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# LOCAL AUTHORITIES PENSION PLAN

## REPORT ON THE ACTUARIAL VALUATION FOR FUNDING PURPOSES AS AT DECEMBER 31, 2012

23 OCTOBER 2013

**Note to reader regarding actuarial valuations:**

This valuation report may not be relied upon for any purpose other than those explicitly noted in the Introduction, nor may it be relied upon by any party other than the parties noted in the Introduction. Mercer is not responsible for the consequences of any other use. A valuation report is a snapshot of a plan's estimated financial condition at a particular point in time; it does not predict a pension plan's future financial condition or its ability to pay benefits in the future. If maintained indefinitely, a plan's total cost will depend on a number of factors, including the amount of benefits the plan pays, the number of people paid benefits, the amount of plan expenses, and the amount earned on any assets invested to pay the benefits. These amounts and other variables are uncertain and unknowable at the valuation date. The content of the report may not be modified, incorporated into or used in other material, sold or otherwise provided, in whole or in part, to any other person or entity, without Mercer's permission. All parts of this report, including any documents incorporated by reference, are integral to understanding and explaining its contents; no part may be taken out of context, used or relied upon without reference to the report as a whole.

To prepare the results in this report, actuarial assumptions are used to model a single scenario from a range of possibilities for each valuation basis. The results based on that single scenario are included in this report. However, the future is uncertain and the plan's actual experience will differ from those assumptions; these differences may be significant or material. Different assumptions or scenarios within the range of possibilities may also be reasonable, and results based on those assumptions would be different. Furthermore, actuarial assumptions may be changed from one valuation to the next because of changes in regulatory and professional requirements, developments in case law, plan experience, changes in expectations about the future and other factors.

The valuation results shown in this report also illustrate the sensitivity to one of the key actuarial assumptions, the discount rate. We note that the results presented herein rely on many assumptions, all of which are subject to uncertainty, with a broad range of possible outcomes and the results are sensitive to all the assumptions used in the valuation.

Decisions about benefit changes, granting new benefits, investment policy, funding policy, benefit security and/or benefit-related issues should not be made solely on the basis of this valuation, but only after careful consideration of alternative economic, financial, demographic and societal factors, including financial scenarios that assume future sustained investment losses.

Funding calculations reflect our understanding of the requirements of the Public Sector Pension Plans Act, the Income Tax Act and related regulations, and the Employment Pension Plans Act and related regulations that are effective as of the valuation date. Mercer is not engaged in the practice of law or tax advice. This report does not constitute and is not a substitute for legal or tax advice.

The Board is responsible for developing a statement of investment policy and goals (SIP&G) to establish the investment principles, policy guidelines and manner in which the assets of the plan shall be invested and managed. The President of the Alberta Treasury Board and Minister of Finance has a duty to invest the assets in accordance with this SIP&G and applicable legislation. The investment functions of the Minister are performed through Alberta Investment Management Corporation.

# Contents

## Summary of Results ($000,000's)

| | 31.12.2012 | 31.12.2011 |
|---|---|---|
| **Going-Concern Financial Status** | | |
| Adjusted market value of assets | $22,873.2 | $19,763.6 |
| Asset smoothing adjustment | $112.7 | $1,217.3 |
| Smoothed value of assets | $22,985.9 | $20,980.9 |
| Going-concern actuarial liability | $28,421.7 | $26,396.1 |
| Funding excess (unfunded liability) | ($5,435.8) | ($5,415.2) |
| Funded ratio – market value basis | 80.5% | 74.9% |
| Funded ratio – smoothed value basis | 80.9% | 79.5% |
| | | |
| **Solvency Financial Position** | | |
| Adjusted market value of assets, less windup expenses | $22,808.2 | $19,698.6 |
| Solvency liability | $37,524.1 | $32,074.6 |
| Solvency excess (deficiency) | ($14,715.9) | ($12,376.0) |
| Solvency ratio | 60.8% | 61.4% |
| | | |
| **Funding Requirements (annualized)**[1] | **2013** | **2012** |
| Total current service cost | $1,497.0 | $1,338.1 |
| Non-investment related expenses | $35.0 | $35.0 |
| Total actuarial normal cost | $1,532.0 | $1,373.1 |
| | | |
| Estimated pensionable payroll | $8,967.4 | $8,191.2 |
| | | |
| Normal cost (% of Pay) | 17.08% | 16.76% |
| Unfunded liability payments (% of Pay) | 7.08% | 7.40% |
| Total contributions (% of Pay)[2] | 24.16% | 24.16% |
| | | |
| Next required valuation date | 31.12.2015 | 31.12.2014 |

[1] Provided for reference purposes only. Contributions must be remitted to the Plan in accordance with the Funding Requirements section of this report.

[2] These are the total contribution rates effective January 1, 2015 and January 1, 2014, respectively.

# 1

# Introduction

### To the Local Authorities Pension Plan Board of Trustees

At the request of the Board of Trustees, we have conducted an actuarial valuation of the Local Authorities Pension Plan (the “Plan”), as at the valuation date, December 31, 2012. We are pleased to present the results of the valuation.

## Purpose

The purpose of this valuation is to determine:

- The funded status of the plan as at December 31, 2012 on going-concern and solvency bases; and
- The range of permissible funding contributions pursuant to the *Public Sector Pension Plans Act* for the triennial period beginning January 1, 2013.

The information contained in this report was prepared for the internal use of the Board of Trustees and for filing with the Canada Revenue Agency, in connection with our actuarial valuation of the Plan. This report will be filed with the Canada Revenue Agency. This report is not intended or suitable for any other purpose.

In accordance with pension benefits legislation, the next actuarial valuation of the Plan will be required with an effective date not later than December 31, 2015, or as at the date of an earlier amendment to the Plan.

## Terms of Engagement

In accordance with our terms of engagement with the Board of Trustees, our actuarial valuation of the Plan is based on the following material terms:

- It has been prepared in accordance with applicable pension legislation and actuarial standards of practice in Canada; and
- As instructed by the Board of Trustees, we have reflected a margin for adverse deviations in our going-concern valuation by reducing the going-concern discount rate by 0.65% per year.

## Events Since the Last Valuation at December 31, 2011

### *Pension Plan*

Since the last valuation, all outstanding asset transfer amounts owing with respect to members who transferred from the Public Service Pension Plan as a result of the Alberta Health Services restructuring have been transferred to the Plan. Accordingly, we have removed the in-transit estimate of the outstanding asset transfer amount.

This valuation reflects the provisions of the Plan as at December 31, 2012. We are not aware of any pending amendments coming into effect during the period covered by this report. The Plan provisions are summarised in Appendix F.

### *Assumptions*

We have used the same going-concern valuation assumptions and methods as were used for the previous valuation, except for the following:

| | **Current Valuation** | **Previous Valuation** |
|---|---|---|
| Price Inflation: | 1.50% per year for 3 years, 2.50% per year thereafter | 2.50% |
| ITA limit / YMPE escalation: | 2.00% p.a. in 2013, 2.125% p.a. in 2014, 2.25% p.a. in 2015, 3.375% p.a. in 2016 grading linearly to 3.75% p.a. in 2019 | 2.875% in 2012, grading linearly to 3.75% in 2019 |
| Post retirement pension increases: | 0.90% per year for 3 years, 1.50% per year thereafter | 1.50% |

The solvency assumptions have been updated to reflect market conditions at the valuation date.

A summary of the going-concern and solvency methods and assumptions are provided in Appendices C and D, respectively.

### *Regulatory Environment and Actuarial Standards*

The Alberta government enacted legislation exempting certain public sector pension plans from funding solvency deficiencies effective January 1, 2003. The funding requirements of the Plan incorporated in this valuation report reflect this legislation.

In September of 2013 the Alberta government announced their vision for public sector pension reform. Proposals were made that impact benefits for service after 2015 should they be implemented. As the proposals have not yet been adopted, this actuarial valuation does not reflect any of the proposed changes.

We are not aware of any changes to the *Public Sector Pension Plans Act* which impact the funding of the Plan.

## Subsequent Events

Information included in a draft report on a Canadian Institute of Actuaries (CIA) study of Canadian pensioners' mortality experience indicates that mortality has recently improved faster than estimated by the current mortality tables utilized in our actuarial valuations for LAPP. The CIA final report on the mortality tables and mortality projection scales and related guidance were not published when the valuation work was completed. We expect that the mortality assumption will be changed in the first valuation of the plan prepared following publication of the final report and guidance on mortality tables and projection scales, based on LAPP specific and general Canadian experience.

After checking with representatives of the Local Authorities Pension Plan, to the best of our knowledge there have been no other events subsequent to the valuation date which, in our opinion, would have a material impact on the results of the valuation. Our valuation reflects the financial position of the Plan as of the valuation date and does not take into account any experience after the valuation date.

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# Valuation Results – Going-Concern

## Financial Status

A going-concern valuation compares the relationship between the value of Plan assets and the present value of expected future benefit cash flows in respect of accrued service, assuming the Plan will be maintained indefinitely.

The results of the current valuation, compared with those from the previous valuation, are summarized as follows:

| **($000,000's)** | **31.12.2012** | **31.12.2011** |
|---|---|---|
| **Assets** | | |
| Market value of assets | $22,862.5 | $19,662.8 |
| Asset smoothing adjustment | $112.7 | $1,217.3 |
| Present value of prior service payments | $10.7 | $11.0 |
| In-transit for AHS transfers | $0.0 | $89.8 |
| Smoothed value of assets | $22,985.9 | $20,980.9 |
| **Going-Concern Actuarial Liability** | | |
| • Active members | $17,886.0 | $16,669.7 |
| • Pensioners and survivors | $9,394.0 | $8,657.7 |
| • Deferred pensioners and hold-on deposits | $1,141.7 | $1,068.7 |
| Total | $28,421.7 | $26,396.1 |
| Funding Excess (unfunded liability) | ($5,435.8) | ($5,415.2) |
| Funding Ratio | 80.9% | 79.5% |

The going-concern actuarial liability includes a provision for adverse deviations.

## Reconciliation of Financial Status ($000,000's)

| | | |
|---|---|---|
| Funding excess (unfunded liability) as at previous valuation | | ($5,415.2) |
| Interest on funding excess (unfunded liability) at 5.75% per year | | ($311.4) |
| Special payments towards unfunded liability | | $567.5 |
| Expected funding excess (unfunded liability) | | ($5,159.1) |
| Net experience gains (losses) | | |
| • Net Investment return | ($117.2) | |
| • Increases in pensionable earnings, YMPE, and interest on member contributions | ($203.9) | |
| • Indexation | $56.6 | |
| • Retirement | ($30.0) | |
| • Mortality of pensioners and beneficiaries | ($41.8) | |
| • Termination, pre-retirement mortality, and disability | $15.2 | |
| • Expenses | $5.1 | |
| Total experience gains (losses) | ($316.0) | ($316.0) |
| Impact of changes in assumptions | | |
| • Price Inflation | $185.4 | |
| Total assumption changes impact | $185.4 | $185.4 |
| Contributions different than accruals | | ($157.2) |
| Data and prior service record changes (including AHS transfer) | | $8.5 |
| Net impact of other elements of gains and losses | | $2.6 |
| Funding excess (unfunded liability) as at current valuation | | ($5,435.8) |

## *Plan Experience*

The main assumptions are compared with actual experience since the previous valuation:

| **Plan Experience ($000,000's)** | **Assumption** | **Actual 2012** | **Impact Gain (loss)** |
|---|---|---|---|
| Net Investment return (actuarial value of assets) | 5.75% | 5.41% | ($117.2) |
| Increases in pensionable salary | 4.03%* | 5.50% | |
| Increases in YMPE | 2.88% | 2.00% | ($203.9) |
| Interest on contributions | 3.00% | 1.50% | |
| Indexation of pensions in payment | 1.50% | 0.96% | $56.6 |
| Retirements | 5,584 members | 2,811 members | ($30.0) |
| Terminations of employment | 6,933 members | 9,055 members | |
| Pre-retirement mortality | 238 members | 196 members | $15.2 |
| Disability | 0 members | 10 members | |
| Mortality of pensioners and beneficiaries | 1,734 deaths | 1,272 deaths | ($41.8) |
| Expenses | $35.0 million | $29.9 million | $5.1 |
| Net experience gains (losses) | | | ($316.0) |

* This value represents 3.25% plus the average of the assumed merit and promotion increase.

## *Commentary*

- The investment return of 5.41% (net of investment management expenses) for 2012 on an actuarial value basis was lower than the valuation assumption of 5.75% per year. This lower investment return produced a loss of approximately $117.2 million. Note that on a market value basis, the gross rate of return was substantially higher (10.99% for 2012). The smoothing method defers recognition of a portion of gains and losses over a three year period.

- Salaries grew at a higher rate than expected over 2012, resulting in higher actuarial liabilities and therefore an actuarial loss. The YMPE grew by a lower rate than assumed in 2012 resulting in an actuarial loss. Interest on contributions in 2012 was lower than assumed resulting in an actuarial gain. All of these factors contributed to a net increase in the actuarial liabilities (experience loss) of approximately $203.9 million.

- The valuation at December 31, 2011 assumed a cost-of-living increase of 1.50% effective January 1, 2013. The actual cost-of-living increase was 0.96%. The lower than expected cost-of-living increase produced a gain of approximately $56.6 million.

- Mortality, termination and retirement experience in aggregate were less favourable than assumed, producing an experience loss of approximately $56.6 million.

- In the December 31, 2011 valuation, contribution increases were scheduled for January 1, 2014, 2 years after the valuation effective date. While the unfunded liability contributions are adjusted to reflect the deferral of the contribution increases, the current service cost is not. This lag in the timing of the current service contribution rate increase, along with a demographic profile of new entrants different than the average, created a loss of $157.2 million.

- Contributions paid that were in excess of the required current service cost of 16.76% from the December 31, 2011 valuation have resulted in $567.5 million being paid towards the unfunded liability.

- In addition, with a plan of this size, it is inevitable that data will change between valuation periods. The combined total of data and prior service record adjustments, including amounts moved into the Plan as a result of members transferring from the Public Service Pension Plan, amounted to $8.5 million.

The above commentary outlines the major components of the gain and loss. All other experience items such as timing of events are combined into the “Net impact of other elements of gains and losses” item.

## Current Service Cost

The current service cost is an estimate of the present value of the additional expected future benefit cash flows in respect of pensionable service that will accrue after the valuation date, assuming the Plan will be maintained indefinitely.

The current service cost during the year following the valuation date compared with the corresponding value determined in the previous valuation, is as follows:

| **($000,000’s)** | **2013** | **2012** |
|---|---|---|
| Actuarial present value of benefits to be earned for service in the next 12 months | $1,497.0 | $1,338.1 |
| Non-investment related expenses | $35.0 | $35.0 |
| Total actuarial normal cost | $1,532.0 | $1,373.1 |
| Pensionable Salary | $8,967.4 | $8,191.2 |
| Current service cost expressed as a percentage of Pensionable Salary | 17.08% | 16.76% |

The key factors that have caused a change in the current service cost since the previous valuation are summarized in the following table:

| | |
|---|---|
| Current service cost as at previous valuation | 16.76% |
| Demographic changes and impact of contribution increases on 50% excess contributions | 0.29% |
| Changes in assumptions | 0.03% |
| Current service cost as at current valuation | 17.08% |

## Components of Current Service Cost

We have prepared a split of the Plan's current service cost by component so that the Board can have an understanding of the value of the benefits provided under the plan.

The precise value of each component is sensitive to the order in which they are run, since there is a compounding effect. However, this gives a rough idea of the proportionate values of each component as the compounding effect will not significantly affect the overall picture.

| | Component Cost | Proportion of Total Current Service Cost |
|---|---|---|
| Plan pension accrual (1.4/2.0%), no ancillary benefits | 13.29% | 77.8% |
| Five year guarantee | 0.04% | 0.2% |
| Early retirement (3% from 65) | 0.93% | 5.4% |
| Unreduced pension at 85 points | 0.75% | 4.4% |
| Cost-of-living adjustments (60% of Alberta CPI) | 2.07% | 12.2% |
| Total current service cost | 17.08% | 100.0% |

In calculating the current service cost of the plan designs which do not include an unreduced retirement prior to 85 points, it is assumed that retirement experience would be the same as for current Plan members who have not achieved 85 points.

## Discount Rate Sensitivity

The following table summarises the effect on the going-concern actuarial liability shown in this report of using a discount rate which is 1.00% lower than that used in the valuation:

| Scenario ($000,000's) | Valuation Basis | Reduce Discount Rate by 1% |
|---|---|---|
| Going-Concern actuarial liability | $28,421.7 | $33,297.5 |
| Current service cost | | |
| Actuarial present value of benefits to be earned for service in the next 12 months | $1,497.0 | $1,850.1 |
| Non-Investment related expenses | $35.0 | $35.0 |
| Total actuarial normal cost | $1,532.0 | $1,885.1 |

# 3

## Valuation Results – Solvency

### Financial Position

In accordance with an amendment to the *Public Sector Pension Plans Act*, the Local Authorities Pension Plan is not subject to the solvency funding requirements outlined in the Alberta *Employment Pension Plans Act*. The Plan is required to disclose the solvency excess or deficiency, but no solvency special payments are required to fund any solvency deficiency that may arise.

When conducting a solvency valuation, we determine the relationship between the respective values of the Plan's assets and its liabilities on a solvency basis, determined in accordance with the Alberta *Employment Pension Plans Act*. The values of the Plan's assets and liabilities on a solvency basis are related to the corresponding values calculated as though the Plan were wound up and settled on the valuation date.

The solvency position as of the valuation date, in comparison with that at the previous valuation date, is as follows:

| **($000,000's)** | **31.12.2012** | **31.12.2011** |
|---|---|---|
| **Assets** | | |
| Market value of assets | $22,862.5 | $19,662.8 |
| Present value of prior service payments | $10.7 | $11.0 |
| In-transit for AHS transfers | $0.0 | $89.8 |
| Plan termination expenses | ($65.0) | ($65.0) |
| Market value of assets available to provide benefits | $22,808.2 | $19,698.6 |
| Actuarial liability | | |
| **Present Value of Accrued Benefits for**: | | |
| Active members | $22,936.1 | $19,840.8 |
| Pensioners and survivors | $12,856.4 | $10,749.4 |
| Deferred pensioners and hold-on-deposits | $1,731.6 | $1,484.4 |
| Total solvency liability | $37,524.1 | $32,074.6 |
| Solvency excess (shortfall) | ($14,715.9) | ($12,376.0) |
| Solvency ratio | 60.8% | 61.4% |

## Impact of Plan Wind Up

In our opinion, the value of the Plan's assets would be less than its actuarial liabilities if the Plan were to be wound up on the valuation date.

Specifically, actuarial liabilities would exceed the market value of Plan assets available to provide benefits by $14,715.9 million. This calculation includes a provision of $65 million for Plan termination expenses that might be payable from the pension fund if the Plan were wound up.

## Solvency Incremental Cost to 2014

The solvency incremental cost is an estimate of the present value of the projected change in the solvency liabilities in the year following the valuation date, adjusted for the benefit payments expected to be made in that period.

The solvency incremental cost determined in this valuation is as follows:

| **($000,000's)** | **31.12.2012** |
|---|---|
| Total solvency liabilities at the valuation date (A) | $37,524.1 |
| Present value of projected solvency liability in one year plus benefit payments (B) | $40,422.9 |
| 2013 Solvency incremental cost (B – A) | $2,898.8 |

The incremental cost is not an appropriate measure of the contributions that would be required to maintain the financial position of the plan on a solvency basis unchanged from the valuation date and the next required valuation date, if actual experience is exactly in accordance with the going-concern valuation assumptions. This is because it does not reflect the fact that the expected return on plan assets (based on the going-concern assumptions) is greater than the discount rate used to determine the solvency liabilities.

## Discount Rate Sensitivity

The following table summarises the effect on the solvency liabilities shown in this report of using a discount rate which is 1.00% lower than that used in the valuation:

| **Scenario ($000,000's)** | **Valuation Basis** | **Reduce Discount Rate by 1%** |
|---|---|---|
| **Total solvency liability** | $37,524.1 | $44,142.5 |

# 4

## Funding Requirements

Current service contribution requirements are governed by both the *Public Sector Pension Plans Act*, and the provisions of the *Income Tax Act* and related regulations.

At the time of preparing this valuation report, under the *Public Sector Pension Plans Act*, the total contribution must be no less than (i) the normal actuarial cost, plus (ii) where an unfunded actuarial liability exists, an amount sufficient to amortize the unfunded actuarial liability over no more than 15 years, less (iii) where there is a funding excess, the amount of the funding excess which the Board has authorized as a contribution reduction.

Under the *Income Tax Act*, the total contribution must be no more than (i) the normal actuarial cost, plus (ii) where an unfunded actuarial liability exists, the amount of the unfunded actuarial liability, less (iii) where there is a funding excess, the amount of the funding excess which exceeds a prescribed level.

The following table outlines the range of funding contributions that would be permitted under the *Income Tax Act* and *Public Sector Pension Plans Act* based on the valuation at December 31, 2012:

| | **Minimum Required Under Public Sector Pension Plans Act** | **Maximum Permitted Under Income Tax Act** |
|---|---|---|
| Current Service Cost | 17.08% | 17.08% |
| Special Payments Towards Unfunded Liabilities (Average) | 7.08% | 58.95%* |
| Amortization of Funding Excess | 0.00% | 0.00% |
| Total Average Contribution Requirement | 24.16% | 76.03% |

* One-time payment.

The Board must select a contribution rate for the period until the next actuarial valuation that falls between the minimum and maximum contribution permitted in accordance with the Board's funding policy.

Current contribution rates meet the requirements of the *Public Sector Pension Plans Act* and are well below the maximum permitted under the *Income Tax Act*. As a result, unless another actuarial valuation is filed in the future with an earlier application date, the following contribution rates will be in effect for the calendar years 2013 through to 2015.

**Employee Contributions – As a % of Pensionable Salary**

| | 2013 | | 2014 | | 2015 | |
|---|---|---|---|---|---|---|
| | Up to YMPE | Above YMPE | Up to YMPE | Above YMPE | Up to YMPE | Above YMPE |
| Current Service Cost | 6.42% | 9.16% | 7.21% | 10.29% | 7.35% | 10.49% |
| Unfunded Liability | 3.01% | 4.31% | 3.18% | 4.55% | 3.04% | 4.35% |
| Total Contribution | 9.43% | 13.47% | 10.39% | 14.84% | 10.39% | 14.84% |
| Aggregate | 10.39% | | 11.58% | | 11.58% | |

**Employer Contributions – As a % of Pensionable Salary**

| | 2013 | | 2014 | | 2015 | |
|---|---|---|---|---|---|---|
| | Up to YMPE | Above YMPE | Up to YMPE | Above YMPE | Up to YMPE | Above YMPE |
| Current Service Cost | 7.42% | 10.16% | 8.21% | 11.29% | 8.35% | 11.49% |
| Unfunded Liability | 3.01% | 4.31% | 3.18% | 4.55% | 3.04% | 4.35% |
| Total Contribution | 10.43% | 14.47% | 11.39% | 15.84% | 11.39% | 15.84% |
| Aggregate | 11.39% | | 12.58% | | 12.58% | |

**Total Contributions – As a % of Pensionable Salary**

| | 2013 | | 2014 | | 2015 | |
|---|---|---|---|---|---|---|
| | Up to YMPE | Above YMPE | Up to YMPE | Above YMPE | Up to YMPE | Above YMPE |
| Current Service Cost | 13.84% | 19.32% | 15.42% | 21.58% | 15.70% | 21.98% |
| Unfunded Liability | 6.02% | 8.62% | 6.36% | 9.10% | 6.08% | 8.70% |
| Total Contribution | 19.86% | 27.94% | 21.78% | 30.68% | 21.78% | 30.68% |
| Aggregate | 21.78% | | 24.16% | | 24.16% | |

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## Actuarial Opinion

In our opinion, for the purposes of the valuations,

- The membership data on which the valuation is based are sufficient and reliable;
- The assumptions are appropriate;
- The methods employed are appropriate for the purpose of establishing the financial position of the plan and the funding contribution requirements pursuant to the *Public Sector Pension Plans Act;* and

This report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada. It has also been prepared in accordance with the funding standards set by the *Public Sector Pension Plans Act.*

| | |
|---|---|
| **Original Signed By** | **Original Signed By** |
| FSA, FCIA | FSA, FCIA |
| October 23, 2013 | October 23, 2013 |
| Date | Date |

# APPENDIX A

## Prescribed Disclosure

### Timing of Next Required Valuation

In accordance with the *Public Sector Pension Plans Act*, an actuarial report must be prepared at intervals not exceeding three years. Accordingly, the next valuation of the Plan will be required as of December 31, 2015.

### Special Payments

#### *Going-Concern Basis*

The following minimum annual special payments must be made to the plan to eliminate the unfunded liability as at December 31, 2012, in accordance with the *Public Sector Pension Plans Act* of Alberta.

| Type of Deficit | Valuation Date | Commencement of First Contribution | Percentage of Pensionable Salary* | Last Payment | Present Value of Future Payments (millions) |
|---|---|---|---|---|---|
| Unfunded Liability | Dec. 31, 2003 | Jan. 1, 2005 | 1.14%** | Dec. 31, 2014 | $198.0 |
| Unfunded Liability | Dec. 31, 2003 | Jan. 1, 2015 | 0.82%** | Dec. 31, 2018 | $268.0 |
| Unfunded Liability | Dec. 31, 2004 | Jan. 1, 2006 | 0.22% | Dec. 31, 2019 | $126.8 |
| Unfunded Liability | Dec. 31, 2005 | Jan. 1, 2007 | 1.50% | Dec. 31, 2020 | $978.6 |
| Unfunded Liability | Dec. 31, 2006 | Jan. 1, 2008 | 0.07% | Dec. 31, 2021 | $50.9 |
| Unfunded Liability | Dec. 31, 2007 | Jan. 1, 2009 | 0.50% | Dec. 31, 2022 | $400.0 |
| Unfunded Liability | Dec. 31, 2007 | Jan. 1, 2010 | 0.93% | Dec. 31, 2022 | $743.9 |
| Unfunded Liability | Dec. 31, 2007 | Jan. 1, 2011 | 0.93% | Dec. 31, 2022 | $743.9 |
| Unfunded Liability | Dec. 31, 2007 | Jan. 1, 2012 | 0.94% | Dec. 31, 2022 | $751.9 |
| Unfunded Liability | Dec. 31, 2010 | Jan. 1, 2013 | 0.73% | Dec. 31, 2025 | $737.9 |
| Unfunded Liability | Dec. 31, 2011 | Jan. 1, 2014 | 0.44% | Dec. 31, 2026 | $435.9 |
| Total – 2014 | | | 7.40% | | |
| Total – Jan. 1 2015 onwards | | | 7.08% | | $5,435.8 |

* The unfunded liability payments are determined based on expected future salary increases and include an adjustment for unfunded liability contributions refunded on termination through excess contributions and non-vested termination refunds.

** Minimum unfunded liability contributions are calculated and expressed as a level percent of payroll. Under the EPPA, if an existing unfunded liability contribution schedule is more than sufficient to amortize the unfunded liability, the oldest unfunded liability contribution rate in the schedule may be reduced or eliminated, as appropriate. Since the 2014 contribution rates for LAPP have already been set and communicated to stakeholders, any changes in contribution rates will be effective January 1, 2015. Accordingly, the December 31, 2003 unfunded liability contribution rate of 1.14% of pay will drop to 0.82% of pay effective January 1, 2015.

# APPENDIX B

## Plan Assets

The pension fund is held in trust by Alberta Investment Management Corporation on behalf of the Local Authorities Pension Plan Board and Alberta Treasury Board and Finance and is invested in accordance with the Board's written statement of investment policies and goals.

We have relied upon the Plan's financial statements prepared by the Auditor General of Alberta.

### Reconciliation of Market Value of Plan Assets

The pension fund transactions since the last valuation are summarized in the following table:

| **($000,000's)** | **2012** |
|---|---|
| January 1 | $19,662.8 |
| PLUS | |
| Member contributions | $873.3 |
| Employer contributions | $959.9 |
| Reciprocal transfer in | $79.4 |
| Prior service payments | $27.6 |
| Contribution from Alberta Health Services | $45.0 |
| Interest, dividends, accrued income, realized and unrealized gains (losses), net of investment expenses | $2,215.3 |
| | $4,200.4 |
| LESS | |
| Pensions paid | $734.8 |
| Termination refunds | $209.5 |
| Fund administrative expenses | $29.9 |
| Reciprocal transfer out | $26.6 |
| | $1,000.7 |
| December 31 | $22,862.5 |
| Gross rate of return[3] | 10.99% |
| Rate of return net of expenses[3] | 10.84% |

We have tested the pensions paid, the lump-sums paid and the contributions for consistency with the membership data for the Plan members who have received benefits or made contributions. The results of these tests were satisfactory.

[3] Assuming mid-period cash flows.

The Plan's investments are summarized as follows:

| Investments | ($000's) | |
|---|---|---|
| Deposits and Short Term Securities | $222,281 | 1.0% |
| Bonds and Mortgages | $6,674,942 | 29.2% |
| Real Return Bonds | $1,049,122 | 4.6% |
| Infrastructure and Private Debt and Loans | $1,172,205 | 5.1% |
| Total Deposits and Fixed Income Securities | $9,118,550 | 39.9% |
| Canadian Public Equities | $2,766,788 | 12.1% |
| Global Developed Equities | $5,021,697 | 22.0% |
| Emerging Market Equities | $765,034 | 3.3% |
| Private Equities | $1,071,971 | 4.7% |
| Timberland | $252,507 | 1.1% |
| Real Estate | $3,133,105 | 13.7% |
| Small Cap Equity | $670,092 | 2.9% |
| Total Equities and Real Estate | $13,681,194 | 59.8% |
| Accrued Interest, Accounts Receivable and Payable | $62,753 | 0.3% |
| Total Market Value of Assets | $22,862,497 | 100.0% |

## Investment Policy

The Board has adopted a statement of investment policy and objectives. This policy is intended to provide guidelines for the manager(s) as to the level of risk which is commensurate with the Plan's investment objectives. A significant component of this investment policy is the asset mix.

The constraints on the asset mix and the actual asset mix at the valuation date are provided for information purposes:

| | | **Long-term Policy** | **Policy Range (%)** | |
|---|---|---|---|---|
| Asset Category | | Weighting | Min | Max |
| Fixed Income | Short Term and Cash | 0.5 | 0.0 | 10.0 |
| | Universe Bonds | 10.0 | 0.0 | 10.0 |
| | Long Bonds | 20.0 | 15.0 | 28.0 |
| | Mortgages | 0.0 | 0.0 | 7.0 |
| Total Fixed Income | | 30.5 | 20.0 | 50.0 |
| Inflation Sensitive/Alternatives | Real Return Bonds | 5.0 | 0.0 | 10.0 |
| | Private Income/Infrastructure | 11.5 | 5.0 | 15.0 |
| | Timberland | 2.0 | 0.0 | 5.0 |
| | Real Estate | 13.5 | 10.0 | 20.0 |
| Inflation Sensitive/Alternatives Total | | 32.0 | 20.0 | 50.0 |
| Short Horizon | Canadian Equity | 9.0 | 5.0 | 20.0 |
| | Global Developed Equity | 16.0 | 10.0 | 40.0 |
| | Emerging Market Equity | 3.5 | 0.0 | 7.0 |
| | Hedge Funds | 0.0 | 0.0 | 10.0 |
| | Small Cap Equity | 3.0 | 0.0 | 6.0 |
| Short Horizon Total | | 31.5 | 25.0 | 50.0 |
| Long Horizon | Private Equity | 6.0 | 3.0 | 9.0 |
| Long Horizon Total | | 6.0 | 3.0 | 9.0 |
| Total Fund (%) | | 100.0 | | |

# APPENDIX C

## Methods and Assumptions – Going-Concern

### Valuation of Assets

The same asset valuation method was used in this valuation as was used in the previous valuation at December 31, 2011. Under this method, actual equity returns in excess of fixed income returns are compared to the assumed equity risk premium and any difference recognized over a three year period. This smoothed value is adjusted for outstanding prior service payments to arrive at the actuarial value of assets. This methodology results in equity returns in excess of fixed income returns above or below the assumed equity risk premium of 4.6% in 2012 (3.7% in 2011) being amortized over a three year period.

Generally speaking, consecutive years of equity investment returns in excess of fixed income returns which fall below the assumed equity risk premium will result in a smoothed value of assets exceeding the market value (since losses are deferred). Similarly, consecutive years of equity investment returns in excess of fixed income returns which exceed the assumed equity risk premium will result in the market value of assets exceeding the smoothed value of assets (since gains are deferred).

The smoothed value of the assets at December 31, 2012 was derived as follows:

| | |
|---|---|
| Market value of assets | $22,862.5 |
| (Less) Plus 1/3 of excess 2011 equity (gains) losses | $538.4 |
| (Less) Plus 2/3 of excess 2012 equity (gains) losses | ($425.7) |
| Present value of prior service payments | $10.7 |
| Smoothed value of assets | $22,985.9 |

On an actuarial value basis, the rate of return (net of all investment management expenses) was 5.41% in 2012.

### Going-Concern Actuarial Liability

Over time, the real cost of a pension plan is the excess of benefits and expenses over investment earnings. The actuarial cost method allocates this cost to annual time periods.

For purposes of the going-concern valuation, we have continued to use the projected unit credit actuarial cost method. Under this method, we determine the present value of benefit cash flows expected to be paid in respect of service accrued prior to the valuation date, based on projected final average earnings. This is referred to as the actuarial liability. For each individual plan member, accumulated contributions with interest are established as a minimum actuarial liability and each member’s current service benefit is tested to ensure that no more than 50% of the value is funded by member contributions. Any member contributions in excess of 50% are included in the actuarial liability.

The *funding excess or unfunded liability*, as the case may be, is the difference between the smoothed value of assets and the actuarial liability. An unfunded liability will be amortised over no more than 15 years through special payments as required under the *Public Sector Pension Plans Act*. A funding excess may, from an actuarial standpoint, be applied immediately to reduce required current service contributions unless precluded by the terms of the Plan or by legislation.

This funding method produces a reasonable matching of contributions with accruing benefits. Because benefits are recognised as they accrue, the actuarial funding method aims at keeping the plan fully funded at all times. This promotes benefit security, once any unfunded liabilities and solvency deficiencies have been funded.

## Current Service Cost

The *current service cost* is the actuarial present value of projected benefits to be paid under the plan with respect to service during the year following the valuation date. The current service cost has been expressed as a percentage of the members' Pensionable Salary to provide an automatic adjustment in the event of fluctuations in membership and / or pensionable salary.

Under the projected unit credit actuarial cost method, the current service cost for an individual member will increase each year as the member approaches retirement. However, the current service cost of the entire group, expressed as a percentage of the members' pensionable earnings, can be expected to remain stable as long as the average age of the group remains constant.

## Actuarial Assumptions – Going-Concern Basis

The present value of future benefit payment cash flows is based on economic and demographic assumptions. At each valuation we determine whether, in our opinion, the actuarial assumptions are still appropriate for the purposes of the valuation, and we revise them, if necessary. Emerging experience will result in gains or losses that will be revealed and considered in future actuarial valuations.

The table below shows the various assumptions used in the current valuation in comparison with those used in the previous valuation.

| Assumption | Current Valuation | Previous Valuation |
|---|---|---|
| Nominal discount rate: | 5.75% | 5.75% |
| Non-investment expenses: | $35 million | $35 million |
| Price Inflation: | 1.50% per year for 3 years, 2.50% per year thereafter | 2.50% |
| ITA limit / YMPE escalation: | 2.00% p.a. in 2013,<br>2.125% p.a. in 2014,<br>2.25% p.a. in 2015,<br>3.375% p.a. in 2016<br>grading linearly to<br>3.75% p.a. in 2019 | 2.875% in 2012, grading linearly to 3.75% in 2019 |
| Salary escalation: | 3.3125% in 2013, grading linearly to 3.75% in 2019, plus Age-Based Merit and Promotion Scale | 3.25% in 2012, grading linearly to 3.75% in 2019, plus Age-Based Merit and Promotion Scale |
| Merit and promotion | Age related table, derived from plan experience from 1989-1993 | Age related table, derived from plan experience from 1989-1993 |
| Post retirement pension increases: | 0.90% per year for 3 years, 1.50% per year thereafter | 1.50% |
| Interest on employee contributions: | 3.00% | 3.00% |
| Retirement rates: | Points (age and service) related table, derived from plan experience from 1994-2002 | Points (age and service) related table, derived from plan experience from 1994-2002 |
| Termination rates: | Age related table, derived from 1994-2002 LAPP experience, adjusted at ages 50-55 | Age related table, derived from 1994-2002 LAPP experience, adjusted at ages 50-55 |
| Mortality rates: | 100% of the rates of the 1994 Uninsured Pensioner Mortality Table | 100% of the rates of the 1994 Uninsured Pensioner Mortality Table |
| Mortality improvements: | Fully generational using Scale AA | Fully generational using Scale AA |
| Disability rates: | None | None |
| Eligible spouse at retirement: | 80% | 80% |
| Spousal age difference: | Male 3 years older | Male 3 years older |
| Percent electing deferred pension: | 25% | 25% |

The assumptions are best-estimate with the exception that the discount rate includes a margin for adverse deviations.

# Age and Service Related Tables

## *Termination Rates*

Sample rates are summarized below:

| Termination Rates | | | | | |
|---|---|---|---|---|---|
| Males - Select Period | | | Females - Select Period | | |
| Years of Service | 0 – 1 | 1 – 2 | Years of Service | 0 – 1 | 1 – 2 |
| Age | | | Age | | |
| 25 | 14.60% | 10.43% | 25 | 13.15% | 11.36% |
| 28 | 13.89% | 9.59% | 28 | 12.04% | 12.22% |
| 30 | 12.09% | 11.66% | 30 | 12.20% | 11.86% |
| 33 | 10.40% | 7.07% | 33 | 12.11% | 10.72% |
| 35 | 11.92% | 8.76% | 35 | 9.94% | 9.51% |
| 38 | 13.77% | 8.66% | 38 | 10.52% | 8.97% |
| 40 | 10.77% | 7.01% | 40 | 8.02% | 7.84% |
| 43 | 9.49% | 9.05% | 43 | 8.41% | 7.62% |
| 45 | 12.62% | 8.56% | 45 | 8.97% | 6.38% |
| 48 | 11.41% | 8.23% | 48 | 9.44% | 6.37% |
| 50 | 20.06% | 12.78% | 50 | 15.56% | 12.04% |
| 53 | 19.37% | 17.47% | 53 | 12.74% | 10.80% |

## *Termination Rates (cont'd)*

| Age | Males (Ultimate) | Females (Ultimate) |
|---|---|---|
| 20 | 8.30% | 10.75% |
| 21 | 8.30% | 10.75% |
| 22 | 8.30% | 10.75% |
| 23 | 8.30% | 10.75% |
| 24 | 8.30% | 10.75% |
| 25 | 8.60% | 9.90% |
| 26 | 8.70% | 10.50% |
| 27 | 8.50% | 10.40% |
| 28 | 8.20% | 10.20% |
| 29 | 7.70% | 9.70% |
| 30 | 7.00% | 9.50% |
| 31 | 6.40% | 9.00% |
| 32 | 5.60% | 8.70% |
| 33 | 5.30% | 8.30% |
| 34 | 5.00% | 7.80% |
| 35 | 4.70% | 7.30% |
| 36 | 4.30% | 6.90% |
| 37 | 4.00% | 6.70% |
| 38 | 3.70% | 6.20% |
| 39 | 3.50% | 5.80% |
| 40 | 3.20% | 5.40% |
| 41 | 3.10% | 5.10% |
| 42 | 2.90% | 4.70% |
| 43 | 2.70% | 4.50% |
| 44 | 2.70% | 4.40% |
| 45 | 2.70% | 4.30% |
| 46 | 2.70% | 4.10% |
| 47 | 2.70% | 4.00% |
| 48 | 2.70% | 3.80% |
| 49 | 2.70% | 3.70% |
| 50 | 4.20% | 5.55% |
| 51 | 4.35% | 5.70% |
| 52 | 4.35% | 5.85% |
| 53 | 4.50% | 6.00% |
| 54 | 4.50% | 6.00% |
| 55 | 0.00% | 0.00% |

## Retirement Rate

Retirement rates are summarized below:

| Retirement Rates | | |
|---|---|---|
| Age | Members with less than 85 points | Members with 85 points |
| 55 | 5.3% | 33.0% |
| 56 | 4.4% | 24.0% |
| 57 | 4.1% | 22.1% |
| 58 | 4.4% | 20.5% |
| 59 | 5.1% | 19.2% |
| 60 | 10.4% | 27.7% |
| 61 | 9.4% | 25.3% |
| 62 | 9.0% | 22.4% |
| 63 | 10.0% | 21.4% |
| 64 | 11.0% | 21.8% |
| 65 | 100.0% | 100.0% |

## Pensionable Earnings

The benefits ultimately paid will depend on each member’s final average salary. To calculate the pension benefits payable upon retirement, death or termination of employment, we have taken salary at December 31, 2012 and assumed that such pensionable earnings will increase at the assumed rate.

Sample merit and promotion rates are summarized below:

| Merit and Promotion | |
|---|---|
| Age | Sample Rates |
| 20 | 3.00% |
| 25 | 2.50% |
| 30 | 1.60% |
| 35 | 1.25% |
| 40 | 0.90% |
| 45 | 0.70% |
| 50 | 0.40% |
| 55 | 0.15% |
| 60 | 0.00% |

## Other Methodologies

We have prepared a list of additional assumptions and methods used in the valuation of the Plan. This list is intended to assist users of this report in understanding the specific benefits valued. Small differences in methods and assumptions in a plan of this size can sometimes have effects in the millions of dollars. Other sections of the report have dealt with data omissions so they will not be repeated here.

- It is assumed that indexation of deferred and immediate pensions commences 1 year after termination or retirement;

- Coordinated options for retired members have the entire pension indexed if retired prior to January 1, 1985 and the base indexed for all others;

- Spousal benefits payable on a member's death are based on the member's base pension if the member retired after December 31, 2003, and are based on the member's coordinated pension for all others;

- Current service contributions are based on pensionable salary, not unlimited salary;

- The pensionable salary for calculating the normal cost percentage is nil for employees over age 65 and nil for employees with more than 35 years of service;

- Advance pensioners were valued as J&S 100% for members with a spouse and G15 for single members, and the administrative 90% adjustment has been removed;

- For deferred benefits on termination or death, the pensions were deferred to age 55 with the early reduction factor calculated from the earlier of age 65 and the attainment of 85 points; and

- A load based on commuted value interest rates is applied to the actuarial reserve for members assumed to elect a commuted value upon termination.

## Rationale for Assumptions

A rationale for each of the assumptions used in the current valuation is provided below.

**Discount Rate**

We have discounted the expected benefit payment cash flows using the expected investment return on the fund assets. Other bases for discounting the expected benefit payment cash flows may be appropriate, particularly for purposes other than those specifically identified in this valuation report.

The discount rate is comprised of the following:

- Estimated returns for each major asset class consistent with market conditions on the valuation date and the target asset mix specified in the Plan's investment policy;
- Additional returns assumed to be achievable due to active equity management equal to the fees related to active equity management. Such fees were determined by the difference between the provision for total investment expenses and the hypothetical fees that would be incurred for passive management of all assets;
- Implicit provision for investment expenses determined based on historical expenses paid from the fund; and
- A margin for adverse deviations of 0.65%.

The discount rate was developed as follows:

| | |
|---|---|
| Assumed investment return, net of median fees for non-public market asset classes | 6.40% |
| Additional returns for active management | 0.19% |
| Investment expense provision for public market asset classes | (0.19%) |
| Margin for adverse deviation | (0.65%) |
| Net discount rate | 5.75% |

The Board recognizes that a portion of this future return is expected to come from equity risk premiums (equity returns above bond yields), and has considered the expected additional risk and volatility when setting the discount rate.

If the fund achieves higher investment returns than assumed, gains will be revealed at subsequent valuations. If the fund achieves lower investment returns, losses will emerge.

**Expenses**

The assumption is based on expected administrative expenses for 2013 (excluding any costs related to the new system installation) provided by representatives of the Local Authorities Pension Plan. Investment management expenses are reflected in the discount rate.

**Inflation**

The level of price inflation directly influences benefits provided by the Plan by the application of the cost-of-living increases. It is also useful in developing a coherent set of economic assumptions by relating several of the individual assumptions to an assumed long term level of underlying price inflation.

The inflation assumption is based on market expectations of long term inflation implied by the yields on nominal and real return bonds at the valuation date of 2.50%, adjusted to reflect the Board's expectation of a three year period of lower inflation. No differentiation is made between expected inflation for Alberta versus Canada.

**Income Tax Act Pension Limit and Year's Maximum Pensionable Earnings**

The assumption is based on historical real economic growth, Canada Pension Plan economic assumptions, and the underlying inflation assumption.

To the extent that the YMPE increases by greater than the assumed rate, gains will accrue in the Plan's funding. Losses will emerge if the YMPE increases at a lower rate than assumed.

**Pensionable Salary**

The assumption is based on general wage growth assumptions increased by our best estimate of additional short-term Alberta real economic growth and future merit and promotional increases.

The merit and promotion scale was derived from the experience of the Local Authorities Pension Plan for years 1989 to 1993.

To the extent that salaries increase by greater than assumed rates, losses will accrue in the plan's funding. Gains will emerge if salaries increase at a lower rate than assumed.

**Cost-of-Living Increases**

The assumption is based on the Plan formula and inflation assumption above.

**Retirement Rates**

Age at retirement is an important consideration for this plan because of the plan design that encourages early retirement. The younger members are at retirement, the greater the cost to the plan of a given member's pension.

The assumption is based on Plan experience over the years 1994 to 2002. Subsequent experience has been consistent with these rates.

**Termination Rates**

We have made an allowance for projected benefits payable on the termination of employment before retirement for reasons other than death.

The assumption is based on Plan experience over the years 1994 to 2002. Recent experience indicates that a change in termination experience may be developing. However, since recent experience has also been affected by economic events, no change has been made at this time.

**Mortality Rates**

The rates of mortality assumed in a valuation serve two purposes: firstly, to determine what portion of the current membership will survive to retirement age, and secondly, to forecast the remaining lifetime of members once they reach retirement.

We have assumed mortality rates in accordance with the 1994 Uninsured Pensioners mortality table and have used projection scale AA to project mortality improvements from 1994 and into the future. Information included in a draft report on a Canadian Institute of Actuaries (CIA) study of Canadian pensioners mortality experience indicates that mortality has recently improved faster than estimated by projection scale AA. Mortality tables and a mortality improvement scale to replace the 1994 Uninsured Pensioners mortality table and projection scale AA for Canadian pension plan purposes are included in the draft report. However, the CIA has announced that the draft tables and improvement scales will differ in the final report and the final report on the mortality tables and mortality projection scale and related guidance from the Canadian Institute of Actuaries on the use of the mortality tables and projection scale were not published when the valuation work was completed. We expect that the mortality assumption will be changed in the first valuation of the plan prepared following publication of the final report and guidance on mortality tables and projection scale, based on Canadian experience.

Based on the assumption used, the life expectancy of a member age 65 at the valuation date is 19.8 for males and 22.1 for females.

**Interest on Employee Contributions**

The assumption is based on Plan terms and the underlying investment return assumption.

**Disability Rates**

Based on the number of employees in approved LTD plans and the small number of disability claims experienced by the plan, we believe it is appropriate to ignore the contingency of disability as being immaterial.

**Eligible Spouse**

The assumption is based on Plan experience over the years 1994 to 2002.

**Spousal Age Difference**

The assumption is based on an industry standard showing males are typically 3 years older than their spouse.

**Percent Electing Deferred Pension / Load on Liabilities for CV Payouts**

The assumption is based on historical Plan termination experience and the current CIA commuted value basis.

# APPENDIX D

## Methods and Assumptions – Solvency

The Canadian Institute of Actuaries requires actuaries to report the financial position of a pension plan on the assumption that the Plan is wound-up on the effective date of the valuation, with benefits determined on the assumption that the pension plan has neither a surplus nor a deficit.

To determine the actuarial liability on the solvency basis, we have valued those benefits that would have been paid had the Plan been wound up on the valuation date, with all members fully vested in their accrued benefits.

There are no benefits under the plan contingent upon the circumstances of the plan wind-up or contingent upon other factors. In particular, there are no additional benefits that would be immediately payable if the employer's business were discontinued on the valuation date. Therefore, it was not necessary to postulate a scenario upon which the hypothetical wind-up valuation is made. Therefore, no benefits payable on plan wind-up were excluded from our calculations.

Upon Plan wind-up members are given options for the method of settling their benefit entitlements. The options vary by eligibility and by province of employment, but in general, involve either a lump sum transfer or an immediate or deferred pension.

The value of benefits assumed to be settled through a lump sum transfer is based on the assumptions described in Section 3500 – *Pension Commuted Values* of the Canadian Institute of Actuaries' Standards of Practice applicable for December 31, 2012.

Benefits provided as an immediate or deferred pension are assumed to be settled through the purchase of annuities based an estimate of the cost of purchasing annuities.

However, there is limited data available to provide credible guidance on the cost of a purchase of indexed annuities in Canada. In accordance with the *Canadian Institute of Actuaries Educational Note: Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates Between December 31, 2012 and December 30, 2013*, we have assumed that an appropriate proxy for estimating the cost of such purchase is using the yield on the long-term Government of Canada Real Return bonds. Note that the CIA published a revised supplement to this Educational Note for valuations with effective dates between June 30, 2013 and December 30, 2013. Because the effective date of this valuation is December 31, 2012, no adjustments have been made to reflect the revised Supplement to the Educational Note.

We have not included a margin for adverse deviation in the solvency and hypothetical wind-up valuations.

The assumptions are as follows:

**Solvency Actuarial Assumptions**

| | |
|---|---|
| **Form of benefit settlement elected by member** | |
| Lump sum | 100% of active and deferred members under age 55 elect to receive their benefit entitlement in a lump sum |
| Annuity purchase | All remaining members are assumed to elect to receive their benefit entitlement in the form of a deferred or immediate pension. These benefits are assumed to be settled through the purchase of deferred or immediate annuities from a life insurance company. |
| **Basis for benefits assumed to be settled through a lump sum** | |
| Mortality rates: | UP94 with projection for future mortality improvements on a generational basis |
| Interest rate: | 2.40% per year for 10 years, 3.60% per year thereafter |
| Cost of living increases: | 0.74% per year for 10 years, 1.38% per year thereafter |
| **Basis for benefits assumed to be settled through the purchase of an annuity** | |
| Mortality rates: | UP94 with projection for future mortality improvements on a generational basis |
| Interest rate: | 2.96% per year |
| Cost of living increases: | 1.53% per year |
| **Retirement age** | |
| Maximum value: | Members are assumed to retire at the age which maximizes the value of their entitlement from the Plan based on the eligibility requirements which have been met at the valuation date |
| **Other assumptions** | |
| Final average earnings: | Based on actual pensionable earnings over the averaging period |
| Family composition: | Same as for going-concern valuation |
| Maximum pension limit: | $150,200 |
| Termination expenses: | $65.0 million |

To determine the solvency position of the Plan, a provision has been made for estimated termination expenses payable from the Plan's assets in respect of actuarial and administration expenses that may reasonably be expected to be incurred in terminating the Plan and to be charged to the Plan.

Because the settlement of all benefits on wind-up is assumed to occur on the valuation date and is assumed to be uncontested, the provision for termination expenses does not include custodial, investment management, auditing, consulting and legal expenses that would be incurred between the wind-up date and the settlement date or due to the terms of a wind-up being contested.

Expenses associated with the distribution of any surplus assets that might arise on an actual wind-up are also not included in the estimated termination expense provisions.

In determining the provision for termination expenses payable from the Plan's assets, we have assumed that the plan sponsors would be solvent on the wind-up date. We have also assumed, without analysis, that the Plan's terms as well as applicable legislation and court decisions would permit the relevant expenses to be paid from the Plan.

Actual fees incurred on an actual plan wind-up may differ materially from the estimates disclosed in this report.

The solvency position is determined in accordance with the requirements of the Employment Pension Plans Act of Alberta.

## Incremental Cost

In order to determine the incremental cost, we estimate the solvency liabilities in one year's time. We have assumed that the cost of settling benefits by way of a lump sum or purchasing annuities remains consistent with the assumptions described above. Since the projected solvency liabilities will depend on the membership in the Plan at the next valuation date, we must make assumptions about how the Plan membership will evolve over the period until the next valuation.

We have assumed that the Plan membership will evolve in a manner consistent with the going-concern assumptions as follows:

- Members terminate, retire and die consistent with the termination, retirement and mortality rates used for the going-concern valuation.
- Pensionable earnings, the Income Tax Act pension limit and the Year's Maximum Pensionable Earnings increase in accordance with the related going-concern assumptions.
- Active members accrue pensionable service in accordance with the terms of the Plan.
- To accommodate for new entrants to the Plan, we have added to the projected liability an amount equal to the liability of new entrants that have joined the Plan since the previous valuation. The demographics and earnings of the new entrants are consistent with the new entrants hired over the past year.

# APPENDIX E

## Membership Data

### Analysis of Membership Data

The actuarial valuation is based on membership data as at December 31, 2012 provided by Alberta Pensions Services Corporation (APS). This data included dates of birth, gender, full / part-time status, pensionable current service, prior bought service, prior service being bought and reciprocal service. Service fields were split for pre 1992 and post 1991 service. Pensionable salary and in-year service were also provided. Contribution information was also provided, split by employee / employer and pre 1992 / post 1991 service.

We have applied tests for internal consistency, as well as for consistency with the data used for the previous valuation. These tests were applied to the membership reconciliation, basic information (date of birth, date of hire, date of membership, gender, etc.), pensionable salary, credited service, contributions accumulated with interest and pensions to retirees and other members entitled to a deferred pension. Contributions, lump sum payments and pensions to retirees were compared with corresponding amounts reported in the Plan's financial statements.

Despite these numerous tests, where data was still unreliable or unavailable, assumptions were required to complete the data. These assumptions are summarised below:

| Description | Assumption |
|---|---|
| Annualization of Pensionable Salary | Data provided by APS included actual salary and service in 2012, as well as annualized salary. For those members with small service (less than 0.1 years in 2012), annualized salary was set to last year's annualized salary increased by 3.3125% plus merit and promotion.<br>For those with small service and no prior salary information, annualized salary was set to $69,110. |
| Missing Salary | For those members missing salary information in 2012, annualized salary was set to last year's annualized salary increased by 3.3125% plus merit and promotion. For members with no prior salary information, annualized salary was set to $69,110. |
| Missing Service | For those members missing all service information in the data, service was set to last year's plus the service ratio set out last year. |
| Service Ratios for Part-Timers | Service ratios are not provided by APS. Since the service ratio has a significant impact on the valuation results, service ratios were set equal to 2012 in-year service, subject to a minimum of 0.4, for all members who were active as at January 1, 2012. Service ratios were set to a minimum of 90% for new entrants. |
| 2013 Pensionable Salary | We have assumed that the 2013 pensionable salary to be used as a divisor for the normal cost percentage will equal the expected pay at the middle of 2013 (2012 pay increased by 3.3125% plus merit and promotion plus ½ year interest at 5.75% per year). |

Plan membership data are summarized below. For comparison, we have also summarized corresponding data from the previous valuation.

| | 31.12.2012 | 31.12.2011 |
|---|---|---|
| **Active Members** | | |
| • Number | 145,933 | 140,417 |
| • Expected average annualized pay for following year | $72,198 | $69,110 |
| • Average years of pensionable service | 8.7 years | 8.8 years |
| • Average age | 45.2 years | 45.3 years |
| • Average employee contributions | $39,676 | $36,953 |
| **Deferred Pensioners** | | |
| • Number | 17,856 | 17,116 |
| • Average annual deferred pension at normal retirement, with COLA to January 1 of following year | $6,265 | $6,081 |
| Average age | 47.6 years | 47.3 years |
| **Hold-on-Deposits** | | |
| • Number | 9,544 | 8,776 |
| • Average contributions with interest | $2,689 | $2,607 |
| • Average age | 46.2 years | 46.1 years |
| **Pensioners and Survivors** | | |
| • Number | 48,866 | 46,256 |
| • Average annual pension at January 1 of following year | $15,031 | $14,456 |
| • Average age | 70.9 years | 70.8 years |

The membership movement for all categories of membership since the previous actuarial valuation is as follows:

| | | |
|---|---|---|
| **Actives** | | |
| Actives @ 31.12.2011 | | 140,417 |
| Adjustments | | (228) |
| Plus: | New & transfers in | 16,540 |
| | Transfers from inactive | 1,275 |
| Less: | Retirements & disabilities | (2,821) |
| | Terminations - deferreds & hold-on deposits | (4,321) |
| | Terminations - paid out and transfers out | (4,734) |
| | Deaths | (195) |
| Actives @ 31.12.2012 | | 145,933 |
| **Deferreds & Hold-on Deposits** | | |
| Deferreds & hold-on deposits @ 31.12.2011 | | 25,892 |
| Adjustments | | 2 |
| Plus: | Transfers from actives | 4,321 |
| Less: | Retirements | (487) |
| | Deaths | (35) |
| | Paid out and transfers out | (1,018) |
| | Transfers to actives | (1,275) |
| Deferreds and hold-on deposits @ 31.12.2012 | | 27,400 |
| **Pensioners and Survivors** | | |
| Pensioners and survivors @ 31.12.2011 | | 46,256 |
| Adjustments | | 21 |
| Plus: | New pensioners from active | 2,821 |
| | New pensioners from deferred and hold-on-deposits | 487 |
| | New beneficiaries | 379 |
| Less: | Deaths or expiry of guarantee | (1,098) |
| Return to active and deferred | | 0 |
| Pensioners and survivors @ 31.12.2012 | | 48,866 |

The distribution of the active members by age and pensionable service as at 31.12.2012 is summarized as follows:

| Age | Years of Pensionable Service | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **0-4** | **5-9** | **10-14** | **15-19** | **20-24** | **25-29** | **30-34** | **35-39** | **40+** | **Total** |
| Under 20 | 43 | | | | | | | | | 43 |
| | 53,227 | | | | | | | | | 53,227 |
| 20 - 24 | 3,166 | 30 | | | | | | | | 3,196 |
| | 59,845 | 62,975 | | | | | | | | 59,875 |
| 25 - 29 | 10,919 | 1,759 | 5 | | | | | | | 12,683 |
| | 66,810 | 74,188 | 72,952 | | | | | | | 67,836 |
| 30 - 34 | 10,326 | 5,225 | 444 | | | | | | | 15,995 |
| | 69,545 | 80,214 | 82,398 | | | | | | | 73,387 |
| 35 - 39 | 8,489 | 5,584 | 1,951 | 133 | | | | | | 16,157 |
| | 67,402 | 81,533 | 87,203 | 84,718 | | | | | | 74,819 |
| 40 - 44 | 8,004 | 5,675 | 3,105 | 900 | 295 | 3 | | | | 17,982 |
| | 64,495 | 77,081 | 85,943 | 88,854 | 82,592 | 69,229 | | | | 73,687 |
| 45 - 49 | 6,863 | 5,805 | 3,641 | 1,921 | 1,857 | 548 | 49 | | | 20,684 |
| | 63,027 | 71,602 | 78,883 | 86,208 | 87,312 | 83,704 | 74,249 | | | 73,132 |
| 50 - 54 | 5,983 | 5,996 | 4,259 | 2,220 | 2,462 | 1,763 | 1,390 | 48 | | 24,121 |
| | 62,140 | 67,838 | 71,970 | 78,459 | 84,342 | 87,644 | 81,008 | 76,866 | | 72,041 |
| 55 - 59 | 3,860 | 4,319 | 3,720 | 2,345 | 2,435 | 1,771 | 1,737 | 496 | 7 | 20,690 |
| | 63,753 | 67,022 | 70,352 | 73,654 | 80,430 | 84,811 | 87,600 | 85,411 | 73,167 | 73,034 |
| 60 - 64 | 1,678 | 2,169 | 2,045 | 1,401 | 1,650 | 977 | 910 | 424 | 77 | 11,331 |
| | 62,925 | 66,122 | 68,005 | 72,765 | 74,305 | 77,186 | 83,608 | 87,227 | 78,847 | 71,236 |
| Over 65 | 432 | 624 | 596 | 342 | 376 | 269 | 253 | 96 | 63 | 3,051 |
| | 58,829 | 63,735 | 67,187 | 67,039 | 66,911 | 74,972 | 75,641 | 83,779 | 80,300 | 67,427 |
| Total | 59,763 | 37,186 | 19,766 | 9,262 | 9,075 | 5,331 | 4,339 | 1,064 | 147 | 145,933 |
| | 65,412 | 73,664 | 76,317 | 78,667 | 81,296 | 83,731 | 83,803 | 85,602 | 79,199 | 72,198 |

# APPENDIX F

## Summary of Plan Provisions

This valuation is based on the plan provisions in effect on December 31, 2012. This summary is not intended as a complete description of the Plan.

| | |
|---|---|
| **Eligibility for Membership** | Eligible participants include full-time and part-time employees who meet criteria specified in the Plan. |
| **Pensionable Service** | As defined under the provisions of the Plan, shall not exceed 35 years. |
| **Credited Interest** | The rate of interest credited to members' contributions is the average yield of five year personal fixed term chartered bank deposits (CANSIM series B14045) over the most recent 12 month period. |
| **Retirement Dates** | *Normal Retirement Date*<br>The normal retirement age is 65.<br>*Early Retirement Date*<br>If a member has been in the Plan for at least two years, the member may choose to retire as early as age 55. |
| **Normal Retirement Pension** | 2.0% of pensionable salary, multiplied by years of pensionable service prior to January 1, 1966,<br>PLUS<br>1.4% of pensionable salary up to the average YMPE, multiplied by pensionable service after December 31, 1965,<br>PLUS<br>2.0% of pensionable salary in excess of the average YMPE, multiplied by pensionable service after December 31, 1965. |
| **Pensionable Salary** | Pensionable salary is the member's average annual salary in the five consecutive years of pensionable service in which such average is the highest. Average YMPE is the average of the Year's Maximum Pensionable Earnings over the same period used to determine the highest average pensionable salary.<br>Pensionable salary for service on and after January 1, 1992 will be limited to $134,800 plus 30% of the YMPE in 2013. After 2013, this maximum pensionable salary is expected to increase with average industrial wage base increases. |
| **Early Retirement Pension** | Members retiring early are entitled to a reduced normal retirement pension commencing immediately. If the member has accrued 85 points (i.e.., age + pensionable service totals at least 85), no reduction is applied. If the member has not accrued 85 points, the normal retirement pension is reduced by 3% for each year that the member's early retirement age precedes the earlier of age 65 and the age at which 85 points would be reached (based on pensionable service accrued to the member's date of termination). |

**Death Benefits**

*Pre-retirement:*

If a member dies before retirement, benefits payable from the plan will depend on the member's length of plan membership, as follows:

**Death Before Retirement**

| Pre-1992 Service | Benefit |
|---|---|
| No Spouse | |
| • < 2 years of pensionable service | Refund of 1 x member contributions |
| • > 2 years of pensionable service | 100% of commuted value plus excess contributions |
| Spouse | |
| • < 2 years of pensionable service | Refund of 1 x member contributions |
| • > 2 years of pensionable service | Either 100% of commuted value or pension for life determined as though the member had retired on the day before death and elected a J&S 100% optional form pension, plus excess contributions. |

| Post-1991 Service | Benefit |
|---|---|
| No Spouse | |
| • < 2 years of pensionable service | Refund of 1 x member contributions |
| • > 2 years of pensionable service | 100% of commuted value plus excess contributions |
| Spouse | |
| • < 2 years of pensionable service | Refund of 1 x member contributions |
| • > 2 years of pensionable service | Either 100% of commuted value or pension for life determined as though the member had retired on the day before death and elected a J&S 100% optional form pension, plus excess contributions. |

*Post retirement:*

The normal form of pension is a pension guaranteed for five years. If the member dies before 60 monthly payments are made, the balance of the 60 payments are payable to the member's spouse or beneficiary. Optional forms of pension are available on an actuarially equivalent basis.

**Termination Benefits**

If a member's employment terminates for reasons other than death or retirement, the benefits payable from the plan will depend on the member's length of plan membership, as follows:

**Benefits in the Event of Termination of Employment**

| If member has: | The plan will pay: |
|---|---|
| Less than two years of pensionable service | • Refund of member contributions |
| At least two years of pensionable service | • Deferred pension (deferred to the earlier of age 65 or attainment of 85 points, based on pensionable service to date of termination).<br>• For all service, excess contributions, if any, will be paid.<br>• For all service, in lieu of the deferred pension, the pension may elect to transfer out 100% of the commuted value plus excess contributions.<br>• Reciprocal transfers are available for both pre-1992 and post-1991 service. |

**Disability Benefits**

If the member is not receiving benefits from an LTD plan and the member is permanently and totally disabled, the member is entitled to an immediate unreduced pension based on pensionable service and salary to the date of disability. If the member is partially disabled, the pension is reduced in the same manner as an early retirement pension.

If the member is receiving benefits from an LTD plan, participation in this plan depends on whether or not the LTD plan is an approved plan. If the LTD plan is an approved plan, participation in this plan continues, but no pension is payable concurrently with the LTD benefit. For the purpose of determining contributions and benefits, pensionable salary will be the pensionable salary immediately preceding disability, increased by subsequent general wage increases applicable for that member's class.

If the LTD plan is not approved, the member is considered to be on a disability leave. The member is eligible to "buy back" this period of leave, as outlined in the plan, upon return to active employment.

**Cost-of-Living Increases**

Cost-of-living increases based on 60% of the Alberta CPI apply to both deferred pensions and pensions in payment, both before and after retirement.

# APPENDIX G

## Alberta Pensions Services Corporation Certification

With respect to the report on the actuarial valuation of the *Local Authorities Pension Plan*, as at December 31, 2012, on behalf of Alberta Pensions Services Corporation, I hereby certify that, to the best of my knowledge and belief:

- A copy of the official plan documents and of all amendments made up to December 31, 2012 was provided to the actuary and is reflected appropriately in the summary of plan provisions contained herein.
- The membership data provided to the actuary included a description that is reasonably free of material misstatement of every person who is entitled to benefits under the terms of the Plan for service up to December 31, 2012.
- All events subsequent to December 31, 2012 that may have an impact on the Plan have been communicated to the actuary.

ALBERTA PENSIONS SERVICES CORPORATION

| | |
|---|---|
| | **Original Signed By Lesley Bowering** |
| Date | Signed |
| | |
| | Name |

# APPENDIX H

## Local Authorities Pension Plan Certification

With respect to the report on the actuarial valuation of the *Local Authorities Pension Plan*, as at December 31, 2012, I hereby certify that, to the best of my knowledge and belief:

- The valuation reflects the terms of the Board's engagement with the actuary described in section 2 of this report, particularly the requirement to include a margin of 0.65% in the discount rate used to perform the going concern valuation.
- All events subsequent to December 31, 2012 that may have an impact on the valuation have been communicated to the actuary.

LOCAL AUTHORITIES PENSION PLAN CORPORATION

| | |
|---|---|
| | **Original Signed By Meryl Whittaker** |
| Date | Signed |
| | |
| | Name |

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