

**Actuarial Valuation Report  
As At September 30, 2004  
On The Annuities  
Underwritten by  
The Municipal Employees' Pension Plan  
and extrapolation of results to December 31, 2004**

Prepared by:

Eckler Partners Ltd.  
Winnipeg, Manitoba

April 12, 2005

## Executive Summary

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### INTRODUCTION

The Municipal Employee's Pension Plan (MEPP) is a defined contribution plan for service prior to July 1, 1973 (the "Former Plan") and a defined benefit plan for service after that date. This report is concerned with the valuation of the annuities in payment which have been provided in respect of contributions under the Former Plan and those which have been provided in respect of "excess" contributions due to the application of the 50% rule under the defined benefit plan for retirements and terminations of employment which occurred on or prior to December 31, 2000.

The Canadian Customs and Revenue Agency has directed that, with effect from January 1, 2002, separate account must be kept of the operation of that part of the MEPP fund under which these annuities are provided. Prior to that date, no separate account of the annuity assets had been kept.

We have therefore been retained by the Municipal Employees' Pension Plan Commission to prepare this report, the purpose of which is to:

- (a) Determine the actuarial liabilities of the annuity account as described above at September 30, 2004 and extrapolate the results of that valuation to December 31, 2004.
- (b) To determine whether the assets attributable to these annuities are sufficient to provide any increase to these annuities.
- (c) Provide cash flow projections of the annuities paid from the Plan.

The previous valuation report was prepared as of December 31, 2001.

### NORMAL ACTUARIAL COST FOR THE PERIOD UNTIL THE NEXT VALUATION

The annuities underwritten by the Plan are funded as each member retires by way of a lump sum transfer of the member's defined contribution account balances.

## HIGHLIGHTS

We have used an interest rate of 6.00%. We also used the UP94 Mortality Table projected to 2015. In the previous valuation 6.00% interest and the 1994 GAM Table were assumed. Our assumptions are described in more detail in Appendix C.

Based on these assumptions, we have determined an extrapolated actuarial liability of \$36,996,000 for the annuities being paid from the Plan as at December 31, 2004 compared to the assets in the account at that date of \$36,928,000, or a deficiency of \$68,000.

We have also valued the liabilities using the basis specified by the Canadian Institute of Actuaries for solvency valuations at December 31, 2004. That valuation essentially examines the hypothetical situation where the plan is wound-up at December 31, 2004 and annuities are purchased from insurance companies. The solvency valuation at December 31, 2004 shows a deficiency of \$2,370,000.

No action is required to fund these deficiencies since this is only a relatively small part of the Municipal Employees Pension Plan which, at December 31, 2004, is in surplus on a going-concern basis and its solvency assets comfortably exceed its solvency liabilities.

We recommend that the next valuation of the annuity account be prepared no later than December 31, 2007.

Yours very truly,

ECKLER PARTNERS LTD.

John Corp, F.I.A., F.C.I.A.

April 12, 2005

## Section 1: Assets

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Based on the results of the previous valuation, the opening asset balance at January 1, 2002 was set equal to the total actuarial liability at that date, or \$42,466,000. In preparing this valuation, we determined that a number of new annuitants had been added since the previous valuation but that no assets had been credited to this part of the fund. 8 of these new annuitants had retirement dates prior to the previous valuation and should have been added at that time. The amounts credited should have been

At January 1, 2002	\$126,000
In 2002	197,000
In 2003	186,000
In 2004 to September 30	209,000
After September 30	0

The annuity fund is kept separate on paper only. Accordingly we have prepared the following income/outgo statements which assumes that the outstanding amounts plus interest were transferred in a lump sum of \$803,000 on October 1, 2004 as follows:

	\$ (thousands of dollars)			
	<u>2002</u>	<u>2003</u>	<u>2004</u>	
			<u>1<sup>st</sup> 9 months</u>	<u>Last 3 months</u>
At start	\$42,466	\$36,587	\$36,804	\$35,104
Transfer at October 1, 2004	0	0		803
Annuities paid	(4,835)	(4,644)	(3,394)	(1,092)
Net investment income	(933)	4,954	1,741	2,135
Admin Expenses	<u>(111)</u>	<u>(93)</u>	<u>(47)</u>	<u>(22)</u>
At end	\$36,587	\$36,804	\$35,104	\$36,928

Information about the assets, transfers and annuity payments are provided to us by PEBA in the form of audited financial statements for 2002 and 2003 and unaudited statements at September 30 and December 31, 2004.

## Section 2: Valuation Assumptions

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### 1. Going-Concern Basis

Interest: The assumed rate of interest was 6% - this is the same assumption as in the previous valuation.

Mortality: Mortality was assumed to be in accordance with the UP94 table projected to 2015. At the previous valuation the GAM1994 table was used.

### 2. Solvency Basis

Interest: The assumed rate of interest was 5.25%

Mortality: Mortality was assumed to be in accordance with the UP94 table projected to 2015.

This is the basis recommended by the Canadian Institute of Actuaries for the determination of pensioner liabilities in solvency valuations at December 31, 2004.

### Section 3: Valuation Results at September 30, 2004

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**1. Going-Concern Basis**

Assets (at market value)	\$35,907,000
Liabilities	<u>37,533,000</u>
Deficiency	(\$1,626,000)

**2. Solvency Basis**

Assets (at market value)	\$35,907,000
Plan wind-up expenses	<u>(480,000)</u>
Net assets	\$35,427,000
Solvency Liabilities	<u>39,400,000</u>
Solvency Deficiency	(\$3,973,000)

## Section 4: Reconciliation of going-concern valuation results at September 30, 2004

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1. Net investment return less than 6%	(\$750,000)
2. Mortality loss	(345,000)
3. Change in mortality table	(668,000)
4. Miscellaneous gain	<u>137,000</u>
Deficiency	(\$1,626,000)

At the previous valuation, the assets were set equal to the liabilities so that there was no surplus or deficiency at that date. The other items are as follows:

1. The net investment return on the fund over the 33 months since the previous valuation was 5.32% per annum.
2. The liabilities at the valuation are \$345,000 more than they would have been if the mortality experience had been consistent with that projected by the mortality assumption at the previous valuation.
3. We have updated the mortality table which has added \$668,000 to the value of the liabilities.
4. The balancing item of \$137,000 or 0.36% of liabilities is less than our materiality level of 0.5% of liabilities.

## Section 5: Extrapolation to December 31, 2004

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### 1. Going-Concern Basis

Assets at September 30, 2004	\$35,907,000
Assets for new annuitants	0
Annuities paid	(1,092,000)
Investment return	2,135,000
Expenses	<u>(22,000)</u>
Assets at December 31, 2004	\$36,928,000
Liabilities at September 30, 2004	\$37,533,000
New annuitant liabilities	0
Annuities paid	(1,092,000)
Interest at 6%	<u>555,000</u>
Extrapolated Liabilities at December 31, 2004	\$36,996,000
Deficiency at December 31, 2004	(\$68,000)

### 2. Solvency Basis

Assets at December 31, 2004 (as above)	\$36,928,000
Expenses of plan wind-up	<u>(480,000)</u>
	\$36,448,000
Solvency Liabilities at September 30, 2004	39,400,000
Annuities paid	(1,092,000)
Interest at 5.25%	<u>510,000</u>
Extrapolated solvency liabilities at December 31, 2004	\$38,818,000
Solvency Deficiency at December 31, 2004	(\$2,370,000)

## Section 6: Cash Flow Projection

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The following table shows the projected annual annuity payments for the next 51 years assuming no new annuities are added. These annuity payments include future indexing of the indexed annuities, but no future increases for the non-indexed annuities.

<b>Year Starting Jan 1</b>	<b>Cash Flow</b>	<b>Year Starting Jan 1</b>	<b>Cash Flow</b>
2005	\$4,375,000	2031	\$357,000
2006	4,228,000	2032	299,000
2007	4,071,000	2033	250,000
2008	3,900,000	2034	208,000
2009	3,713,000	2035	171,000
2010	3,527,000	2036	139,000
2011	3,331,000	2037	113,000
2012	3,133,000	2038	91,000
2013	2,935,000	2039	73,000
2014	2,733,000	2040	58,000
2015	2,535,000	2041	45,000
2016	2,341,000	2042	35,000
2017	2,152,000	2043	27,000
2018	1,968,000	2044	21,000
2019	1,789,000	2045	15,000
2020	1,619,000	2046	11,000
2021	1,456,000	2047	9,000
2022	1,301,000	2048	7,000
2023	1,157,000	2049	5,000
2024	1,021,000	2050	4,000
2025	896,000	2051	3,000
2026	780,000	2052	2,000
2027	676,000	2053	1,000
2028	582,000	2054	1,000
2029	498,000	2055	1,000
2030	423,000	2056	0

## Section 7: Actuarial Opinion and Cost Certificate

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### The Municipal Employees' Pension Plan

Forming part of the actuarial report dated April 12, 2005 on a valuation of the annuities underwritten under the Plan as at September 30, 2004 and an extrapolation of the results of that valuation to December 31, 2004.

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I hereby certify that:

1. The purpose of this report was to determine the present value, as at September 30, 2004, of the future liabilities for all annuities underwritten by the Municipal Employees' Pension Plan and to extrapolate the results of that valuation to December 31, 2004.
2. The Plan's going-concern liabilities for all annuities underwritten at December 31, 2004 equal \$36,996,000, compared to assets at that date of \$36,928,000 or a deficiency of \$68,000.
3. On a solvency basis, the liabilities exceed the assets by \$2,370,000 at December 31, 2004.
4. If this part of the plan were to be wound-up on December 31, 2004, its liabilities would exceed its assets.
5. Since this is only a small part of the Municipal Employees Pension Plan, which is in surplus on a going-concern basis and whose solvency assets exceed its solvency liabilities by a larger amount than the \$2,370,000 in 3. above, no action is required to fund these deficiencies.

Notwithstanding the foregoing, emerging experience which differs from the assumptions on which this valuation and extrapolation are based, will result in gains or losses which will be revealed in subsequent valuations.

In my opinion, for the purposes of the valuation and extrapolation:

- a. the data on which the valuation is based are sufficient and reliable;
- b. the assumptions used are in, aggregate, appropriate;
- c. the methods employed in the valuation are appropriate;
- d. there are no subsequent events that occurred after the valuation date;

This valuation report has been prepared, and my opinions given, in accordance with accepted actuarial practice.

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John Corp,  
Fellow of the Institute of Actuaries  
Fellow of the Canadian Institute of Actuaries

April 12, 2005

## Appendix A: Summary of Plan Provisions

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This appendix contains a brief summary of the provisions of the Plan that are relevant for valuation purposes:

### LIFE ANNUITIES

Life annuities are paid for the life of the annuitant based on:

1. rates of interest offered at the time the annuity commences;
2. the form of the annuity.

### FORMS OF ANNUITIES

The following is a brief description of the various forms of annuities currently being paid out of the retirement fund:

#### Life Annuity

The annuity is payable on a monthly basis in arrears for the life of the annuitant. If the annuitant dies before the end of the guarantee period, the remaining guaranteed payments are paid to the last designated beneficiary. A single member can purchase an annuity guaranteed for 0, 5, 10, or 15 years. A member with a spouse can purchase a single life annuity if the spouse waives the right to a joint annuity.

#### Joint and Last Survivor Annuity

The annuity is payable on a monthly basis in arrears for the life of the annuitant and the spouse. In the month following the death of the annuitant, monthly benefits are payable to the spouse for the remainder of the spouse's lifetime. The continuing benefits for the spouse are selected at the time of retirement as either 100%, 75%, 60% or 50% of the annuitant's payments. The member may purchase a joint annuity with a 0, 5, 10 or 15-year guarantee on the annuitant's payments. The current annuities being paid include continuing benefits for spouses at percentages equal to 50%, 60%, 75% and 100%.

Upon the death of both the annuitant and the spouse and after any applicable guarantee period, payments cease and no further benefits are payable.

### **Indexed Annuities**

Effective February 28, 1997, the Plan began underwriting annuities that included provisions for indexing at 100% of the increases in the Consumer Price Index (CPI). Increases in the annuity payments for “Indexed Annuities” are granted on each January 1 following the member’s retirement date. The increase at January 1, 2005 is 2.00%. The increase for indexing on the first January 1 following a member’s date of retirement is provided on a pro-rata basis from the month of retirement.

Members have the option of choosing an annuity that includes future indexing or not.

### **Excess Interest Increases for Non-Indexed Annuities**

With effect from January 1, 2003, annuities, other than indexed annuities, will be increased by the excess over 6% of the rate of return in the immediately preceding year on the assets supporting the annuity liabilities. The rate of return in a particular year will be determined by PEBA using a smoothing technique – this is the same technique which is used to determine the interest credit on members’ contribution accounts under the defined benefit plan. The increase in any year will not be greater than the increase in the Consumer Price Index for the previous year.

## Appendix B: Underwriting Annuities

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The major task involved in underwriting annuities is to convert an amount of accumulated contributions to an annual lifetime pension at the time an annuity commences.

In order to perform this conversion, two major assumptions are necessary. The first is the length of time that payments are expected to be made. The second is the amount of investment earnings that the fund can be expected to earn over a long period of time.

For indexed annuities, a third assumption, the expected level of increases in the CPI, is also necessary.

This first assumption regarding the length of time that payments are expected to be made is calculated by using a mortality table that allows the determination of a probability for each potential future payment. Given a large number of people, and assuming the investment earnings assumption is exactly realized, the fund will be extinguished at the time the last member of the group dies. Some in the group will die earlier than expected, thus producing a gain to the fund. Some will die later than expected, producing a loss to the fund. If the mortality assumptions are exactly realized, the gains will offset the losses.

The annuities underwritten by the Plan have, in the past, been issued using an interest rate that is determined based on the yield on investments at the time that the annuity is underwritten. The theory behind this approach is that the equity at the time of conversion could be hypothetically invested to earn the assumed rate of interest which will allow the Plan to make the expected annuity payments for the member and, if applicable for the spouse's lifetime.

From January 1, 2002 on, any non-indexed annuities will be determined using the lesser of 6% and the initial rate for the first 15 years used in the Canadian Institute of Actuaries Transfer Value basis which was effective September 1, 1993 which is consistent with the approach to excess interest increases described in Appendix A.

## Appendix C: Actuarial Assumptions and Cost Methods

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### ACTUARIAL ASSUMPTIONS

Assumptions have been adopted in order to estimate the liabilities that have been incurred by the Plan. The true liability of the Plan will emerge only as experience develops, new annuities are added to the Plan, and annuity payments are made. Emerging experience, differing from the assumptions, will result in gains or losses, which will be revealed in future valuations. These assumptions should be reviewed from time to time in order to adequately reflect the experience of the Plan.

The actuarial assumptions used in the September 30, 2004 valuation were modified as follows.

#### Summary of Assumptions

##### Going-Concern

##### *Demographic Mortality:*

2001 Valuation	GAM 1994 (Static)
2004 Valuation	UP94 Projected to 2015

##### *Economic Interest:*

2001 and 2004	6.00% net of expenses
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##### *Future Indexing*

##### *(Indexed Annuities):*

2001	3.35% on January 1, 2002 (actual) 3.00% on January 1, 2003 and annually thereafter (assumption)
2004	2.00% on January 1, 2005 3.00% on January 1, 2006 and annually thereafter

##### *Future Increases*

##### *(Non-Indexed Annuities):*

2001	2% on January 1, 2002
2004	None

##### Solvency

Mortality:	UP94 Projected to 2015
Interest:	5.25%
Future Indexing: (indexed annuities only)	2% at January 1, 2005, 2.25% thereafter
Expenses of plan wind-up:	\$250 per member

### COST METHOD

The liability for each annuitant is the actuarial present value of all future payments under the annuity.

## Appendix D: Membership

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### SOURCE OF DATA

The relevant data required to carry out this valuation was received from the offices of the Public Employees Benefits Agency and this data was gathered as of September 30, 2004. The data was checked for consistency between the previous valuation and this valuation. Our tests consisted of verifying that information such as dates of birth, dates of retirement, and forms of pension were internally consistent with the December 31, 2001 valuation data. We also performed a reconciliation of the plan membership from December 31, 2001 to September 30, 2004.

### Reconciliation of Membership

The following is a reconciliation of the annuitants from December 31, 2001 to September 30, 2004. A summary of the data follows:

Annuitants at December 31, 2001	2,015
New annuitants (2002/4 retirements)	38
New annuitants (others)	8
Deaths/Guarantee period ends - payments cease	(145)
Deaths with continuing payments	(120)
New survivors' pensions	<u>126</u>
Annuitants at September 30, 2004	1,922

**SUMMARY OF DATA AT SEPTEMBER 30, 2004**

Number of annuitants	1,922
Total annual payment	\$4,490,000
Average annual payment	\$2,336
Average age	76.7
Average period since commencement of annuity	14.6 years

**MEMBERSHIP DISTRIBUTION**

	<b>Males</b>		<b>Females</b>	
	<b>No.</b>	<b>Annual Annuity</b>	<b>No.</b>	<b>Annual Annuity</b>
-54	10	\$ 27,990	10	\$ 24,783
55-59	8	14,028	12	16,163
60-64	20	52,051	32	95,188
65-69	98	205,844	90	134,057
70-74	255	671,023	171	251,462
75-79	299	894,899	215	326,696
80-84	210	547,058	216	389,243
85-89	93	463,907	109	210,173
90-94	28	79,810	34	41,504
95+	<u>3</u>	<u>26,532</u>	<u>9</u>	<u>17,698</u>
	1,024	\$2,983,142	898	\$1,506,969

## Appendix E: Plan Sponsor Certification

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With respect to the Annuities underwritten by the Municipal Employees' Pension Plan, forming part of an actuarial report on a valuation of the Plan as of September 30, 2004 and extrapolation to December 31, 2004:

I hereby certify that, to the best of my knowledge and belief,

- (a) The summary of plan provisions contained in this report is a complete and accurate summary of the terms of the plan.
- (b) The membership summarized in this report is a complete and accurate description of all persons who are entitled to benefits under the terms of the plan in respect of annuities issued to the date of the valuation.
- (c) All events subsequent to the valuation date that may have an impact on the results of the valuation have been communicated to the actuary.

Date: \_\_\_\_\_

Signed: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_