Item 12.3(ii)

HALIFAX REGIONAL MUNICIPALITY PENSION PLAN

REPORT ON THE ACTUARIAL VALUATION AS AT DECEMBER 31, 2017

REGISTRATION NO. 0238063

SEPTEMBER 2018

PREPARED BY:

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CONSULTANTS + ACTUARIES

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SUMMARY OF RESULTS

Going Concern Financial Position	December 31, 2017	December 31, 2016
Going concern value of assets (excluding the present value of special payments)	$1,764,561,000	$1,621,183,000
Going concern liability	(1,948,469,000)	(1,793,993,000)
Going concern excess / (unfunded liability)	($183,908,000)	($172,810,000)

Solvency Financial Position	December 31, 2017	December 31, 2016
Solvency assets	$1,838,375,000	$1,673,030,000
Solvency liabilities	2,767,557,000	2,633,994,000
Solvency excess / (deficit)	($929,182,000)	($960,964,000)
Solvency concerns ratio	66.4%	63.5%

Hypothetical Wind-Up Financial Position	December 31, 2017	December 31, 2016
Wind-up assets	$1,838,375,000	$1,673,030,000
Windup liabilities	2,913,845,000	2,786,983,000
Wind-up excess / (deficit)	($1,075,470,000)	($1,113,953,000)
Transfer ratio	63.1%	60.0%

Funding Requirements (Annualized)	Year Following December 31, 2017	
	% of Payroll	$
Estimated contributory payroll		$314,444,000
Required employee contributions	12.3%	38,667,000
Employer matching required contributions	12.3%	38,667,000
Total required contributions	24.6%	$77,334,000
Total value of benefits earned in the year	18.3%	$57,478,000
Required contributions in excess of benefits earned	6.3%	$19,856,000
Minimum special payments[1]	6.2%	19,495,500
Maximum eligible employer contribution[2]		$1,094,281,000

[1] Reflects municipal solvency relief

[2] Equal to wind-up deficiency plus eligible employer current service cost

SECTION I INTRODUCTION AND PURPOSE OF VALUATION

At the request of the Halifax Regional Municipality Pension Committee (the "Committee"), we have completed an actuarial valuation of the *Halifax Regional Municipality Pension Plan* (the "Plan") as of December 31, 2017.

The purposes of this actuarial valuation are as follows:

- to determine the financial position of the Plan on going concern, solvency, and hypothetical wind-up bases;
- to establish the minimum and maximum contributions to the Plan until the next valuation; and
- to meet the statutory filing requirements under the Nova Scotia *Pension Benefits Act* and the Income Tax Act.

In this report, we provide the valuation results, along with an actuarial opinion with recommended funding levels for use until the next valuation. The data, actuarial assumptions and methodology used in valuing both the assets and the liabilities of this pension plan is provided by way of appendices for ease of reference.

The intended users of this report are the Committee, the Nova Scotia Superintendent of Pensions and the Canada Revenue Agency. This report is not intended or necessarily suitable for purposes other than those listed above. Any party reviewing this report for other purposes should have their own actuary or other qualified professional assist in their review to ensure that the party understands the assumptions, results and uncertainties inherent in our estimates.

The next valuation of the Plan must be completed as at a date no later than December 31, 2018.

Reliance

We have relied on the asset information as provided in the plan's audited financial statements. We have also relied on the Plan administrator to provide all relevant data and to confirm the pertinent Plan terms.

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SECTION II PLAN CHANGES AND SUBSEQUENT EVENTS

The *Halifax Regional Municipality Pension Plan* became effective April 1, 1998 as the result of the merger of four prior pension plans – the City of Halifax Superannuation Plan, the Halifax County Municipality Full-time Retirement Pension Plan, the City of Dartmouth Employees' Retirement Plan, and the Metropolitan Authority Employees' Pension Plan (the "Prior Plans").

Actuarial Assumptions

There have been changes to the going concern assumptions since the last valuation. The going concern discount rate has changed from 6.4% per annum to 6.2% per annum and the retirement assumption has changed to remove the one year delay in retirement for those members immediately eligible to retire. There was also a small change to the method used to determine the expected retirement date for a small subset of plan members.

These changes have increased going concern liabilities by $75,303,000 and decreased the current service cost by $315,000.

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

The actuarial assumptions used in the valuation are provided in Appendix B.

We are not aware of any other events subsequent to the valuation date that would have a material impact on the results of this valuation.

SECTION III FINANCIAL POSITION OF THE PLAN

A. Going Concern Basis: Financial Position as at December 31, 2017

Our calculations show that the total actuarial present value as at December 31, 2017 for all benefits accrued to active and inactive members, retirees and survivors is $1,948,469,000 (rounded to the nearest $1,000). This compares to going concern assets of $1,764,561,000 prior to the inclusion of the present value of previously established special payments and results in a going concern unfunded liability of $183,908,000 as at December 31, 2017. The valuation balance sheet shown below summarizes the going concern financial position of the Plan as at December 31, 2017 and as at December 31, 2016 for comparative purposes.

FINANCIAL POSITION – GOING CONCERN BASIS

	December 31, 2017	December 31, 2016
Going concern assets		
Market value of assets	$1,840,375,000	$1,675,030,000
Actuarial asset smoothing adjustment	(75,814,000)	(53,847,000)
Present value of special payments	173,226,000	166,818,000
Total going concern assets	$1,937,787,000	$1,788,001,000
Going concern liabilities		
Active and disabled members	$899,245,000	$809,725,000
Retirees and survivors	959,010,000	897,264,000
Deferred and inactive members	22,963,000	25,171,000
Defined contribution accounts	37,635,000	32,576,000
Transfer deficiency holdbacks	29,616,000	29,257,000
Total going concern liabilities	$1,948,469,000	$1,793,993,000
Previous year credit balance (PYCB)	-	-
Going concern excess / (unfunded liability) prior to inclusion of PV of special payments	**($183,908,000)**	**($172,810,000)**
New going concern excess / (unfunded liability)	**(10,682,000)**	**(5,992,000)**
Going concern funding ratio prior to inclusion of PV of special payments	**90.6%**	**90.4%**

As shown above, the December 31, 2017 actuarial valuation has revealed a going concern unfunded liability prior to inclusion of the present value of special payments in the amount of $183,908,000. This compares to a going concern unfunded liability at the previous valuation of $172,810,000 prior to the inclusion of the present value of special payments. Special payment requirements in respect of the unfunded liability are detailed in Section IV - Funding Requirements. Details on the development of the previous year credit balance is provided in Appendix A.

Sensitivity Analysis

Below we show the impact on the going concern actuarial liability as at December 31, 2017 of a one percentage point drop in the discount rate assumption (i.e., from 6.20% per annum to 5.20% per annum). All other assumptions were kept unchanged.

GOING CONCERN SENSITIVITY

	Impact 1% Drop
Total Going Concern Actuarial Liability	$2,204,281,000

The change in the actuarial liability would have the impact of increasing the liability by $255,812,000 or 13.1% as at December 31, 2017.

Reconciliation of Going Concern Financial Position

The reconciliation provides an independent cross-check of the calculations performed, and also determines the chief reasons leading to the change in the surplus and/or unfunded liabilities (deficiencies) that have occurred since the previous valuation date.

Although a complete analysis down to the final dollar can be made, such an analysis requires the processing of a considerable amount of detailed data relating to the Plan; the expense of which would not normally be justified unless there were special circumstances.

However, it is possible to make an approximate analysis along broader lines and, under normal circumstances; this type of analysis will produce meaningful results.

The table below summarizes the results of our reconciliation of change in financial position over the past year.

RECONCILIATION OF GOING CONCERN FINANCIAL POSITION

Going concern excess / (unfunded liability) as at December 31, 2016		($172,810,000)
Special payments made in 2017	21,274,000	
Interest on unfunded liability and special payments at 6.40%	(10,403,000)	10,871,000
Expected going concern excess (shortfall) at December 31, 2017		($161,939,000)
Investment experience	$44,041,000	
Pensionable earnings	7,683,000	
Retirement experience	5,886,000	
Mortality experience	(98,000)	
Termination experience	(6,406,000)	
Change in discount rate	(44,889,000)	
Change in other assumption / method	(30,414,000)	(24,197,000)
Other gain and loss items		2,228,000
Going concern excess / (unfunded liability) as at December 31, 2017		($183,908,000)

B. Solvency Basis: Financial Position as at December 31, 2017

The "solvency basis" is a hypothetical construct intended to portray the funded status of the Plan had it terminated or wound-up effective on the valuation date. That is, an assessment is made as to whether the assets of the pension fund would be sufficient if no further benefits are provided and all members were paid their entitlements as an annuity, a deferred annuity, or as a commuted value. As required under Section 7(2) of the Nova Scotia *Pension Benefits Regulations*, entitlements of a member on wind-up of the Plan under Section 97 of the Act are excluded from the solvency liabilities.

The financial position of the Plan on a solvency basis as at December 31, 2017 and as at December 31, 2016 for comparison purposes is as follows:

FINANCIAL POSITION – SOLVENCY BASIS

	December 31, 2017	December 31, 2016
Solvency assets		
Market value of assets	$1,840,375,000	$1,675,030,000
Termination expense provision	(2,000,000)	(2,000,000)
Total solvency assets	$1,838,375,000	$1,673,030,000
Solvency liabilities		
Active members	$1,330,320,000	$1,274,224,000
Retirees and survivors	1,329,717,000	1,252,558,000
Deferred and inactive members	40,269,000	45,379,000
Defined contribution accounts	37,635,000	32,576,000
Transfer deficiency holdbacks	29,616,000	29,257,000
Total solvency liabilities	$2,767,557,000	$2,633,994,000
Solvency asset adjustment	112,534,000	96,255,000
Solvency liability adjustment	-	-
Solvency excess / (deficit) prior to inclusion solvency asset/liability adjustments	**($929,182,000)**	**($960,964,000)**
Previous year credit balance	-	-
Solvency excess / (deficiency)	**($816,648,000)**	**($864,709,000)**
Solvency concern ratio	**66.4%**	**63.5%**

As shown above, the solvency valuation has revealed a solvency deficit of $929,182,000 prior to the inclusion of the asset and liability adjustments as at December 31, 2017. This compares to a solvency deficit of $960,964,000 as at the previous valuation. Including the solvency asset and liability adjustments, the solvency deficiency is $816,648,000.

As per the Nova Scotia *Pension Benefits Regulations*, the Plan is exempt from funding the solvency deficiency.

Solvency Asset Adjustment

The Nova Scotia *Pension Benefits Regulations* defines the solvency asset adjustment as follows:

(1) the amount by which the value of the solvency assets is adjusted by apply an averaging method that stabilizes short-term fluctuations in the market value of the Plan assets, calculated over a period of no longer than 5 years; and

(2) the present value of special payments, adjusted to reflect the current going-concern valuation, and due to be paid over the prescribed period following the valuation date.

Part (1) of the solvency asset adjustment is zero as an averaging method has not been used. Part (2) of the solvency asset adjustment is $112,534,000 as at December 31, 2017, reflecting the present value of the remaining special payments over the prescribed period.

Solvency Liability Adjustment

The Nova Scotia *Pension Benefits Regulations* defines the solvency liability adjustment as the amount by which solvency liabilities are adjusted as the result of using solvency interest rates that are the average of the solvency interest rates over the same period as assets are adjusted under part (1) of the solvency asset adjustment. Since assets have not been adjusted, the solvency liability adjustment is zero.

Sensitivity Analysis

Below we show the impact on the solvency actuarial liability as at December 31, 2017 of a one percentage point drop in the discount rate assumption. All other assumptions were kept unchanged.

SOLVENCY SENSITIVITY

	Impact 1% Drop
Total Solvency Actuarial Liability	$3,230,741,000

The change in the actuarial liability would have the impact of increasing the liability by $463,184,000 or 16.7% as at December 31, 2017.

Incremental Cost

In accordance with the Canadian Institute of Actuaries' Standard of Practice, we have estimated the incremental cost of the solvency liability as at December 31, 2017. This is the present value of the expected aggregate change in solvency liability between December 31, 2017 and the next valuation date, adjusted upwards for expected benefit payments. The next valuation is expected to be as at December 31, 2018.

The estimated incremental cost for the period December 31, 2017 to December 31, 2018 is $120,491,000. The estimated incremental cost does not impact the funding requirements of the Plan under the Nova Scotia *Pension Benefits Act* and is for information purposes only.

The methodology for calculating the incremental cost was to determine the solvency liability as at the end of the cost period, allowing for new benefits expected to accrue in the interim. New benefits include future pension accruals and future qualification for early retirement benefits. The present value of this future liability (adjusted for the impact of benefit payments made) was then compared to the current solvency liability to determine the incremental cost.

C. Hypothetical Wind-up Basis: Financial Position as at December 31, 2017

The liabilities on a hypothetical wind-up basis include those benefits that were excluded from the solvency valuation (e.g., benefits provided under Section 97 of the Act).

The financial position of the Plan on a hypothetical wind-up basis as at December 31, 2017 is as follows:

FINANCIAL POSITION – WIND-UP BASIS

	December 31, 2017
Wind-up assets	
Market value of assets	$1,840,375,000
Termination expense provision	(2,000,000)
Total wind-up assets	$1,838,375,000
Wind-up liabilities	
Active members	$1,476,608,000
Retirees and survivors	1,329,717,000
Deferred and inactive members	40,269,000
Defined contribution accounts	37,635,000
Transfer deficiency holdbacks	29,616,000
Total Wind-up liabilities	$2,913,845,000
Wind-up excess / (deficiency)	**($1,075,470,000)**

D. Transfer Ratio as at December 31, 2017

The Nova Scotia *Pension Benefits Regulations* also require the determination of a "transfer ratio". This transfer ratio is used to determine whether transfers of commuted values to terminating members can be made in full, immediately. The transfer ratio is the ratio of the amount by which solvency assets exceed the lesser of the previous year credit balance ($0) and the amount of expected employer normal contributions and special payments over the valuation period, to the solvency liabilities and the liabilities excluded in calculating the solvency liabilities (i.e., the wind-up liabilities). As at December 31, 2017 the transfer ratio is 63.1% (i.e., $1,838,375,000 divided by $2,913,845,000).

If the transfer ratio is less than 100% then, unless certain conditions are met, a portion of a terminated member's commuted value cannot be paid in a lump sum, but instead must be held back and paid with interest within 5 years. For this Plan, the portion is 36.9%. The two conditions that allow full payment of the commuted value are:

- if an additional contribution is remitted to the fund equal to the portion of the commuted value that should be held back, or
- if the aggregate of the portions that should be held back for all members who terminated since the last valuation date is less than 5% of the assets of the Plan.

Even though the second condition that would allow full payment to be made is expected to be satisfied over the valuation period, the Plan Administrator has decided to continue to pay benefits at the transfer ratio level.

SECTION IV FUNDING REQUIREMENTS

A. Current Service Costs

The Plan's current service cost is the value of the benefits accruing to members in the year following the valuation determined on a going concern basis.

The table below summarizes the results of the Plan's current service cost for the 12-month period from December 31, 2017 and the comparison with the required employee contributions over this period. The cost of benefits accruing in respect of the year following the valuation date is $57,478,000. This amounts to 18.3% of active contributory payroll.

CURRENT SERVICE COST

	% of Payroll	$
Estimated contributory payroll for 2018 service		314,444,000
Member required contributions	12.3%	38,667,000
Employer matching required contributions	12.3%	38,667,000
Total required contributions	24.6%	$77,334,000
Total value of benefits for service	18.3%	57,478,000
Required contributions in excess of value of benefits earned	6.3%	$19,856,000

The total current service cost has not changed from 18.3% as at the previous valuation. The following sets out an approximate reconciliation of the change in current service cost:

CURRENT SERVICE COST RECONCILIATION

	% of Payroll
Current service cost as at January 1, 2017	18.3%
Change in discount rate	0.7%
Change in other assumption / method	(0.6%)
Changes in Plan demographics	(0.1%)
Current service cost as at January 1, 2018	18.3%

Contribution Rates

The following table summarizes the current contribution rate schedules by division:

	Members	Employers
Current Plan Division		
Public Safety Occupations hired after April 1, 1998	12.56%	12.56%
Public Safety Occupations hired after July 1, 1994 under former City of Halifax Plan	12.56%	12.56%
Other Public Safety Occupations who elected "Rule of 75"	12.91%	12.21%
All other members	12.21%	12.21%
Dartmouth Plan Division		
Public Safety Occupations	11.72%	12.90%
Members contributing at a lower rate	10.42%	11.47%
All other members	11.42%	12.57%
Halifax Plan Division		
Public Safety Occupations hired after July 1, 1994	12.26%	12.26%
All other members	11.91%	11.91%
County Plan Division		
All members	11.71%	11.71%
Metropolitan Authority Plan Division		
All members	12.01%/12.91%	12.01%/12.91%

Sensitivity Analysis

Below we show the impact on the current service cost as at December 31, 2017 of a one percentage point drop in the discount rate assumption. All other assumptions were kept unchanged.

CURRENT SERVICE COST SENSITIVITY

	Impact 1% Drop
Total Current Service Cost	$69,691,000

The change in the discount rate would have the impact of increasing the current service cost by $12,213,000 or 21.2% as at December 31, 2017.

B. Special Payments

In addition to current service contributions, special payments are required in order to amortize the Plan's going concern unfunded liability. The Plan is subject to a solvency funding exemption as per the Nova Scotia *Pension Benefits Regulations*, and therefore no special payments are required to amortize the Plan's solvency deficiency.

Special Payments

The schedule of special payments set out in the December 31, 2016 valuation is as follows:

REMAINING SPECIAL PAYMENTS FROM PREVIOUS VALUATION

Payment Type	Date Established	Term Remaining	Annual Payment as % of Payroll	Present Value of Special Payments[1]
Going Concern	December 31, 2009	7.00 years	0.9%	$19,989,000
Going Concern	December 31, 2012	10.00 years	4.8%	145,270,000
Going Concern	December 31, 2016	14.00 years	0.2%	7,967,000
Total			5.9%	$173,226,000

[1] Present value of payments calculated at 6.20%, and assumes a 2.75% annual increase in payroll. Total payroll for the purpose of special payment calculations is unadjusted for decrements in the following year.

As the present value of existing special payments, $173,226,000 is less than the unfunded liability ($183,908,000), new special payments are required. The following schedule provides the new special payment required.

ANNUAL SPECIAL PAYMENTS DETERMINED AS AT DECEMBER 31, 2017

Payment Type	Date Established	Term Remaining	Annual Payment as % of Payroll	Present Value of Special Payments[1]
Going Concern	December 31, 2009	7.00 years	0.9%	$19,989,000
Going Concern	December 31, 2012	10.00 years	4.8%	145,270,000
Going Concern	December 31, 2016	14.00 years	0.2%	7,967,000
Going Concern	December 31, 2017	15.00 years	0.3%	12,611,000
Total			6.2%	$185,837,000

[1] Present value of payments calculated at 6.20%, and assumes a 2.75% annual increase in payroll. Total payroll for the purpose of special payment calculations is unadjusted for decrements in the following year.

The minimum special payments are 6.2% of payroll, which is less than the required contributions in excess of the value of benefits earned. Therefore, the current contributions are sufficient to fund the minimum required special payments.

The Plan is subject to a solvency funding exemption as per the Nova Scotia *Pension Benefits Regulations,* and therefore no special payments are required to amortize the Plan's solvency deficiency.

C. Maximum Contribution

The maximum employer contribution prior to the next valuation is equal to the hypothetical wind-up deficit plus the employer portion of the current service cost, totaling $1,094,281,000.

D. Timing of Contributions

Contributions for current service must be made no later than 30 days following the month for which the contribution is payable. Special payments must be paid by equal instalments, within 30 days following the end of each month.

SECTION V ACTUARIAL OPINION

The following represent our primary conclusions as a result of our actuarial valuation as at December 31, 2017:

1. As at December 31, 2017 the Plan has a going concern unfunded liability of $183,908,000.
2. The Plan has a solvency deficiency of $816,648,000 after inclusion of 5 years' worth of special payments. The Plan is subject to a solvency funding exemption as per the Nova Scotia *Pension Benefits Regulations*. Accordingly, no solvency deficiency payments are required at this time.
3. The going concern unfunded liability must be amortized according to the special payment schedule detailed in Section IV.

   The minimum required annual special payments of 6.2% of payroll are required for the next 7 years, 5.3% for the following 3 years, 0.5% for the following 4 years and 0.3% for the next year. Matched employer contributions in excess of the value of benefits earned are sufficient to fund these minimum special payments.
4. The cost of benefits accruing in respect of the year following the valuation date is $57,478,000, which amounts to 18.3% of active contributory payroll. Employee contributions will be 12.3% resulting in a minimum employer service cost of 6.0% of contributory payroll or 48.6% of employee contributions. We note that the Plan text requires the employer to match employee contributions for most members of the Plan.
5. The adequacy and appropriateness of this funding level should be reviewed at the next actuarial valuation of this Plan, which should take place as at December 31, 2018 at the latest.
6. If the Plan were to be wound up on the valuation date, the value of Plan assets would be less than actuarial liabilities by an amount of $1,075,470,000, after allowance for "grow-in benefits" under the Nova Scotia *Pension Benefits Act and Regulations*.
7. The maximum employer contribution permitted in 2018 is estimated to be $1,094,281,000.
8. The transfer ratio of the Plan is 63.1%.
9. Pursuant to the *Income Tax Act and Regulations*, there is no excess surplus as of the valuation date.
10. We are not aware of any events that occurred between the valuation date and the date this report was completed that would have a material impact on the results of this valuation other than those outlined in Section II.

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11. In our opinion,
    a. the data on which the valuation is based are sufficient and reliable for the purposes of the valuation as described in Section I;
    b. the assumptions described herein are appropriate for the purposes of the valuation; and
    c. the methods employed in the valuation are appropriate for the purposes of the valuation.

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

Nonetheless, emerging experience, differing from the assumptions, will result in gains or losses which will be revealed in future valuations.

Respectfully submitted,

Original Signed

Original Signed

Philip Churchill, FSA, FCIA

Jennifer Urquhart, FSA, FCIA

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APPENDIX A DEVELOPMENT OF PREVIOUS YEAR CREDIT BALANCE

The table below, shows the reconciliation of the previous year credit balance between December 31, 2016 and December 31, 2017.

Previous year credit balance at December 31, 2016		0
Actual employer contributions		
Current service cost	21,620,000	
Special payments:		
- Unfunded actuarial liability	21,274,000	
Transfer deficiency contributions	0	
Additional employer contributions	0	
Total		42,894,000
Minimum required contributions between December 31, 2016 and December 31, 2017		
Current service cost	21,620,000	
Special payments:		
- Unfunded actuarial liability	19,923,000	
Transfer deficiency contributions	0	
Total		41,543,000
Application of previous year credit balance between December 31, 2016 and December 31, 2017		1,351,000
Previous year credit balance at December 31, 2017		0

APPENDIX B PLAN ASSETS

Sources of Plan Asset Data

The pension fund is held in trust by Northern Trust under the Halifax Regional Municipality Master Trust and is invested in accordance with the investment policy. The Halifax Regional Municipality Pension Plan and the Halifax Regional Water Commission Employees' Pension Plan are the only two plans that participate in the Master Trust.

We have relied upon audited financial statements prepared by KPMG for the 2017 plan year.

Market Value of Plan Assets

The following is a summary of the market value of Plan assets by category as at December 31, 2017:

December 31, 2017	$	%
Cash & cash equivalents	16,563,000	0.9
Fixed income	461,934,000	25.1
Canadian equity	114,103,000	6.2
Global equity	587,080,000	31.9
Minimum targeted return[1]	660,695,000	35.9
Total	**1,840,375,000**	**100.0**

Target Asset Mix

The target asset mix contained in the Plan's Statement of Investment Policies and Procedures effective November 16, 2017 is as follows:

	Minimum	Target	Maximum
Equities	30%	35%	60%
Fixed income	20%	25%	50%
Minimum targeted return	20%	40%	50%
		100%	

1 The minimum targeted return portfolio investments are private investments in real estate, infrastructure, private equity and private debt.

Reconciliation of Plan Assets

A summary of pension fund transactions for the period January 1, 2017 to December 31, 2017 is summarized below:

RECONCILIATION OF PLAN ASSETS

	2017
January 1	**$1,675,030,000**
Employee contributions	41,534,000
Employer contributions	42,894,000
Transfers from other plans	2,650,000
Investment income and net capital gains	176,319,000
Pension payments	(80,344,000)
Lump sum payments	(11,016,000)
Administrative expenses	(6,692,000)
December 31	**$1,840,375,000**

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APPENDIX C ACTUARIAL METHODS AND ASSUMPTIONS

A. Going Concern Valuation

Asset Valuation Method

For the going concern valuation, we have employed an asset valuation method that contains a smoothing of asset values, but still relates them to their market values. This smoothing approach amortizes the difference between actual and expected investment returns over a five-year period (the current and four subsequent years).

The following table shows the development of the actuarial value of assets as at December 31, 2017:

ACTUARIAL VALUE OF ASSETS

Market value of assets at December 31, 2017			$1,840,375,000
Less unrecognized investment return in excess (deficient) of discount rate assumption in each year:	2017:	$62,561,871 x 80%	50,049,000
	2016:	($8,300,965) x 60%	(4,981,000)
	2015:	58,346,648 x 40%	23,339,000
	2014:	37,031,677 x 20%	7,406,000
			75,814,000
Actuarial value of assets at December 31, 2017			**$1,764,561,000**

Actuarial Cost Method

For the purposes of the going concern valuation, we have used the Projected Unit Credit actuarial cost method in the determination of current service contributions as well as the accrued liabilities.

In using the Projected Unit Credit method, as a first step, a calculation is made of the liability in respect of all benefits that have accrued to members for service up to and including the valuation date based on projected final average earnings. This represents the "accrued liability".

As a completely separate process, the current service cost has been calculated. This represents the cost of providing the benefits that will accrue in respect of the 12-month period following the valuation date. This is compared with the amount of required employee contributions over that period. The difference represents the required employer contribution necessary in order for those benefits to be properly funded.

Under this funding method, the cost of a dollar per year of deferred pension commencing at retirement age increases with the age of an employee. Thus, the dollar cost rises steadily over an individual's working life. However, for the group as a whole, if the average age remains reasonably constant (which can occur through the retirement of older members and the addition of new, young members), the recommended contribution rate will remain relatively stable. If the Plan membership's average age increases, on the other hand, the current service costs will also increase. Such increases would be revealed in future valuations.

Actuarial Assumptions

For the purposes of a going concern valuation, we select actuarial assumptions with a long term focus. That is, we anticipate that the Plan will continue indefinitely into the future. Actuarial assumptions are selected giving consideration to historical trends, future expectations and Plan specific experience, where possible. The assumptions chosen are expected to produce a stable pattern of funding and meet the Plan sponsor's desire to minimize potential for significant shortfalls or deficits in the future.

The purpose of this part of our analysis is to determine an appropriate method and series of assumptions to make proper allowance for the Plan's future liabilities by way of payment of pensions and other benefits. In making these calculations, assumptions must be made:

1. as to the probability that a particular payment will be made at a certain time (for example, depending upon whether or not the individual concerned survives to that date); and
2. the expected amount of each such payment.

In order to do this, the actuary must make a series of assumptions in connection with the many factors which will have a bearing upon the future financial operation of the Pension Plan. These include the following:

(a) future salary increases;

(b) future rates of mortality (and the corresponding life expectancies of the Plan members);

(c) future rates of employee turnover (withdrawal from the Plan); and

(d) the retirement experience.

Finally, the actuary must give consideration to the rate of interest that will be earned on the assets of the pension fund in future years.

As part of our process of analysis, all of these factors have received consideration. Where applicable, we have taken into account the actual experience of this Plan. However, it should be noted that, from a statistical point of view, actual experience data developed from a single pension plan has limited validity unless the number of plan members is very large. Therefore, it becomes necessary to take into account statistics developed from many other pension plans.

Going Concern Discount Rate Assumption

The selection of the discount rate for this valuation was based on reasonable expectations for the relationships between key economic variables over the long term, as well as the expected impact of those economic variables on the investment performance of the pension fund given the fund's investment policy.

The discount rate assumption (net of expenses) has been changed from the previous valuation. Based on the assumed inflation rate and other key economic expectations over the long term, and taking into account a margin for adverse deviations, the going concern discount rate assumption was developed as follows:

GOING CONCERN DISCOUNT RATE

Discount Rate Components	
Gross expected investment return	6.75%
Added value from active management	0.25%
Provision for expenses	(0.40%)
Estimated net investment return	6.60%
Provisions for adverse deviation	(0.40%)
Going concern discount rate assumption	**6.20%**

Inflation

The inflation assumption has a direct bearing on the assumption with respect to active member salary increases. The inflation assumption from 2016 remains unchanged at 2.10% per annum, as it is in alignment with our overall economic outlook. This rate is within the Bank of Canada's 1% - 3% inflation-control target range.

Salary Increase

The salary increase assumption includes a base component as well as a component for seniority, merit and promotion, and varies by age. The rate assumed for the base component has not been changed from 2.75% as at the previous valuation. The component for seniority, merit and promotion has remained the same and is outlined below:

ANNUAL SALARY INCREASE RATES

Age Group	Seniority, Merit and Promotion Component
< Age 30	2.0%
30 – 39	1.5%
40 – 44	1.0%
45 – 49	0.5%
Age 50 +	0.0%

YMPE and CRA Defined Benefit Limit Increase

We have assumed the Year's Maximum Pensionable Earnings (YMPE) would increase at a rate of 2.75% per annum from the current known level of $55,900 in 2018.

We have assumed the Canada Revenue Agency defined benefit limit would also increase at a rate of 2.75% per annum from the current known level of $2,944.44 for 2018. In combination with a member's pensionable service and their year of retirement, this limit determines the maximum pension that may be payable from a registered defined benefit pension plan under the Income Tax Act.

Both of these assumptions are consistent with the previous valuation.

Contribution Crediting

Interest is credited on member contributions at a rate based on the 5-year personal fixed term chartered bank deposit rate as determined from the Canadian Socio-Economic Information Management (CANSIM) Series V122515, published in the Bank of Canada Review.

In order to project member contribution-with-interest balances to the expected date of termination, death or retirement, we have assumed contribution rates as a percent of pensionable earnings would continue into the future, and that interest would be credited on those contributions at a rate of 3.0% per annum, as in the previous valuation.

Mortality

For this valuation, we have continued to use the CPM 2014 Private Sector Mortality Table (CPM2014Priv), and we have assumed mortality improvements in accordance with CPM Improvement Scale B (CPM-B). The CPM 2014 Private table represents the best available information to date on the mortality patterns of Canadians participating in, or retired from, defined benefit pension plans in the private sector. The membership of this Plan consists of various employee groups, including outside workers, inside workers, as well as uniformed workers from Police & Fire. Given the diverse group, the CPM 2014 Private table was considered to offer the most appropriate "best estimate" of mortality patterns for participants in this Plan.

Retirement Age

We have assumed 60% of members who achieve eligibility for unreduced retirement will retire when first eligible. If a member has already met the eligibility for the earliest unreduced retirement date, it is assumed that member will retire immediately rather than in one year as was assumed in the previous valuation. The remainder of members are assumed to retire at their normal retirement date.

Marital Status

There has been no change since the previous valuation in the marital status assumptions. For members who have not yet retired, we have assumed that 85% of members will have an eligible spouse on the earlier of death or retirement. For members who have retired, actual marital status on file was used, with an assumption that 5% of pensioners who were married at retirement are single at the date of the valuation. Further, we have continued to assume that male spouses are 3 years older than female spouses.

Termination Rates

The annual termination decrement rate assumption has not changed from the previous valuation. The rates vary by age. Sample rates are as follows:

TERMINATION RATES

Age	Annual Termination Decrement Rate
25	20.0%
30	11.2%
35	6.3%
40	3.4%
45	1.8%
50	1.2%
55	0.0%
60	0.0%

The termination scale stops at a member's earliest retirement date (age 50 for Public Service Occupation members and 55 for other members).

For those who are assumed to terminate, 50% elect a deferred pension and 50% elect an immediate commuted value payout. We have assumed that the discount rate at which members' deferred pensions are converted to a commuted value is 3.75% per annum. The mortality table is the CPM Combined Table with improvements in accordance with Scale CPM-B.

This is the same assumption as was used in the previous valuation.

Disability Rates

There is no explicit assumption for disability rate for the members of this plan. However, the overall current service cost is increased by 0.25% of total payroll to account for the potential cost of members who could become disabled in the year. The additional cost would be a waiver of member contributions for these individuals.

The following table details the actuarial assumptions that have been used in the going concern valuation.

Going Concern Valuation Actuarial Assumptions

	December 31, 2017		December 31, 2016	
Discount rate:	6.2% per annum		6.4% per annum	
Annual salary increase:	Promotional component: Age-based scale	Base component: 2.75% per annum	Promotional component: Age-based scale	Base component: 2.75% per annum
Maximum pension and YMPE:	2018: $2,944.44 and $55,900 2019+: Increase at 2.75% per annum		2017: $2,914.44 and $55,300 2018+: Increase at 2.75% per annum	
Contribution crediting:	3.00% per annum		3.00% per annum	
Mortality:	CPM 2014 Private Sector Mortality Table projected generationally with CPM Improvement Scale B		CPM 2014 Private Sector Mortality Table projected generationally with CPM Improvement Scale B	
Retirement age:	60% of members retire when eligible for an unreduced pension; remainder retire at their normal retirement date		60% of members of members retire when eligible for an unreduced pension (or in one year if immediately eligible); remainder retire at their normal retirement date	
Marital status:	Non-retired members: 85% married Retired males and females (with spouse on file): 95% married Retired males and females (no spouse on file): 0% married Male spouse is assumed to be 3 years older than female spouse		Non-retired members: 85% married Retired males and females (with spouse on file): 95% married Retired males and females (no spouse on file): 0% married Male spouse is assumed to be 3 years older than female spouse	
Termination rates:	Variable by age, and 50% of members elect a deferred pension, 50% elect a commuted value. Commuted value discount rate: 3.75% per annum Commuted value mortality assumption: CPM Combined, with CPM-B improvement scale		Variable by age, and 50% of members elect a deferred pension, 50% elect a commuted value. Commuted value discount rate: 3.75% per annum Commuted value mortality assumption: CPM Combined, with CPM-B improvement scale	
Disability rates:	No rates, but load of 0.25% of payroll on current service cost to account for members who could become disabled in the year.		No rates, but load of 0.25% of payroll on current service cost to account for members who could become disabled in the year.	
Actuarial method:	Projected Unit Credit		Projected Unit Credit	

B. Solvency Valuation

The Nova Scotia *Pension Benefits Act* prescribes a solvency valuation. A solvency valuation permits the regulator to assess the solvency of the Plan should it terminate or wind-up effective on the valuation date. That is, an assessment is made as to whether the assets of the pension fund would be sufficient if no further benefits were provided and all Members were paid their entitlements. If solvency assets are not sufficient to fund solvency liabilities (i.e., the Plan has a solvency deficiency), then special payments are required in order to eliminate the deficiency, unless the Plan is subject to solvency relief in accordance with the Act and Regulations.

Benefits are assumed to be settled through a lump sum transfer for 100% of active members who are not retirement eligible as at the date of valuation. Benefits are assumed to be settled through the purchase of annuities for members who are eligible for retirement at the date of valuation and for all pensioners and deferred pensioners.

For active members whose benefits are assumed to be settled through lump sum transfer, the interest rate used for calculating solvency liabilities was 2.60% per annum for 10 years and 3.40% per annum thereafter. These rates were determined in accordance with Section 3500 of the Canadian Institute of Actuaries ("CIA") Standards of Practice – Pension Commuted Values with rates in effect for the month of December 2017. The mortality assumption used was the CPM-2014 (Combined) mortality table projected with Scale CPM-B.

For those members whose benefits are assumed to be settled through purchase of annuities, the solvency liabilities were calculated using an interest rate of 3.09% per annum and mortality at CPM-2014 (Combined) mortality table projected with Scale CPM-B. These assumptions represent the estimated basis for settlement of the Plan's obligations for retired lives by the purchase of insured annuities on the valuation date and are in accordance with the Canadian Institute of Actuaries Educational Note entitled "Assumptions for Hypothetical Wind-Up and Solvency Valuations with Effective Dates Between December 31, 2017 and December 30, 2018".

In accordance with the CIA Transfer Value Recommendations, the retirement age assumption incorporates the retirement age which provides the maximum value.

Note that the solvency valuation does not make any assumptions about future pay increases or future terminations of employment, since all members are assumed to terminate on the valuation date. In accordance with the Nova Scotia *Pension Benefits Regulations*, the solvency valuation does not include the value of any grow-in benefits that would apply on plan wind-up.

The actuarial assumptions for the solvency valuation are described in the following table:

SOLVENCY VALUATION ACTUARIAL ASSUMPTIONS

	December 31, 2017	December 31, 2016
Interest rates for benefits to be settled through annuity purchase:	3.09% per annum	3.20% per annum
Interest rates for benefits to be settled through lump sum transfer:	2.60% per annum for 10 years and 3.40% thereafter	2.20% per annum for 10 years and 3.50% thereafter
Pre-retirement mortality:	None	None
Post-retirement mortality:	CPM-2014 Combined mortality, projected with Scale CPM-B	CPM-2014 Combined mortality, projected with Scale CPM-B
Retirement age:	Age at maximizes lump sum value	Age at maximizes lump sum value
Salary scale:	None	None
Married assumption:	85% married (male spouse is 3 years older)	85% married (male spouse is 3 years older)
Actuarial cost method:	Termination Method	Termination Method

C. Hypothetical Wind-Up Valuation

The hypothetical wind-up valuation liability assumptions are the same as those used in the solvency valuation, except that the wind-up valuation also includes liabilities with respect to benefits commonly known as "grow-in benefits" which are described in Section 97 of the Nova Scotia *Pension Benefits Act*. In particular, members whose age plus service is greater than or equal to 55 at the valuation date are assumed to "grow-in" to (i.e., become entitled to) early retirement eligibility and provisions.

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APPENDIX D MEMBERSHIP DATA

The membership data in respect of this Plan is maintained by the Halifax Regional Municipality Pension Plan Office.

The data was reviewed by us as to accuracy and reasonableness and we are satisfied that the data are complete. In addition, we have performed various checks of reasonableness on dates of employment, plan membership and birth. We also compared lists of active members with lists of inactive and retired members to check for duplicates. In all cases, we found the data to be sufficient and reliable for the purposes of the valuation.

Appendix F contains confirmation by Halifax Regional Municipality Pension Plan Office as to the accuracy and completeness of the data provided.

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

MEMBERSHIP DATA

	December 31, 2017	December 31, 2016
Active Members		
Number	6,199	5,905
Average pensionable earnings	$59,886	$59,842
Average years of pensionable service	10.5 years	10.8 years
Average age	47.1 years	47.3 years
Proportion female	48.7%	47.7%
Accumulated contributions with interest	$368,082,000	$344,996,000
Deferred Pensioners/Inactive Members		
Number	586	620
Average annual pension	$5,060	$5,327
Average age	47.8	47.7
Number with deferred annual pension amounts	509	527
Proportion female	58.4%	59.5%
Accumulated member contributions for members with no pension accrued	$1,884,000	$3,304,000
Pensioners and Survivors		
Number	4,121	3,909
Average annual pension	$20,164	$20,200
Average age	70.4	70.2
Proportion female	49.0%	49.7%

Active membership includes members who are still accruing service under the prior plans as follows:

6 members in the City of Halifax Superannuation Plan

2 members in the Halifax County Municipality Full-time Retirement Pension Plan

3 members in the City of Dartmouth Employees' Retirement Pension Plan; and

0 members in the Metropolitan Authority Employees' Pension Plan

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

RECONCILIATION OF MEMBERSHIP

	Active Members	Inactive and Deferred	Pensioners and Survivors	Total
Total at December 31, 2016	**5,905**	**620**	**3,909**	**10,434**
New members	639	-	-	639
Terminations paid out	(74)	(29)	-	(103)
Terminations to deferred	(50)	50	-	-
Return to active	20	(20)	-	-
Retirements	(189)	(17)	206	-
New Survivor	-	-	33	33
Deaths (paid out)	(10)	-	-	(10)
Deaths (with survivor)	(2)	-	(31)	(33)
Deaths (no survivor)	-	-	(70)	(70)
Pension ceased	-	-	(5)	(5)
New Ex-Spouse	-	-	12	12
Data adjustments	(40)	(6)	4	(42)
Record (Consolidation)/Split	-	(12)	63	51
Total at December 31, 2017	**6,199**	**586**	**4,121**	**10,906**

The distribution of the active members' pensionable earnings by age and pensionable service as at December 31, 2017, is summarized as follows

	Years of Pensionable Service							
Age	**<5**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30>**	**Total**
<25	89 41,974							**89** **$41,974**
25-29	275 50,433	29 75,341						**304** **$52,810**
30-34	325 52,991	129 70,781	45 82,879					**499** **$60,285**
35-39	314 52,021	204 67,224	149 80,031	30 84,120				**697** **$63,840**
40-44	304 48,761	185 63,868	192 73,393	130 79,985	22 80,689			**833** **$63,510**
45-49	314 47,050	211 55,814	217 68,113	146 70,027	135 79,159	68 83,936		**1,091** **$62,281**
50-54	261 45,920	228 50,950	212 58,939	152 60,799	119 71,340	175 80,679	37 90,141	**1,184** **$60,204**
55-59	164 50,835	184 52,694	169 55,410	153 50,108	104 64,899	110 72,303	86 72,647	**970** **$57,746**
60-64	62 63,838	85 48,403	96 50,993	84 45,675	28 55,597	44 60,072	27 76,478	**426** **$54,152**
65>	21 45,608	18 53,489	22 57,902	23 45,841	13 59,264	4 85,814	5 57,344	**106** **$53,294**
Total	**2,129** **$49,787**	**1,273** **$58,925**	**1,102** **$65,839**	**718** **$62,597**	**421** **$71,325**	**401** **$76,724**	**155** **$76,997**	**6,199** **$59,886**

The distribution of the inactive members by age as at December 31, 2017, is summarized as follows:

Distribution of Inactive Members

	Deferred Pensioners*		Pensioners and Survivors	
Age	**Number**	**Average Annual Pension**	**Number**	**Average Annual Pension**
20-24	1	-		
25-29	22	1,239		
30-34	32	2,473		
35-39	49	5,119		
40-44	60	4,877	1	-
45-49	89	5,288	6	-
50-54	99	6,222	82	34,656
55-59	103	6,065	360	29,594
60-64	36	3,159	777	25,396
65-69	14	6,818	909	21,013
70-74	4	-	827	16,725
75-79			531	15,192
80-84			350	14,302
85-99			175	13,882
90-94			79	13,780
95-99			19	10,338
100-104			5	-
Total	**509**	**$5,060**	**4,121**	**$20,164**

* *Includes only deferred members with non-zero accrued pensions.*

To protect confidentiality, subsets with 10 or fewer members will not have the pensions shown.

APPENDIX E SUMMARY OF PLAN PROVISIONS

Introduction

The *Halifax Regional Municipality Pension Plan* became effective April 1, 1998 as the result of the merger of four prior pension plans – the City of Halifax Superannuation Plan, the Halifax County Municipality Full-time Retirement Pension Plan, the City of Dartmouth Employees' Retirement Plan, and the Metropolitan Authority Employees' Pension Plan.

This valuation is based on the Plan provisions in effect on December 31, 2017. The following is a summary of the Plan's main provisions in effect on December 31, 2017. It is not intended as a complete description of the Plan.

Eligibility for Membership

A full-time employee of a participating employer must join the Plan on the date of full-time employment.

Part-time employees may join on the first day of January or July coincident with or next following the completion of twelve months of continuous service provided that, in the twelve months preceding Plan membership, the employee has:

- earned at least 25% of the YMPE; or
- worked at least 700 hours for the employer.

The YMPE, or Year's Maximum Pensionable Earnings, refers to the maximum annual amount of earnings upon which an employee and an employer contribute to the Canada Pension Plan (CPP).

Contributions – Defined Benefit

Members and their employer contribute in equal proportions in the amount required to pay the cost of providing benefits under the Plan's defined benefit provision to which members are entitled as determined by the actuary.

Contributions – Defined Contribution

Members may elect to contribute to the Plan's defined contribution provision on their defined contribution earnings based on the contribution rates defined in the Plan.

Earnings – Defined Benefit

Defined benefit earnings are regular earnings in respect of a normal work schedule, excluding overtime or other forms of differential or premium pay or other allowances and entitlements, except where such differential or premium pay is part of the Member's regular compensation based on the Member's regular work schedule

Earnings – Defined Contribution

Defined contribution earnings are overtime and other non-regular earnings as defined in the Plan.

Normal Retirement Date

The normal retirement date is the first day of the month coincident with or next following the member's 65th birthday (60th birthday for employees in Public Safety Occupations).

Early Retirement Date

A member may choose to retire as early as 10 years prior to their normal retirement date, or on or after their optional retirement date.

A member's optional retirement date is the first day of the month coincident with or next following the earlier of:

- the date on which the member's age plus continuous service totals 80 (75 for members in Public Safety Occupations who were hired on or after July 1, 1994 and were members of the City of Halifax Superannuation Plan, members in Public Safety Occupations who became members after April 1,1998, or other members in Public Safety Occupations who elected to convert to the current plan and elected "Rule of 75"); and
- the date the member reaches 60 years of age.

Should a member retire on or after their optional retirement date, the pension will be unreduced.

Postponed Retirement

Members may postpone retirement as late as December 31 of the year the member reaches 71 years of age.

Pension at Normal Retirement

If a member retires on the normal retirement date, the member will be entitled to an annual pension, payable monthly, equal to the member's credited service multiplied by 2% of the average annual earnings over the three highest consecutive years while a member of the Plan.

The member will also receive the value of their defined contribution account.

Early Retirement Pension

If an active member retires early, the member will be entitled to a pension that is calculated the same way as for a normal retirement. The pension payable, however, will be reduced by 0.5% for each month the retirement date precedes the date the member would have been eligible for an unreduced pension, assuming continued employment.

If a deferred member retires early, the member will be entitled to the accrued defined benefit earned. The pension payable, however, will be reduced by 0.5% for each month the retirement date precedes age 60, if the member terminated prior to December 31, 2010, or the normal retirement date if the member terminated on or after December 31, 2010.

The member will also receive the value of their defined contribution account.

Postponed Retirement Pension

If a member postpones retirement, the benefit will be calculated the same was as for a normal retirement, based on credited service and earnings to the postponed retirement date.

The member will also receive the value of their defined contribution account.

Maximum Pension

The total annual pension payable under the defined benefit provisions of the Plan upon retirement, death or termination of employment cannot exceed the lesser of:

- 2% of the average of the best three consecutive years of total compensation paid to the member, multiplied by total credited service; and
- The defined benefit limit under the *Income Tax Act* (or such lesser amount for service purchased after June 7, 1990 that was not previously pensionable), multiplied by the member's total credited service.

Death Benefits Before Retirement

If a member dies before eligibility for an immediate pension, the member's spouse, or beneficiary (or estate) if there is no spouse, will receive a lump sum settlement equal to the commuted value of the member's benefit.

If a member dies after eligibility for an immediate pension, but before pension payments start, the member's spouse is entitled to receive an immediate pension calculated as if the member retired on the day before death and elected a joint and survivor 66.67% pension. In addition, if the commuted value of the member's pension exceeds the commuted value of the survivor pension, the member's spouse will receive the difference as an actuarially equivalent pension. The member's spouse can also elect to receive the commuted value of the survivor pension as a lump sum. If there is no spouse, the beneficiary (or estate) will receive the commuted value of the member's benefit.

In addition, the member's spouse or beneficiary (or estate) if there is no spouse, will receive the value of the member's defined contribution account.

Death Benefits After Retirement

The normal form of payment for a member without a spouse is a lifetime pension guaranteed for ten years. If the member has a spouse, the spouse will receive 66.67% of the pension being received by the member prior to death.

In either case, there is a guarantee to ensure that payments to or in respect of a member are at least equal to their own contributions with interest at the time of retirement.

Disability Benefits

If a member qualifies for benefits under a participating employer sponsored long term disability plan, the Canada Pension Plan or the Workers Compensation Board, credited service under the Plan continues to accrue and member required contributions are waived.

Termination Benefits

If a member's employment terminates for reasons other than death or retirement, the member is entitled to the defined benefit pension accrued to the date of termination of employment.

If the member terminated employment prior to December 31, 2010, the deferred pension is payable commencing at age 60. If the member terminated employment on or after December 31, 2010, the deferred pension is payable commencing at the member's normal retirement date. A member may elect to receive a reduced early retirement pension as early as age 55 (age 50 for members in Public Service Occupations). The pension will be reduced by 0.5% for each month the pension commences prior to the date it would have been payable on an unreduced basis.

If a member is not eligible to receive an immediate pension, the member may transfer the commuted value of that pension into another retirement vehicle in accordance with the applicable federal and provincial legislation.

The member is also entitled to receive the value of their defined contribution account.

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APPENDIX F ADMINISTRATOR CERTIFICATION

On behalf of the Administrator of the *Halifax Regional Municipality Pension Plan*, I hereby certify that the employee data provided to Eckler Ltd. for the purposes of the actuarial valuation as at December 31, 2017 are accurate and complete.

ROBERT J. RITCHIE

Name

Original Signed

Signature

Chief Executive Officer

Title

25-09-18

Date