MERCER

TALENT • HEALTH • RETIREMENT • INVESTMENTS

THE CONTRIBUTORY PENSION PLAN FOR SALARIED EMPLOYEES OF MCMASTER UNIVERSITY INCLUDING MCMASTER DIVINITY COLLEGE 2000

REPORT ON THE ACTUARIAL VALUATION FOR FUNDING PURPOSES AS AT JULY 1, 2014 PREPARED PURSUANT TO STAGE 2 OF THE SOLVENCY FUNDING RELIEF MEASURES APPLICABLE TO PENSION PLANS IN THE BROADER PUBLIC SECTOR

JUNE 2015

MARSH & McLENNAN COMPANIES

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.

Should the plan be wound up, the going concern funded status and solvency financial position, if different from the wind-up financial position, become irrelevant. The hypothetical wind-up financial position estimates the financial position of the plan assuming it is wound up on the valuation date. Emerging experience will affect the wind-up financial position of the plan assuming it is wound up in the future. In fact, even if the plan were wound up on the valuation date, the financial position would continue to fluctuate until the benefits are fully settled.

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 Pension Benefits Act of Ontario, the Income Tax Act, and related regulations that are effective as of the valuation date. Mercer is not a law firm, and the analysis presented in this report is not intended to be a legal opinion. You should consider securing the advice of legal counsel with respect to any legal matters related to this report.

CONTENTS

1

Summary of Results

(000's)	07.01.2014	07.01.2011
Going Concern Financial Status		
Smoothed value of assets	$1,372,247	$1,136,699
Going concern funding target	$1,624,694	$1,318,220
Funding excess (shortfall)	($252,447)	($181,521)
Solvency and Wind-up Financial Position		
Market value of assets net of termination expenses and in-transit items	$1,542,265	$1,106,270
Total Wind-up liability	$1,739,750	$1,382,384
Solvency/Windup excess (shortfall)	($197,485)	($276,114)
Transfer Ratio	89%	80%
Funding requirements (annualised) [1]		
Total current service cost	$53,682	$49,751
Less: Estimated member contributions	($23,948)	($18,412)
University current service cost	$29,734	$31,339
University current service cost as a percentage of members' contributions	**124%**	**170%**
Minimum special payments		
2011/2012	-	$10,796
2012/2013	-	$20,800
2013/2014	-	$20,800
2014/2015	$20,800	-
2015/2016	$30,361	-
2016/2017	$30,361	-
2017/2018	$30,361	-
Estimated minimum university contribution for the year		
2011/2012	-	$42,135
2012/2013	-	$52,854
2013/2014	-	$55,060
2014/2015	$50,534	-
2015/2016	$59,154	-
2016/2017	$59,529	-
Estimated maximum university contribution for the Plan year following the valuation date	$282,181	$307,453
Next required valuation date	July 1, 2017	July 1, 2014

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

2

Introduction

To McMaster University

At the request of McMaster University, we have conducted an actuarial valuation of the Contributory Pension Plan for Salaried Employees of McMaster University Including McMaster Divinity College 2000 (the "Plan"), sponsored by McMaster University (the "Company"), as at the valuation date, July 1, 2014. 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 July 1, 2014 on going concern, hypothetical wind-up, and solvency bases;

- The minimum required funding contributions from July 1, 2014 in accordance with the *Pension Benefits Act of Ontario* and in accordance with Stage 2 of the solvency funding relief measures applicable to pension plans in the broader public sector; and

- The maximum permissible funding contributions from 2014, in accordance with the *Income Tax Act.*

Funding Relief

The Regulations to the *Pension Benefits Act* were amended in May 2011 and further amended in November 2013, May 2014 and in March 2015. The amendments include the solvency funding relief measures that were introduced for pension plans in the broader public sector. Stage 2 of the solvency funding relief measures allows the administrator of the plan to:

- defer the start of any new going concern special payment schedules by up to twelve months;
- make solvency special payments in each month of the first three years of the 10 year period beginning on a day that is not later than 12 months after the Stage 2 valuation date equal to the greater of zero and interest for the month; on the amount by which the solvency liabilities exceed the solvency assets less the going-concern special payments for the month;
- make solvency special payments during the remaining seven years of the above 10 year period to liquidate the solvency deficiency in equal monthly instalments; and
- file the next funding valuation report with an effective date which is three years after the Stage 2 valuation date.

The University has been approved for Stage 2 of the solvency funding relief measures for pension plans in the broader public sector. Accordingly, the minimum monthly contribution requirements determined herein have been determined in accordance with Stage 2 of the solvency funding relief measures for pension plans in the broader public sector.

The information contained in this report was prepared for the internal use of the University and for filing with the Financial Services Commission of Ontario and with the Canada Revenue Agency, in connection with our actuarial valuation of the Plan. This report will be filed with the Financial Services Commission of Ontario and 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 as at a date not later than July 1, 2017, or as at the date of an earlier amendment to the Plan.

Terms of Engagement

In accordance with our terms of engagement with the McMaster University, 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.
- As instructed by the McMaster University, we have reflected a margin for adverse deviations in our going concern valuation by reducing the going concern discount rate by 0.40% per year.

We have reflected the McMaster University decisions for determining the solvency funding requirements, summarized as follows:

– The same plan wind-up scenario was hypothesized for both hypothetical wind-up and solvency valuations.

– No benefits were excluded from the Solvency liabilities,

– The solvency financial position was determined on a market value basis.

– Solvency relief measures have been applied. They are described in the Funding Relief section of this report.

See the Valuation Results - Solvency section of the report for more information.

Events since the Last Valuation at July 1, 2011

Pension Plan

This valuation reflects the provisions of the Plan as at July 1, 2014. The Plan has been amended since the date of the previous valuation, as follows:

– To reflect changes in employee contribution rates for certain groups; and
– To reflect changes in special retirement date for certain member groups

The Plan provisions are summarized 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**
Pensionable earnings increases:	<u>Unifor members</u> 3.0% per year for 3 years; 4.0% per year thereafter <u>TMG members</u> 3.8% per year for 3 years; 4.0% per year thereafter <u>MUFA members</u> 4.6% per year for 3 years; 4.0% per year thereafter <u>Clinical Faculty members</u> 4.0% per year	4.75% (4.00% for Clinical Faculty Members)
Inflation	2.0%	2.5%

	Current valuation	**Previous valuation**
Post retirement pension increases	Actual 1.1.2015 increase, 2.0% per year for each of 2016, 2017, 2018 and 2019, 1.90% per year (1.40% for Unifor members hired after May 1, 2010) thereafter	1.50% per year (1.00% per year for Unifor members hired after May 1, 2010)
Mortality rates:	100% of the rates of the 2014 Public Sector Canadian Pensioners Mortality Table	85% of the rates of the 1994 Uninsured Pensioner Mortality Table for males, and 107% for females
Mortality improvements:	Fully generational using CPM Improvement Scale B	Fully generational using Scale AA
Portability:	95% of terminating members and 5% of retiring members are assumed to elect a commuted value	All terminating and retiring members are assumed to elect a deferred pension

The hypothetical wind-up and solvency assumptions have been updated to reflect market conditions at the valuation date.

A summary of the going concern methods and assumptions is provided in Appendix C. A summary of the hypothetical wind-up and solvency methods and assumptions is provided in Appendix D.

Regulatory Environment and Actuarial Standards

There have been a number of changes to the Act and regulations which impact the funding of the Plan.

The Government of Ontario has announced its intentions to makes changes to the funding requirements for pension plans registered in Ontario. Since then Bill 120 received Royal assent. However, the intended changes to the funding requirements which impact the funding of single-employer pension plans will be contained in regulations which have not yet been adopted.

Effective July 1, 2012, the *Pension Benefits Act (Ontario)* and the Regulations to the Act were amended to require plans to provide immediate vesting to all Ontario plan members and to provide grow-in benefits to certain Ontario members whose employment is terminated at the initiation of their employer. The Plan has been amended to reflect these requirements. The Regulations to the Pension Benefits Act were amended in November 2012 to reflect previously announced changes. The measures introduced are as follows:

On a permanent basis, the regulations were amended to:

- Permit solvency and going concern special payments to be amortized beginning up to one year after the valuation date;
- Permit the use of irrevocable letters of credit from financial institutions to cover solvency deficiencies up to 15 per cent of a plan’s solvency liabilities, in lieu of special payments to eliminate the deficiency over the prescribed period.

The Regulations to the *Pension Benefits Act* were amended in May 2011 and further amended in November 2013, May 2014 and in March 2015. The amendments include the solvency funding relief measures that were introduced for pension plans in the broader public sector. Stage 2 of the solvency funding relief measures allows the administrator of the plan to:

- defer the start of any new going concern special payment schedules by up to twelve months;
- make solvency special payments in each month of the first three years of the 10 year period beginning on a day that is not later than 12 months after the Stage 2 valuation date equal to the greater of zero and interest for the month; on the amount by which the solvency liabilities exceed the solvency assets less the going-concern special payments for the month;
- make solvency special payments during the remaining seven years of the above 10 year period to liquidate the solvency deficiency in equal monthly instalments; and
- file the next funding valuation report with an effective date which is three years after the Stage 2 valuation date.

The University's elections in regard to these new funding options are summarized in the Terms of Engagement.

Subsequent Events

The University granted regular and supplemental pension increases effective January 1, 2015. We have included the January 1, 2015 pension increase in the going concern, solvency, and wind-up liabilities.

After checking with representatives of the University, 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.

Impact of Case Law

This report has been prepared on the assumption that all of the assets in the pension fund are available to meet all of the claims on the Plan. We are not in a position to assess the impact that the Ontario Court of Appeal's decision in *Aegon Canada Inc. and Transamerica Life Canada versus ING Canada Inc.* or similar decisions in other jurisdictions might have on the validity of this assumption.

We have assumed that all the Plan's assets are available to cover the Plan's liabilities presented in this report.

3

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's	July 1, 2014	July 1, 2011
Assets		
Market value of assets	$1,543,115	$1,107,120
Asset smoothing adjustment	($170,868)	$29,579
Smoothed value of assets	$1,372,247	$1,136,699
Going concern funding target		
• Active members	$833,927	$728,730
• Pensioners and survivors	$751,491	$554,878
• Deferred pensioners	$39,276	$34,612
Total	$1,624,694	$1,318,220
Funding excess (shortfall)	($252,447)	($181,521)

The going concern funding target includes a provision for adverse deviations.

Reconciliation of Financial Status

Funding excess (shortfall) as at previous valuation		($181,521)
Interest on funding excess (shortfall) at 6.00% per year		($34,673)
Employer's special payments, with interest		$58,026
Expected funding excess (shortfall)		($158,168)
Net experience gains (losses)		
• Net investment return (market basis)	$195,871	
• Impact of asset smoothing	($206,097)	
• Increases in pensionable earnings	$18,275	
• Indexation	$19,450	
• Mortality	($4,348)	
• Retirement	$25,513	
• Termination	$1,071	
Total experience gains (losses)		$49,735
Impact of changes in assumptions		
• Change in demographic assumptions	($83,072)	
• Change in economic assumptions	($34,343)	
Total assumption changes impact		($117,415)
Impact of amendments		$6,947
Impact of January 1, 2015 COLA		($36,967)
Net impact of other elements of gains and losses		$3,421
Funding excess (shortfall) as at current valuation		($252,447)

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's	2014	2011
Total current service cost	$53,682	$49,751
Estimated members' required contributions	($23,948)	($18,412)
Estimated employer's current service cost	$29,734	$31,339
Employer's current service cost expressed as a percentage of members' pensionable earnings	9.71 %	10.87%
Employer's current service cost expressed as a percentage of member contributions	124%	170%

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

Employer's current service cost as at previous valuation	10.87%
Demographic changes	(0.73%)
Plan amendments	(0.80%)
Changes in assumptions	0.37%
Employer's current service cost as at current valuation	9.71%

Discount Rate Sensitivity

The following table summarizes the effect on the going concern funding target shown in this report of using a discount rate which is 1.00% lower than that used in the valuation:

Scenario	Valuation Basis	Reduce Discount Rate by 1%
Going concern funding target	$1,624,694	$1,873,539
Current service cost		
• Total current service cost	$53,682	$66,291
• Estimated members' required contributions	($23,948)	($23,948)
• Estimated employer's current service cost	$29,734	$42,343

4

Valuation Results – Hypothetical Wind-up

Financial Position

When conducting a hypothetical wind-up valuation, we determine the relationship between the respective values of the Plan's assets and its liabilities assuming the Plan is wound up and settled on the valuation date, assuming benefits are settled in accordance with the Act and under circumstances producing the maximum wind-up liabilities on the valuation date. However, to the extent permitted by law, the actuary may disregard:

– Benefits that would not be payable under the hypothesized scenario.

– Plan member earnings after the valuation date.

The hypothetical wind-up financial position as of the valuation date, compared with that at the previous valuation, is as follows:

$000's	July 1, 2014	July 1, 2011
Assets		
Market value of assets	$1,543,115	$1,107,120
Termination expense provision	($850)	($850)
Wind-up assets	$1,542,265	$1,106,270
Present value of accrued benefits for:		
• Active members	$928,844	$779,575
• Pensioners and survivors	$764,416	$565,525
• Deferred pensioners	$46,490	$37,284
Total wind-up liability	$1,739,750	$1,382,384
Wind-up excess (shortfall)	($197,485)	($276,114)

Wind-up Incremental Cost to July 1, 2017

The wind-up incremental cost is an estimate of the present value of the projected change in the hypothetical wind-up liabilities from the valuation date until the next scheduled valuation date, adjusted for the benefit payments expected to be made in that period.

The hypothetical wind-up incremental cost determined in this valuation, compared with the corresponding value determined in the previous valuation, is as follows:

	July 1, 2014	**July 1, 2011**
Number of years covered by report	3 years	3 years
Total hypothetical wind-up liabilities at the valuation date (A)	$1,739,750	$1,382,384
Present value of projected hypothetical wind-up liability at the next required valuation (including expected new entrants) plus benefit payments until the next required valuation (B)	$1,975,716	$1,578,260
Hypothetical wind-up incremental cost (B – A)	$235,966	$195,876

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 hypothetical wind-up basis unchanged from the valuation date to 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 hypothetical wind-up liabilities.

Discount Rate Sensitivity

The following table summarizes the effect on the hypothetical wind-up liabilities shown in this report of using a discount rate which is 1% lower than that used in the valuation:

Scenario	**Valuation Basis**	**Reduce Discount Rate by 1%**
Total hypothetical wind-up liability	$1,739,750	$1,979,581

5

Valuation Results – Solvency

Overview

The Act also requires the financial position of the Plan to be determined on a solvency basis. The financial position on a solvency basis is determined in a similar manner to the Hypothetical Wind-up Basis, except for the following:

Exceptions	Reflected in valuation based on the terms of engagement
The circumstance under which the Plan is assumed to be wound up could differ for the solvency and hypothetical wind-up valuations.	The same circumstances were assumed for the solvency valuation as were assumed for the hypothetical wind-up valuation.
Certain benefits can be excluded from the solvency financial position. These include: (a) any escalated adjustment (e.g. indexing), (b) certain plant closure benefits, (c) certain permanent layoff benefits, (d) special allowances other than funded special allowances, (e) consent benefits other than funded consent benefits, (f) prospective benefit increases, (g) potential early retirement window benefit values, and (h) pension benefits and ancillary benefits payable under a qualifying annuity contract.	No benefits were excluded from the solvency liabilities shown in this valuation.
The financial position on the solvency basis needs to be adjusted for any Prior Year Credit Balance.	Not applicable.
The solvency financial position can be determined by smoothing assets and the solvency discount rate over a period of up to 5 years.	Smoothing was not used.
The benefit rate increases coming into effect after the valuation date can be reflected in the solvency valuation.	Not applicable.

Financial Position

The financial position on a solvency basis, compared with the corresponding figures from the previous valuation, is as follows:

$000's	July 1, 2014	July 1, 2011
Assets		
Market value of assets	$1,543,115	$1,107,120
Termination expense provision	($850)	($850)
Net assets	$1,542,265	$1,106,270
Liabilities		
Total hypothetical wind-up liabilities	$1,739,750	$1,382,384
Value of excluded benefits	$0	($8,894)
Liabilities on a solvency basis	$1,739,750	$1,373,490
Surplus (shortfall) on a market value basis	($197,485)	($267,220)
Transfer ratio	0.89	0.80

6

Minimum Funding Requirements

The Act prescribes the minimum contributions that McMaster University must make to the Plan. The minimum contributions in respect of a defined benefit component of a pension plan are comprised of going concern current service cost and special payments to fund any going concern or solvency shortfalls.

The University has elected and has been approved to make use of Stage 2 of the solvency relief measures for pension plans in the broader public sector. Accordingly, the minimum monthly contribution requirements determined herein reflect the Stage 2 requirements under the solvency funding relief regulation for pension plans in the broader public sector.

On the basis of the assumptions and methods described in this report, the rule for determining the minimum required employer monthly contributions, as well as an estimate of the employer contributions, from the valuation date until the next required valuation are as follows:

	Employer's contribution rule			Estimated employer's contributions	
Period beginning	**Monthly current service cost**[2]	**Explicit monthly expense allowance**	**Minimum monthly special payments**	**Monthly current service cost including expense allowance**	**Total minimum monthly contributions**
July 1, 2014	124%	$0	$1,733,304	$2,477,833	$4,211,137
July 1, 2015	117%	$0	$2,530,085	$2,399,417	$4,929,502
July 1, 2016	116%	$0	$2,530,085	$2,430,667	$4,960,752

The estimated contribution amounts above are based on projected members' required contributions. Therefore, the actual employer's current service cost will be different from the above estimates and, as such, the contribution requirements should be monitored closely to ensure contributions are made in accordance with the Act.

The development of the minimum special payments is summarized in Appendix A.

Other Considerations

Differences Between Valuation Bases

There is no provision in the minimum funding requirements to fund the difference between the hypothetical wind-up and solvency shortfalls, if any.

In addition, although minimum funding requirements do include a requirement to fund the going concern current service cost, there is no requirement to fund the expected growth in the hypothetical wind-up or solvency liability after the valuation date, which could be greater than the going concern current service cost.

Timing of Contributions

Funding contributions are due on a monthly basis. Contributions for current service cost must be made within 30 days following the month to which they apply. Special payment contributions must be made in the month to which they apply.

Retroactive Contributions

The Company must contribute the excess, if any, of the minimum contribution recommended in this report over contributions actually made in respect of the period following the valuation date. This contribution, along with an allowance for interest, is due no later than 60 days following the date this report is filed.

[2] Expressed as a percentage of members' required contributions.

Payment of Benefits

The Act imposes certain restrictions on the payment of lump sums from the Plan when the transfer ratio revealed in an actuarial valuation is less than one. If the transfer ratio shown in this report is less than one, the plan administrator should ensure that the monthly special payments are sufficient to meet the requirements of the Act to allow for the full payment of benefits, and otherwise should take the prescribed actions.

Additional restrictions are imposed when:

- The transfer ratio revealed in the most recently filed actuarial valuation is less than one and the administrator knows or 'ought to know' that the transfer ratio of the Plan has declined by 10% or more since the date the last valuation was filed.

- The transfer ratio revealed in the most recently filed actuarial valuation is greater than or equal to one and the administrator knows or 'ought to know' that the transfer ratio of the Plan has declined to less than 0.9 since the date the last valuation was filed.

As such, the administrator should monitor the transfer ratio of the Plan and, if necessary, take the prescribed actions.

Letters of Credit

Minimum funding requirements in respect of solvency deficiencies that otherwise require monthly contributions to the pension fund may be met, in the alternative, by establishing an irrevocable letter of credit subject to the conditions established by the Act. Required solvency special payments in excess of those met by a letter of credit must be met by monthly contributions to the pension fund.

7

Maximum Eligible Contributions

The *Income Tax Act* (the "ITA") limits the amount of employer contributions that can be remitted to the defined benefit component of a registered pension plan. However, notwithstanding the limit imposed by the ITA, for plans which are not 'Designated' as defined in the ITA, in general, the minimum required contributions under the Act can be remitted.

In accordance with Section 147.2 of the ITA and *Income Tax Regulation* 8516, for a plan which is underfunded on either a going concern or on a hypothetical wind-up basis, the maximum permitted contributions are equal to the employer's current service cost, including the explicit expense allowance if applicable, plus the greater of the going concern funding shortfall and hypothetical wind-up shortfall.

For a plan which is fully funded on both going concern and hypothetical wind-up bases, the employer can remit a contribution equal to the employer's current service cost, including the explicit expense allowance if applicable, as long as the surplus in the plan does not exceed a prescribed threshold. Specifically, in accordance with Section 147.2 of the ITA, for a plan which is fully funded on both going concern and hypothetical wind-up bases, the plan may not retain its registered status if the employer makes a contribution while the going concern funding excess exceeds 25% of the going concern funding target.

Schedule of Maximum Contributions

The Company is permitted to fully fund the greater of the going concern and hypothetical wind-up shortfalls, as well as make current service cost contributions. The portion of this contribution representing the payment of the going concern funding shortfall can be increased with interest at 6.00% per year from the valuation date to the date the payment is made, and must be reduced by the amount of any deficit funding made from the valuation date to the date the payment is made.

Assuming the Company contributes the greater of the going concern and hypothetical wind-up shortfall as of the valuation date, the rule for determining the estimated maximum eligible annual contributions, as well as an estimate of the maximum eligible contributions until the next valuation, are as follows:

Employer's contribution rule				Estimated employer's contributions
Year beginning	**Monthly current service cost[3]**	**Monthly expense allowance**	**Deficit Funding**	**Monthly current service cost including expense allowance**
July 1, 2014	124%	$0	n/a	$2,477,833
July 1, 2015	117%	$0	n/a	$2,399,417
July 1, 2016	116%	$0	n/a	$2,430,667

The employer's current service cost in the above table was estimated based on projected members' required contributions. The actual employer's current service cost will be different from these estimates and, as such, the contribution requirements should be monitored closely to ensure compliance with the ITA.

[3] Expressed as a percentage of members' required contributions.

8

Actuarial Opinion

In our opinion, for the purposes of the valuations,

- The membership data on which the valuation is based are sufficient and reliable.
- All assumptions were independently reasonable at the time the valuation was prepared and are, in aggregate, appropriate.
- The methods employed in the valuation are appropriate.

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 and solvency standards set by the Pension Benefits Act of Ontario.

Lorraine Gignac

Lorraine Gignac
Fellow of the Canadian Institute of Actuaries
Fellow of the Society of Actuaries

June 19, 2015

Date

Zaharia

Maria Zaharia
Fellow of the Canadian Institute of Actuaries
Fellow of the Society of Actuaries

June 19, 2015

Date

APPENDIX A

Prescribed Disclosure

Definitions

The Act defines a number of terms as follows:

Defined Term	Description	Result
Transfer Ratio	The ratio of: (a) solvency assets minus the lesser of the Prior Year Credit Balance and the minimum required employer contributions until the next required valuation; to (b) the sum of the solvency liabilities and liabilities for benefits, other than benefits payable under qualifying annuity contracts that were excluded in calculating the solvency liabilities.	0.89
Prior Year Credit Balance	Accumulated excess of contributions made to the pension plan in excess of the minimum required contributions (note: only applies if the Company chooses to treat the excess contributions as a Prior Year Credit Balance).	$0
Solvency Assets	Market value of assets including accrued or receivable income and excluding the value of any qualifying annuity contracts.	$1,543,115,000
Solvency Asset Adjustment	The sum of:	
	(a) the difference between smoothed value of assets and the market value of assets	$0
	(b) the present value of going concern special payments (including those identified in this report) within 6 years following the valuation date	$251,082,000
	(c) the present value of any previously scheduled solvency special payments (excluding those identified in this report)	$0
Solvency Liabilities	Liabilities determined as if the plan had been wound up on the valuation date, including liabilities for plant closure benefits or permanent layoff benefits that would be immediately payable if the employer's business were discontinued on the valuation date of the report, but, if elected by the plan sponsor, excluding liabilities for, (a) any escalated adjustment, (b) excluded plant closure benefits, (c) excluded permanent layoff benefits, (d) special allowances other than funded special allowances, (e) consent benefits other than funded consent benefits, (f) prospective benefit increases, (g) potential early retirement window benefit values, and (h) pension benefits and ancillary benefits payable under a qualifying annuity contract.	$1,739,750,000

Solvency Liability Adjustment	The amount by which solvency liabilities are adjusted as a result of using a solvency valuation interest rate that is the average of market interest rates calculated over the period of time used in the determination of the smoothed value of assets.		N/A
Solvency Deficiency	The amount, if any, by which the sum of:		
	(a)	the solvency liabilities	$1,739,750,000
	(b)	the solvency liability adjustment	$0
	(c)	the prior year credit balance	$0
			$1,739,750,000
	Exceeds the sum of		
	(d)	the solvency assets net of estimated termination expenses[4]	$1,542,265,000
	(e)	the solvency asset adjustment	$251,082,000
			$0

Timing of Next Required Valuation

In accordance with Stage 1 of the solvency relief measures for pension plans in the broader public sector, the next valuation of the Plan will be required as of July 1, 2017.

[4] In accordance with accepted actuarial practice, for purposes of determining the financial position, the market value of plan assets was reduced by a provision for estimated termination expenses payable from the Plan's assets that may reasonably be expected to be incurred in terminating the Plan and to be charged to the Plan.

Special Payments

Based on the results of this valuation, the Plan is not fully funded. In accordance with the Act, any going concern deficits must be amortized over a period not exceeding 15 years, beginning on a date not later than 12 months after July 1, 2014, and any solvency deficits must be amortized over a period in accordance with Stage 2 funding relief measures.

As such, special payments must be made as follows:

				Present Value	
Type of payment	Start date	End date	Monthly Special Payment	Going Concern Basis[5]	Solvency Basis[6]
Going concern	July 1, 2007	June 30, 2021	$594,538	$40,911,000	$44,998,000
Going concern	July 1, 2008	June 30, 2023	$107,558	$9,018,000	$10,170,000
Going concern	July 1, 2012	June 30, 2027	$1,031,208	$112,528,000	$115,826,000
				$162,457,000	
New going concern	July 1, 2015	June 30, 2030	$796,781	$89,990,000	$80,088,000
Total			$2,530,085	$252,447,000	$251,082,000

The present value of going concern special payments scheduled in the previous valuation is lower than the going concern shortfall resulting in a going concern unfunded liability of $89,990,000. As a result, a new going concern special payment schedule had to be established.

[5] Calculation only considers going concern special payments and is based on a going concern discount rate.

[6] Calculation considers both solvency and going concern special payments (five years only) and is based on the average solvency discount rate.

Pension Benefit Guarantee Fund (PBGF) Assessment

The PBGF assessment base and liabilities are derived as follows:

Solvency assets	$1,543,115,000	(a)
PBGF liabilities	$1,739,750,000	(b)
Solvency liabilities	$1,739,750,000	(c)
Ontario asset ratio	100.00%	(d) = (b) ÷ (c)
Ontario portion of the fund	$1,543,115,000	(e) = (a) x (d)
PBGF assessment base	$196,635,000	(f) = (b) – (e)
Amount of additional liability for plant closure and/or permanent layoff benefits which is not funded and subject to the 2% assessment pursuant to s.37(4)	$0	(g)

The PBGF assessment is calculated as follows:

$5 for each Ontario member	$32,300	(h)
0.5% of PBGF assessment base up to 10% of PBGF liabilities	$869,875	(i)
1.0% of PBGF assessment base between 10% and 20% of PBGF liabilities	$226,600	(j)
1.5% of PBGF assessment base over 20% of PBGF liabilities	$0	(k)
Sum of (h), (i), (j) and (k)	$1,128,775	(l)
$300 for each Ontario member	$1,938,000	(m)
Lesser of (l) and (m)	$1,128,775	(n)
2.0% of additional liabilities ((g) x 2%)	$0	(o)
Total Guarantee Fund Assessment ((n) + (o), no less than $250) (before applicable tax)	$1,128,775	(p)

APPENDIX B

Plan Assets

The pension fund is held by CIBC Mellon. In preparing this report, we have relied upon fund statements prepared by CIBC Mellon without further audit. Customarily, this information would not be verified by a plan's actuary. We have reviewed the information for internal consistency and we have no reason to doubt its substantial accuracy.

.

Reconciliation of Market Value of Plan Assets

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

	($000)		
	2011/2012	**2012/2013**	**2013/2014**
July 1	$1,102,202	$1,151,899	$1,292,489
PLUS			
Members' contributions	$17,537	$20,304	$22,661
University contributions	$46,266	$52,312	$50,589
Investment earnings	$46,757	$129,921	$243,493
Transfer to the Plan	$494	$387	$344
	$111,054	$202,924	$317,087
LESS			
Pensions paid	$48,471	$50,761	$54,460
Lump-sums paid	$8,882	$7,307	$11,583
Administration and investment fees	$4,004	$4,266	$4,014
	$61,357	$62,334	$70,057
June 30	$1,151,899	$1,292,489	$1,539,519
Gross rate of return[7]	4.2%	11.2%	18.8%
Rate of return net of expenses[8]	3.9%	10.8%	18.5%

[7] Assuming mid-period cash flows.

[8] Assuming mid-period cash flows.

The market value of assets shown in the above table is adjusted to reflect in-transit amounts as follows:

	($000)	
	Current Valuation	**Previous Valuation**
Market value of invested assets	$1,539,519	$1,102,202
In-transit amounts		
– University contributions	1,733	3,593
– Member contributions	1,875	1,351
– Expenses	($12)	(26)
Market value of assets adjusted for in-transit amounts	$1,543,115	$1,107,120

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.

Investment Policy

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

The plan administrator is solely responsible for selecting the plan's investment policies, asset allocations, and individual investments.

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

	Investment Policy			Actual Asset Mix as at July 1, 2014
	Minimum	**Target**	**Maximum**	
Canadian Equities	16%	21%	26%	21.0%
US Equities	17%	22%	27%	25.7%
Non-North American Equities	17%	22%	27%	22.8%
Bonds	25%	35%	45%	30.1%
Cash and cash equivalents	0%	0%	10%	0.4%
		100%		100.0%

APPENDIX C

Methods and Assumptions – Going Concern

Valuation of Assets

For this valuation, we have used an adjusted market-value method to determine the smoothed value of assets. Under this method, realized and unrealized capital gains (losses) arising during a given year are spread on a straight-line basis over 5 years.

The asset values produced by this method are related to the market value of the assets, with the advantage that, over time, the market-related asset values will tend to be more stable than market values. To the extent that more capital gains than losses will arise over the long term, the smoothed value will tend to be lower than the market value.

The smoothed value of the assets at July 1, 2014 was derived as follows:

	($000)			
	2010/2011	2011/2012	2012/2013	2013/2014
Market value at July 1st	$950,054	$1,102,202	$1,151,899	$1,292,489
Payments into Plan	$59,075	$64,297	$73,003	$73,594
Payments out of Plan	($50,611)	($57,353)	($58,068)	($66,043)
Expected return at 6.00%	$57,257	$66,339	$69,563	$77,777
Investment experience gains/(losses)	$86,427	($23,586)	$56,092	$161,702
Market value at June 30th	$1,102,202	$1,151,899	$1,292,489	$1,539,519

The smoothed value of the assets at July 1, 2014, was derived as follows:

Market value of assets					$1,539,519
LESS					
Unrecognized capital gains	2013/2014	$161,702	x	80%	$129,362
(Losses) realized or unrealized	2012/2013	$56,092	x	60%	$33,655
	2011/2012	($23,586)	x	40%	($9,434)
	2010/2011	$86,427	x	20%	$17,285
					$170,868
Smoothed value of assets					$1,368,651

The smoothed value of assets shown in the above table is adjusted to reflect in-transit amounts as follows:

($000's)	Current Valuation	Previous Valuation
Smoothed value of assets	$1,368,651	$1,131,781
In-transit amounts		
– University contributions	1,733	3,593
– Member's contributions	1,875	1,351
– Expenses	(12)	(26)
Smoothed value of assets, adjusted for in-transit amounts	$1,372,247	$1,136,699

Going Concern Funding Target

Over time, the real cost to the employer of a pension plan is the excess of benefits and expenses over member contributions and 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 funding target. For each individual plan member, accumulated contributions with interest are established as a minimum actuarial liability.

The funding excess or funding shortfall, as the case may be, is the difference between the market or smoothed value of assets and the funding target. A funding excess on a market value basis indicates that the current market value of assets and expected investment earnings are expected to be sufficient to meet the cash flows in respect of benefits accrued to the valuation date as well as expected expenses – assuming the plan is maintained indefinitely. A funding shortfall on a market value basis indicates the opposite – that the current market value of the assets is not expected to be sufficient to meet the plan's cash flow requirements in respect of accrued benefits, absent additional contributions.

As required under the Act, a funding shortfall must be amortized over no more than 15 years through special payments. A funding excess may, from an actuarial standpoint, be applied immediately to reduce required employer current service contributions unless precluded by the terms of the plan or by legislation.

The actuarial cost method used for the purposes of this valuation produces a reasonable matching of contributions with accruing benefits. Because benefits are recognized as they accrue, the actuarial cost method provides an effective funding target for a plan that is maintained indefinitely.

Current Service Cost

The current service cost is the present value of projected benefits to be paid under the plan with respect to service expected to accrue during the period until the next valuation.

The employer's current service cost is the total current service cost reduced by the members' required contributions.

The employer's current service cost has been expressed as a percentage of the members' contributions to provide an automatic adjustment in the event of fluctuations in membership and/or pensionable earnings. The estimated percentages for years 2015 – 2016 take into account changes in the membership profile as well as changes in the contribution rates in those years.

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
Discount rate:	6.00%	6.00%
Explicit expenses:	$0	$0
Inflation:	2.0%	2.50%
ITA limit / YMPE increases:	3.00%	3.00%
Pensionable earnings increases:	<u>Unifor members</u> 3.0% per year for 3 years; 4.0% per year thereafter <u>TMG members</u> 3.8% per year for 3 years; 4.0% per year thereafter <u>MUFA members</u> 4.6% per year for 3 years; 4.0% per year thereafter <u>Clinical Faculty members</u> 4.0% per year	4.75% (4.00% for Clinical Faculty)
Post-retirement pension increases:	Actual 1.1.2015 increase, 2.0% per year in each of 2016, 2017, 2018 and 2019 followed by 1.90% per year (1.40% per year for Unifor	1.50% per year (1.00% for Unifor members hired after May 1, 2010)

	members hired after May 1, 2010) thereafter	

Assumption	Current valuation	Previous valuation
Interest on employee contributions:	6.00%	6.00%
Retirement rates:	15% retire when first eligible for an unreduced pension, 10% retire at each age thereafter up to age 64, 20% retire at age 65, 50% retire at each of ages 66-69, remainder retire at age 70	15% retire when first eligible for an unreduced pension, 10% retire at each age thereafter up to age 64, 20% retire at age 65, 50% retire at each of ages 66-69, remainder retire at age 70
Termination rates:	10% of terminations are assumed to be involuntary without increase Age-related table	Age-related table
Mortality rates:	100% of the rates of the 2014 Public Sector Canadian Pensioners Mortality Table	85% of the rates of the 1994 Uninsured Pensioner Mortality Table for males, and 107% for females
Mortality improvements:	Fully generational using CPM Improvement Scale B	Fully generational using Scale AA
Disability rates:	None	None
Eligible spouse at retirement:	85%	85%
Spousal age difference:	Male 3 years older	Male 3 years older
Portability:	95% of terminating members and 5% of retiring members are assumed to elect a commuted value and the commuted value basis in effect for July 2014 is assumed to remain in effect at future retirement dates	All terminating and retiring are assumed to elect to retire on pension

Age Related Tables

Sample rates from the age related tables are summarized in the following table:

Age	Termination
20	36.0%
25	20.0%
30	11.2%
35	6.3%
40 and over	0.0%

Pensionable Earnings

The benefits ultimately paid will depend on each member's final average earnings. To calculate the pension benefits payable upon retirement, death, or termination of employment, we have taken the rate of pay on July 1, 2014 and assumed that such pensionable earnings will increase at the assumed rate.

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 [market] [smoothed] value of the fund. 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 non-investment and administrative expenses determined as the average rate of non-investment expenses paid from the fund over the last 3 years

The discount rate was developed as follows:

Assumed investment return	6.60%
Additional returns for active management	0.00%
Allowance for administrative, actuarial and passive investment management fees	(0.20%)
Margin for adverse deviation	(0.40%)
Net discount rate	6.00%

Expenses

The assumption is based on the average amount of investment and administrative expenses over the last 3 years.

Inflation

The mid-point of the Bank of Canada target range of 1% to 3% (i.e. 2%)

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

The assumption is based on historical real economic growth and the underlying inflation assumption.

Pensionable Earnings

The assumption is based on general wage growth assumptions increased by our best estimate of future merit and promotional increases over general wage growth considering University's expectations

Post-Retirement Pension Increases

The assumption is based on the Plan formula taking into account actual fund rates of return to July 1, 2014 and the inflation assumption described above.

Retirement Rates

The assumption is based on the experience over the Plan years 2002 to 2008. Subsequent experience has been consistent with these rates

Termination Rates

The assumption is based on the medium termination rates obtained by the Ontario Committee on Portable Pensions.

The proportion of terminations that are assumed to be involunatary without cause was selected based on recent experience

Mortality Rates

The assumption for the mortality rates is based on the Canadian Pensioners' Mortality (CPM) study published by the Canadian Institute of Actuaries in February 2014.

Due to the size of the Plan, specific data on plan mortality experience is insufficient to determine the mortality rates. After considering plan-specific characteristics, such as the type of employment, the industry experience, pension and employment income for the plan members, and data in the CPM study, it was determined to use the CPM Public Sector mortality rates without adjustment.

There is broad consensus among actuaries and other longevity experts that mortality improvement will continue in the future, but the degree of future mortality improvement is uncertain. The mortality improvement scale published in the CPM study represents one reasonable outlook for future improvement. We have used the CPM mortality improvement scale without adjustment.

Based on the assumption used, the life expectancy of a member age 65 at the valuation date is 22.6 years for males and 24.5 years for females.

Interest on Employee Contributions

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

Disability Rates

Use of a different assumption would not have a material impact on the valuation.

Eligible Spouse

The assumption is based on an industry standard for non-retired members (actual status used for retirees).

Spousal Age Difference

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

Portability

The assumptions is based on recent experience.

APPENDIX D

Methods and Assumptions – Hypothetical Wind-up and Solvency

Hypothetical Wind-up Basis

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. For the purposes of the hypothetical wind-up valuation, the plan wind-up is assumed to occur in circumstances that maximize the actuarial liability.

To determine the actuarial liability on the hypothetical wind-up 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 including, however, the impact of the cost of living adjustments that were granted on January 1, 2015.

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 July 1, 2014.

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

We have used the annuity proxy determined in accordance with the *CIA Educational Note: Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates Between December 31, 2013 and December 30, 2014* to estimate the cost of purchasing annuities. This basis does not reflect the actual mortality experience of the Plan members, which has been significantly lower than standard mortality rates. If an insurance company were to assume these obligations and take the past mortality experience of the Plan, industry, or employment type into account, it is quite likely that they would demand a higher price.

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

The assumptions are as follows:

Form of Benefit Settlement Elected by Member	
Lump sum	70% of active members under age 55, and 50% of active members over 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 generational with projection scale AA
Interest rate:	2.80% per year for 10 years, 4.2% per year thereafter
Basis for Benefits Assumed to be Settled through the Purchase of an Annuity	
Mortality rates:	UP94 generational with projection scale AA
Interest rate:	3.15% per year based on a duration of 11.4 years determined for the liabilities assumed to be settled through the purchase of an annuity.
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
Grow-in:	The benefit entitlement and assumed retirement age of Ontario members whose age plus service equals at least 55 at the valuation date reflect their entitlement to grow into early retirement subsidies
Other Assumptions	
Special payments	Discounted at the average interest rate of 3.04% per year
Final average earnings:	Based on actual pensionable earnings over the averaging period
Family composition:	Same as for going concern valuation
Maximum pension limit:	$2770.00 increasing at rate 2.34% per year for 10 years, 3.37% per year thereafter
Termination expenses:	$850,000

To determine the hypothetical wind-up 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 sponsor 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.

Incremental Cost

In order to determine the incremental cost, we estimate the hypothetical wind-up liabilities at the next valuation date. 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 hypothetical wind-up 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 three years.

- Cost of living adjustments are consistent with the inflation assumption used for the going concern valuation.

Solvency Basis

In determining the financial position of the Plan on the solvency basis, we have used the same assumptions and methodology as were used for determining the financial position of the Plan on the hypothetical wind-up basis.

The solvency position is determined in accordance with the requirements of the Act.

APPENDIX E

Membership Data

Analysis of Membership Data

The actuarial valuation is based on membership data as at July 1, 2014, provided by McMaster University.

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 membership reconciliation, basic information (date of birth, date of hire, date of membership, gender, etc.), pensionable earnings, 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 financial statements. The results of these tests were satisfactory.

If the data supplied are not sufficient and reliable for its intended purpose, the results of our calculation may differ significantly from the results that would be obtained with such data. Although Mercer has reviewed the suitability of the data for its intended use in accordance with accepted actuarial practice in Canada, Mercer has not verified or audited any of the data or information provided.

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

		July 1, 2014			**July 1, 2011**	
	Males	Females	Total	Males	Females	Total
Active Members						
Full-time						
Number	1,083	2,214	3,297	1,175	2,027	3,202
Total pensionable earnings for the following year	$121,463,177	$156,647,325	$278,110,502	$120,844,971	$137,526,025	$258,370,996
Average pensionable earnings for the following year	$112,154	$70,753	$84,353	$102,847	$67,847	$80,691
Average years of pensionable service	13.6	11.1	11.9	13.6	11.4	12.2
Average age	49.0	46.5	47.3	48.8	46.7	47.5
Accumulated contributions with interest	$120,014,638	$107,375,955	$227,390,593	$115,493,875	$89,362,811	$204,856,686
Part-time						
Number	99	223	322	47	455	502
Total pensionable earnings for the following year	$11,312,945	$16,848,794	$28,161,739	$3,185,657	$26,675,081	$29,860,738
Average pensionable earnings for the following year	$114,272	$75,555	$87,459	$67,780	$58,627	$59,484
Average years of pensionable service	13.3	12.3	12.6	7.6	7.0	7.1
Average age	49.7	48.9	49.1	47.2	44.4	44.7
Accumulated contributions with interest	$9,181,630	$11,771,191	$20,952,821	$1,528,176	$9,302,946	$10,831,122
Deferred Pensioners						
Number	379	528	907	339	439	778
Total annual pension	$1,924,673	$2,046,258	$3,970,931	$1,664,467	$1,839,863	$3,504,330
Average annual pension	$5,078	$3,875	$4,378	$4,910	$4,191	$4,504
Average age	50.2	47.6	48.7	48.7	47.3	47.9
Pensioners and Survivors						
Number	787	1,147	1,934	746	935	1,681
Total annual lifetime pension	$31,664,610	$23,937,797	$55,602,407	$29,385,273	$17,450,784	$46,836,057
Average annual lifetime pension	$40,235	$20,870	$28,750	$39,390	$18,664	$27,862
Average age	74.7	72.7	73.5	74.1	72.2	73.1

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

	Actives	Deferred Vested	Pensioners and Beneficiaries	Total
Total at July 1, 2011	3,704	778	1,681	6,163
New entrants	644			644
Re-hires	12	(12)		0
Terminations:				
• Pending	(246)	246		0
• Transfers/lump sums	(173)	(89)		(262)
• Deferred pensions	(13)	13		0
Deaths	(11)	(2)	(130)	(143)
Retirements	(293)	(25)	318	0
Beneficiaries			67	67
Data adjustments	(5)	(2)	(2)	(9)
Total at July 1, 2014	3,619	907	1,934	6,460

The distribution of the active members by age and pensionable service as at July 1, 2014 is summarized as follows:

Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
Under 25	18									**18**
	45,270									**45,270**
25 to 29	179	23								**202**
	52,347	57,804								**52,968**
30 to 34	212	102	6							**320**
	62,500	65,251	68,161							**63,483**
35 to 39	179	149	88	5						**421**
	71,188	79,048	70,883	68,883						**73,879**
40 to 44	127	172	148	37	11					**495**
	72,524	87,112	94,425	80,092	77,698					**84,822**
45 to 49	102	155	182	72	36	19				**566**
	70,877	78,150	102,796	105,855	69,649	68,160				**87,413**
50 to 54	74	147	147	84	82	87	23	2		**646**
	68,312	77,696	94,645	106,672	94,880	78,782	61,906	*		**85,956**
55 to 59	53	83	93	59	66	73	43	20		**490**
	77,029	78,107	88,932	87,970	98,521	126,252	86,406	74,227		**91,725**
60 to 64	17	32	43	44	42	72	37	19	7	**313**
	98,567	76,809	87,553	88,171	100,554	118,925	121,518	91,561	68,625	**99,936**
65 to 69	5	12	11	6	23	25	22	20	6	**130**
	108,355	96,770	113,160	112,783	105,140	148,326	146,542	178,271	164,881	**134,842**
70+	2	3	1		3	2	1	3	3	**18**
	*	129,940	*		93,150	*	*	141,935	93,651	**144,218**
Total	**968**	**878**	**719**	**307**	**263**	**278**	**126**	**64**	**16**	**3,619**
	66,502	**78,329**	**92,918**	**96,535**	**93,405**	**107,930**	**103,370**	**114,615**	**109,413**	**84,629**

*For individual cells with information on two members or less, the average earnings are not disclosed for confidentiality reasons

The distribution of the inactive members by age as at the valuation date is summarized as follows:

	Deferred Pensioners		Pensioners and Survivors	
Age	**Number**	**Average Pension**	**Number**	**Average Pension**
Under 25	2	*		
25-29	30	$1,454		
30-34	67	$1,644		
35-39	95	$2,997		
40-44	121	$3,598		
45-49	175	$5,048		
50-54	161	$4,710	11	$36,218
55-59	141	$6,152	107	$29,442
60-64	78	$6,021	244	$28,913
65-69	31	$3,569	416	$27,653
70 – 74	4	$142	382	$35,125
75 – 79			279	$31,371
80 – 84			229	$26,191
85 – 89	1	*	156	$22,347
90 – 94			84	$18,595
95+	1	*	26	$10,734
Total	**907**	**$4,378**	**1,934**	**$28,750**

*For individual cells with information on two members or less, the average pension is not disclosed for confidentiality reasons

APPENDIX F

Summary of Plan Provisions

Mercer has used and relied on the plan documents, including amendments and interpretations of plan provisions, supplied by McMaster University. If any plan provisions supplied are not accurate and complete, the results of any calculation may differ significantly from the results that would be obtained with accurate and complete information. Moreover, plan documents may be susceptible to different interpretations, each of which could be reasonable, and the results of estimates under each of the different interpretations could vary.

This valuation is based on the plan provisions in effect on July 1, 2014. Since the previous valuation, the Plan has been amended.

The following is a summary of the Plan's main provisions in effect on July 1, 2014. This summary is not intended as a complete description of the Plan.

Eligibility for membership	Full-time employees may elect to join the Plan immediately but are required to join on the July 1st following completion of six month's employment. Part-time employees who either earn at least 35% of the YMPE or work for at least seven hundred hours in each of the two preceding consecutive calendar years for the University are eligible and are required to join under the same criteria as above. All members of the Plan (active and inactive) as of July 1, 2000 and new employees who joined the Original Plan between July 1, 2000 and December 31, 2000 have been transferred to this Plan if they voted in favour of the Surplus Sharing Agreement. In addition, members who joined the Original Plan between January 1, 2001 and January 14, 2003 have been transferred to this Plan following the approval of the asset transfer by the Financial Services Commission of Ontario. The Plan was completely closed to new SAAO employees or TMG employees who were hired after June 16, 2009 and to MUALA (Librarians) hired after March 16, 2010.
Member Contributions	Refer to table below

		Employee Contribution Rate on Regular Annual Salary	
Class of Member	**Period**	**Up to YMPE**	**In Excess of YMPE**
A.1 Faculty Members	July 1, 2006 to June 30, 2007	4.25%	5.75%
	July 1, 2007 to July 1, 2011	5.00%	6.50%
	July 2, 2011 to June 30, 2012	5.75%	7.65%
	July 1, 2012 to June 30, 2013	6.50%	8.75%
	July 1, 2013 forward	7.00%	10.00%
A.2 TMG Members	July 1, 2006 to June 30, 2007	4.25%	5.75%
	July 1, 2007 to January 9, 2010	5.00%	6.50%
	January 10, 2010 to January 8, 2011	5.50%	7.25%
	January 9, 2011 to January 7, 2012	6.00%	8.00%
	January 8, 2012 to July 6, 2013	6.50%	8.75%
	July 7, 2013 forward	7.00%	10.00%
SAAO Members	July 1, 2007 to January 9, 2010	5.00%	6.50%
	January 10, 2010 to January 8, 2011	5.50%	7.25%
	January 9, 2011 to January 7, 2012	6.00%	8.00%
	January 8, 2012 to July 6, 2013	6.50%	8.75%
	July 7, 2013 forward	7.00%	10.00%
B. Librarians	July 1, 2006 to June 30, 2007	4.25%	5.75%
	July 1, 2007 to July 1, 2011	5.00%	6.50%
	July 2, 2011 to June 30, 2012	5.75%	7.65%
	July 1, 2012 to June 30, 2013	6.50%	8.75%
	July 1, 2013 forward	7.00%	10.00%
C. Unifor Local 5555 Members	June 16, 2008 to January 9, 2010	5.50%	7.00%
	January 10, 2010 to January 8, 2011	5.75%	7.50%
	January 9, 2011 to January 7, 2012	6.25%	8.25%
	January 8, 2012 to January 5, 2013	6.50%	8.75%
	January 6, 2013 to September 13, 2014	7.81%	10.06%
	September 14, 2014 forward	7.56%	10.56%

		Employee Contribution Rate on Regular Annual Salary	
Class of Member	**Period**	**Up to YMPE**	**In Excess of YMPE**
D. Members who are employees of McMaster Association of Part Time Students • McMaster Children's Centre Inc. • McMaster University Faculty Association • Divinity College • Members who are non-union employees of Regional Medical Associates of Hamilton	July 1, 2007 to July 10, 2010	5.00%	6.50%
	July 11, 2010 to January 8, 2011	5.50%	7.25%
	January 9, 2011 to January 7, 2012	6.00%	8.00%
	January 8, 2012 July 26, 2014	6.50%	8.75%
	July 27, 2014 forward	7.00%	10.00%
E. Members who are union employees of Regional Medical Associates of Hamilton	July 1, 2008 to July 10, 2010	5.50%	7.00%
	July 11, 2010 to January 8, 2011	5.75%	7.50%
	January 9, 2011 to January 7, 2012	6.25%	8.25%
	January 8, 2012 to July 26, 2014	6.50%	8.75%
	July 27, 2014 to September 13, 2014	7.81%	10.06%
	September 14, 2014 forward	7.56%	10.56%
F. Full-time clinical faculty members of the Faculty of Health Sciences who must maintain membership in the Regional Medical Associate of Hamilton	July 1, 2006 to June 30, 2009	3.50%	5.00%
	July 1, 2009 to February 1, 2014	5.50%	7.00%
	February 2, 2014 forward	7.00%	10.00%

		Employee Contribution Rate on Regular Annual Salary	
Class of Member	**Period**	**Up to YMPE**	**In Excess of YMPE**
G. Other Members (not included above)	July 1, 2007 to July 10, 2010	5.00%	6.50%
	July 11, 2010 to January 8, 2011	5.50%	7.25%
	January 9, 2011 to January 7, 2012	6.00%	8.00%
	January 8, 2012 to July 26, 2014	6.50%	8.75%
	July 27, 2014 forward	7.00%	10.0%
H. MUALA Members	March 16, 2010 to July 5, 2010	5.00%	6.50%
	July 6, 2010 to January 8, 2011	5.50%	7.25%
	January 9, 2011 to January 7, 2012	6.00%	8.00%
	January 8, 2012 forward	6.50%	8.75%

Pension Benefits

Members other than Unifor Local 5555 Members hired on or after May 1, 2010

The amount of annual payable to a member at his unreduced retirement age will be:

a) 1.4% of Best Average Salary up to the Average Year's Maximum Pensionable Earnings times years of pensionable service, plus
b) 2.0% of Best Average Salary in excess of the Average Year's Maximum Pensionable Earnings times years of pensionable service.

Best Average Salary means the annualized average of the 48 highest months of earnings while a Plan participant. Average Year's Maximum Pensionable Earnings means the pro-rated average Yearly Maximum Pensionable Earnings, in the same 48 months as are used to calculate Best Average Salary.

Pensions in payment will be increased from January 1st each year on a pro-rated basis (using the number of months the pensioner has been retired in the twelve months) by the excess over 4.5% of the average annual rate of return earned on the assets of the Plan over the previous five Plan Years, subject to a maximum of that year's rate of increase in the Consumer Price Index. Effectively July 1, 1997, if there is any year where the percentage calculated under the excess interest formula exceeds the rate of increase in the Consumer Price Index, the excess will be used to provide a supplementary increase to the pensions in pay for which the annual pension increase in any of the three previous years was based on the excess interest formula, provided that the supplementary increase will be limited to 100% of CPI increases in each of the three preceding years.

In addition, members on LTD will have their salary adjusted each July 1st by the percentage increase applied to pensions in payment. This increase will be applied from the later of July 1, 1990 or the July 1st following disability.

A member may retire early with a reduced pension at any time during the 10-year period preceding his normal retirement date. The reduction will be 0.5% for each month by which actual retirement precedes age 65.

A member may retire early with an unreduced pension once they have attained the criteria set out in the table below.

A member may postpone his actual retirement and commencement of pension (with University consent prior to December 12, 2006), but in any event his pension shall commence no later than the 1st of December of the year of attainment of age 71. He will continue to make contributions and his benefits under the Plan will continue to accrue until such postponed retirement date.

Pension Benefits (continued)	**Unifor Local 5555 Members hired on or after May 1, 2010** The amount of annual pension payable to a member at his unreduced retirement age will be: c) 1.0% of Best Average Salary up to the Average Year's Maximum Pensionable Earnings times years of pensionable service, plus d) 1.6% of Best Average Salary in excess of the Average Year's Maximum Pensionable Earnings times years of pensionable service. Best Average Salary means the annualized average of the 60 highest months of earnings while a Plan participant. Average Year's Maximum Pensionable Earnings means the pro-rated average Yearly Maximum Pensionable Earnings, in the same 60 months as are used to calculate Best Average Salary. Pensions in payment will be increased from January 1st each year on a pro-rated basis (using the number of months the pensioner has been retired in the twelve months) by the excess over 5.0% of the average annual rate of return earned on the assets of the Plan over the previous five Plan Years, subject to a maximum of that year's rate of increase in the Consumer Price Index.Iif there is any year where the percentage calculated under the excess interest formula exceeds the rate of increase in the Consumer Price Index, the excess will be used to provide a supplementary increase to the pensions in pay for which the annual pension increase in any of the three previous years was based on the excess interest formula, provided that the supplementary increase will be limited to 100% of CPI increases in each of the three preceding years. A member may retire early with a reduced pension at any time during the 10-year period preceding his normal retirement date. The reduction will be 0.5% for each month by which actual retirement precedes age 65. A member may retire early with an unreduced pension once they have attained the criteria set out in the table below. A member may postpone his actual retirement and commencement of pension, but in any event his pension shall commence no later than the 1st of December of the year of attainment of age 71. He will continue to make contributions and his benefits under the Plan will continue to accrue until such postponed retirement date.
Bridge Benefits	Effective July 1, 1997, members who retire early and have attained the requisite number of points to receive an unreduced pension will receive a bridge benefit equal to $19.00 per month per year of credited service accrued to June 30, 1996 to a maximum of 20 years of service. The bridge benefit is payable from the later of the member's early retirement date and age 60 and ceases payment on attainment of age 65 or death, if earlier.
Minimum Benefits	If the member's total Required Contributions plus net interest are greater than 50% of the commuted value of a member's retirement and bridge pensions, the excess amount will be refunded to the member as a lump sum payment. In addition, the member will receive a refund of his voluntary contributions with interest, if any.

Maximum Benefits	The total annual pension payable from the Plan upon retirement, death or termination of employment cannot exceed the member's pensionable service multiplied by the lesser of: a) $2,770.00 or such other maximum prescribed for this purpose under the Income Tax Act; and b) 2.0% of the average of the best three consecutive years of regular annual Salary.
Survivor Benefits	**Death Before Retirement:** On the date of a member prior to retirement, his beneficiary or estate is entitled to receive a death benefit equal to his required contributions accrued to December 31, 1986 accumulated with net interest on the fund, and his beneficiary or estate shall receive the commuted value of the member's pension accrued after December 31, 1986, plus any required contributions made after December 31, 1986, accumulated with net interest on the fund, in excess of 50% of the commuted value. In addition, his beneficiary or estate will receive a refund of his voluntary contributions with interest, if any. **Death After Retirement:** The benefit is payable for life, but guaranteed for seven years in any event. In the case of a member with a spouse, 50% of the benefit is continued to the spouse for life and at least the remainder of the guaranteed seven years' payments will be made. There is no required adjustment in respect of his surviving spouse's benefit. Prior to July 1, 1997, the normal form of benefit was as described about with five-year guarantee in place of the seven-year guarantee. Alternative forms of pension are available in actuarial equivalent amounts and for members who have a spouse and who retire after December 31, 1987, the automatic form of pension will be an actuarially reduced benefit which continues 60% of the pension to a surviving spouse for life.

Termination Benefits	If a Member terminates employment prior to retirement, he may elect to receive one of the following: a) A refund of his required contributions, with Net Interest on the Fund. b) A transfer of the greater of twice his Required Contributions plus Net Interest and the commuted value of his deferred pension to another locked-in registered pension vehicle* c) A deferred pension, payable at Normal Retirement Date, equal to the pension earned to the date of termination. * Unifor Local 5555 members hired on or after May 1, 2010 and Faculty members or Librarians hired after July 1, 2013 will not be entitled to option b). However such member will be entitled to transfer the commuted value of his deferred pension to another locked-in registered pension vehicle In addition, a member is entitled to a refund of the excess of his Required Contributions plus Net Interest over 50% of the commuted value of the deferred pension described in c) above. The excess is measured separately for required contributions with interest and pension benefits accrued before and after January 1, 1987. In addition, a member is entitled to a refund of his voluntary contributions with Net Interest, if any.

Unreduced Early Retirement Criteria

Class A	**Unreduced Early Retirement Date**	
SAAO Members and TMG Members who are employees on June 30, 2006 and who retire on or after July 1, 2006	**For Retirement Dates from**	**Age + Plan Participation Equals at Least**
	July 1, 2006 to December 31, 2011	80
	January 1, 2012 to December 31, 2012	81
	January 1, 2013 to December 31, 2013	82
	January 1, 2014 to December 31, 2014	83
	January 1, 2015 to December 31, 2015	84
	January 1, 2016 forward	85
MUALA Members who are employees on March 15, 2010 and who retire on or after March 16, 2010	**For Retirement Dates from**	**Age + Plan Participation Equals at Least**
	April 1, 2010 to December 31, 2011	80
	January 1, 2012 to December 31, 2012	81
	January 1, 2013 to December 31, 2013	82
	January 1, 2014 to December 31, 2014	83
	January 1, 2015 to December 31, 2015	84
	January 1, 2016 forward	85

	Unreduced Early Retirement Date	
Faculty Members who are employees on June 30, 2006 and who retire on or after July 1, 2006 and Librarians who are employees on June 15, 2006 and who retire on or after June 16, 2006	**For Retirement Dates from**	**Age + Plan Participation Equals at Least**
	July 1, 2006 to December 31, 2011	80
	January 1, 2012 to December 31, 2012	81
	January 1, 2013 to December 31, 2013	82
	January 1, 2014 to December 31, 2014	83
	January 1, 2015 to December 31, 2015	84
	January 1, 2016 to December 31, 2018	85
	January 1, 2019 to December 31, 2019	86
	January 1, 2020 to December 31, 2020	87
	January 1, 2021 to December 31, 2021	88
	January 1, 2022 to December 31, 2022	89
	January 1, 2023 forward	90
SAAO and TMG Members who become Employees on or after July 1, 2006		**Age + Plan Participation Equals at Least**
		85
Faculty Members who become Employees on or after July 1, 2006 and Librarians who become Employees on or after June 16, 2006	**For Retirement Dates from**	**Age + Plan Participation Equals at Least**
	July 1, 2006 to December 31, 2018	85
	January 1, 2019 to December 31, 2019	86
	January 1, 2020 to December 31, 2020	87
	January 1, 2021 to December 31, 2021	88
	January 1, 2022 to December 31, 2022	89
	January 1, 2023 forward	90

	Unreduced Early Retirement Date

Members who are employees of:

– McMaster Association of Part Time Students
- McMaster Children's Centre Inc.
- McMaster University Faculty Association
- Divinity College

and

Members who are non-union employees of Regional Medical Associates of Hamilton

For Retirement Dates from	Age + Plan Participation Equals at Least
July 1, 2006 to December 31, 2011	80
January 1, 2012 to December 31, 2012	81
January 1, 2013 to December 31, 2013	82
January 1, 2014 to December 31, 2014	83
January 1, 2015 to December 31, 2015	84
January 1, 2016 forward	85

Unifor Local 5555 member and Members who are union employers or Regional Medical Association of Hamilton	Age + plan participation equals at least 80. Members who are newly hired by the University on or after May 1, 2010 and in respect of service as a Unifor Local 5555 Member only, the unreduced early retirement date is the first day of any month coincident with or following the date on which the Member, has (1) attained age 60, and (2) the sum of the Member's age and years and participation in the Plan equals at least 80.

Full-time clinical faculty members of the Faculty of Health Sciences who must maintain membership in the Regional Medical Associates of Hamilton

For Retirement Dates from	Age + Plan Participation Equals at Least
Prior to February 1, 2014	80
February 1, 2014 to December 31, 2014	81
January 1, 2015 to December 31, 2015	82
January 1, 2016 to December 31, 2016	83
January 1, 2017 to December 31, 2017	84
January 1, 2018 forward	85

	Unreduced Early Retirement Date	
Other Members (not included above) who are employees on June 30, 2007 and who retired on or after July 1, 2007	**For Retirement Dates from**	**Age + Plan Participation Equals at Least**
	July 1, 2006 to December 31, 2011	80
	January 1, 2012 to December 31, 2012	81
	January 1, 2013 to December 31, 2013	82
	January 1, 2014 to December 31, 2014	83
	January 1, 2015 to December 31, 2015	84
	January 1, 2016 forward	85
Other Members (not included above) who become Employees on or after July 1, 2007	Age + plan participation equals at least 85	

APPENDIX G

Employer Certification

With respect to the Report on the Actuarial Valuation for Funding Purposes as at July 1, 2014 of the Contributory Pension Plan for Salaried Employees of McMaster University Including McMaster University Divinity College 2000, I hereby certify that, to the best of my knowledge and belief:

- The valuation reflects the terms of McMaster University's engagement with the actuary described in section 2 of this report, particularly the requirement to include a margin of 0.40% in the discount rate used to perform the going concern valuation and the Company's decisions in regards to determining the going-concern and solvency funding requirements.

- A copy of the official plan documents and of all amendments made up to July 1, 2014 was provided to the actuary and is reflected appropriately in the summary of plan provisions contained herein.

- The asset information summarized in Appendix B is reflective of the Plan's assets.

- The membership data provided to the actuary included a complete and accurate description of every person who is entitled to benefits under the terms of the Plan for service up to July 1, 2014.

- All events subsequent to July 1, 2014 that may have an impact on the Plan have been communicated to the actuary.

18/6/15

Date

Signed

ROGER COULDREY

Name

Roger Couldrey
Vice-President, Administration

MERCER

Mercer (Canada) Limited
161 Bay Street, P.O. Box 501
Toronto, Ontario M5J 2S5
+1 416 868 2000