# UNIVERSITY OF GUELPH

# PENSION PLAN FOR NON-PROFESSIONAL STAFF OF UNIVERSITY OF GUELPH

## Actuarial Valuation as at October 1, 2018

May 27, 2019

Registration Number: 0324632



WillisTowersWatson

# DISCLAIMERS

This document is an actuarial valuation report of a pension plan. It is technical in nature and the reader should seek expert advice to fully understand it. The actuarial results presented here are based on numerous economic and demographic assumptions as to future events. Emerging experience, differing from the assumptions, will result in gains or losses that will be revealed in future actuarial valuations.

This report is based on the terms of engagement listed in Appendix A.

This report is based on the premise that all the plan's assets, including any letters of credit, are available to meet the plan's liabilities included in this valuation.

This report is based on the premise that the plan remains a going concern. This report does not address the disposition of any surplus assets remaining in the event of plan windup. If an applicable pension regulator or other entity with jurisdiction directs otherwise, certain financial measures contained in this report, including contribution requirements, may be affected.

The results presented in this report have been developed using a particular set of actuarial assumptions. Other results could have been developed by selecting different actuarial assumptions. The results presented in this report are reasonable actuarial results based on actuarial assumptions reflecting our expectation of future events.

Future contribution levels may change as a result of future changes in the actuarial methods and assumptions, the membership data, the plan provisions and the legislative rules, or as a result of future experience gains or losses, none of which have been anticipated at this time.

The results were developed with various data as at the valuation date that were provided to us: plan membership data, plan assets data, plan provisions and statement of investment policy. Towers Watson Canada Inc ("Willis Towers Watson") has relied on these data after verifying them and assessing their reasonableness. However, Willis Towers Watson has not independently audited these data.

The information contained in this report was prepared for University of Guelph, for its internal use and for filing with the Pension authorities, in connection with the actuarial valuation of the plan prepared by Willis Towers Watson. This report is not intended, nor necessarily suitable, for other parties or for other purposes. Furthermore, some results in this report are based on assumptions mandated by legislation. These results may not be appropriate for purposes other than those for which they were prepared. Further distribution of all or part of this report to other parties (except where such distribution is required by applicable legislation) or other use of this report is expressly prohibited without Willis Towers Watson's prior written consent. Willis Towers Watson is available to provide additional information with respect to this report to the above-mentioned intended users upon request.

The numbers in this report are not rounded. The fact that numbers are not rounded does not imply a greater level of precision than if the numbers had been rounded.

# Definitions:

**Pension authorities** means the Financial Services Commission of Ontario and the Canada Revenue Agency ("CRA").

**Pension legislation** means the *Pension Benefits Act (Ontario)* and Regulation thereto and the *Income Tax Act (Canada)* and Regulations thereto ("ITA").

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# Introduction

**Purpose**

This report with respect to the Pension Plan for Non-Professional Staff of University of Guelph has been prepared for University of Guelph, the plan administrator, and presents the results of the actuarial valuation of the plan as at October 1, 2018.

The principal purposes of the report are:

- to present information on the financial position of the plan on going concern, solvency and hypothetical windup bases;
- to provide the basis for employer contributions.

**Significant Events since Previous Actuarial Valuation (August 1, 2016)**

Changes to the going concern basis are described in Appendix C. Changes to the solvency basis are described in Appendix D.

Since October 1, 2018, there have been increases to member contribution rates for OSSTF and UGFSEA Unit 1 effective May 1, 2019 and for UGFSEA Unit 2 effective August 1, 2019. These changes have been reflected in this report.

On May 19, 2017, the Ontario Ministry of Finance announced proposed reforms to the funding framework for defined benefit pension plans. On April 20, 2018, final regulations were released, and apply to reports with valuation dates on and after December 31, 2017 which are filed after April 30, 2018. As this report has an effective date on or after December 31, 2017 it has been prepared on the basis of the new funding rules.

### Subsequent Events

We completed this actuarial valuation on May 10, 2019.

On May 21, 2019, amendments to the Pension legislation were released. These amendments are intended to clarify certain details related to the new funding framework that took effect on May 1, 2018. The impact, if any, of these amendments will be reflected in a subsequent valuation report.

Except as noted above, to the best of our knowledge and on the basis of our discussions with University of Guelph, no other events which would have a material financial effect on the actuarial valuation occurred between the actuarial valuation date and the date this actuarial valuation was completed.

### Next Valuation

The next actuarial valuation of the plan must be performed with an effective date not later than October 1, 2021.

# Section 1: Going Concern Financial Position

## 1.1 Statement of Financial Position

| | | October 1, 2018 | | August 1, 2016 |
|---|---|---|---|---|
| **Going Concern Value of Assets** | $ | 19,530,000 | $ | 17,133,000 |
| **Actuarial Liability** | | | | |
| Active and disabled members | $ | 1,027,447 | $ | 1,057,912 |
| Retired members and beneficiaries | | 5,560,141 | | 5,746,515 |
| Terminated vested members | | 126,769 | | 148,367 |
| Total actuarial liability | $ | 6,714,357 | $ | 6,952,794 |
| **Actuarial Surplus (Unfunded Actuarial Liability)** | $ | 12,815,643 | $ | 10,180,206 |
| **Funded Ratio** | | 291% | | 246% |
| Provision for Adverse Deviation (PfAD) | $ | 612,199 | | n.a. |
| Actuarial Surplus (Unfunded Actuarial Liability) After PfAD | $ | 12,203,444 | | 10,180,206 |
| **Excess Actuarial Surplus[1]** | $ | 10,371,805 | $ | 8,442,007 |

**Note:**

[1] Considered to be nil if there is a hypothetical windup or solvency deficit.

## 1.2 Reconciliation of Financial Position

| | | | | |
|---|---|---|---|---|
| Actuarial surplus (unfunded actuarial liability) as at August 1, 2016 | | | $ | 10,180,206 |
| Net special payments | | | | 0 |
| Expected interest on: | | | | |
| ■ Actuarial surplus (unfunded actuarial liability) | $ | 1,287,428 | | |
| ■ Net special payments | | 0 | | 1,287,428 |
| Plan experience: | | | | |
| ■ Investment gains (losses) | $ | 1,124,583 | | |
| ■ Salary gains (losses) | | (29,466) | | |
| ■ YMPE gains (losses) | | (5,016) | | |
| ■ Cost-of-living adjustment gains (losses) | | 65,814 | | |
| ■ Retirement gains (losses) | | 19,655 | | |
| ■ Withdrawal gains (losses) | | 7,629 | | |
| ■ Mortality gains (losses) | | (2,349) | | |
| ■ Miscellaneous liability gains (losses) | | (207,975) | | 972,875 |
| Change in actuarial basis: | | | | 375,134 |
| Actuarial surplus (unfunded actuarial liability) as at October 1, 2018 before PfAD | | | $ | 12,815,643 |

## 1.3 Contributions (Ensuing Year)

| | October 1, 2018 | August 1, 2016 |
|---|---|---|
| **Employer Normal Actuarial Cost** | | |
| Normal actuarial cost in respect of benefits | $ 444,418 | $ 195,397 |
| Provision for Adverse Deviation (PfAD) | $ 40,605 | n.a. |
| Estimated member contributions | (259,338)[1] | (97,376)[2] |
| Employer normal actuarial cost | $ 225,685[1] | $ 98,021[2] |
| Employer normal actuarial cost as % of member contributions | 87%[1] | 101%[2] |

**Notes:**

[1] Member contribution rates will change effective May 1, 2019 for OSSTF and UGFSEA Unit 1 and effective August 1, 2019 for UGFSEA Unit 2. As a result of these changes, estimated member contributions for the year starting October 1, 2018 are expected to be $9,000 higher on an annualized basis, with an offsetting reduction to the employer normal actuarial cost. The employer normal actuarial cost as a % of member contributions will change to 82% effective May 1, 2019 and 81% effective August 1, 2019.

[2] Effective May 1, 2017 member contributions rates for OSSTF and UGFSEA Units 1 & 2 members changed. As a result of these changes, estimated member contributions for the year starting August 1, 2016 was expected to be $6,000 higher on an annualized basis, with an offsetting reduction to the employer normal actuarial cost. The employer normal actuarial cost as a % of member contributions changed to 89% effective May 1, 2017.

### Reconciliation of Employer Normal Actuarial Cost Rule

| | |
|---|---|
| Employer normal actuarial cost as a % of member contributions at August 1, 2016 | 101% |
| ■ Changes in membership profile and miscellaneous effects | (2)% |
| ■ Changes in actuarial basis | (18)% |
| ■ Changes in plan provisions | (10)% |
| ■ Change in the PfAD level | 16% |
| Employer normal actuarial cost as a % of member contributions at October 1, 2018 | 87% |

# Section 2: Solvency and Hypothetical Windup Financial Position

## 2.1 Statement of Solvency and Hypothetical Windup Financial Position

| | October 1, 2018 | | August 1, 2016 | |
|---|---|---|---|---|
| **Solvency Value of Assets** | | | | |
| Market value of assets | $ | 19,900,000 | $ | 17,865,000 |
| Provision for plan windup expenses | | (100,000) | | (100,000) |
| Total solvency value of assets | $ | 19,800,000 | $ | 17,765,000 |
| **Solvency Liability** | | | | |
| Active and disabled members | $ | 1,293,813 | $ | 1,486,379 |
| Retired members and beneficiaries | | 6,870,519 | | 7,351,002 |
| Terminated vested members | | 162,601 | | 197,876 |
| Total solvency liability | $ | 8,326,933 | $ | 9,035,257 |
| **Solvency Surplus (Unfunded Solvency Liability)** | $ | 11,473,067 | $ | 8,729,743 |
| Prior Year Credit Balance | $ | 0 | $ | 0 |
| **Solvency ratio** | | Not less than 100% | | Not less than 100% |
| Value of excluded benefits | $ | 1,127,343 | $ | 1,324,559 |
| Total hypothetical windup liability | $ | 9,454,276 | $ | 10,359,816 |
| **Hypothetical Windup Surplus (Unfunded Hypothetical Windup Liability)** | $ | 10,345,724 | $ | 7,405,184 |
| Lesser of estimated employer contributions for the period until the next actuarial valuation and the prior year credit balance | $ | 0 | $ | 0 |
| Transfer ratio | | Not less than 100% | | Not less than 100% |
| **PBGF Information** | | | | |
| Ontario PBGF liability | $ | 8,326,933 | $ | 9,035,257 |
| Ontario asset ratio | | 100% | | 100% |
| Ontario portion of the fund | $ | 19,900,000 | $ | 17,865,000 |
| PBGF assessment base | $ | 0 | $ | 0 |
| Ontario additional PBGF liability | $ | 0 | $ | 0 |

**Comments:**

- The solvency actuarial valuation results presented in this report are determined under a scenario where, following a plan windup, the employer discontinues its operations.

- The hypothetical windup valuation results presented in this report are determined under the same scenario used for the solvency valuation.

- As the transfer ratio is not less than 1.00, payments of the commuted value of pension entitlements for terminated members can be paid in full. Pursuant to Regulations 19(4) or 19(5) to the Pension legislation, approval of the Superintendent will be required to make commuted value transfers if there has been a significant decline in the transfer ratio after the actuarial valuation date.

## 2.2 Determination of the Statutory Solvency Excess (Deficiency)

In calculating the statutory solvency excess (deficiency), various adjustments can be made to the solvency financial position.

| | | October 1, 2018 | | August 1, 2016 |
|---|---|---|---|---|
| Solvency surplus (unfunded solvency liability) | $ | 11,473,067 | $ | 8,729,743 |
| Adjustments to solvency position: | | | | |
| ■ Present value of existing amortization payments | $ | 0 | $ | 0 |
| ■ Adjustment to reflect reduced solvency deficiency[1] | | 1,249,040 | | n.a. |
| ■ Prior year credit balance | | 0 | | 0 |
| ■ Total | $ | 1,249,040 | $ | 0 |
| Statutory solvency excess (deficiency) | $ | 12,722,107 | $ | 8,729,743 |

**Note:**

[1] Equals 15% of the solvency liability.

# Section 3: Contributions

## 3.1 Estimated Minimum Employer Contribution (Ensuing Years)

The estimated minimum employer contributions for the next three years are shown in the table below. The amounts for the year beginning October 1, 2018 are before the adjustments to member contributions noted in Section 1.3 that come into effect after the valuation date. The amounts for the years commencing October 1, 2019 and October 1, 2020 reflect these adjustments.

| Year Beginning: | October 1, 2018 | October 1, 2019 | October 1, 2020 |
|---|---|---|---|
| Employer Normal Actuarial Cost (including the PfAD)[1] | $ 225,685 | $ 225,737 | $ 234,766 |
| Amortization Payments | | | |
| Going concern | $ 0 | $ 0 | $ 0 |
| Solvency | 0 | 0 | 0 |
| Sub-total | $ 0 | $ 0 | $ 0 |
| Application of Prior Year Credit Balance | 0 | 0 | 0 |
| Available Actuarial Surplus[2] | $ 11,156,720 | $ 10,931,035 | $ 10,705,298 |
| Required Application of Available Actuarial Surplus | (225,685) | (225,737) | (234,766) |
| Estimated Minimum Employer Contribution | $ 0 | $ 0 | $ 0 |

**Notes:**

1 Assumes that employer normal actuarial cost and member contributions increase by 4.00% each year following the actuarial valuation date based on expected payroll increases.

2 The available actuarial surplus is the lesser of the going concern actuarial surplus and the amount that, if it were deducted from the solvency assets of the plan, would reduce the solvency ratio to 105%. Given that the plan has an excess actuarial surplus, the available actuarial surplus must be applied to the employer normal actuarial cost. Actuarial cost certificates effective October 1, 2019 and October 1, 2020 need to be filed in order to confirm the surplus as of those dates.

## 3.2 Estimated Maximum Employer Contribution (Ensuing Year)

| | | October 1, 2018 |
|---|---|---|
| Employer Normal Actuarial Cost (including the PfAD) | $ | 225,685 |
| Greater of the Unfunded Actuarial Liability and the Unfunded Hypothetical Windup Liability | | 0 |
| Required Application of Excess Actuarial Surplus | | (225,685) |
| Estimated Maximum Employer Contribution | $ | 0 |

## 3.3 Timing of Contributions

Employer normal cost and member contributions: monthly and within 30 days of the month to which they pertain.

Amortization payments: monthly before the end of the month to which they pertain (or replaced by an equivalent letter of credit), if applicable.

Adjustment to contributions made since the valuation date: within 60 days from the date that this report is filed with the Pension authorities.

# Section 4: Actuarial Opinion

In our opinion, for the purposes of the going concern, solvency and hypothetical windup valuations:

- the membership data on which the actuarial valuations are based are sufficient and reliable,
- the assumptions are appropriate, and
- the methods employed in the actuarial valuations are appropriate.

This report has been prepared, and our opinion has been given, in accordance with accepted actuarial practice in Canada. The actuarial valuations have been conducted in accordance with our understanding of the funding and solvency standards prescribed by the Pension legislation.

Towers Watson Canada Inc.

| | |
|---|---|
| Melbourne, Geoffrey | Gonsalves, Davis |
| FCIA | FCIA |

*Toronto, Ontario*
May 27, 2019

# Appendix A: Significant Terms of Engagement and Certificate of the Plan Administrator

## A.1 Significant Terms of Engagement

For purposes of preparing this actuarial valuation report, the plan administrator has directed that:

- The actuarial valuation is to be prepared as at October 1, 2018.
- No margins for adverse deviations are to be used.
- For the purpose of determining the going concern discount rate, the investment policy dated April 20, 2018, which is the most up-to-date version, should be considered. There are no expectations that the target asset class distribution will be modified in the future.
- For purposes of determining the Provision for Adverse Deviation level as at October 1, 2018, the actual asset allocation based on the September 30, 2018 audited financial statements and additional information related to the investment categories provided directly by the plan administrator should be used.
- For purposes of determining the Provision for Adverse Deviation level, the plan is to be considered open to new entrants.
- The going concern value of assets is to be determined using the averaging technique described in the Asset Valuation Method section in Appendix C.
- The going concern actuarial cost method to be used is the projected unit credit prorated on service.
- For purposes of determining the solvency liabilities of the plan, the value of benefits arising from future inflation are to be excluded.
- The solvency and hypothetical windup valuation results are to be determined under a scenario where all expenses are paid from the pension fund.

Should these directions from the plan administrator be amended or withdrawn, Willis Towers Watson reserves the right to amend or withdraw this report.

## A.2 Certificate of the Plan Administrator

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

- the significant terms of engagement contained in Appendix A of this report are accurate and reflect the plan administrator's judgement of the plan provisions and/or an appropriate basis for the actuarial valuation of the plan;
- the information on plan assets, including the information on the investment policy and intended changes to the asset mix distribution after the valuation date, if any, forwarded to Towers Watson Canada Inc. and summarized in Appendix B of this report is complete and accurate;
- the data forwarded to Towers Watson Canada Inc. and summarized in Appendix E of this report are a complete and accurate description of all persons who are members of the plan, including beneficiaries who are in receipt of a retirement income, in respect of service up to the date of the actuarial valuation;
- the summary of plan provisions contained in Appendix F of this report is accurate; and
- except as noted in the Introduction of the report, there have been no events which occurred between the actuarial valuation date and the date this actuarial valuation was completed that may have a material financial effect on the actuarial valuation.

L Kimball
Signature

May 30/19
Date

Lori Kimball
Name

AVP Finance
Title

Martha Harley

May 30/19

MARTHA HARLEY

Assoc. VP HUMAN RESOURCES

# Appendix B: Assets

## B.1 Statement of Market Value (All Plans)

The assets of the University of Guelph's three pension plans are held in a commingled fund managed by a number of investment managers. The master trustee as at October 1, 2018 is CIBC Mellon.

As at October 1, 2018, an amount of $1,191,000 was payable from the master trust, comprised of the following:

| | Professional Plan | Retirement Plan | Non-Professional Plan | Total |
|---|---|---|---|---|
| Employer normal cost contributions in transit | $ 495,000 | $ 180,000 | $ 0 | $ 675,000 |
| Member contributions in transit | 427,000 | 152,000 | 5,000 | 584,000 |
| Accrued investment management and trustee fees | (1,057,000) | (413,000) | (21,000) | (1,491,000) |
| Other net payables at October 1, 2018 | (649,000) | (301,000) | (9,000) | (959,000) |
| Net receivable (payable) | $ (784,000) | $ (382,000) | $ (25,000) | $ (1,191,000) |

| | October 1, 2018 | | | August 1, 2016 | | |
|---|---|---|---|---|---|---|
| **Invested Assets** | | | | | | |
| Equities | | | | | | |
| ■ Canadian equities | $ | 169,877,000 | 10.9% | $ | 296,253,000 | 22.3% |
| ■ U.S./international equities | | 686,655,000 | 44.3% | | 537,633,000 | 40.5% |
| ■ Total equities | $ | 856,532,000 | 55.2% | $ | 833,886,000 | 62.7% |
| Fixed income and mortgage | $ | 533,739,000 | 34.4% | $ | 397,600,000 | 29.9% |
| Real estate and infrastructure | $ | 116,064,000 | 7.5% | $ | 61,784,000 | 4.6% |
| Cash and cash equivalents | $ | 45,253,000 | 2.9% | $ | 35,407,000 | 2.7% |
| Total Invested Assets | $ | 1,551,588,000 | 100.0% | $ | 1,328,677,000 | 100.0% |
| **Other Assets** | | | | | | |
| Accrued Income | $ | 2,937,000 | | $ | 5,218,000 | |
| Net accounts receivable/ (payable) | | (1,191,000) | | | (563,000) | |
| Total other assets | $ | 1,746,000 | | $ | 4,655,000 | |
| **Total Assets** | $ | 1,553,334,000 | | $ | 1,333,332,000 | |

**Comments:**

- The invested assets are held by CIBC Mellon under accounts TRDUGX UGXF00010002, TRDUGX UGXF00020002 and TRDUGX UGXF00030002.
- The data relating to the invested assets are based on the financial statements issued by CIBC Mellon and Ernst and Young. All such data has been relied upon by Willis Towers Watson following tests of reasonableness with respect to contributions, benefit payments and investment income. However, Willis Towers Watson has not independently audited or verified this data.

## B.2 Asset Class Distribution

The following table shows the target asset allocation stipulated by the plan's investment policy in respect of major asset classes and the actual asset allocation as at October 1, 2018.

| Asset Class | Target asset allocation[1] | Asset allocation as at October 1, 2018 |
|---|---|---|
| Equities | | |
| ■ Canadian equities | 13% (8% - 18%) | 10.9% |
| ■ U.S. Equities | 13% (8% - 18%) | 19.1% |
| ■ International equities | 14% (9% - 19%) | 18.7% |
| ■ Emerging market | 5% (0% - 10%) | 6.6% |
| Total equities | 45% (40% - 50%) | 55.3% |
| Real estate and infrastructure | | |
| ■ Real estate | 10% (5% - 15%) | 5.0% |
| ■ Infrastructure | 10% (5% - 15%) | 2.5% |
| Total real estate/infrastructure | 20% (15% - 25%) | 7.5% |
| Fixed Income | | |
| ■ Mortgages | 5% (0% - 10%) | 7.4% |
| ■ Canadian Fixed Income | 22.5% (12.5% - 32.5%) | 20.9% |
| ■ Global High Yield Income | 5% (0% - 10%) | 6.0% |
| Total fixed income | 32.5% (27.5% – 37.5%) | 34.3% |
| Cash | 2.5% (0% - 5%) | 2.9% |

**Note:**

[1] This information was obtained from the investment policy in effect for the plan as at October 1, 2018.

## B.3 Reconciliation of Invested Assets (Market Value)

| | Non-Professional Plan | All Plans |
|---|---|---|
| Assets as at August 1, 2016 (unaudited) | $ 17,865,000 | $ 1,333,332,000 |
| Reconciliations to unaudited balances | 20,000 | 400,000 |
| | $ 17,885,000 | $ 1,333,732,000 |
| Receipts: | | |
| ■ Contributions: | | |
| – Employer normal actuarial cost | 0 | 59,800,000 |
| – Employer amortization payments | 0 | 54,735,000 |
| – Members' required contributions | 328,000 | 47,774,000 |
| – Members' other contributions | 0 | 2,178,000 |
| ■ Investment return, net of investment expenses | 2,896,000 | 220,949,000 |
| ■ Total receipts | $ 3,224,000 | $ 385,436,000 |
| Transfers from/(to) other University Plans | $ 151,000 | $ 0 |
| Disbursements: | | |
| ■ Benefit payments: | | |
| – Pension payments | $ 1,296,000 | $ 130,407,000 |
| – Lump sum settlements | 15,000 | 32,289,000 |
| ■ Non-investment expenses | 49,000 | 3,138,000 |
| ■ Total disbursements | $ 1,360,000 | $ 165,834,000 |
| Assets as at October 1, 2018 | $ 19,900,000 | $ 1,553,334,000 |

**Comments:**

- This reconciliation is based on the financial statements issued by CIBC Mellon and Ernst and Young.
- The rate of return earned on the market value of assets (all plans), net of all expenses, from August 1, 2016 to October 1, 2018 is approximately 7.2% per annum.

## B.4 Development of the Going Concern Value of Assets

| | | | Adjusted Market Value Beginning from September 30: | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2014 | 2015 | 2016 | 2017 | 2018 |
| (Adj) Market Value | September 30, 2014 | | 1,245,373,000 | | | | |
| Net Contributions | | | (5,047,000) | | | | |
| Assumed Interest | | 6.00% | 74,571,000 | | | | |
| (Adj) Market Value | September 30, 2015 | | 1,314,897,000 | 1,264,216,000 | | | |
| Net Contributions | | | (14,686,000) | (14,686,000) | | | |
| Assumed Interest | | 6.00% | 78,453,000 | 75,412,000 | | | |
| (Adj) Market Value | September 30, 2016 | | 1,378,664,000 | 1,324,942,000 | 1,358,901,000 | | |
| Net Contributions | | | (14,119,000) | (14,119,000) | (14,119,000) | | |
| Assumed Interest | | 5.65% | 77,496,000 | 74,460,000 | 76,379,000 | | |
| (Adj) Market Value | September 30, 2017 | | 1,442,041,000 | 1,385,283,000 | 1,421,161,000 | 1,440,597,000 | |
| Net Contributions | | | 15,083,000 | 15,083,000 | 15,083,000 | 15,083,000 | |
| Assumed Interest | | 5.65% | 81,901,000 | 78,695,000 | 80,722,000 | 81,820,000 | |
| (Adj) Market Value | September 30, 2018 | | 1,539,025,000 | 1,479,061,000 | 1,516,966,000 | 1,537,500,000 | 1,554,525,000 |
| Actuarial Value of Assets at October 1, 2018 | | | | | | | 1,525,415,000 |

**Comments:**

- The starting value of each column is the actual market value of assets, excluding net accounts receivable/(payable) at the indicated date.
- The rate of return earned on the going concern value of assets, net of all expenses, from August 1, 2016 to October 1, 2018 is approximately 8.4% per annum.

## B.5 Going Concern Value of Assets by Plan Going Concern

The going concern value of assets for the total fund is allocated to each of the three plans participating in the fund. The going concern value of invested assets, excluding the net accounts receivable/(payable) of $(1,191,000), is allocated in proportion to the number of units of the total fund held by each plan. The number of units held by each plan and the allocated going concern values of assets are as follows:

| | | | | | Total Going Concern Value of Assets | |
|---|---|---|---|---|---|---|
| *Plan* | *Number of Units* | *Going Concern Value of Assets* [1] | *Pending Inter-Plan Transfers* | *Net Accounts Receivable / (Payable)* | *Before Collar* [2] | *After Collar* [2] |
| Professional | 4,909,116 | $ 1,079,874,000 | $ 6,912,000 | $ (784,000) | $ 1,086,002,000 | $ 1,086,002,000 |
| Retirement | 1,937,224 | 426,137,000 | (7,063,000) | (382,000) | 418,692,000 | 418,692,000 |
| Non-Professional | 88,211 | 19,404,000 | 151,000 | (25,000) | 19,530,000 | 19,530,000 |
| Total | 6,934,551 | $ 1,525,415,000 | $ 0 | $ (1,191,000) | $ 1,524,224,000 | $ 1,524,224,000 |

**Notes:**

[1] Excluding net accounts receivable / (payable).

[2] Methodology used to determine the Going Concern Value of Assets includes provision that resulting amount must be within 90%-110% of market value of assets.

# Appendix C: Actuarial Basis - Going Concern Valuation

## C.1 Methods

**Asset Valuation Method**

The development of the going concern of assets was performed for the three University plans, i.e., the Professional Plan of University of Guelph, the Retirement Plan of University of Guelph and the Non-Professional Plan of University of Guelph, in total. The total invested assets were allocated among the three plans in proportion to the units allocated to each plan by the trustee, to which net outstanding amounts were then incorporated on a plan-by-plan basis.

The going concern value of assets was calculated as the average of the market value of invested assets at the valuation date and the adjusted market values at September 30 of the four previous years. To obtain these adjusted market values, the market values at September 30th of each of the four preceding years were accumulated to the valuation date with net contributions and assumed investment returns. Net contributions were calculated as contributions less benefit payments and were assumed to occur uniformly throughout each year. Assumed investment returns were calculated assuming that each year the assets earned interest at the going concern liability discount rate in effect during such year. The going concern value of invested assets was determined for all plans combined, with the result allocated pro-rata to each plan's market value of invested assets. This was then adjusted for net outstanding amounts and so that the value is within 90%/110% of market value on a plan-by-plan basis.

The objective of the asset valuation method is to produce a smoother pattern of going-concern surplus (deficit) and hence a smoother pattern of contributions, consistent with the long-term nature of a going concern valuation. The assumed investment return has been selected to equal the expected return on the assets over long periods with a margin for adverse deviations. As such, it is anticipated that, on average, the asset valuation method will tend to produce a result that is somewhat less than the market value of assets.

**Actuarial Cost Method**

The actuarial liability and the normal actuarial cost were calculated using the projected unit credit cost method (prorated on credited service). A middle of year decrement timing model has been applied.

## C.2 Actuarial Assumptions

| | **October 1, 2018** | **August 1, 2016** |
|---|---|---|
| **Economic Assumptions (per annum)** | | |
| Liability discount rate | 6.20% | 5.65% |
| Rate of inflation | 2.00% | Same |
| Rate of salary increase | 4.00% (nil for disabled members) | Same |
| Escalation of YMPE under Canada/Québec Pension Plan [1] | 3.00% | Same |
| Escalation of *Income Tax Act (Canada)* maximum pension limitation [2] | 3.00% | Same |
| Post-retirement pension increases | 0.60% | Same |
| Interest on members' contributions | 6.20% | 5.65% |
| **Demographic Assumptions** | | |
| Mortality | 125%/110% for males/females of CPM-2014 Public Sector Mortality Table, projected using Scale CPM-B | Same |
| Retirement from active membership | Age-related rates (see Table 1) | Same |
| Pension commencement after termination of employment | Earliest unreduced retirement date | Same |
| Withdrawal | Age-related rates (see Table 2) | Same |
| Percentage of involuntary terminations of employment | 0% | Same |
| Disability incidence/recovery | Nil | Same |
| **Other** | | |
| Percentage of members with an eligible spouse at pension commencement and electing joint and survivor pension form | 75% | Same |
| Years male spouse older than female spouse | 3 | Same |
| Provision for non-investment expenses | None; return on plan assets is net of all expenses | Same |

## Notes:

[1] The YMPE of $55,900 for 2018 is the starting value for the YMPE projection as at the current actuarial valuation and is indexed starting in 2019.

[2] The *Income Tax Act (Canada)* maximum pension limit of $2,944.44 per year of service in 2018 is the starting value for maximum pension limit projection as at the current valuation and is indexed starting in 2019.

## Table 1 — Retirement Rates

| Age | Rate [1] |
|---:|---:|
| 55 to 59 | .05 |
| 60 to 64 | .15 |
| 65 to 68 | .50 |
| 69 | 1.00 |

## Note:

[1] Plus 0.05 at age where member first attains 85 points if prior to age 65.

## Table 2 — Withdrawal Rates

| Age | Rate |
|---:|---:|
| 20 to 29 | .09 |
| 30 to 39 | .07 |
| 40 to 44 | .06 |
| 45 to 54 | .03 |
| 55 | 0 |

## C.3 Rationale for Actuarial Assumptions

The rationale for the material actuarial assumptions used in the going concern valuation is summarized below.

The going concern assumptions do not include margins for adverse deviations, as a separate Provision for Adverse Deviations has been applied to the actuarial liability and normal actuarial cost

**Liability discount rate**

The assumption is an estimate of the expected long-term return on plan assets adjusted as follows:

| | |
|---|---|
| ■ Expected long-term return on plan assets before adjustments | 5.60% |
| ■ Effect of rebalancing and diversification | 0.75% |
| ■ Added value of pension fund managers | 0.00% |
| ■ Investment management fees | (0.04)% |
| ■ Adjustment for non-investment expenses paid by the plan | (0.11)% |
| ■ Expected long term return on plan assets after adjustments | 6.20% |

**Post-retirement pension increases**

Recognizing the asymmetric nature of the plan's indexation provision, this assumption was developed by determining the median level of post-retirement increases that results from the plan's indexation provision using the Willis Towers Watson's capital market model. The capital market model simulates inflation with this variable being developed through both the analysis of historical rates, and the application of econometric theory. In modeling inflation, current conditions and long term expectations are used.

**Rate of inflation**

Estimate of future rates of inflation considering economic and financial market conditions at the valuation date.

### Rate of salary increase

| | |
|---|---|
| ■ Assumed rate of inflation | 2.00% |
| ■ Average increases in payroll above inflation for the overall plan membership | 1.00% |
| ■ Average expected increase as a result of individual employee merit and promotion | 1.00% |
| ■ Total rate of salary increase | 4.00% |

### Escalation of YMPE under C/QPP and ITA limit

Indexed annually based on increases in the Industrial Aggregate Wage index for Canada, assumed to be a rate of inflation of 2.00% per annum, plus 1.00% per annum for the effect of real economic growth and productivity gains in the economy.

### Mortality

Base mortality rates from the CPM-2014 Public Sector table are considered reasonable for the actuarial valuation of the plan since many university employees might be expected to have socio-economic characteristics more similar to the public sector.

Multipliers of 125% for males and 110% for females are applied to the base mortality rates and were developed based on a review of plan experience of the Retirement Plan of University of Guelph for the 10-year period ending August 1, 2013.

It has been observed that mortality experience gains and losses in the current and prior valuations do not suggest that the mortality assumptions are inappropriate.

Applying improvement scale CPM-B generationally provides allowance for improvements in mortality after 2018 and is considered reasonable for projecting mortality experience into the future.

No allowance has been made for mortality prior to retirement with respect to terminated vested members in order to approximate the value of pre-retirement death benefits.

### Retirement from active membership

The rates of retirement were developed based on a review of the experience of the Retirement Plan of University of Guelph for the 5-year period extending from April 1, 2008 to April 1, 2013 and an assessment of future expectations. The experience of the Retirement Plan of University of Guelph is considered a good proxy for the experience of this plan. All members are assumed to commence their pension at retirement date.

### Pension commencement after termination of employment

All terminated members are assumed to commence their pension at the age that produces the highest liability.

### Withdrawal

The rates of withdrawal were developed based on a review of the experience of the Retirement Plan of University of Guelph for the 5-year period extending from April 1, 2008 to April 1, 2013 and an assessment of future expectations. The experience of the Retirement Plan of University of Guelph is considered a good proxy for the experience of this plan. All members are assumed to commence their pension at retirement date.

### Percentage of involuntary terminations of employment

No allowance has been made for involuntary terminations of employment since assuming otherwise would not have a material impact on the actuarial valuation results.

### Disability incidence/recovery

There are no disability benefits under the plan other than the accrual of retirement income (earnings remain constant) during disability. Consequently, the assumption of no incidence of disability or recovery therefrom makes an appropriate allowance for such continued accruals.

### Percentage of members with an eligible spouse at pension commencement and electing joint and survivor pension form

The assumed percentage of members with a spouse and the proportion electing a joint and survivor pension form are based on a review of plan experience for the Retirement Plan of University of Guelph for the 5-year period extending from April 1, 2008 to April 1, 2013. The experience of the Retirement Plan of University of Guelph is considered a good proxy for the experience of this plan.

### Years male spouse older than female spouse

The assumption is based on a review of plan experience for the Retirement Plan of University of Guelph the 5-year period extending from April 1, 2008 to April 1, 2013. The experience of the Retirement Plan of University of Guelph is considered to be a good proxy for the experience of this plan.

### Provision for non-investment expenses

The liability discount rate is net of all expenses. The assumed level of expenses reflected in the liability discount rate is based on recent experience of the plan and an assessment of future expectations.

# Appendix D: Actuarial Basis - Solvency and Hypothetical Windup Valuations

## D.1 Methods

### Asset Valuation Method

The market value of invested assets, adjusted for net outstanding amounts, has been used for the solvency and hypothetical windup valuations. The resulting value has been reduced by a provision for plan windup expenses.

### Liability Calculation Method

The solvency and hypothetical windup liabilities for members were calculated using the unit credit cost method.

### Other Considerations

The solvency and hypothetical windup valuations have been prepared on a hypothetical basis. In the event of an actual plan windup, the plan assets may have to be allocated between various classes of plan members or beneficiaries as required by applicable Pension legislation. Such potential allocation has not been performed as part of these solvency and hypothetical windup valuations.

## D.2 Solvency Incremental Cost Actuarial Method

To calculate the Solvency Incremental Cost ("SIC"), we used the same method as for the solvency valuation.

No new entrants have been considered on the basis that such assumptions would not have a material impact on the SIC. The benefits and members' contributions were projected using the going concern valuation assumptions and the plan provisions.

The projected population, benefits and members' contributions were adjusted with the going concern actuarial assumptions and the plan provisions.

We adjusted the expected settlement method at the end of the projection period to reflect demographic evolution. We used the discount rate applicable to the settlement method at the valuation date for each member.

The liability discount rates are assumed to remain at their current level over the projection period.

## D.3 Actuarial Assumptions

| | October 1, 2018 | August 1, 2016 |
|---|---|---|
| **Economic Assumptions (per annum)** | | |
| Liability discount rate (for solvency and before pension commencement for hypothetical windup) | | |
| ■ Annuity purchase | 3.3% | 2.5% |
| ■ Commuted value transfer | 3.3% for 10 years, 3.4% thereafter | 1.7% for 10 years, 3.0% thereafter |
| Liability discount rate( after pension commencement for hypothetical windup) | | |
| ■ Annuity purchase | 1.7% | 1.0% |
| ■ Commuted value transfer | 3.3% for 10 years, 3.4% thereafter | 1.7% for 10 years, 3.0% thereafter |
| **Demographic Assumptions** | | |
| Mortality | CPM2014 Canadian Pensioners' Mortality Table, projected generationally using Scale B | Same |
| Retirement/pension commencement | Described in section D.4 | Same |
| **Other** | | |
| Percentage of members with an eligible spouse at pension commencement and electing joint and survivor pension form | 75% | Same |
| Years male spouse older than female spouse | 3 | Same |
| Percentage of members receiving settlement by commuted value transfer [1] | | |
| ■ Inactive members | 0% | Same |
| ■ Active members under 55 years old | 100% | Same |
| ■ Active members aged 55 years and over | 25% | Same |
| Provision for expenses | $100,000 | Same |

**Note:**

[1] The balance are assumed to receive settlement by annuity purchase.

## D.4 Rationale for Actuarial Assumptions

The rationale for the material actuarial assumptions used in the solvency and hypothetical windup valuations is summarized below.

The actuarial assumptions used in the solvency and hypothetical windup valuations do not include margins for adverse deviations.

**Liability discount rate**

Portion of the solvency and hypothetical windup liabilities expected to be settled by a group annuity purchase: based on the CIA annuity purchase guidance applicable at the valuation date which corresponds to an approximation of the annuity purchase rate. The duration of the liabilities assumed to be settled through the purchase of non-indexed annuities is 8.5.

Portion of the solvency and hypothetical windup liabilities expected to be settled by commuted value transfer: determined in accordance with the *Standards of Practice for Pension Commuted Values* in effect at the valuation date.

**Mortality**

For the benefits that are expected to be settled by a group annuity purchase: based on CIA annuity purchase guidance.

For benefits that are expected to be settled by commuted value transfer: determined in accordance with the *Standards of Practice for Pension Commuted Values* in effect at the valuation date. No pre-retirement mortality has been assumed in order to approximate the value of pre-retirement death benefits.

**Retirement/pension commencement**

- Active and disabled members: pension commences at the age that produces the highest actuarial value (including statutory grow-in rights for members in Ontario.)
- Terminated vested members: pension commences at earliest unreduced retirement date under the terms of the plan.

This is in accordance with the CIA Standards and consistent with the expected assumption that would have been used by insurers to price the group annuity.

**Percentage of members with an eligible spouse at pension commencement and electing joint and survivor pension form**

See rationale for going concern assumptions in Appendix C.

**Percentage of members receiving settlement by commuted value transfer**

This assumption has been determined by considering the benefit provisions of the plan, legislative requirements to offer specific settlement options to various classes of members, and, in particular, the options to be provided to members upon plan windup.

The assumption also reflects the expectation that members further from retirement are more likely to elect to settle their pension benefit by a commuted value transfer, while members closer to retirement are more likely to elect to settle their pension benefit through a group annuity purchase where this option is available.

**Provision for expenses**

Allowance was made for normal administrative, actuarial, legal and other costs which would be incurred if the plan were to be wound up (excluding costs relating to the resolution of surplus or deficit issues). The actuarial valuation is premised on a scenario in which all costs incurred as a result of plan windup were assumed to be paid from the pension fund.

# Appendix E: Membership Data

| | October 1, 2018 | August 1, 2016 |
|---|---|---|
| **Active and disabled members** | | |
| ■ Number | 73 | 38 |
| ■ Average age | 43.9 | 45.6 |
| ■ Average credited service | 1.9 | 3.1 |
| ■ Annual payroll | $3,476,980 | $1,528,841 |
| ■ Average salary | $47,630 | $40,233 |
| **Retired members and beneficiaries** | | |
| ■ Number | 63 | 68 |
| ■ Average age | 83.4 | 82.8 |
| ■ Total annual pension | $611,781 | $593,112 |
| ■ Average annual pension | $9,711 | $8,722 |
| **Terminated vested members** | | |
| ■ Number | 5 | 4 |
| ■ Average age | 53.8 | 61.0 |
| ■ Total annual pension | $13,338 | $13,132 |
| ■ Average annual pension | $2,668 | $3,283 |

The following distribution relates to active and disabled members. The following meanings have been assigned to:

- Age: Age as at October 1, 2018
- Credited Service: Credited service as at October 1, 2018
- Salary: Pensionable earnings for year commencing October 1, 2018

| | | *Credited Service* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Age* | | *0 - 4* | *5 - 9* | *10 - 14* | *15 - 19* | *20 - 24* | *25 - 29* | *30 - 34* | *35 +* | *Total* |
| < 20 | Number | | | | | | | | | |
| | Average Salary | | | | | | | | | |
| 20 - 24 | Number | 3 | | | | | | | | 3 |
| | Average Salary | * | | | | | | | | * |
| 25 - 29 | Number | 10 | | | | | | | | 10 |
| | Average Salary | 53,636 | | | | | | | | 53,636 |
| 30 - 34 | Number | 8 | | | | | | | | 8 |
| | Average Salary | 50,282 | | | | | | | | 50,282 |
| 35 - 39 | Number | 7 | | 1 | | | | | | 8 |
| | Average Salary | 52,686 | | * | | | | | | * |
| 40 - 44 | Number | 5 | | | | | | | | 5 |
| | Average Salary | 54,878 | | | | | | | | 54,878 |
| 45 - 49 | Number | 11 | | | | | | | | 11 |
| | Average Salary | 45,942 | | | | | | | | 45,942 |
| 50 - 54 | Number | 9 | 1 | | | 1 | | | | 11 |
| | Average Salary | 44,673 | * | | | * | | | | 47,294 |
| 55 - 59 | Number | 13 | | | | | | | | 13 |
| | Average Salary | 38,492 | | | | | | | | 38,492 |
| 60 - 64 | Number | 4 | | | | | | | | 4 |
| | Average Salary | 38,932 | | | | | | | | 38,932 |
| 65 + | Number | | | | | | | | | |
| | Average Salary | | | | | | | | | |
| Total | Number | 70 | 1 | 1 | | 1 | | | | 73 |
| | Average Salary | 47,206 | * | * | | * | | | | 47,630 |

Average Age = 43.9 Average Credited Service = 1.9

### Review of Membership Data

The membership data were supplied by University of Guelph's third-party administrator, Morneau Shepell, as at October 1, 2018.

Elements of the data review included the following:

- ensuring that the data were intelligible (i.e., that an appropriate number of records was obtained, that the appropriate data fields were provided and that the data fields contained valid information);
- preparation and review of membership reconciliations to ascertain whether the complete membership of the plan appeared to be accounted for;
- review of consistency of individual data items and statistical summaries between the current actuarial valuation and the previous actuarial valuation;
- review of reasonableness of individual data items, statistical summaries and changes in such information since the previous actuarial valuation date; and
- comparison of the membership data and the plan's financial statements for consistency.

However, the tests conducted as part of the membership data review may not have captured certain deficiencies in the data. We have also relied on the certification of the plan administrator as to the quality of the data, as described below.

### Data Adjustments

For certain groups, credited service for the period between the termination benefit change date and retirement benefit change date is based on the membership data supplied by Morneau Shepell as of at August 1, 2016.

## Membership Reconciliation

**Active and disabled members:**

| | |
|---|---|
| ■ As at August 1, 2016 | 38 |
| ■ New entrants (including re-employed) | 41 |
| ■ Retirements | (2) |
| ■ Terminations: | |
| – Not settled | 0 |
| – With lump sum settlement | (3) |
| – With deferred pension entitlement | (1) |
| ■ Deaths: | |
| – Not settled | |
| – With lump sum settlement | 0 |
| – With survivor's pension | 0 |
| ■ Transferred out | (2) |
| ■ Transferred in | 2 |
| ■ Data corrections | 0 |
| ■ As at October 1, 2018 | 73 |

**Retired members and beneficiaries:**

| | |
|---|---|
| ■ As at August 1, 2016 | 68 |
| ■ New retirements | 2 |
| ■ New beneficiaries | 4 |
| ■ Deaths: | |
| – Without survivor's pension | (7) |
| – With survivor's pension | (4) |
| ■ Data corrections | 0 |
| ■ As at October 1, 2018 | 63 |

**Terminated vested members:**

| | |
|---|---|
| ■ As at August 1, 2016 | 4 |
| ■ New vested terminations | 1 |
| ■ Lump sum settlements | 0 |
| ■ Retirements | 0 |
| ■ Deaths: | |
| – With lump sum settlement | 0 |
| – With survivor's pension | 0 |
| ■ Data corrections | 0 |
| ■ As at October 1, 2018 | 5 |

# Appendix F: Summary of Plan Provisions

The following is an outline of the principal features of the plan which are of financial significance to valuing the plan benefits. This summary is based on the most recently restated plan document as at June 30, 2015, amendment #1 to amendment #2 and amendment #3 & #4 (expected to be filed in June 2019), as provided by the University of Guelph, and does not make any provisions for the possibility that a change or action (retroactive or otherwise) could be imposed by order of a regulatory body or a court. It is not a complete description of the plan terms and should not be relied upon for administration or interpretation of benefits. For a detailed description of the benefits, please refer to the plan document.

**Plan Effective Date**

September 1, 1965

**Definitions**

*Best Average Earnings*

Average earnings for the best 36 consecutive months prior to date of termination or retirement.

*CPI Increase*

Increase in average Canadian Consumer Price Index in the 12-month period ending in April of one year over a similar period in the previous year.

*Credited Service*

Continuous service since the Effective Date during which regular contributions are made. Proportionate Credited Service is granted to part-time Members. Credited Service is limited to 35 years.

*Earnings*

Basic earnings (annualized for part-time Employees), including deferred income, excluding bonuses, overtime payments and other payments. Earnings for disabled Members, during the period of disability, are deemed to be equal to the Member's earnings in the 12 months immediately prior to disability and increased annually to reflect the percentage increase in the salary base level for the Member’s union, association, or group, as applicable.

***Employee***

Full-time or part-time, permanent, non-professional staff.

*YMPE Average*

Average YMPE for the 60 consecutive months immediately prior to date of termination or retirement.

*85 Points Date*

The date where the sum of Member's age and Credited Service is equal to 85 (determined based on the presumption that the Member remained in active service).

**Plan Participation**

Members of UGFSEA Units 1 and 2 and OSSTF who were not enrolled in the Retirement Plan on October 1, 2014, or who are hired on or after October 1, 2014, are required to join the Plan upon meeting certain eligibility criteria.

**Member Contributions**

Member contribution rates reflected in this current report vary by employee group as follows:

| Employee Group | Effective Date | % Below YMPE | % Above YMPE |
|---|---|---|---|
| OSSTF | May 1/17 | 7.80 | 9.14 |
| | May 1/19 | 8.05 | 9.39 |
| UGFSEA Unit 1 | May 1/17 | 7.32 | 9.02 |
| | May 1/19 | 7.57 | 9.27 |
| UGFSEA Unit 2 | May 1/17 | 7.27 | 8.97 |
| | Aug. 1/19 | 7.52 | 9.22 |

Members are not required to contribute after completion of 35 years of Credited Service. Contributions are waived during disability.

## Normal Retirement

*Eligibility*

First day of the month next following or coincident with attainment of age 65.

*Basic Annual Pension*

For Members who joined the plan prior to October 1, 2014:

1.267% of the Member's Best Average Earnings not exceeding the YMPE Average, plus 1.667% of the Member's Best Average Earnings in excess of the YMPE Average, for each year of Credited Service.

Notwithstanding the above, effective May 1, 2007 for Exempt Group and USW Local 4120 and effective May 1, 2009 for CUPE 1334, the pension is determined as 1.367% of the Member's Best Average Earnings not exceeding the YMPE Average, plus 1.667% of the Member's Best Average Earnings in excess of the YMPE Average, for each year of Credited Service.

For Members who joined the plan on or after October 1, 2014:

1.5% (1.6% for OSSTF Members) of the Member's Best Average Earnings not exceeding the YMPE Average, plus 2.0% of the Member's Best Average Earnings in excess of the YMPE Average, for each year of Credited Service.

*Maximum Pension*

Current *Income Tax Act (Canada)* limit, or such higher amount as permitted from time to time. The plan provisions provide for limitation on pre-1990 past service benefits as defined in subsection 8504(6) of the Regulations to the *Income Tax Act (Canada)*.

**Early Retirement**

*Eligibility*

Attainment of age 55.

*Basic Annual Pension*

Member’s pension is reduced by 1/4% for each month that retirement precedes the earliest of:

(a) normal retirement age; and

(b) Earliest Unreduced Date (“EUD”) as outlined below for each employee group.

| | | Earliest Unreduced Date (“EUD”) | |
|---|---|---|---|
| **Employee Group** | **EUD Change Date** | **For service up to EUD Change Date** | **For service on or after EUD Change Date** |
| OSSTF | May 1/13 | 85 Points Date | 90 Points Date and at least age 60 |
| UGFSEA Unit 1 & 2 | N/A | 85 Points Date | N/A |
| USW | N/A | 85 Points Date | N/A |

**Postponed Retirement**

*Eligibility*

Retirement from the University after age 65, but in no event after age 69.

*Annual Pension Income*

Pension accrued at date of retirement.

**Forms of Payment**

*Timing*

Pensions are payable monthly on the last day of each calendar month.

*Normal Form*

Monthly pension payable at the end of each month for life, together with a continuation of 60% to the spouse on the Member's earlier death. A survivor's pension is payable to the Member's children under certain circumstances. A Member without a spouse receives a monthly pension payable for life, guaranteed for 60 months in any event.

*Optional Form*

Optional forms of pension are available on an actuarial equivalent basis. Optional forms include variations in term certain guarantee and varying levels of continuation for spousal forms.

**Death Benefit**

*Pre-Retirement*

A lump sum payment equal to the greater of twice the member's required contributions, with interest, and the commuted value of the member's Accrued Pension.

*Post-Retirement*

Based on normal form or optional form of pension elected by a Member.

**Termination of Employment**

Accrued pension commencing at normal retirement date, or as early as age 55 with the applicable reduction applied. The reduction varies depending on whether the benefit was earned before or after the Termination Benefit Change Date (outlined below):

- In respect of service up to the Termination Benefit Change Date, the accrued pension is reduced by ¼% for each month that pension commencement precedes the earlier of the normal retirement date and the 85 Points Date.

- In respect of service on or after the Termination Benefit Change Date, the accrued pension is actuarially reduced for pension commencement prior to the normal retirement date.

Alternatively a Member may elect to have the commuted value of his accrued pension transferred to a registered vehicle on a locked-in basis. For service up to the Termination Benefit Change Date the lump sum benefit is equal to the greater of twice his required contributions, with interest, and the commuted value.

The actuarial equivalent lump sum value of the benefit earned prior to January 1, 1987 shall not be less than the Member's contributions made during such period together with interest. Also, in the event the Member's contributions made subsequent to January 1, 1987 together with interest are greater than 50% of the actuarial equivalent lump sum value of the benefit earned during such period, a refund will be provided.

| Employee Group | Termination Benefit Change Date |
|---|---|
| OSSTF | May 1/13 |
| UGFSEA Unit 1 | May 1/12 |
| UGFSEA Unit 2 | Jan. 1 /12 |
| USW | N/A |

### Disability Benefit

Required Member contributions cease during disability; Credited Service continues to accrue and Earnings are indexed during disability.

### Adjustment to Pension in Payment

Pensions are increased annually while in payment to reflect the excess, if any, by which the previous year's CPI increase (maximum 8%) is over 2.0%.

# Appendix G: Sensitivity Analysis and Other Disclosures

## G.1 Sensitivity Information

Amounts determined with a discount rate 1% lower:

| | | |
|---|---|---|
| Going concern actuarial liability | $ | 7,362,726 |
| Solvency actuarial liability | $ | 9,251,056 |
| Employer normal actuarial cost as a % of member contributions | | 126% |

## G.2 Solvency Incremental Cost

| | | |
|---|---|---|
| Solvency Incremental Cost (up to next valuation date) | $ | 1,888,402 |

## G.3 Provision for Adverse Deviation Level

**Actual Asset Allocation for Fixed Income Assets**

The actual asset allocation as at October 1, 2018 has been used to determine the Provision for Adverse Deviation level, as disclosed in the September 30, 2018 audited financial statements. We have relied on the direction from the plan administrator related to fixed income allocations and ratings. Fixed income investments listed below not meeting the minimum credit rating prescribed by the Pension legislation (within the global high yield bond allocation) have been categorized as non-fixed income.

| | Actual asset allocation | Fixed income allocation | Non-fixed income allocation | Fixed income weight |
|---|---|---|---|---|
| Asset classes | | | | |
| - Canadian equities | 10.95 | 0 | 10.95 | 0% |
| - US equities | 19.11 | 0 | 19.11 | 0% |
| - International equities | 18.65 | 0 | 18.65 | 0% |
| - Emerging market equities | 6.58 | 0 | 6.58 | 0% |
| - Real estate | 4.96 | 2.48 | 2.48 | 50% |
| - Infrastructure | 2.51 | 1.25 | 1.26 | 50% |
| - Mortgages | 7.38 | 3.69 | 3.69 | 50% |
| - Fixed income | 26.95 | 22.10 | 4.85 | 82% |
| - Cash and accrued income | 2.91 | 2.91 | 0 | 100% |
| Total | 100.00% | 32.43% | 67.57% | |

**Benchmark Discount Rate**

| **Components** | **Rate** |
|---|---|
| CANSIM V39056 | 2.48% |
| Risk Premium on Non-Fixed Income Assets[1] | 3.38% |
| Risk Premium on Fixed Income Assets[2] | 0.49% |
| Diversification Allowance | 0.50% |
| **Benchmark Discount Rate** | 6.85% |

**Notes:**

1 5.00% of the non-fixed proportion of the assets.

2 1.50% of the fixed proportion of the assets.

### Provision for Adverse Deviation Level

| **Components** | **Provision for Adverse Deviation level** |
|---|---|
| Fixed | 4.00% |
| Asset mix based | 5.51% |
| Benchmark discount rate based[1] | 0.00% |
| **Provision for Adverse Deviation Level[2]** | 9.51% |

**Notes:**

[1] Reflects going concern discount rate less benchmark discount rate (subject to a minimum of zero), multiplied by the going concern liabilities duration (refer to sub-section G.1)

[2] The Provision for Adverse Deviation is applied to the going concern actuarial liability and total normal cost, excluding any portion for future indexation.

# Actuarial Information Summary

See the instructions for completing this form. If an item does not apply, enter "N/A".

## Part I – Plan Information and Contributions

**A. 001. Name of registered pension plan**

Pension Plan for Non-Professional Staff of University of Guelph

**B. 002. Registration number**

Canada Revenue Agency: 0324632 Other: ______

**C. 003. Is this plan a designated plan?**

☐ Yes ☑ No

**D. 004. Valuation date of report**

Year 2018 Month 10 Day 01

**E. 005. End date of period covered by report**

Year 2021 Month 09 Day 30

**F. 006. Purpose of the report (indicate all reasons for which the report was prepared)**

☐ Initial report for a newly established plan
☑ Regular (triennial or annual) report for an ongoing plan
☐ Interim report in respect of an amendment to an ongoing plan
☐ Partial termination
☐ Termination
☐ Conversion
☐ Other (explain) ______

**G. Contributions (prior to application of any credits or surplus) for covered period**

| **Periods** (see instructions) | Period 1 | Period 2 | Period 3 | Period 4 |
|---|---|---|---|---|
| **007.** Period start date (YYYY-MM-DD) | 2018-10-01 | 2019-10-01 | 2020-10-01 | |
| **008.** Period end date (YYYY-MM-DD) | 2019-09-30 | 2020-09-30 | 2021-09-30 | |
| **Normal cost (defined benefit provision)** **009.** Members | 259,338 | 278,688 | 289,835 | |
| **010.** Employer | 225,685 | 225,737 | 234,766 | |
| **010a.** Explicit expense allowance included in employer normal cost above | | | | |
| **Normal cost (money purchase provision)** **011.** Members | | | | |
| **012.** Employer | | | | |
| **Special payments** Special payments for going-concern unfunded liability and solvency deficiency **013.** Employer | 0 | 0 | 0 | |
| **013a.** Members | 0 | 0 | 0 | |
| **Fixed contributions** **014.** Estimated dollar amounts of fixed employer and, if applicable, member contributions (defined benefit provision) | | | | |
| **014a.** Estimated dollar amounts of fixed employer and, if applicable, member contributions (money purchase provision) | | | 0 | |

## Part II – Membership and Actuarial Information

| **H. Membership information** | Number | Average age | Average pensionable service | Average salary | Average annual pension |
|---|---|---|---|---|---|
| **015.** Active members | 73 | 43.90 | 1.90 | 47,630 | N/A |
| **016.** Retired members | 63 | 83.40 | N/A | N/A | 9,711 |
| **017.** Other participants | 5 | 53.80 | N/A | N/A | 2,668 |

**I. Actuarial basis for going-concern valuation (see instructions)**

**020. Asset valuation method**

☐ Market ☑ Smoothed Market ☐ Book ☐ Book and Market combination ☐ Other (specify) ______

**021. Liability valuation method**

☑ Accrued benefit (unit credit) ☐ Entry age normal ☐ Individual level premium ☐ Aggregate ☐ Attained Age

☐ Other (specify) ______

**I. Actuarial basis for going-concern valuation (continued)**

Selected actuarial assumptions

Where a flat rate is used, enter the rate under "Ultimate rate" and "N/A" under "Initial rate" and "Number of years".

| **Valuation interest rate** | Initial rate (%) | Number of years | Ultimate rate (%) |
|---|---|---|---|
| **025.** Active members | N/A | N/A | 6.20 |
| **026.** Retired members | N/A | N/A | 6.20 |
| **027.** Rate of indexation | N/A | N/A | 0.60 |
| **028.** Rate of general wage and salary increase | N/A | N/A | 4.00 |
| **029.** YMPE escalation rate | N/A | N/A | 3.00 |
| **030.** *Income Tax Regulations*' maximum pension limit escalation | N/A | N/A | 3.00 |
| **031.** Rate of CPI increase | N/A | N/A | 2.00 |

**035.** Year *Income Tax Regulations*' maximum pension limit escalation commences ........ 2019

**036.** Mortality table

☐ 1994 GAM Static ☐ 1994 Group Annuity Reserving (GAR) ☐ 1994 UP ☐ 80% of 1983 GAM ☐ CPM2014

☑ CPM2014Publ ☐ CPM2014Priv ☐ Other (specify) ________

**036a.** Improvement scale

Has a projection of mortality improvement been made? ........ ☑ Yes ☐ No

i) Has an assumption of generational mortality improvements been made? ........ ☑ Yes ☐ No

ii) If applicable, what is the year in which the mortality improvements have been projected? ........

iii) Which scale have you used?

☐ Scale AA ☑ Scale CPM-B ☐ Scale CPM-B1D2014 ☐ Other (specify) ________

**036b.** Adjustment to the mortality table

i) Has an adjustment to the mortality table been made? ........ ☑ Yes ☐ No

ii) If **yes**, which percentage did you apply to ........ Male 125.0 Female 110.0

**037.** Allowance for promotion, seniority, and merit increases

☑ Included in (line **028**) above ☐ Separate scale based on age or service ☐ No allowance

**038.** Allowance for expenses

**038a.** Allowance for investment expenses

☑ Implicit ☐ Explicit ☐ Both explicit and implicit

**038b.** Allowance for administrative expenses

☑ Implicit ☐ Explicit ☐ Both explicit and implicit

**039.** If a multi-employer plan, number of hours of work per member per plan year ________

**040.** Was a withdrawal scale used? ........ ☑ Yes ☐ No

**041.** Were variable retirement rates used? ........ ☑ Yes ☐ No

**042.** If **no**, what is the assumed retirement age? ........ ________

**J. Actuarial basis for solvency valuation**

| **Valuation interest rate** | Initial rate (%) | Select period | Ultimate rate (%) |
|---|---|---|---|
| **045.** Benefits to be settled by lump sum transfer | 3.30 | 10 | 3.40 |
| **046.** Benefits to be settled by purchase of deferred annuity | N/A | N/A | 3.30 |
| **047.** Benefits to be settled by purchase of immediate annuity | N/A | N/A | 3.30 |
| **048.** Rate of indexation | N/A | N/A | N/A |

**049.** Mortality table

Lump sum: ☐ 1994 UP Generational ☐ CPM2014Priv ☑ CPM2014 ☐ CPM2014Publ ☐ Other (specify) ________

Annuity Purchase: ☐ 1994 UP Generational ☐ CPM2014Priv ☑ CPM2014 ☐ CPM2014Publ ☐ Other (specify) ________

**049a.** Improvement scale used

Lump sum: ☐ Scale AA ☑ Scale CPM-B ☐ Scale CPM-B1D2014 ☐ Other (specify) ______ ☐ None

Annuity Purchase: ☐ Scale AA ☑ Scale CPM-B ☐ Scale CPM-B1D2014 ☐ Other (specify) ______ ☐ None

**K. Balance sheet information (DB provisions, see instructions)**

**050.** Market value of assets, adjusted for receivables and payables ........ 19,900,000

**051.** Amount of contributions receivable included in market value above ........ 5,000

**Going-concern valuation**

**052.** Going-concern assets ........ 19,530,000

**053.** Optional ancillary contributions account balance included in going-concern assets above for a flexible pension plan (if applicable) ______

**Going-concern liabilities**

**060.** For active members ........ 1,027,447

**061.** For retired members ........ 5,560,141

**062.** For other participants ........ 126,769

**063.** For optional ancillary benefits to be provided under a flexible pension plan (if applicable) ........ 0

**064.** Other reserve ........ 612,199

**065.** Reserve type ☐ Expenses ☐ Ad-hoc indexing ☑ Provision for Adverse Deviation ☐ Other (specify) ______

**070.** Net funded position—surplus/deficit ........ 12,203,444

**071.** Additional voluntary contributions ........ 0

**072.** Money purchase assets (if applicable) ........ 0

**Solvency valuation**

Complete lines **080** to **100** only if the report contains an explicit solvency valuation

**Solvency assets**

**080.** Solvency assets with adjustment for expense provision, if any ........ 19,800,000

**081.** Amount of wind-up expense provision reflected in line **080** ........ 100,000

**082.** Optional ancillary contributions account balance included in solvency assets above for a flexible pension plan (if applicable) . 0

**Solvency liabilities**

**090.** For active members ........ 1,293,813

**091.** For retired members ........ 6,870,519

**092.** For other participants ........ 162,601

**093.** For optional ancillary benefits to be provided under a flexible pension plan (if applicable) ........ ______

**094.** Other reserve ........ 0

**095.** Reserve type ........ ☐ Expenses ☐ Other (specify) ______

**100.** Net solvency position—surplus/deficit ........ 11,473,067

**101.** Incremental cost ........ 1,888,402

**If the plan provides benefit increases coming into effect during the period covered by the report but after the valuation date, have those increases been reflected in:**

**102.** The going-concern liabilities in lines **060** to **064**? ........ ☐ Yes ☐ No ☑ N/A

**103.** The solvency liabilities in lines **090** to **094**? ........ ☐ Yes ☐ No ☑ N/A

**Discount rate sensitivity**

| | Change in percentage using discount rate 1% lower | Change in amount using discount rate 1% lower | Change in amount using discount rate 1% higher |
|---|---|---|---|
| **104.** Going-concern liabilities | 9.66 | 648,369 | -591,273 |
| **105.** Normal cost | 21.09 | 93,707 | -77,390 |
| **106.** Solvency liabilities | 11.10 | 924,123 | -831,809 |

**L. Actuarial gains or losses**

**110.** Was a gain/loss analysis done? ........ ☑ Yes ☐ No

**111.** If line **110** is **yes**, indicate the date of the last filed funding valuation report and the net funded position as of that date ........ Year 2016 Month 08 Day 01 ........ 10,180,206

If line **110** is **yes**, indicate amount of gain or loss due to:

| | |
|---|---|
| **112.** interest on surplus (unfunded liability) | 1,287,428 |
| **113.** special payments made | |
| **114.** amount used for contribution holiday | |
| **115.** change in actuarial assumptions | 375,134 |
| **116.** change in the asset valuation method | |
| **117.** change in liability valuation method | |
| **118.** plan amendments/changes | |
| **119.** investment experience | 1,124,583 |
| **120.** retirement experience | 19,655 |
| **121.** mortality experience | (2,349) |
| **122.** withdrawal experience | 7,629 |
| **123.** salary increase experience | (29,466) |
| **124.** optional ancillary contributions forfeited | |

Are there major contributing sources other than lines **112** to **124** above (if **yes**, specify)

| | |
|---|---|
| **125.** Cost-of-living adjustments | 65,814 |
| **126.** Provision for Adverse Deviation | (612,199) |
| **127.** all other sources (combined) | (212,991) |

**M. Subsequent events**

**135.** Are there any subsequent event(s) that have not been reflected in the valuation? (refer to SOP) ☑ Yes ☐ No

**N. Statements of opinion**

**136.** Does the report include the statements of opinion required by the SOP (data, assumptions, methods, accepted actuarial practice)? ☑ Yes ☐ No

**136a.** Are any of the actuary's statements of opinion qualified? ☐ Yes ☑ No

Financial Services Commission of Ontario — Commission des services financiers de l'Ontario

## Part III – Information required by the Financial Services Commission of Ontario

**O. Additional valuation information**

**Going-concern valuation**

**137.** Are benefits under the pension plan provided by an annuity purchase? ☐ Yes ☑ No

**138.** If line **137** is **yes**,

a) enter the total asset value of the annuities purchased

b) enter the total liability of the annuities purchased

**139.** Have escalated adjustments been included in going-concern liabilities? ☑ Yes ☐ No ☐ N/A

**Solvency valuation**

**140.1** If line **137** is **yes**,

a) enter the total asset value of the annuities purchased

b) enter the total liability of the annuities purchased

**140.2** Enter the value of any solvency deficiency payment that is guaranteed by a letter of credit

**140.3** Enter the expiry date of the letter of credit, if any (Year / Month / Day)

**141.** Have any of the excludable benefits been excluded? ☑ Yes ☐ No ☐ N/A

**142.** If line **141** is **yes**, enter the total amount of liabilities being excluded: 1,127,343

**143.** With respect to the type of benefits provided under the plan for service after the valuation date, complete the following table:

| Provision type | Benefit accruals for service after valuation date (Yes/No) | Closed(Yes/No) |
|---|---|---|
| **Defined Benefit** | Yes | No |
| **Defined Contribution** | No | No |

**144. (i)** Has an averaging method been applied to the market value of assets in determining the solvency asset adjustment? ☐ Yes ☑ No

**a)** If line **(i)** is yes, indicate the positive or negative amount by which the solvency assets are adjusted as a result of applying the averaging method

**(ii)** Has the averaging method used in determining the solvency asset adjustment changed since the last valuation? ☐ Yes ☑ No

If line **(ii)** is **yes**, complete **(ii)a** or **(ii)b**, as appropriate:

**a)** The change in method increases solvency asset adjustment by the amount of

**b)** The change in method decreases solvency asset adjustment by the amount of

**P. Miscellaneous**

**145.** Prior year credit balance 0

**146.** Transfer ratio (express in decimal format) 2.1050

**Guarantee fund assessment**

**147.** PBGF liabilities 8,326,933

**148.** PBGF assessment base 0

**149.** Amount of additional liability for plant closure and/or permanent layoff benefits as described in "E" of subsection 37(4) of *Regulation 909, R.R.O. 1990*, as amended 0

**149a.** Number of Ontario plan beneficiaries 141

## Part IV – Information required by the Canada Revenue Agency

**R. Additional information**

**173.** Surplus/deficit determined at the valuation date as per the instructions:

**173a.** Going-concern basis 12,203,444

**173b.** Wind-up basis 10,345,724

**173c.** For designated plans, maximum funding valuation basis

**174.** Excess surplus determined at the valuation date:

**174a.** Going-concern basis 10,371,805

**174b.** For designated plans, maximum funding valuation basis

**175.** For designated plans, employer normal cost determined under the maximum funding valuation basis:

**Period 1**

**Period 2**

**Period 3**

**Period 4**

**176.** Minimum surplus required under applicable pension benefit legislation before contribution holiday:

**176a.** Going-concern basis 0

**176b.** Wind-up basis 0

**177.** Maximum amount that could be claimed as eligible employer contribution(s) – defined benefit provisions – under subsection 147.2(2) of the *Income Tax Act*:

**177a.** Unfunded liability 0

**177b.** Normal cost:

**Period 1** 0

**Period 2** 0

**Period 3** 0

**Period 4**

**178.** Do you have any employees contributing over the limit stipulated under paragraph 8503(4) of the *Income Tax Regulations?* ☐ Yes ☑ No

## Part V – Information required by Retraite Québec

**S. Additional Information**

**185.** Date on which the valuation report was prepared ____________

**186.** Value of additional liabilities arising from an improvement on a funding basis ____________

**187.** Value of additional liabilities arising from an improvement on a solvency basis ____________

**188.** Surplus assets that can be allocated to fund contributions ____________

**189.** Special payments ____________

**190.** Total of the letters of credit taken into account in the assets ____________

**191.** Insured annuities from an insurer taken into account in the actuarial valuation on a solvency basis ____________

**T. Additional information for plans whose employer is a municipality, a municipal housing bureau, or an educational institution at the university level**

**For service prior to the establishment of the stabilization fund**

**192.** Reserve on a funding basis ____________

| | Present Value | Amortization payments | | | |
|---|---|---|---|---|---|
| | | Period 1 | Period 2 | Period 3 | Period 4 |
| **193**. Deficiency attributable to the employer | | | | | |
| **194.** Funding deficiency<br>**194a.** Payable by the members | | | | | |
| **194b.** Payable by the employer | | | | | |

**For service following the establishment of the stabilization fund**

**195.** Stabilization fund value ____________

| | Stabilization contributions | | | |
|---|---|---|---|---|
| | Period 1 | Period 2 | Period 3 | Period 4 |
| **196.** Members | | | | |
| **197.** Employer | | | | |

| | Present Value | Amortization payments | | | |
|---|---|---|---|---|---|
| | | Period 1 | Period 2 | Period 3 | Period 4 |
| **198.** Technical funding deficiency<br>**198a.** Payable by the members | | | | | |
| **198b.** Payable by the employer | | | | | |

**U. Additional information for pension plans other than those mentioned in Section T, and for which solvency funding does not apply.**

**199.** Target level (as a percentage) of the required stabilization provision ____________

| | Stabilization contributions | | | |
|---|---|---|---|---|
| | Period 1 | Period 2 | Period 3 | Period 4 |
| **200.** Members | | | | |
| **201.** Employer | | | | |

| | Present Value | Amortization payments | | | |
|---|---|---|---|---|---|
| | | Period 1 | Period 2 | Period 3 | Period 4 |
| **202.** Technical funding deficiency<br>**202a.** Payable by the members | | | | | |
| **202b.** Payable by the employer | | | | | |
| **203.** Stabilization funding deficiency<br>**203a.** Payable by the members | | | | | |
| **203b.** Payable by the employer | | | | | |
| **204.** Improvement funding deficiency<br>**204a.** Payable by the members | | | | | |
| **204b.** Payable by the employer | | | | | |

## Part VI – Certification by Actuary

As the actuary who signed the funding valuation report (the report), I certify that this completed form accurately reflects the information provided in the report.

Dated this 31 (day) day of May (month), 2019 (year)

Signature of actuary

Geoffrey Melbourne
Print or type name of actuary

Towers Watson Canada Inc.
Name of firm

(416)960-2780
Telephone number

geoffrey.melbourne@willistowerswatson.com
Email Address*

*** Optional information. The Canada Revenue Agency will not communicate on plan specific matters with clients by email, since we cannot guarantee the confidentiality of emailed information.**

Personal information is collected under the authority of section 147.2 of the *Income Tax Act* and is used for the administration of a registered pension plan. It may also be used for any purpose related to the administration or enforcement of the Act such as audit and compliance. Information may also be shared or verified under information-sharing agreements to the extent authorized by law. Under the *Privacy Act*, individuals have the right to access their personal information and request correction if there are errors or omissions. Refer to Info Source **cra.gc.ca/gncy/tp/nfsrc/nfsrc-eng.html**, Personal Information Bank CRA PPU 226.