



Actuarial Report on

**The Brandon University
Retirement Plan**

Actuarial Valuation as at
December 31, 2021

CRA Reg. No. 0206078

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Report on the Actuarial Valuation of the Brandon University Retirement Plan as at December 31, 2021

SUMMARY OF RESULTS

	12.31.2021	12.31.20120
Going Concern Financial Position		
Going concern assets	\$224,966,000	\$206,407,000
Going concern liabilities	<u>\$203,065,000</u>	<u>\$196,622,000</u>
Going concern surplus/(unfunded liability)	\$21,901,000	\$9,785,000
Going concern funded ratio	1.108	1.050
Windup Financial Position		
Market value of assets net of provision for wind-up expenses	\$249,642,000	\$225,344,000
Windup liability	<u>\$251,406,000</u>	<u>\$258,756,000</u>
Windup excess/(deficiency)	(\$1,764,000)	(\$33,412,000)
Solvency Financial Position		
Solvency assets net of provision for wind-up expenses	\$224,646,000	\$206,107,000
Solvency liabilities	<u>\$251,406,000</u>	<u>\$258,756,000</u>
Solvency excess/(deficiency)	(\$26,760,000)	(\$52,649,000)
Solvency ratio	0.894	0.797
Minimum Contributions in Year Following valuation		
Estimated employer's current service cost	\$3,337,000	\$3,591,000
Minimum special payments	<u>\$0</u>	<u>\$0</u>
Total minimum required contributions	\$3,337,000	\$3,591,000

Section 1. EXECUTIVE SUMMARY

We are pleased to present this report which was prepared at the request of the Pension Trustees of the Brandon University Retirement Plan ("Pension Trustees") for the following purposes:

1. To report on the financial position of the Brandon University Retirement Plan ("Plan") as at December 31, 2021 on a going concern basis;
2. To determine the actuarial cost of benefits expected to accrue under the Plan for service of the employees for the period following the valuation date and up to the date of the next actuarial valuation. The effective date of the next valuation must be no later than December 31, 2024;
3. To determine the financial position of the Plan as at December 31, 2021 on solvency and hypothetical wind-up bases;
4. To establish the minimum and maximum contributions required for the period from December 31, 2021 until the date of the next actuarial valuation for compliance with the applicable pension legislation and the terms of the Plan;
5. To provide the actuarial certifications required under the Pension Benefits Act of Manitoba and the Income Tax Act of Canada.

The intended users of this report are the Pension Trustees, Brandon University, the Office of the Superintendent - Pension Commission (Manitoba), and Canada Revenue Agency. This report is not intended or necessarily suitable for purposes other than those listed above. Any party reviewing this report for other purposes should have their own actuary or other qualified professional assist in their review to ensure that the party understands the assumptions, results and uncertainties inherent in our estimates.

A summary of the key valuation results is provided below.

1. Using the projected unit credit accrued benefit funding method the Plan has a going concern surplus equal to \$21,901,000 at December 31, 2021. There are no special payments required.
2. There is a solvency deficiency of \$26,760,000. The solvency ratio is 0.894.

This Plan is subject to the funding requirements of the Pension Benefits Act of Manitoba. As such, a solvency valuation must be prepared and normally any solvency deficiency would require funding over a five-year period. However, the University is eligible and has made an election to be exempt from certain solvency funding and other requirements in accordance with the *Solvency Exemption for Public Sector Pension Plans Regulation*. As a result of the election, the University is exempt from making special payments for solvency deficiencies. The election was filed with the Office of the Superintendent – Pension Commission (Manitoba) on January 19, 2009.

In the absence of the election under the *Solvency Exemption for Public Sector Pension Plans Regulation* special payments would be necessary to fund the solvency deficiency as follows:

Effective Date	Amortization Period	Annual Special Payment
December 31, 2021	Jan 2022 – Dec 2026	\$5,723,000

- If the Plan was wound-up on the valuation date the liabilities would exceed assets by \$1,764,000.
- Available Actuarial Surplus under the Pension Benefits Regulations is calculated to be nil as at December 31, 2021.
- The recommended contributions shown in this valuation satisfy the collective agreement between Brandon University ("University") and the Brandon University Faculty Association ("BUFA"), the requirements of the Pension Benefits Act of Manitoba, and the Income Tax Act. The recommended University contributions are in accordance with the following schedule assuming the 2022 estimated pensionable earnings of \$38,138,000 increase by 4.5% for 2023 and 3.0% for 2024.

Year	Amount as a percent of pensionable payroll	Estimated Members' Pensionable Earnings	Estimated University Current Service Cost
2022	8.75%	\$38,138,000	\$3,337,000
2023	8.75%	\$39,854,000	\$3,487,000
2024	8.75%	\$41,050,000	\$3,592,000

University contributions recommended in this report are eligible contributions under the Income Tax Act.

- Since the solvency ratio of the Plan is greater than 0.85, the Pension Benefits Regulations of Manitoba requires that the next valuation be performed no later than December 31, 2024.
- Based on the Plan's investment experience from 2018 to 2021, retired and deferred members are eligible for a supplementary pension increase effective July 1, 2022. The amount of the increase, capped by the increase in the Consumer Price Index, is 4.08%. This has been reflected in the going concern valuation results at December 31, 2021.
- This report should be filed with the Office of the Superintendent – Pension Commission (Manitoba), to meet the filing requirements of the Pension Benefits Regulations of Manitoba, and with Canada Revenue Agency, in order to ensure that contributions recommended in the report will qualify as eligible contributions for purposes of the Income Tax Act. The next actuarial valuation of the Plan should be performed no later than December 31, 2024.



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

Respectfully submitted

ECKLER Ltd.



Andrew Kulyk

Fellow of the Canadian Institute of Actuaries



Shannon Tesluck

Fellow of the Canadian Institute of Actuaries



Section 2. INTRODUCTION

The Brandon University Retirement Plan (hereinafter referred to as the “Plan”) was amended and restated January 1, 1992. There have been no amendments to Plan since the date of the previous valuation that would have a material effect on the results of our valuation.

Based on the Plan’s investment experience from 2018 to 2021, retired and deferred members are eligible for a supplementary pension increase in 2022 effective July 1. The amount of the increase is capped by the increase in the Consumer Price Index and is equal to 4.08%. This has been reflected in our going concern valuation.

CHANGES SINCE THE PREVIOUS VALUATION

Pension Benefits Regulation amendment (Regulation 63/2021) and amendment (Regulation 142/2021) amending the Manitoba Pension Benefits Act came into force on October 1, 2021 and December 1, 2021 respectively and introduced significant changes to the funding rules applicable to defined benefit pension plans registered in Manitoba. However, the University was eligible for and elected to make use of the *Solvency Exemption for Public Sector Pension Plans Regulation*, and was therefore not impacted by the changes to the funding rules. The University is, however, required to file annual valuation reports if the solvency ratio of the Plan is below 85% in accordance with the amended Regulations.

The last valuation of the Plan was prepared as at December 31, 2020. Since the last valuation, the going concern actuarial assumptions were revised. In particular,

- the discount rate was increased to 5.50% per year from 5.25% per year,
- the assumed inflation rate was changed to 3.50% for two years and 2.00% per year thereafter,
- the assumed increase in the Year’s Maximum Pensionable Earnings was changed to 4.50% for two years and 3.00% per year thereafter,
- the assumed increase in wage inflation is 4.50% for two years, with 3.00% per year thereafter,
- pensions for retired and deferred members were assumed to increase following 2022 by 1.0% per year instead of 0.75% to reflect the higher expected return on plan assets,
- the mortality assumption was updated to use the Club Vita Canada 2020 VitaCurves with improvement scale CPM-B.

See Appendix B for details of the assumptions used in this valuation and the rationale employed in setting these assumptions. See Section 4 for the impact of the changes in assumptions on the valuation results.

The solvency economic and demographic assumptions were changed to reflect market conditions as at the valuation date, and the CIA's Educational Note on Assumptions for Hypothetical Wind-up and Solvency Valuations. These assumptions are summarized in Appendix B.

SUBSEQUENT EVENTS

We are not aware of any events that occurred between the valuation date and the date this report was completed that would have a material impact on the results of this valuation.

VALUATIONS INCLUDED IN THIS REPORT

In this report, we describe the results of three different valuations of the Plan:

- A "going concern valuation" which is used to estimate the funded position of the Plan, assuming the Plan is continued indefinitely, and to estimate the contributions currently required to be made to the Plan's fund, both to fund the cost of any benefits being earned by members for current service and, in the event there is a funding deficiency, to liquidate the amount of the funding deficiency.
- A "wind-up valuation", which is intended to reflect the status of the Plan as if it had been wound up on the valuation date and the Plan members had been provided with the benefits specified by the Plan and the Pension Benefits Act of Manitoba. The purpose of this valuation is to show the degree of benefit security provided for all of the Plan members' accrued benefit by the current assets of the pension fund. The wind-up valuation is not used to determine the required contributions to the Plan. It is, however, used to determine the maximum contributions permitted by the Canada Revenue Agency.
- A "solvency valuation", which is required by the Regulations under the Pension Benefits Act of Manitoba. This valuation is similar to a wind-up valuation, except that certain adjustments may be made to the assets. The solvency valuation is required to be performed but does not affect the required contributions to the Plan as the University has made an election under the *Solvency Exemption for Public Sector Pension Plans Regulation*.

The difference between the wind-up and solvency valuations for this Plan relates to the value of assets that are included in the valuation. For the wind-up valuation, the only assets taken into account are the invested assets of the Plan, which are taken at their market values net of provision for wind-up expenses plus in-transit accrued amounts. For the solvency valuation, Plan assets also take into account the present value of special payments that are scheduled to be made for the next five years from the valuation date and an adjustment to smooth the market value over a period which cannot exceed five years. For purposes of the solvency valuation the assets have been smoothed over four years. Please note that due to the going concern surplus position of the Plan as at December 31, 2021, special payments will cease and therefore no present value of special payments is included in the solvency assets.

FILING REQUIREMENTS

The last filed actuarial report was effective December 31, 2020. This report outlines the movements of the Plan's financial position since the previous valuation and is to be filed with the Office of the Superintendent – Pension Commission (Manitoba) and Canada Revenue Agency. It is to be used by the University to determine its funding requirements for the period following the valuation date. The next actuarial valuation of the Plan should be performed no later than December 31, 2024.



Section 3. DATA

The valuation was based on data as of the valuation date, December 31, 2021, supplied to us by Brandon University. This data is summarized in Appendix C.

We subjected the data to a number of tests of reasonableness and consistency, including the following:

- a member's (and partner's as applicable) age is within a reasonable range;
- all dates remained unchanged from the data used in the previous actuarial valuation of the Plan;
- accrued pensions changed by a reasonable amount;
- the form of pension payment did not change (other than resulting from the death of a retired member); and
- we examined the additions to, and deletions from, each of the data files (i.e., the files for active employees, pensioners and terminated members entitled to a deferred vested pension) since the previous valuation to determine whether all Plan members were accounted for in this valuation, to check for duplicate records and to confirm pension amounts.

Data was corrected as appropriate. The results of our tests were satisfactory.

Assets of the Plan are held in trust with CIBC Mellon. The funds are invested in a number of pooled funds operated by Connor, Clark & Lunn Investment Management Limited. We have relied on the financial statements for the fund prepared by Brandon University for the December 31, 2021 year-end.

Section 4. GOING CONCERN VALUATION

VALUATION BALANCE SHEET

The following is the going concern valuation balance sheet as at December 31, 2021 based on:

- the Plan provisions (summarized in Appendix A);
- the going concern valuation assumptions (described in Appendix B);
- the membership data (summarized in Appendix C);
- the actuarial value of assets (summarized in Appendix D), and

Going Concern Valuation	12.31.2021	12.31.2020
<u>Going Concern Assets</u>		
Actuarial value of Plan assets	\$224,966,000	\$206,407,000
<u>Going Concern Liabilities</u>		
Retired members and survivors	\$120,253,000	\$112,294,000
Terminated vested members	\$4,825,000	\$5,244,000
Active members – Academic and non-union members	\$63,648,000	\$63,144,000
Active members – Non-Academic union members	\$13,529,000	\$15,426,000
Other benefits outstanding	\$670,000	\$391,000
Additional voluntary contributions	\$140,000	\$123,000
Total going concern liabilities	\$203,065,000	\$196,622,000
Surplus / (unfunded liability)	\$21,901,000	\$9,785,000
Funded Ratio	1.108	1.050

The liability as at December 31, 2021 for Other Benefits Outstanding includes:

- \$165,000 for sessional employees with no pensionable earnings in 2021,
- Benefit payouts to terminated members that are pending settlements.

There is a going concern surplus of \$21,901,000 as at December 31, 2021, therefore no unfunded liability special payments are required for 2022.



EXPERIENCE GAIN AND LOSS

The Plan has a going concern surplus of \$21,901,000 at December 31, 2021. Our previous valuation of the Plan showed the Plan had an unfunded liability of \$9,785,000. The approximate derivation of the going concern surplus at December 31, 2021 is as follows:

Going concern surplus (unfunded liability) at Dec. 31, 2020	\$9,785,000
Interest on surplus (unfunded liability), special payments and transfers in for 2021 at 5.25%	\$514,000
Expected surplus (unfunded liability) at Dec. 31, 2021	<u>\$10,299,000</u>
Plus actuarial gains(losses) due to experience differing from the actuarial assumptions in 2021:	
▪ Gain/(loss) on terminations other than assumed	\$141,000
▪ Gain/(loss) on active and deferred member retirements other than assumed	\$818,000
▪ Gain/(loss) on mortality other than assumed	(\$42,000)
▪ Gain/(loss) on salaries and the YMPE increasing at different rates than assumed	\$968,000
▪ Gain/(loss) attributable to net investment experience	\$12,499,000
▪ Gain/(loss) attributable to pension increases other than assumed	(\$3,978,000)
▪ Gain/(loss) attributable to service accrued different than expected	(\$192,000)
Net actuarial experience gain/(loss)	<u>\$10,214,000</u>
Gain/ (loss) due to data corrections	(\$540,000)
Gain/ (loss) due to marriage breakdown pay out	(\$312,000)
Gain/ (loss) due to change in inflation and YMPE assumption	\$73,000
Gain/ (loss) due to change general salary increase assumption	(\$315,000)
Gain/ (loss) due to change in pension increase assumption	(\$5,174,000)
Gain/ (loss) due to increasing the discount rate to 5.50%	\$5,746,000
Gain/ (loss) due to change in mortality assumption	\$1,911,000
Other experience resulted in a net gain/(loss) of approximately	(\$1,000)
Going concern surplus (unfunded liability) at Dec. 31, 2021	<u>\$21,901,000</u>

The following summarizes the largest sources of gains and losses to the Plan since the previous valuation:



- The actual net investment return earned by the Plan in 2021, based on smoothed asset values, was 11.37% compared to an expected return of 5.25% per year resulting in a gain of \$12,499,000.
- Actual pension increases were greater than assumed, resulting in a loss of \$3,978,000.
- Future pension increases are increased to 1.00% per year from 0.75% per year, resulting in a loss of \$5,174,000.
- The going concern discount rate has increased from 5.25% to 5.50% resulting in a gain of \$5,746,000.
- Member salaries and the YMPE increased at a rate that was less than expected, resulting in a gain of \$968,000.
- Actual retirements were different than expected, resulting in a gain of \$818,000. This gain is comprised of a gain due to active member retirements being different than expected of \$550,000 and a gain due to deferred member retirements being different than expected of \$268,000.

INTEREST RATE SENSITIVITY OF THE GOING CONCERN LIABILITY

The effect of decreasing the interest rate used to determine the going concern liability by 1% from 5.50% to 4.50% is an increase in the total going concern liability of \$24,035,000.

CURRENT SERVICE COST

Employees are required to contribute 8.0% of pensionable earnings less 1.8% of pensionable earnings for which Canada Pension Plan (CPP) contributions are required. Pensionable earnings for this purpose are subject to an annual limit related to the maximum benefit accrual in a year. For 2022, the Yearly Maximum Contributory Earnings (YMCE) is \$118,220.

Based on the assumptions and membership data described herein, we estimate that the University's current service cost from December 31, 2021, until the effective date of the next valuation, is 8.75% of pensionable earnings. Unlike member contributions, pensionable earnings for this purpose are not limited to the YMCE. The current service cost determined as at December 31, 2020 was 8.05% of pensionable earnings.

In accordance with the Plan provisions, the University shall pay additional contributions equal to the normal actuarial cost of the benefit improvements effective November 10, 2008 and April 1, 2009.



2022	Dollar	% of Earnings
Estimated 2022 pensionable earnings	\$38,138,000	
Current service cost		
Total current service cost	\$5,759,000	15.10%
Estimated employee contributions	(\$2,422,000)	(6.35%)
Employer current service cost (A)	\$3,337,000	8.75%
Total special payments (B)	\$0	0.00%
Total minimum contribution required by the Act and Regulations	\$3,337,000	8.75%
Plan Provision Contribution		
Employer formula contribution	\$2,608,000	6.84%
Additional current service cost	\$649,000	1.70%
Total minimum contribution required by the Plan provisions (C)	\$3,257,000	8.54%
Employer current service cost (A)	\$3,337,000	8.75%
Total special payments (B)	\$0	0.00%
Employer additional contribution (C - A - B)	\$0	0.00%
Total Employer required contribution	\$3,337,000	8.75%

The minimum University contribution required by the Pension Benefits Regulations exceeds the minimum University contribution required to be made in accordance with the provisions of the Plan.

The table below summarizes the University's estimated current service contribution for the three years commencing January 1, 2022, assuming 2022 estimated pensionable earnings of \$38,138,000 increase by 4.5% for 2023 and 3.0% for 2024. The actual dollar amount of the current service contribution may be higher or lower than the amount indicated below if the actual pensionable earnings are different than estimated.

Year	Amount as a percent of pensionable payroll	Estimated Members' Pensionable Earnings	Estimated University Current Service Cost
2022	8.75%	\$38,138,000	\$3,337,000
2023	8.75%	\$39,854,000	\$3,487,000
2024	8.75%	\$41,050,000	\$3,592,000



INTEREST RATE SENSITIVITY OF THE CURRENT SERVICE COST

The effect of decreasing the interest rate used to determine the regular current service cost by 1% from 5.50% to 4.50% increases the total current service cost from \$5,759,000 to \$6,827,000, an increase of \$1,069,000. This represents an increase in the 2022 employer current service cost as a percent of pensionable earnings from 8.75% to 11.55%.

Section 5. HYPOTHETICAL WIND-UP VALUATION

The purpose of the hypothetical wind-up valuation is to determine the financial position of the Plan if it were wound up on the valuation date. The circumstances in which the plan wind-up occurs is that both Brandon University and the Plan wind-up, giving rise to termination benefits to members not eligible for retirement on the wind-up date and retirement benefits to all other members. There are no benefits on plan wind-up that were excluded from our valuation. The liability for all active members with 15 years or more of service on the valuation date includes the value of the early retirement subsidy as provided by the Plan.

Accordingly, the following approach was used:

1. The Plan assets were valued at market value.
2. The benefits valued are those which members would be entitled to under applicable legislation if the Plan were wound up on the valuation date. All Plan members become fully vested on Plan wind-up, regardless of age or service.
3. In the hypothetical wind-up valuation, we assumed immediate pension commencement for members eligible to retire. For members assumed to elect the lump sum option, it was assumed with a probability of 50% that the pension would start at the earliest age at which the member will be entitled to an unreduced lifetime pension and with a probability of 50% the pension would start at the age which produced the highest present value of the pension.
4. The actuarial assumptions are developed in accordance with the Canadian Institute of Actuaries' (CIA's) Standard of Practice for determining Pension Commuted Values and the CIA Educational Note – *Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates on or after December 31, 2021 and no later than December 30, 2022* dated March 2022. These assumptions are described in detail in Appendix B.
5. In accordance with the CIA Educational Note, the spread above the unadjusted CANSIM series V39062 was determined to be 115 basis points based on a duration of 10.6 for the portion of the liability assumed to be settled through the purchase of annuities. Accordingly, the discount rate assumed for the purchase of non-indexed annuities is 2.81%.

Based on the Plan provisions in effect on December 31, 2021, the wind-up valuation assumptions and the membership data supplied by the University, the following is the wind-up position of the Plan as at December 31, 2021:

Hypothetical Wind-up Valuation	12.31.2021	12.31.2020
<u>Wind-up Assets</u>		
Market value of Plan assets	\$249,962,000	\$225,644,000
Allowance for wind-up expenses	(\$320,000)	(\$300,000)
Total wind-up assets	<u>\$249,642,000</u>	<u>\$225,344,000</u>
<u>Wind-up Liabilities</u>		
Retired members and survivors	\$136,360,000	\$134,326,000
Terminated vested members	\$6,111,000	\$7,227,000
Active members – Academic and non-union members	\$90,089,000	\$95,120,000
Active members – Non-Academic union members	\$18,036,000	\$21,569,000
Other benefits outstanding	\$670,000	\$391,000
Additional voluntary contributions	\$140,000	\$123,000
Total wind-up liabilities	<u>\$251,406,000</u>	<u>\$258,756,000</u>
Wind-up excess/ (shortfall)	<u>(\$1,764,000)</u>	<u>(\$33,412,000)</u>

As shown above, if the Plan had been wound-up as at December 31, 2021, the wind-up liabilities would have exceeded the wind-up assets by \$1,764,000.



Section 6. SOLVENCY VALUATION

The table below shows the solvency position of the Plan as at December 31, 2021. The circumstances in which the plan wind-up occurs is that both Brandon University and the Plan wind-up giving rise to termination benefits to members not eligible for retirement on the wind-up date and retirement benefits to all other members. There are no benefits on Plan wind-up that were excluded from our valuation. The liability for all active members with 15 years or more of service on the valuation date includes the value of the early retirement subsidy as provided by the Plan.

The calculations are based on the Plan provisions in effect on the valuation date, the solvency valuation assumptions described in Appendix B, and the membership data supplied by the University.

Solvency Valuation	12.31.2021	12.31.2020
<u>Solvency Assets</u>		
Actuarial value of Plan assets (A)	\$224,966,000	\$206,407,000
Allowance for wind-up expenses (B)	(\$320,000)	(\$300,000)
Total solvency assets	\$224,646,000	\$206,107,000
<u>Solvency Liabilities</u>		
Retired members and survivors	\$136,360,000	\$134,326,000
Terminated vested members	\$6,111,000	\$7,227,000
Active members – Academic and non-union members	\$90,089,000	\$95,120,000
Active members – Non-Academic union members	\$18,036,000	\$21,569,000
Other benefits outstanding	\$670,000	\$391,000
Additional voluntary contributions	\$140,000	\$123,000
Total solvency liabilities (C)	\$251,406,000	\$258,756,000
Solvency excess/ (shortfall)	(\$26,760,000)	(\$52,649,000)
Solvency ratio [(A + B) ÷ C]	0.894	0.797

INTEREST RATE SENSITIVITY OF THE SOLVENCY LIABILITY

The effect of decreasing the interest rates used to determine the solvency liability by 1%, i.e. reducing the annuity purchase rate from 2.81% p.a. to 1.81% and a corresponding decrease in the commuted value rates, is an increase in the liability of approximately \$35,984,000.

SOLVENCY INCREMENTAL COST

The incremental cost represents the present value on the valuation date of the expected aggregate change in the solvency liability between valuations, adjusted upward for expected benefit payments between the valuation dates.



The total estimated incremental cost between the valuation date, December 31, 2021 and the date of the next valuation, December 31, 2024, is \$33,063,000.

SPECIAL PAYMENTS

This plan is subject to the funding requirements of the Pension Benefits Act of Manitoba. As such, it is required that a solvency valuation is prepared and any solvency deficiency is required to be funded over a five-year period. However, the University is eligible and has made an election to be exempt from certain solvency funding and other requirements in accordance with the *Solvency Exemption for Public Sector Pension Plans Regulation* ("Solvency Exemption"). As a result of the election, the University is exempt from making special payments for solvency deficiencies. The election was filed with the Office of the Superintendent – Pension Commission (Manitoba) on January 19, 2009.

The Plan has a solvency deficiency (i.e., an excess of solvency liabilities over solvency assets including the present value of five years previously established special payments (nil at December 31, 2021) of \$26,760,000. In the absence of the Solvency Exemption the requirement would be to liquidate the solvency deficiency by equal monthly payments over the period beginning on the valuation date and ending on December 31, 2026. Accordingly, the minimum solvency special payment would be \$5,723,000 per year, payable monthly from 2022 to 2026 inclusive.

Section 7. ELIGIBLE CONTRIBUTIONS

MINIMUM CONTRIBUTIONS

Members and the University are each required to contribute at the rate of 8.0% of salary up to the Year's Basic Earnings (YBE) under the Canada Pension Plan, 6.2% between the YBE and the Year's Maximum Pensionable Earnings (YMPE) and 8.0% in excess of the YMPE. Members contribute only on the amount earned up to the Year's Maximum Contributory Earnings (YMCE).

Notwithstanding, the University may be required to make additional contributions in excess of the contributions described above in order to satisfy the negotiated funding of certain benefit improvements or requirements of the Pension Benefits Act of Manitoba and Regulations.

Accordingly, the University is required to make current service cost contributions equal to 8.75% of pensionable earnings for the period from January 1, 2022 to the effective date of the next valuation.

Available Actuarial Surplus calculated in accordance with the Regulations is nil.

The minimum University contributions required under the Pension Benefits Act of Manitoba and in accordance with the *Solvency Exemption for Public Sector Pension Plans Regulation* are as follows:

	2022
Total current service cost	\$5,759,000
Estimated employee contributions	\$2,422,000
Employer current service cost	\$3,337,000
Estimated 2022 pensionable earnings	\$38,138,000
Employer current service cost as a percentage of earnings	8.75%
Total special payments	\$0
Total minimum University contribution	\$3,337,000

The minimum University contribution required by the Pension Benefits Act exceeds the minimum University contribution required to be made in accordance with the provisions of the Plan.

The table below summarizes the University's estimated current service contribution for the three years commencing January 1, 2022, assuming 2022 estimated pensionable earnings of \$38,138,000 increase by 4.5% for 2023 and 3.0% for 2024. The actual dollar amount of the current service contribution may be higher or lower than the amount indicated below if the actual pensionable earnings are different than estimated.



Year	Amount as a percent of pensionable payroll	Estimated Members' Pensionable Earnings	Estimated University Current Service Cost
2022	8.75%	\$38,138,000	\$3,337,000
2023	8.75%	\$39,854,000	\$3,487,000
2024	8.75%	\$41,050,000	\$3,592,000

MAXIMUM CONTRIBUTIONS

The University may choose to fund at a higher level than the minimum required by the Pension Benefits Act shown above. In accordance with the Income Tax Act, the maximum permitted contribution the University could make is equal to the sum of:

1. A lump sum equal to \$1,764,000 – the greater of the unfunded actuarial liability (\$0 since in a surplus position at December 31, 2021) and the windup deficiency of \$1,764,000 as of December 31, 2021; plus
2. The current service contributions of 8.75% of pensionable earnings for the period ending December 31, 2022, until the effective date of the next valuation.

In accordance with the Pension Benefits Act of Manitoba, all contributions due to the Plan must be remitted monthly. Employee and Employer contributions are due within 30 days following the end of the month to which they apply.

Section 8. ACTUARIAL OPINION

With respect to the Brandon University Retirement Plan forming part of the actuarial report on a valuation of the Plan at December 31, 2021:

The recommendations for funding are in accordance with an agreement regarding the University's funding obligations by the signatories to the collective agreement between the University and BUFA that provides for the funding of certain benefit improvements.

We hereby certify that,

- a. The purpose of this report is to provide actuarial estimates of the funding payments required to be made by Brandon University for the period from December 31, 2021 to the date of the next valuation. The effective date of the next valuation must be no later than December 31, 2024 in order to comply with applicable legislation.
- b. Based on the projected unit credit accrued benefit funding method the Plan has a going concern surplus of \$21,901,000.
- c. There are no special payments to be made.
- d. Based on the projected unit credit accrued benefit funding method, to satisfy the funding requirements of the Pension Benefits Act the University is required to contribute 8.75% of pensionable earnings for the period from January 1, 2022 to the date of the next valuation. The estimated cost of benefits for 2022 is \$5,759,000 of which \$2,422,000 will be paid by the members and \$3,337,000 will be paid by the University.

The table below summarizes the University's estimated current service contribution for the three years commencing January 1, 2022, assuming 2022 estimated pensionable earnings of \$38,138,000 increase by 4.5% for 2023 and 3.0% for 2024. The actual dollar amount of the current service contribution may be higher or lower than the amount indicated below if the actual pensionable earnings are different than estimated.

Year	Amount as a percent of pensionable payroll	Estimated Members' Pensionable Earnings	Estimated University Current Service Cost
2022	8.75%	\$38,138,000	\$3,337,000
2023	8.75%	\$39,854,000	\$3,487,000
2024	8.75%	\$41,050,000	\$3,592,000

- e. Available Actuarial Surplus calculated in accordance with the Regulations is nil.
- f. The minimum University required by the provisions of the Pension Benefits Act of Manitoba exceeds the University contribution required by contribution required by the Plan.



- g. In our opinion, the value of the Plan assets would be less than the actuarial liabilities if the Plan were to be wound up as at December 31, 2021. The estimated shortfall would be approximately \$1,764,000.
- h. The Plan has a solvency shortfall at December 31, 2021 of \$26,760,000 and the solvency ratio is 0.894.

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

In our opinion,

- a. the membership data on which the valuation is based are sufficient and reliable, for the purposes of the valuation,
- b. the assumptions used are appropriate for the purposes of the valuation, and
- c. the methods employed in the valuation are appropriate for the purposes of the valuation.

This report has been prepared and this opinion given in accordance with accepted actuarial practice in Canada.



Andrew Kulyk
Fellow of the Canadian Institute of Actuaries

May 26, 2022

Date



Shannon Tesluck
Fellow of the Canadian Institute of Actuaries

May 26, 2022

Date



Appendix A. SUMMARY OF PLAN PROVISIONS

There have been no amendments to Plan since the date of the previous valuation that would have a material effect on the results of our valuation.

ELIGIBILITY

New staff must join the Plan when employed.

MEMBER CONTRIBUTIONS

Members are required to contribute at the rate of 8.0% of salary up to the YBE, 6.2% between the YBE and the YMPE, and 8% in excess of the YMPE. Members contribute only on the amount earned up to the YMCE.

The YMCE is the sum of \$86,111 prior to April 1, 2009 or \$98,750 thereafter, and 30% of the YMPE for the year.

UNIVERSITY CONTRIBUTIONS

Basic Contributions

The University is required to contribute at the rate of 8.0% up to the YBE, 6.2% between the YBE and the YMPE and 8.0% in excess of the YMPE with no salary limitation applied, plus any special payments required under the Pension Benefits Act of Manitoba.

Additional Contributions

As a result of amendments to improve benefits effective November 10, 2008 and April 1, 2009 and the collective bargaining agreement between the University and BUFA, the provision for University contributions was amended for additional contributions. The University shall pay additional contributions equal to the normal actuarial cost of the benefit improvements made effective on the above dates but excluding the effect of the increase in the member contribution rate effective April 1, 2009.

Further, additional University contributions of 1.15% of salary effective November 10, 2008, increasing to 2.25% of salary effective April 1, 2009, are required for members who joined the Plan prior to January 1, 2008 with an Initial Amount, as defined in amendment 10/01, having a present value as at December 31, 2007 of \$5,107,000. Additional contributions under this provision shall cease when the outstanding balance on the Initial Amount is reduced to zero by any University contributions that are in excess of the University's portion of the normal actuarial cost of current service. The requirement under this provision had been fully satisfied previous to the date of this valuation.

Contributions Required to Satisfy Requirements of the Pension Benefits Act

The University is required to contribute the amounts required to satisfy the Pension Benefits Act of Manitoba and Regulations ("Act and Regulations"). If the University contributions required to satisfy the Act and Regulations exceed those amounts above (Basic and Additional), the University is required to make additional contributions to satisfy those requirements.

NORMAL RETIREMENT

The normal retirement date of all members is the first of the month following their 65th birthday.

EARLY RETIREMENT

A member may retire on the first day of any month within the ten-year period prior to his normal retirement date. If the member is age 60 or over and his age plus years of service equals 85 or more, there is no reduction on early pension commencement, otherwise the reduction is 1/3% for each month by which his early retirement date precedes the first date that he would have satisfied the "rule of 85, minimum age 60", had employment continued, but not later than age 65.

LATE RETIREMENT

A member who continues in employment after his normal retirement date continues to make contributions to the Plan and his pension does not commence until his actual retirement date or the end of the year in which the member attains age 71, if earlier.

PENSION

At retirement, the member is entitled to an annual pension equal to 2% of his final average earnings multiplied by the member's years of credited service less 0.6% of his CPP average earnings multiplied by the member's years of service since January 1, 1990. Final average earnings are the average of the best 5 years earnings in the last 12 prior to retirement. CPP average earnings are the member's average earnings up to the YMPE in the 5 years prior to retirement. For members who retired prior to April 1, 2009, the maximum annual pension was \$1,722.22 per year of credited service. Effective April 1, 2009, the maximum was increased to \$1,975.00 per year of credited service for members who retired on or after April 1, 2009.

FORMS OF PENSION

For members who retired prior to November 10, 2008, the normal form of pension at retirement was payable for life with a guarantee of 5 years' payments. Effective November 10, 2008, members retiring with a spouse at retirement receive a pension in the form of joint and survivor with 2/3 continuing to the surviving spouse. Other options are available on an actuarially equivalent basis.

PENSION INCREASES

For increases provided prior to December 31, 2013, pensions in payment and deferred pensions are increased automatically on July 1 by the same percentage as the investment return on the fund in the previous year, based on actuarial values, exceeds 6%, subject to a maximum increase of the CPI in that year. If the increase in any year is limited by the CPI increase and there was a previous year, or years, when the increase was less than the CPI, the University, on the advice of the Plan trustees, may provide a higher increase so that some or the entire shortfall may be made up.

The Plan was amended for increases provided after December 31, 2013 to revise the method of calculating supplemental pension increases. The amendment changes the calculation of the



excess fund return to be the excess over 6% of the previous four-year geometric average rather than the excess over 6% of the actuarial return of smoothed assets in the previous year.

DEATH BENEFITS PRIOR TO RETIREMENT

The death benefit is the commuted value of the pension earned to the date of death.

BENEFITS ON TERMINATION OF EMPLOYMENT

A member who terminates employment is entitled to a deferred pension payable from normal retirement date.

50% of the deferred pension in respect of service after January 1, 1985 must be paid for by University contributions.

Members not eligible to commence an immediate pension upon termination of employment may transfer the commuted value of their accrued pension to a locked-in retirement account.

GREAT-WEST LIFE PENSIONERS

Those members who retired prior to May 1989 had their pensions provided by an annuity purchased from Great-West Life. Each year additional amounts of annuities had been purchased to provide pension increases but beginning in 1999 any additional pensions for these members are paid from the fund.

Appendix B. ACTUARIAL ASSUMPTIONS AND METHODS

Going Concern Valuation

These assumptions are the same as those used at the previous valuation, except where noted.

Interest:

In order to determine the expected investment return on the investments of the Plan our model determined expected long-term capital market returns, standard deviations and correlations for each major asset class noted in Appendix E (universe bonds, Canadian equities, global equities, etc.) by using historic returns, current yields and forecasts. We then stochastically generated projected asset class returns for 5,000 paths over 30 years to create expected returns for each asset class. The simulated going concern discount rate was the return at the median of each asset class weighted by the asset mix percentages of the benchmark fund in the Managed Account Agreement between Connor, Clark and Lunn and the Pension Trustees.

We have assumed that there will be no added-value returns from the active management strategy employed in excess of the associated additional investment management fees.

Based on the methodology described above, the going concern discount rate assumption was developed as follows:

	Expected Return
Simulated gross investment return before margin and expenses	6.65%
Assumed active management value added	0.20%
Provision for investment management and administration expenses	(0.50%)
Provision for adverse deviations	(0.85%)
Going concern discount rate	5.50%

For the previous valuation, a going-concern discount rate of 5.25% was used.

Expenses:

The interest rate assumption includes an implicit provision for investment and administration expenses paid from the Plan based on recent experience in the Plan.

Inflation:

We have assumed increases in the Consumer Price Index for Canada ("CPI") equal to 3.5% for two years, 2.0% per year thereafter. We have based our assumed inflation on our estimate of future inflation considering anticipated high levels of inflation increases over the next two years, as well Bank of Canada's long-term inflation target of 1% to 3% per annum. Our chosen rate is



consistent with the implied market rate based on long term Government of Canada nominal bonds and long-term Government of Canada real return bonds.

Salary Increases:

Salaries are assumed to increase from 2021 levels as follows:

- i. General – 4.5% per year for two years, 3.0% per year thereafter. This rate is based on an allowance for market implied inflation at December 31, 2021 of 3.5% per year for two years, 2.0% per year thereafter plus real salary increases of 1.0% per year which is consistent with historical increases in the Canadian economy.
- ii. Promotional & Merit - Academic and non-union members – we have used a promotional and merit scale, extracts of which are shown below:

Age	Average Annual Increase over next 5 years	Average Annual Increase to age 65
30	3.3%	2.3%
35	2.8%	2.2%
40	2.5%	2.0%
45	2.2%	1.9%
50	2.0%	1.8%
55	1.8%	1.7%
60	1.7%	1.7%

Scheduled rate increases according to collective bargaining agreements are reflected in our valuation. A summary of the annual increases are as follows:

Year	Academic and non-union members	Non-Academic union members
2019	0.00%	3.50%
2020	0.00%	1.00%
2021	0.75%	1.00%
2022	1.00%	1.75%
2023	*	2.00%

** increase rates as per our assumption above*

Mortality:

We assumed that baseline mortality will be in accordance with Club Vita Canada's 2020 VitaCurves, which vary by plan member, with generational projection using the CPM-B



improvement scale. Improvements in mortality from 2017 to the calendar year of determination are projected based on each member's year of birth.

VitaCurves are baseline mortality rates that vary by member based on their individual longevity characteristics and have been developed using a generalized linear modelling framework. (More details on the methodology can be found in the Canadian Institute of Actuaries member's paper: Key Factors for Explaining Differences in Canadian Pensioner Baseline Mortality.) The CV20 VitaCurves have been calibrated based on Club Vita Canada's longevity dataset for the years 2016-2018. Club Vita Canada's longevity dataset is composed of a subset of Canadian registered pension plans across Canada, and includes plans covering a range of industries in both the private and public sector. Club Vita Canada's CV20 VitaCurves have been developed based on longevity experience consisting of 2.3 million exposure years and 59 thousand deaths over 2016-2018, and vary by the following longevity factors:

- Gender;
- Pensioner type – pensioner or surviving spouse;
- Disability status at retirement for pensioners – disabled or non-disabled pensioner;
- Postal code-based lifestyle/longevity group – five groups for each of males and females;
- Affluence as measured by pension amount or earnings – there are four pension bands for males, three earnings bands for females and four earnings bands for males and females;
- Occupation type – currently or formerly employed in a manual or non-manual occupation; and
- Pension form at retirement for pensioners – single life or joint life.

Given that the availability of longevity factors varies by plan, and also by members within a plan, the CV20 VitaCurves are calibrated based on different combinations of the factors outlined above, resulting in over 500 baseline mortality tables. The best VitaCurve is assigned to each individual Plan member based on the longevity factors available for that member.

Specifically for this Plan, all longevity factors as described above, with the exception of disability status at retirement for pensioners, were used to assign VitaCurves to individual Plan members.

For the purpose of determining commuted values for those assumed to elect a lump sum at retirement, the CPM Combined Table with improvement scale CPM-B was used.

In the previous valuation, the 2014 Public Sector Mortality Table without size adjustments (CPM2014Publ), projected with full generational improvements in mortality using CPM improvement Scale B (CPM-B), was used to estimate the incidence of death before and after retirement.

Termination:



Considering the size of the Plan, there is not adequate termination experience data appropriate for developing a table of termination probabilities. We have continued to assume termination probabilities in accordance with three times the probabilities from the Ontario Light Table, with zero probability for ages greater than or equal to 55. Sample rates are as follows:



Age	Probability of Termination
30	16.8%
35	9.6%
40	6.6%
45	5.1%
50	3.6%
55	0%

We have assumed that 75% of members terminating prior to becoming eligible for retirement will elect to receive their pension as a lump sum commuted value. The commuted values are calculated using an assumed rate of 4.0% per year. The remaining terminating members are assumed to receive a deferred pension from the Plan.

The assumed future commuted value discount rate is based on:

- assumed current bond yields with an expectation that yields will rise in future years, and
- The inflation assumption of 2.0% per year

Retirement:

The retirement age of members has a financial impact on the Plan. A retirement study was performed in April 2021 and the results of that study were used to develop the following table based on 10 years of retirement experience in the Plan from 2011 to 2020. This table will be re-evaluated as more experience is revealed and updated as appropriate when future valuations are performed.

Age	Probability of Retirement
55 - 56	3.0%
57 - 58	4.0%
59 - 64	10.0%
65	30.0%
66 - 69	15.0%
70+	100.0%

Deferred plan members are assumed to retire at age 55.

Year's Maximum Pensionable Earnings:

We have assumed that the CPP Year's Maximum Pensionable Earnings (YMPE) will increase annually based on average general increases in wages in Canada. For this valuation we have



assumed that the YMPE will increase from its 2022 level of \$64,900 by 4.5% per year for two years, 3.0% per year thereafter. This is consistent with the general salary increase assumption.

For the previous valuation it was assumed that the YMPE would increase from its 2021 level of \$61,600 by 3.0% per year.

Future Pension Increases:

Pensions in pay and deferred pensions are increased annually by an amount equal to the excess of the four-year average investment return of the fund over a base rate of 6.0%, limited by the increase in the Consumer Price Index for Canada. Despite assuming that the fund will earn 5.25% per year on average over the long term, based on the asset mix of the fund we expect that there will be years where the fund return will exceed 6.0% and increases in pensions will be granted. Pensions for retired and deferred members will be increased in 2022 by 4.08%. We have assumed that pensions will subsequently increase following 2022 by 1.00% per year thereafter.

In the previous valuation, pensions were assumed to increase following 2021 by 0.75% per year.

Future increases in respect of pensions paid by Great-West Life:

Pension for retired and deferred members will be increased in 2022 by 4.08%. We have assumed pensions will subsequently increase following 2022 by 1.00% per year. We have included in our valuation a provision for the full amount of pension increases to be paid out of the Plan with respect to pensions paid by Great-West Life.

In the previous valuation, pensions were assumed to increase following 2021 by 0.75% per year.

Actuarial value of assets:

For this valuation, we have continued to use an actuarial value of assets that smooths excess investment returns over a four-year period relative to the assumed investment return. The assumed investment return is the rate applicable from the prior actuarial valuation for each year during the smoothing period. The applicable assumed investment returns are shown below:

Year	Assumed Investment Return
2018	5.55%
2019	5.55%
2020	5.30%
2021	5.25%

We further restrict the actuarial value of assets to be within 10% of the market value of assets, if required.



Family composition:

Because members who are married at the time of retirement receive a joint and survivor pension with 2/3rds of the pension continuing to the spouse and single members receive a lifetime pension guaranteed for five years, the marital status at retirement can have a financial impact on the Plan. Reliable data on family composition at retirement is unavailable for this Plan. We have assumed that 85% of male members and 70% of female members have a spouse at retirement and the male spouse is three years older than the female spouse which is typical for pension plans in general.

GOING-CONCERN VALUATION METHOD

We have used a projected unit credit actuarial cost method. This values the benefits for accrued service to the valuation date by projecting salaries to retirement, determining the pension at retirement and discounting the value back to the valuation date. We compare the value of the liabilities in respect of service after 1984 to the contributions plus interest in respect of the same period to determine if the 50% test is applicable. If it is, we make the appropriate adjustment to the liability. Ancillary benefits on death or termination of employment are valued in a similar manner.

The liability for sessional employees who had no pensionable earnings in 2021 is determined to be two times their accumulated contributions with interest as at December 31, 2021.

The University's current service cost under this method is the excess of the cost of benefits which will arise in the year following the valuation over the member's contributions in that year.

Solvency and Wind-up Valuation

The following summarizes the actuarial assumptions used for the Solvency and Wind-up Valuations:

Actuarial value of assets:

Solvency: Smoothed value based on four-year smoothing relative to an expected return of:

- 2018: 5.55%
- 2019: 5.55%
- 2020: 5.30%
- 2021: 5.25%

Wind-up: Market value



Interest:	2.81% per year for annuity purchase ¹ 2.30% per year for 10 years and 3.40% per year thereafter for lump sum transfer.
Future increases in Pensionable Earnings:	None
Mortality:	CPM2014 (Combined) Mortality Table with mortality improvement projected generationally in accordance with Scale CPM-B.
Marital Status	85% of male members are married, 70% of female members are married, with male spouse 3 years older than female spouse.
Proportion electing annuity purchase	100% of retirees and 100% of active and deferred members age 55 & older. All others elect a lump sum transfer of the commuted value.
Allowance for wind-up expenses:	\$320,000 (approximately \$50,000 plus \$275 per member). Excludes costs related to surplus/deficit distribution issues on plan wind-up. Assumes all expenses will be paid from the Plan in the event of wind-up.
Pension Increase	We have made no allowance for any assumed future pension increases.

The liability for sessional employees who had no pensionable earnings in 2021 is determined to be two times their accumulated contributions with interest as at December 31, 2021.

Incremental Cost

The incremental cost is the present value, at the valuation date, of the expected aggregate change in the hypothetical wind-up or solvency liability between the valuation date and the next valuation date. It also reflects expected benefit payments between the valuation date and the calculation date.

In our report we have determined the incremental cost under the solvency basis. The incremental cost was determined as the sum of (a) and (b) minus (c)

- (a) the projected solvency liability at the next valuation date for those members at the current valuation date, allowing for expected decrements and change in membership

¹ In accordance with the CIA Educational Note, the spread above the unadjusted CANSIM series V39062 was determined to be 115 basis points based on a duration of 10.6 for the portion of the liability assumed to be settled through the purchase of annuities. Accordingly, the discount rate assumed for the purchase of non-indexed annuities is 2.81%.



- status, service accrual and increase in earnings between the current valuation date and the next valuation date. An adjustment was made for new entrants between the two valuation dates. The demographics and earnings of the new entrants are consistent with the new entrants hired over the past year. An adjustment was also made for the cost of living increase to be granted to retired and deferred members prior to the end of the year, if any. The resulting projected solvency liability was then discounted with interest to the current valuation date;
- (b) the present value of the benefit payments expected to be paid between current valuation date and the next valuation date, discounted with interest to the current valuation date;
 - (c) the solvency liability as at the current valuation date.

For purposes of calculating the solvency incremental cost, the expected decrements, as well as the expected benefit payments between the current valuation date and the next, were determined using the going concern demographic assumptions. The projected solvency liability at the next valuation date was determined using the same method and assumptions as disclosed in this Appendix. In particular, we have assumed that the discount rates will remain the same throughout the projection period and the Standards of Practice for determining commuted value rates in effect at the valuation date will remain unchanged, as will the current educational guidance on the estimation of annuity purchase costs.

Appendix C. MEMBERSHIP DATA

This section provides a summary of membership data used in the valuation. Eckler provides membership record keeping and administration services for the Plan, updated based on an annual report provided by the University. The data was compiled from our records as at December 31, 2021. We have reconciled the data with that used in the previous valuation and are satisfied that the data are sufficient and reliable for the purposes of the valuation.

Active Members²	12.31.2021	12.31.2020
Number of Members	465	459
Average Pensionable Earnings ³	\$79,790	\$84,732
Average Credited Service	10.1	10.5
Average Age	48.9	49.0
Total Required Contributions with Interest	\$24,999,211	\$24,949,392
Total Additional Voluntary Contributions with Interest	\$139,610	\$123,591
Deferred Pensioners	12.31.2021	12.31.2020
Number of Members	64	66
Average Age	54.6	55.1
Average Annual Deferred Pension Payable at 65	\$6,817	\$6,831
Pensioners and Survivors	12.31.2021	12.31.2020
Number of Lifetime Pensions	374	351
Average Age (Lifetime Pensions)	74.8	74.8
Average Annual Lifetime Pension	\$26,441	\$26,665
Number of Certain Only Pensions	1	1
Average Annual Certain Only Pension	*	\$*
Number of Great-West Life Pensions	4	6
Average Age (Great-West Life Pensions)	94.0	94.2
Average Annual Great-West Life Pension	\$13,204	\$10,872

² Active Members includes sessional employees with earnings in the calendar year prior to the valuation date.

³ Earnings shown represent the actual earnings in the year prior to the valuation date. Earnings for new entrants have been annualized.



Sessional Employees⁴	12.31.2021	12.31.2020
Number of Members	42	41
Total Required Contributions with Interest	\$82,510	\$72,217

⁴ Sessional Members includes sessional employees that did not have any pensionable earnings in the calendar year prior to the valuation date.



Distribution of Active Membership

The following tables summarize the distribution of active membership by age and credited service. We have included the count of members in each group and shown their average pensionable earnings for 2021.

Academic and Non-Union Members

Age Group	Credited Service								Total
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35+	
20 - 24	1								1
	*								*
25 - 29	3								3
	55,921								55,921
30 - 34	19	1							20
	47,320	*							49,370
35 - 39	31	13	2						46
	53,215	100,984	*						68,935
40 - 44	29	20	7	4					60
	57,698	95,053	102,843	94,413					77,864
45 - 49	12	17	2	3	1				35
	53,220	103,731	*	105,067	*				87,381
50 - 54	20	7	5	15	5				52
	39,519	104,258	116,867	120,631	123,228				87,118
55 - 59	11	9	7	12	10	3			52
	33,085	91,306	129,027	123,680	134,468	113,137			101,099
60 - 64	11	5	4	11	11	4	1		47
	66,945	116,733	96,333	137,370	137,321	171,398	*		118,427
65 - 69	2	2	1	4	5	3	1	2	20
	*	*	*	136,205	138,595	153,026	*	*	123,950
70 - 74				1	1		1	1	4
				*	*		*	*	105,010
Total	139	74	28	50	33	10	3	3	340
	50,389	100,951	110,666	122,956	134,814	148,408	86,307		89,185
								136,678	

*Earnings in cells with fewer than three members have been suppressed.



Non-Academic Union Members

Age Group	Credited Service								Total
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35+	
20 - 24	1								1
	*								14,209
25 - 29	2								2
	*								7,014
30 - 34	4	4							8
	43,334	65,556							54,445
35 - 39	7	13	5						25
	45,870	57,380	75,691						57,819
40 - 44	6	7	5	1	2				21
	39,963	53,900	63,390	*	*				54,293
45 - 49	8	2	5	2	1	1			19
	44,947	*	59,780	*	*	*			52,583
50 - 54	3	1	2	2	3				11
	48,400	*	*	*	54,809				57,902
55 - 59	3	3	4	1	2	4	1		18
	50,025	49,912	50,090	*	*	52,231	*		52,182
60 - 64	1	1	2	2	3		4	1	14
	*	*	*	*	49,290		59,556	*	58,475
65 - 69				1		1	2		4
				50,399		72,270	59,158		60,246
70 - 74						1		1	2
						*		*	*
Total	35	31	23	9	11	7	7	2	125
	42,328	56,048	63,586	60,565	56,499	56,375	60,391	*	54,237

**Earnings in cells with fewer than three members have been suppressed.*



The following table summarizes the distribution of inactive members by age.

Pensioner and Survivor Lifetime Pensions			Deferred Pensioners		
Age	Count	Average Annual Lifetime Pension	Age	Count	Average Annual Deferred Pension Payable at 65
45 - 49	1	*	35 - 39	5	\$5,541
50 - 54	-	-	40 - 44	4	5,890
55 - 59	7	14,352	45 - 49	12	6,739
60 - 64	32	24,512	50 - 54	10	11,386
65 - 69	67	20,212	55 - 59	9	6,332
70 - 74	86	30,108	60 - 64	14	5,671
75 - 79	71	34,510	65 - 69	8	6,032
80 - 84	55	23,954	70+	2	*
85 - 89	36	25,070			
90 - 94	13	18,772			
95+	6	16,600			
Total	374	\$26,441	Total	64	\$6,817



The following table summarizes the changes in membership since the previous valuation.

Reconciliation of Membership

	Active ³		Pensioner	Deferred	Sessional ⁴⁵	Total
	Academic and non-union members	Non-Academic union members				
At December 31, 2020	321	138	352	66	41	918
Data adjustments		1		(1)		
New entrants	53	11				64
Sessional to active	3				(3)	
Active to sessional	(8)	(1)			9	
Terminations						
- Deferred	(2)	(3)		5		
- Paid out	(8)	(6)		(1)	(2)	(17)
- Small Benefit	(7)	(4)			(3)	(14)
Retirements						
- Pension	(10)	(11)	26	(5)		
Death	(2)		(6)			(8)
Survivors			3			3
At December 31, 2021	340	125	375	64	42	946

³ Includes sessional employees with earnings in the year prior to the valuation date.

⁴ Sessional employees with no earnings in the year prior to the valuation date.



Appendix D. PLAN ASSETS

Assets of the Plan are held in trust with CIBC Mellon. The funds are invested in a number of pooled funds operated by Connor, Clark, & Lunn. We have relied on the draft financial statements for the fund prepared by Brandon University for the December 31, 2021 year-end, as well as information provided by CIBC Mellon to determine the assets of the Plan.

Asset Mix Policy

	Benchmark
Canadian Equity	15.0%
U.S. Equity	18.5%
International Equity	18.5%
Emerging Markets Equity	8.0%
Long Bond Fund	20.0%
Infrastructure	10.0%
Real Estate	10.0%
Cash and Equivalents	0%
Total	100.0%

The Pension Trustees are in the process of updating the investment policy and benchmark asset mix. We have reflected the draft benchmark asset policy in this valuation.

FINANCIAL STATEMENTS

A summary of the change in assets since January 1, 2019, provided by the University, is summarized below:

	2019	2020	2021
Balance at January 1	176,273,632	203,861,060	225,643,712
Member Contributions	2,521,049	2,349,475	2,508,046
University Contributions	3,256,463	3,356,543	3,430,427
Transfers	611,601	167,299	7,365
Investment Income	4,969,776	6,000,786	5,874,650
Realized Gains + Losses	9,057,882	16,309,964	22,825,770
Change in Market Values	17,998,497	5,840,528	1,336,778
Other income	0	43	37
Pensions Paid	(8,929,773)	(9,194,105)	(9,580,069)
Termination Payments	(929,418)	(1,409,139)	(1,012,839)
Death Payments	0	(657,677)	0
Expenses	(968,649)	(981,065)	(1,071,994)
Balance at December 31	203,861,060	225,643,712	249,961,883

The market value of assets as at December 31, 2021 shown above is equal to the invested assets of \$249,583,261 plus contributions receivable equal to \$624,373 minus payables equal to \$245,751.

ACTUARIAL VALUE OF ASSETS

To place a value on the assets for actuarial valuation purposes, we have used an approach which smooths out the volatility of the market valuation by amortizing excess investment earnings net of expenses over the assumed investment earnings for the same period based on the actuarial valuation in effect at the time. Specifically, net investment earnings in excess of the following assumed rates are amortized over a four-year period. We further restrict the actuarial value of assets to be within 10% of the market value, if required.

Year	Assumed Investment Return		Actual Net Investment Return	Excess Net Investment Return
2018	5.55%	10,180,018	(5,140,073)	(15,320,091)
2019	5.55%	9,686,892	31,057,506	21,370,614
2020	5.30%	10,661,865	27,170,213	16,508,348
2021	5.25%	11,724,309	28,965,205	17,240,895



In practical terms, the actuarial asset value includes 100% of the excess investment earnings from 2018, 75% from 2019, 50% from 2020 and 25% from 2021.

The actuarial asset value is derived as follows:

Market value at Dec. 31, 2021				249,961,883
-75% of 2021 excess investment earnings	0.75 x	17,240,895	=	(12,930,671)
-50% of 2020 excess investment earnings	0.50 x	16,508,348	=	(8,254,174)
-25% of 2019 excess investment earnings	0.25 x	21,370,614	=	(5,342,654)
-0% of 2018 excess investment earnings	0.00 x	(15,320,091)	=	0
Actuarial value at Dec. 31, 2021				<u>223,434,384</u>
Actuarial value as a percent of market value				89.39%

The actuarial value of assets must be within 10% of the market value of assets. As shown above, the actuarial value before limit is less than 90% of the market value. Therefore, the actuarial value of assets at December 31, 2021 is restricted to \$224,966,000, resulting in an actuarial value as a percent of market value of 90.00%.

INVESTMENT RETURN

Assuming that all cash flows occurred in the middle of the year, the pension fund earned a rate net of return of expenses of 12.97% based on the market value of assets and 11.37% based on the actuarial value of assets in 2021.

Appendix E. PLAUSIBLE ADVERSE SCENARIOS

A plausible adverse scenario is considered to be one that will occur in the short term (immediately to one year) with a likelihood of occurring between 1 in 10 and 1 in 20 based on the opinion of the actuary. The purpose of the following scenarios is to illustrate the impact on the Plan's financial position of the following adverse but plausible assumptions relative to the best estimate assumptions selected for the Plan's going concern valuation. The purpose of disclosing these results is to demonstrate the sensitivity of the funded status and annual current service cost between the current and the next valuation date to certain key risk factors affecting the Plan. The results of the scenarios selected are shown in the table below, with a description of each scenario following.

	Going Concern Results at 12.31.2021	Plausible Adverse Scenario Results at 12.31.2021		
		Interest Rate Risk	Deterioration of Asset Values	Longevity Risk
Total going concern assets	\$224,966,000	\$229,419,000	\$214,892,000	\$224,966,000
Total going concern liabilities	\$203,065,000	\$210,062,000	\$203,065,000	\$207,164,000
Going concern excess (unfunded liability)	\$21,901,000	\$19,357,000	\$11,827,000	\$17,802,000
Employer current service cost	\$3,337,000	\$3,640,000	\$3,337,000	\$3,432,000
Employer current service cost as % of earnings*	8.75%	9.54%	8.75%	9.00%
Discount rate	5.50%	5.19%	5.50%	5.50%
Adjusted market value of assets	\$249,962,000	\$254,910,000	\$215,792,000	\$249,962,000

* this is based on estimated earnings of \$38,138,000

INTEREST RATE RISK

This scenario illustrates the sensitivity of the funded status of the Plan and current service cost to an immediate change in the market interest rates underlying fixed income investments.

In order to assess the impact of a decrease in interest rates of a magnitude consistent with a 1 in 10 likelihood of occurring, we have used the same stochastic model that is used to determine the going concern discount rate (see Appendix B). The stochastic model is based on 5,000 simulations of projected financial variables, including long term yields on fixed income investments and asset class returns. Our long-term best estimates for these variables, and the going concern discount rate are based on the median values over these 5,000 simulations.



To determine the sensitivity to interest rate risk, and the resulting impact on Plan assets and liabilities, we have:

- considered the hypothetical going concern discount rate over the 500 trials where fixed income yields are lowest at the one-year horizon,
- determined the decrease in median long-term fixed income yields over the 500 trials where fixed income yields are the lowest at the one-year horizon.

As such, under the interest rate risk scenario, the going concern discount rate is decreased by 31 basis points as of December 31, 2021.

With respect to the impact on fixed income assets, the scenario results in a decrease in long term yields on fixed income investments of 0.63%.

Based on the estimated duration of the Plan assets, liabilities and the current service cost, we have then determined the estimated change to the Plan's funded status under the interest rate risk scenario.

DETERIORATION OF ASSET VALUES

This scenario illustrates the sensitivity of the funded status of the Plan to short-term shock which causes a reduction in the market value of assets, with no change to the liabilities of the Plan. This scenario is assumed not to impact the current expectation of the long-term rate of return, and consequently, the going concern discount rate.

In order to assess the impact of a decrease in asset values of a magnitude consistent with a 1 in 10 likelihood of occurring, we have used the same stochastic model that is used to determine the going concern discount rate (see Appendix B). The stochastic model is based on 5,000 simulations of projected financial variables, including long term yields on fixed income investments and asset class returns.

To determine the sensitivity to a deterioration in asset values, based on the Plan's target asset mix, we have determined the decrease in median investment returns over the 500 trials where investment returns are the lowest at the one-year horizon.

As such, under the deterioration of asset values scenario, the market value of assets is decreased by 13.7% as of December 31, 2021.

LONGEVITY RISK

This scenario illustrates the sensitivity of the funded status of the Plan to pension plan members living longer than expected. The impact of this scenario was determined using more conservative mortality assumption than currently employed, resulting in a one-year increase to the average life expectancy of the Plan as of December 31, 2021.



Appendix F. CERTIFICATE OF TRUSTEES

With regards to the December 31, 2021 actuarial report for the Brandon University Retirement Plan, we hereby certify that, to the best of our knowledge and belief:

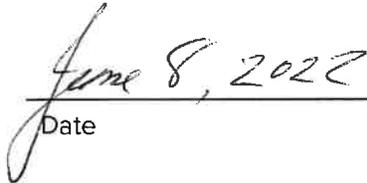
- A copy of the official Plan document and all amendments made to December 31, 2021 were provided to the actuary;
- The membership data provided to the actuary includes a complete and accurate description of every person who is entitled to benefits under the terms of the Plan for service up to December 31, 2021; and
- All events subsequent to December 31, 2021 that may have an impact on the valuation have been communicated to the actuary.
- The valuation reflects the terms of the engagement with the actuary, in particular the use of a 5.50% valuation interest rate.



Signature



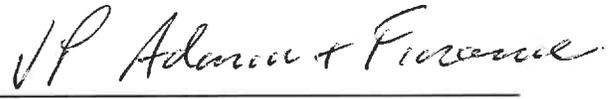
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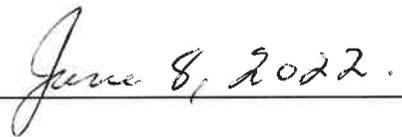
Date



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Title



Date

