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Report to the Trustee on the Actuarial Investigation as at 31 December 2022

The Macquarie University Professorial Superannuation Scheme

16 June 2023

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Key Results and Recommendations

I have prepared this report on the actuarial investigation of the Macquarie University Professorial Superannuation Scheme (the Scheme) as at 31 December 2022. The Scheme is closed to new members.

My report should not be relied upon for any other purpose or by any party other than the Trustee of the Scheme. Mercer is not responsible for the consequences of any other use. This report should be considered in its entirety and not distributed in parts. The Trustee should share this report with Macquarie University (the University), who may consider obtaining separate actuarial advice on the recommendations contained in the report.

Change in Financial Position

The following table summarises the Scheme's financial position, at both this and the previous actuarial investigation.

	Position at 31 December 2022		Position at 31 December 2021	
Defined Benefits Only	**$000**	**Asset Coverage**	**$000**	**Asset Coverage**
Assets	7,628		9,699	
Liability for Vested Benefits	11,004	69.3%	9,272	104.6%
Liability for Actuarial Value of Accrued Benefits	11,004	69.3%	9,272	104.6%
Excess of Assets over Liabilities	(3,376)		427	

The coverage level of liabilities at 31 December 2022 was lower than at the previous actuarial investigation, primarily due to the impact of the following:

- Investment earnings on the Scheme assets of -9.3% pa, which were lower than the expected rate of +7.0% pa;
- No pensioner deaths during the year; and
- The change in assumptions adopted for this investigation.

These items were partially offset by pension indexation of 1.9%, which was lower than the expected rate of 4.0%.

Assumptions

I have updated the financial assumptions adopted to value the Scheme liabilities from those used in the previous investigation. These reflect changes to the economic environment, as well as the switch of the Scheme assets to a more conservative investment strategy during the year. There has been a slight decrease in the gap between the assumed rate of investment earnings and the rate of pension indexation from 3.0% pa to 2.75% pa. I have also updated the mortality rates used to value the liabilities to reflect changes in longevity since the effective date of the mortality table used in the previous investigation. These changes in aggregate have increased the value of liabilities.

The liabilities shown above assume the Scheme continues to operate 'as is' until the last pensioner dies. In the event of a Scheme wind up, or termination of pension payments, prior to the natural cessation of the pensions, different measures of benefit liabilities may apply, and further financing from the University may be required to meet the resulting benefit liabilities. Please refer to the discussion in Section 9 for more detail.

Recommended Contribution Rates and Projections

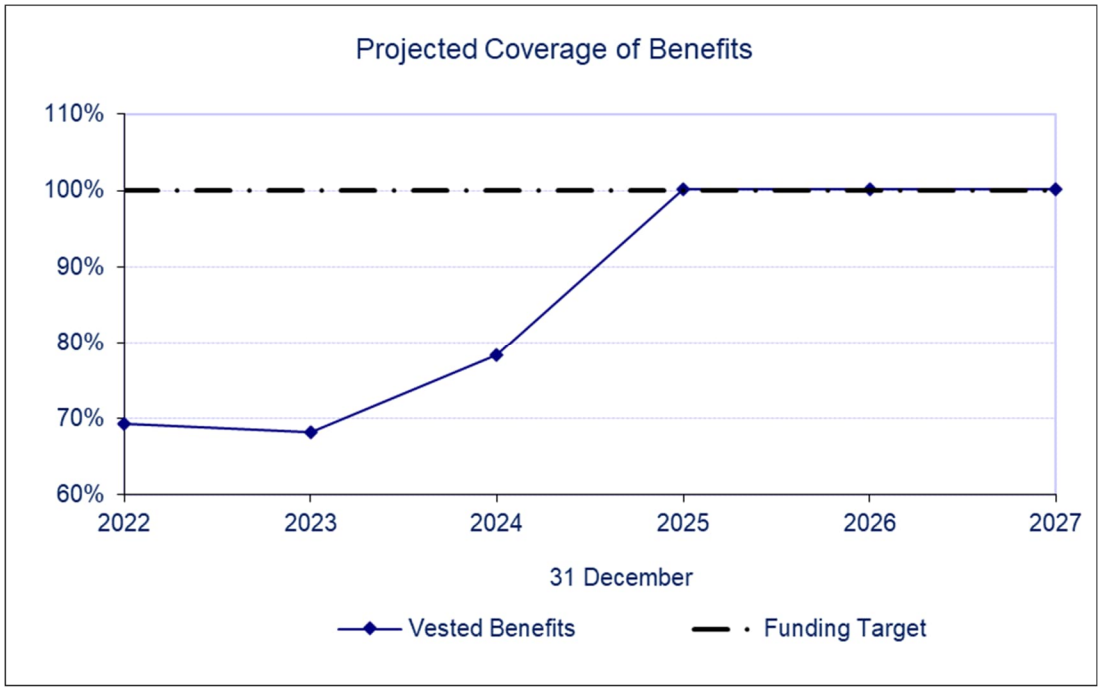
At 31 December 2022, the Scheme was in an unsatisfactory financial position. The 69.3% coverage of the Defined Benefit Vested Benefits was significantly below the financing objective of 100% coverage adopted for this investigation.

Following discussion with the Trustee and University regarding the financial position at 31 December 2022 and potential contribution options, I recommend the University contributes to the Scheme at the annual rate of 1.2 times Professorial Salary, and makes the following contributions over the next three years:

- $370,000 in the year ending 31 December 2023;
- $1,600,000 in the year ending 31 December 2024; and
- $2,500,000 in the year ending 31 December 2025.

The contribution of $370,000 in 2023 represents the annual contribution that would have been required for each of the next three years to return the Scheme to a satisfactory financial position if the assumptions used to value the pension liabilities had not been changed for this investigation.

I have prepared the following projection of Scheme assets and benefit liabilities based on the assumptions adopted for this investigation and the recommended contributions:



The graph above shows that the recommended contribution program is expected to result in assets of 100% of Defined Benefit Vested Benefits (which is the financing objective adopted in this investigation) by 31 December 2025.

The Scheme is therefore projected to be in a satisfactory financial position by 31 December 2025.

Requirements of SPS 160: Restoration Plan

My recommendations take into account the requirements of APRA Superannuation Prudential Standard 160: Defined Benefit Matters (SPS 160). SPS 160 requires that a Restoration Plan is put in place given that the Scheme is in an “unsatisfactory financial position”.

Specifically, SPS 160 requires the Trustee to take the following actions on receipt of this report:

- Provide a copy of this report to APRA within 15 business days of receipt;
- Consult with the University about implementing the recommended contribution program;
- Appoint an actuary to be responsible for advice to the trustee during the restoration period;
- Develop and approve a Restoration Plan within 3 months;
- Provide a copy of the Restoration Plan to APRA within 15 business days of approval; and
- Implement the Restoration Plan.

The above projection indicates that the recommended contribution program is expected to return the Scheme to a satisfactory financial position by 31 December 2025. The contribution program will be reviewed at the next actuarial investigation as at 31 December 2023.

Risks

The above projection is based on the assumptions adopted, which represent a single scenario from a range of possibilities. The future is uncertain and the Scheme’s actual experience will differ from these assumptions; these differences may be minor in their overall effect, or they may be significant and material. In addition, different sets of assumptions or scenarios may also be within the reasonable range and results based on those alternative assumptions would be different. I will review the liability coverage level in my role as Scheme actuary at least once every year.

Sections 7 and 8 provide illustrations of the impact of investment volatility on the projected coverage of Vested Benefits and show that a 1% pa reduction in the assumed future investment return would result in a 6% increase in the assessed value of liabilities.

Section 9 discusses risks related to the Scheme’s pension liabilities, including inflation risk, longevity risk and risks involved if the pension liabilities were to be valued by a third party (for example, by a life office).

Other Findings and Recommendations

Suitability of Policies

I am satisfied that the investment policy for the Scheme is suitable.

Recommendations

I recommend that the Scheme’s Shortfall Limit be increased from 95.0% to 98.2%.

Actions Required by the Trustee

The Trustee should consider this report and confirm its agreement (or otherwise) to the contribution and other recommendations including the establishment of a Restoration Plan in accordance with SPS 160.

The Trustee should seek formal agreement from the University to contribute in line with the recommendations in this report.

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Introduction

Background of the Scheme

The Scheme is operated for the benefit of former professorial employees of the University. The governing rules of the Scheme are set out in the Trust Deed dated 5 April 1967 (as amended).

The Trustee of the Scheme is Diversa Trustees Limited which operates the Scheme as required under the Trust Deed.

A high-level summary of the benefits provided is set out in Appendix A.

Purpose

I have prepared this report exclusively for the Trustee of the Macquarie University Professorial Superannuation Scheme for the following purposes:

- To present the results of an actuarial investigation of the Scheme as at 31 December 2022;
- To review Scheme experience for the period since the previous actuarial investigation as at 31 December 2021;
- To recommend contributions to be made by the University intended to allow the Scheme to meet its benefit obligations in an orderly manner, and to reach and maintain an appropriate level of security for members' accrued benefit entitlements;
- To satisfy the relevant requirements of the superannuation legislation for actuarial investigations of the Scheme's financial position;
- To meet legislative requirements under relevant Commonwealth superannuation legislation; these include the Superannuation Industry (Supervision) Act 1993 and associated regulations (SIS legislation) and SPS 160.

My report satisfies Professional Standard 400 issued by the Actuaries Institute setting out requirements for actuarial investigations of defined benefit superannuation funds.

The previous actuarial investigation was conducted as at 31 December 2021 by David O'Keefe FIAA of ALEA Actuarial Consulting Pty Limited, and the results are contained in a report dated 7 April 2022.

Significant events since the investigation date

I am unaware of any significant events that have occurred since 31 December 2022 which would materially impact on the findings or recommendations in this report.

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Experience since the Last Investigation

Data provisions

To prepare this report, I have relied on financial and participant data provided by the Scheme's administrator, Iress. The data used is summarised in this report. I have not independently verified or audited the data provided but have performed a range of broad "reasonableness" checks and tested for consistency with previous records. I am satisfied that the data is sufficiently accurate for the purposes of this actuarial investigation.

I have also relied upon the documents, including amendments, governing the Scheme as provided by the Trustee. The Trustee is ultimately responsible for the validity, accuracy and comprehensiveness of this information. If the data or Scheme provisions are not accurate and complete, the investigation results may differ significantly from the results that would be obtained with accurate and complete information; this may require a revision of this report.

Membership

The membership of the Scheme's defined benefit section as at 31 December 2022 is as follows:

Category	Number	Pension Amounts (per annum)	Average Age
Pensioners	18	$1,449,077	84.6

During the period under review the number of pensioners within the Scheme remained the same. At least two deaths were expected, which meant the Scheme liabilities did not reduce as expected, which had a negative impact on the Scheme's financial position.

Investment Returns

The investment return for the year to 31 December 2022 was -9.3% pa compared to the long term assumption at the last actuarial investigation of 7.0% pa. The lower return than assumed had a negative impact on the Scheme's financial position.

Pension Indexation

Pensions for the defined benefit pensioners increased by 1.9%, reflecting the change in Average Weekly Ordinary Time Earnings (AWOTE). The lower pension indexation than the assumed rate of 4.0% had a positive impact on the Scheme's financial position.

Contributions

The University contributed at the rate of 1.5 times Professorial Salary over the period since the previous actuarial investigation, to cover the expenses of operating the Scheme, which was as recommended. The contributions had a slightly positive impact on the Scheme's financial position as the expenses incurred were less than 1.5 times Professorial Salary.

Impact of the experience on the financial position

The main experience items affecting the Scheme's financial position during the period from 31 December 2021 to 31 December 2022 were as follows:

Item	Assumption at previous review	Scheme experience	Comment on effect
Investment returns	7.0% pa	-9.3% pa	Negative effect – investments grew at a lower rate than assumed
Pension Indexation	4.0% pa	1.9% pa	Positive effect – benefit liabilities grew at a lower rate than assumed
Membership changes	2 deaths	no deaths	Negative effect – pension liabilities did not reduce at the rate expected
Expenses	1.5 times Professorial Salary	1.2 times Professorial Salary	Slight positive effect – University contributions were greater than expenses incurred

The overall impact of this experience was a deterioration in the Scheme's net financial liabilities (the difference between assets and liabilities).

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Actuarial Assumptions

The ultimate cost to the University of providing the benefits to members is:

- The amount of benefits paid out; and
- The expenses of running the Scheme, including tax;

less

- The return on investments.

The ultimate cost to the University will not depend on the actuarial assumptions or the methods used to determine the recommended University contribution, but on the actual experience of the Scheme. The financing method and actuarial assumptions adopted will however affect the timing of the contribution requirements from the University.

The actuarial process includes projections of possible future Scheme assets and benefit liabilities based on actuarial assumptions about future experience.

These assumptions include investment returns, pension increases, mortality rates and the costs of operating the Scheme.

It is not expected that these assumptions will be precisely borne out in practice, but rather that in combination they will produce a model of possible future experience that is considered a suitable basis for setting contribution rates.

Economic assumptions

The most significant assumption made in estimating the cost of defined benefits is the difference between:

- The assumed rate of investment earnings; and
- The rate of pension indexation used in the projections of future pension payments.

This difference is commonly referred to as the “gap”.

The key economic long term assumptions adopted for this investigation are:

	Assumption
Investment returns (gross of tax, net of investment fees)	6.25% p.a.
Pension Indexation	3.50% p.a.

The assumption for investment returns is based on the expected long-term investment return for the Scheme’s current benchmark investment mix, calculated using Mercer’s assumptions of the means and standard deviations of returns from the various underlying asset classes and the correlations of returns between those asset classes.

The pension indexation assumption is based on long-term economic forecasts for future increases in AWOTE.

Demographic and decrement assumptions

Pensioner mortality

Examples of the assumed pensioner mortality rates are set out in below. I have based these rates on a mortality table derived by Mercer from the experience of public sector superannuation schemes in Australia from 2012-17.

	Base mortality rates	
Age	Males	Females
65	0.00410	0.00281
70	0.00794	0.00552
75	0.01526	0.01068
80	0.03268	0.02262
85	0.07026	0.04911
90	0.13584	0.10821

An allowance for future mortality improvements from the mid-point of the experience period is made based on the 25-year improvement factors from Australian Life Tables 2015-17.

Other assumptions

New members

The Scheme is closed to new entrants and I have made no allowance for new members.

Expenses

Administration costs, management expenses and consulting fees are deducted from Scheme assets. Based on recent experience, these are assumed to average 1.2 times Professorial Salary.

Tax

I have assumed that earnings on the Scheme's assets will continue to be tax-free, as they only support pensions in payment. All future University contributions are assumed to be subject to 15% contribution tax, after deduction of any administration and management costs.

Impact of the changes in assumptions

I have summarised in the table below the changes in assumptions from those used in the previous investigation and the reasons for the changes:

Assumption	Investigation at 31 December 2022	Investigation at 31 December 2021	Reason for change
Investment return	6.25% p.a.	7.0% p.a.	Updated to reflect long term expected outlook, and the switch of assets to a more conservative investment strategy.
Pension indexation	3.5% p.a.	4.0% p.a.	Updated to reflect expected long term outlook.
Pensioner mortality	Standard Mercer pensioner mortality table 2012-17 with improvements.	Appropriate to the 2005 year as provided by the ABS in its publication “Population Projections Australia 2002-2101”.	Updated to better reflect expected pensioner longevity.

The overall impact of the changes in assumptions was to increase the value of liabilities by approximately $2.5m.

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Assets

Market value

The net market value of the Scheme's assets as at 31 December 2022 was $7,706,000 (based on the data provided by the Scheme's administrator). The net assets available to support the defined benefit liabilities is calculated as follows:

Calculation of Defined Benefits Assets at 31 December 2022	
Net market value of the Scheme assets as at 31 December 2022	**$7,706,000**
Less outstanding transactions	$39,000
Less assets held to meet the Operational Risk Financial Requirement	$39,000
Net assets to support the defined benefit liabilities of the Scheme	**$7,628,000**

Operational Risk Reserves

The assets to meet the Operational Risk Financial Requirement (ORFR) are held directly by the Scheme. I have deducted these assets when calculating the assets to support the Scheme's defined benefit liabilities (as above).

The scope of this Investigation does not include a review of the adequacy of assets held to meet the Trustee's ORFR or the Trustee's ORFR strategy.

The Australian Prudential Regulator Authority (APRA) is conducting a review into the existing Prudential Standard SPS 114 Operational Risk Financial Requirement (SPS 114) with enhanced obligations for trustees. The Trustee will likely require a review of its ORFR strategy when the new prudential standard is in effect.

Investment Policy

The primary objectives of the investment policy are to deliver investment returns of 1.0% pa above the CPI over rolling seven-year periods, to achieve a return in excess of the average performance of comparable investments and to deliver no more than 5 negative rates of return over any 20-year periods.

The Scheme's investment strategy for assets supporting defined benefit liabilities is the Mercer Conservative Growth Fund. The Scheme's strategic asset allocation involves a benchmark exposure of 35% to 'growth' assets such as shares and property and a benchmark exposure of 65% to 'defensive' assets such as cash and fixed interest.

The table below sets out the actual and benchmark investment allocations of these assets as at the investigation date. 'Growth' assets are expected to earn higher returns over the long term compared to 'defensive' assets, but also to exhibit more variation in returns from year to year.

Asset Class	Actual Asset Allocation	Strategic Asset Allocation
Australian equities	10%	9%
Overseas equities	10%	12%
Property	12%	12%
Other growth	3%	2%
Total growth	**35%**	**35%**
Fixed interest	46%	45%
Cash	19%	20%
Total defensive	**65%**	**65%**
Total	**100%**	**100%**

Source: The Scheme's Quarterly Investment Report for quarter ending 31 December 2022

The Scheme also had approximately 7% of assets invested in the Macquarie and NAB Cash Accounts at the investigation date, the majority of which related to a contribution paid by the University in December 2022.

At the effective date of the previous actuarial investigation, 31 December 2021, the Scheme's investment strategy for assets supporting defined benefit liabilities was the Schroder Strategic Growth Fund, which involved a benchmark exposure of 72% to growth assets and 28% to defensive assets. During the year, the Trustee and the University agreed to adopt to a more conservative investment strategy for the Scheme's assets.

The defined benefit liabilities are not affected by the investment return on the Scheme's assets. The volatility of the Scheme's investment returns will therefore affect the financial position of the Scheme from year to year and is likely to impact on the required level of University contributions.

I am satisfied that the current investment strategy is appropriate in view of the Scheme's longer term cash flows and the financial support provided by the University.

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The Actuarial Approach

Financing Objective

The financing objective adopted for this investigation is to maintain the value of the Scheme's assets at least equal to 100% of Defined Benefit Vested Benefits.

I have taken into consideration the provisions of the Trust Deed and any professional requirements as set out below.

Professional Requirements

Under Professional Standard 400 issued by the Actuaries Institute, the funding method selected by the actuary *"must aim to provide that:*

(a) members' benefit entitlements (including any pension increases provided by the Trust Deed or in accordance with either precedent or the intentions of the Trustee and/or Fund Sponsor) are fully funded before the members retire; and

(b) the Net Assets of the Fund from time to time, after making full provision for the entitlements of any beneficiaries or members who have ceased to be employed, exceed the aggregate of benefits which employed members would reasonably expect to be payable to them on termination of membership, including the expenses of paying those benefits, and having regard to the provisions of the Trust Deed and the likely exercise of any Options or Discretions." (Paragraph 5.5.4 of PS400).

Accordingly, the actuary needs to be satisfied that any funding program is expected to provide a level of assets which meets or exceeds immediate benefit entitlements based on members' reasonable expectations. Should assets fall below that level, the funding program needs to aim to lift assets to at least the required level over a reasonable time period and to maintain assets at or above the required level thereafter.

I have set the financing objective on the basis that members' reasonable expectations on termination would be to receive the lump sum value of their pension, on the actuarial assumptions adopted for this investigation.

Provisions of the Trust Deed

The rules of the Scheme require that the Trustee ensures compliance with the relevant requirements (clause 20) – these include annual actuarial investigation of the Scheme.

Financing Method

There are various financing methods that could be followed in setting the University contribution level. This investigation uses the "Target Funding" method, which was also used at the previous investigation.

Under this method, the University contribution rate required to provide a target level of coverage of a particular benefit liability measure is determined.

Under this method of financing, the level of the University contribution may vary from time to time to ensure that the Scheme remains on course towards its financing objective (minimum 100% coverage of Vested Benefits).

I consider that the Target Funding method is suitable in the Scheme's current circumstances as it allows the recommended contribution rate to be determined specifically to meet the Scheme's financing objective.

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Financial Position of the Scheme

Funding status

Vested Benefits

Vested Benefits are the estimated actuarial value of expected future payments in respect of current pensioners.

At 31 December 2022, the Scheme assets represented 69.3% of the vested benefits and hence the Scheme was considered to be an “unsatisfactory financial position” under SIS legislation This means the financing objective of 100% coverage adopted for this investigation has not been met.

Actuarial Value of Accrued Benefits

The Actuarial Value of Accrued Benefits equals the Vested Benefits for pensioners.

The following table shows these funding measures at both the previous and current investigation dates.

	Position at 31 December 2022		Position at 31 December 2021	
Defined Benefits Only	$000	Asset Coverage	$000	Asset Coverage
Assets	7,628		9.699	
Liability for Vested Benefits	11,004	69.3%	9,272	104.6%
Liability for Actuarial Value of Accrued Benefits	11,004	69.3%	9,272	104.6%
Excess of Assets over Liabilities	(3,376)		427	

The coverage level of liabilities was lower than at the previous actuarial investigation due to:

- The overall negative experience discussed in Section 3; and
- The changes in the actuarial assumptions resulting in an increase in the value of liabilities as discussed in Section 4 of this report.

Previous recommendations

The previous actuarial investigation recommended University contributions at the rate of 1.5 times Professorial Salary for the year ending 31 December 2022, which the University has paid.

Recommended Contributions

Based on the financing objective described above and the results of this investigation, and following discussion with the Trustee and University regarding potential contribution options, I recommend that the University contributes to the Scheme at the annual rate of 1.2 times Professorial Salary, and makes the following contributions over the next three years:

- $370,000 in the year ending 31 December 2023;
- $1,600,000 in the year ending 31 December 2024; and
- $2,500,000 in the year ending 31 December 2025.

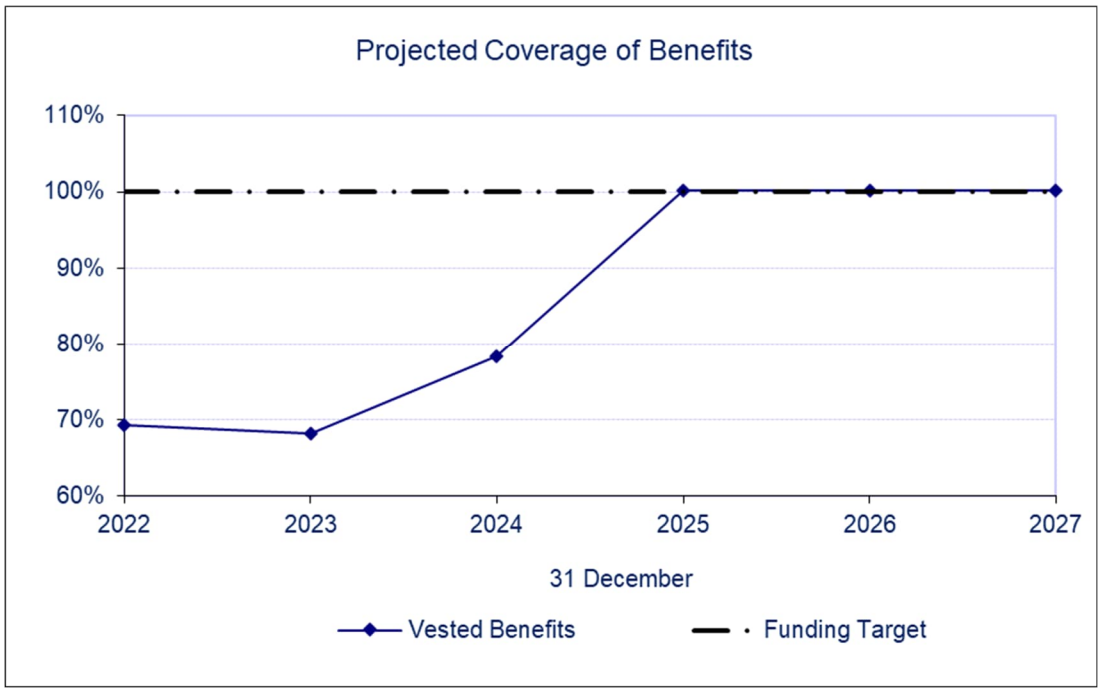
The contribution of $370,000 in 2023 represents the annual contribution that would have been required for each of the next three years to return the Scheme to a satisfactory financial position if the assumptions used to value the pension liabilities had not been changed for this investigation.

Projected Financial Position

I have prepared a projection of Scheme assets and benefit liabilities based on:

- The actuarial assumptions adopted for this investigation; and
- The recommended University contributions.

The results of the projection are as follows:



This projection is based on the assumptions adopted, which represent a single scenario from the range of possibilities. The future is uncertain and the Scheme's actual experience will differ from those assumptions; these differences may be minor in their overall effect, or they may be significant and material. In addition, different sets of assumptions or scenarios may also be within the reasonable range and results based on those alternative assumptions would be different, as discussed below.

The projection above shows that the recommended contributions are anticipated to result in assets of 100% of Defined Benefit Vested Benefits (which represents the financing objective adopted in this investigation) by 31 December 2025.

The Scheme is therefore projected to be in a satisfactory financial position by 31 December 2025.

Sensitivity Analysis

I have tested the effect of changes to the key assumptions on the value of liabilities.

The liabilities shown in this report are calculated using my best estimate assumptions for investment returns of 6.25% pa and pension indexation of 3.5% pa. As both future investment returns and future pension increases are unknown, it is almost certain that actual experience will differ from these assumptions.

It is the difference between the investment return rate and pension indexation rate (commonly referred to as the 'gap') that is crucial rather than the individual assumptions, because the value of the assets moves with investment returns while the Scheme's defined benefit liabilities grow with pension indexation (i.e. in line with AWOTE).

To quantify the sensitivity of the value of liabilities to my assumptions, I have calculated the change in liability based on the following scenarios:

- Decrease the long term investment return assumption by 1% pa; and
- Increase the pension indexation assumption by 1% pa.

All other assumptions are assumed to remain the same.

The effects of these changes are shown below, with the impact of the change as a percentage of liabilities:

	Accrued liabilities	Change in accrued liabilities	Change in accrued liabilities
Scenario	**$M**	**$M**	**%**
Base assumptions as shown previously	11.004		
Decrease investment return by 1% pa	11.655	0.651	5.9
Increase pension indexation by 1% pa	11.616	0.612	5.6

In both scenarios, the value of Scheme liabilities would continue to exceed the value of Scheme assets.

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Key Risks

Investment Volatility

I have considered the impact of investment volatility on the Scheme's financial position over the next few years using a "High return" and a "Low return" scenario. The returns under both scenarios have been derived from assumptions about the likely risk attached to the Scheme's defined benefit investment strategy.

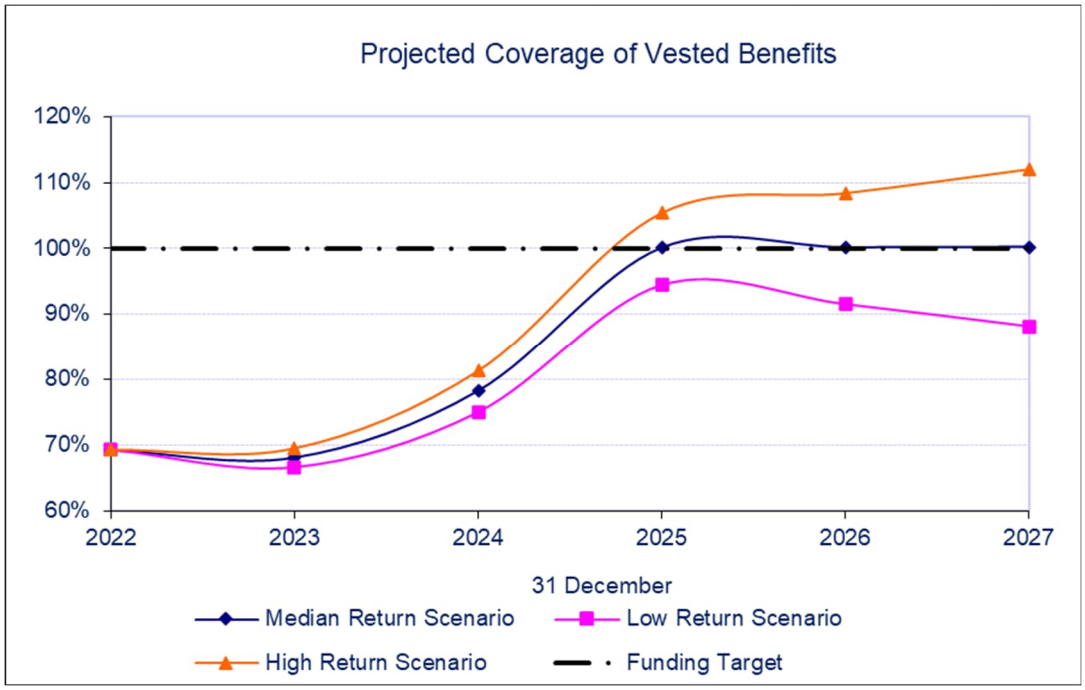
The current vested benefits for defined benefit members are not linked to investment returns. Therefore the Scheme's vested benefits coverage is highly sensitive to changes in the investment return assumptions.

Using the investment return model and assumptions adopted, there is approximately a 10% chance of the Scheme's cumulative investment return being less than the "Low return" scenario over the next five years. Similarly, there is approximately only a 10% chance of the Scheme's cumulative investment return being greater than the "High return" scenario over the next five years.

1 January 2023 to 31 December	Assumed Cumulative Investment Return (%)		
	"Low Return"	Valuation	"High Return"
2023	4.1%	6.25%	8.2%
2024	8.4%	12.9%	17.1%
2025	12.8%	19.9%	26.7%
2026	17.4%	27.4%	37.1%
2027	22.3%	35.4%	48.3%

The cumulative investment return is the total return from 1 January 2023 up to 31 December in the year shown. The extent of variation allowed for in these projections reflects the Scheme's asset mix and Mercer's views on potential variability in investment results in various investment sectors.

The graph below shows the effect on the projected ratio of assets to Vested Benefits for defined benefit members under the "High return" and "Low return" scenarios, with all other investigation assumptions remaining unchanged.



Based on fluctuations in investment returns only, and assuming other experience is in line with the assumptions adopted for this investigation, there is approximately an 80% chance that the coverage of Vested Benefits by assets at 31 December 2025 will fall in the range from 94% to 105%.

The “low return” scenario and the “high return” scenario shown above are illustrations only, and show what may occur under assumed future experiences that differ from my baseline assumptions. These scenarios do not constitute upper or lower bounds and the actual future coverage of Vested Benefits may differ significantly from the range shown above, depending on actual future experience. In fact, there is a 1 in 20 chance that the investment return could be less than -1.5% in any year based on the Scheme’s current benchmark asset allocation.

In my view, the Trustee should be satisfied with the expected improvement in the level of security over the next few years if the University contributes at the recommended levels. However, the Scheme’s financial position will need to be monitored on a regular basis to determine if an increase in University contributions is required due to unfavourable experience.

Legislative risk

This risk is that the Commonwealth Government could make legislative changes that increase the cost of providing the defined benefits – for example, an increase in the rate of tax on superannuation funds. This risk is borne by the University.

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Pension Liabilities and Related Risks

The Scheme currently has lifetime pensioners as shown in the membership table in Section 3. Lifetime pensioners present particular risks to the Scheme as there is uncertainty relating to the level of future payments and the period for which they will be paid.

Future pension increases

The risk is that pension increases will rise more rapidly than assumed, increasing benefits in payment and potentially requiring additional University contributions. This risk is borne by the University.

For example, if the assumed future pension increase (or indexation) rate was increased by 1% pa with no change in other assumptions, then the Vested Benefits would increase by $612,000 as shown in the table in Section 7, with a resulting deterioration in the net financial position from 69.3% to 65.7%.

The actual rate of future pensions increases may vary (positively or negatively) from the rate assumed at this investigation by much more than the (positive) 1% pa illustrated in the example above.

Longevity risk

The risk is that pensioners live longer than assumed, resulting in pension payment costs for more years. This risk is borne by the University.

For example, if all current lifetime pensioners **are assumed to** live one year longer than currently assumed, with no change in other assumptions, then Vested Benefits would increase by $711,000 (University funding cost impact $711,000/0.85 = $836,000), with a resulting reduction in the coverage of Vested Benefits from 69.3% (as per the table in Section 7) to 65.1%.

Impact of using a buy-in contract to fund the pension liability

The basis used to value defined benefit pension entitlements for the purposes of this investigation is considered suitable taking into account the Scheme's current circumstances, including the existing assets and assuming the ongoing support of the University. However, The Trustee could reduce these risks by purchasing a buy-in contract for the lifetime pensioners of the Scheme.

In a buy-in contract, a premium is paid to an insurer and a bulk annuity contract is issued to the Scheme. The annuity contract is considered an investment held by the Scheme. The payment of pensions is still the responsibility of the Trustee, paid to retirees from the Scheme assets and not directly by the insurer. The insurer then pays the Scheme the value of the pensions agreed in the bulk annuity contract. Therefore, the assets and liabilities associated with the contract remain on the balance sheet, but are very well matched.

To illustrate the cost of purchasing a buy-in contract I have downloaded Challenger (the main annuity provider in Australia) annuity rates from their advisor portal. These rates show the average price to provide the current level of lifetime pensions, based on Challenger's interest rate, indexation assumptions and mortality assumptions. The indexation assumptions are linked to the Consumer Price Index, not a salary measure, so the rates are not a direct match for the Scheme's pensions.

Based on these rates, the pension liability would be valued at $11.4 million (i.e. $0.4 million higher than the valuation in this investigation), with a resulting reduction in the coverage of Actuarial Value of Accrued Benefits from 69% to 67%. However, the actual cost of purchasing a buy-in contract could be higher to incorporate the Scheme's indexation policy.

Purchasing a buy-in contract is likely to require significant additional University financing in order to enable provision to be made for continuation of the pension entitlements.

There are additional risks associated with a buy-in that would need to be considered, such as:

- Counterparty risk – the risk that the annuity provider defaults on their obligations
- Mismatch risk – the risk that the annuity provider cannot provide annuities that match the lifetime pensioners benefits exactly

In addition, there would be additional costs relating to purchasing a buy-in contract which could represent approximately 0.25% of the Scheme's assets.

Impact of a possible wind up

As set out in Section 6, I have set the financing objective on the basis that the pensioners' reasonable expectations on termination of the Scheme would be to receive a lump sum equal to the value of their pension as determined by the actuarial assumptions adopted for this investigation.

However, this approach may not be realistic or fair for pensioners if a buy-in contract could be purchased to fund the lifetime pensioners. As outlined above, the amount that would be required to be paid to an insurer to take on the pension liability is likely to be higher than the value of the lump sum.

In the event of wind up prior to the death of the last surviving pensioner, a buy-in contract would become a buy-out and the responsibility of paying the pensions would be passed onto the annuity provider.

Under this scenario, the coverage of Vested Benefits (prior to allowance for wind-up costs) also reduces as described above.

If the Scheme were to wind up, either before or after the death of the last surviving pensioner, any remaining assets would be treated in accordance with the Scheme's Trust Deed. It is not clear what happens on termination of the Scheme, and the Trustee and the University would need to obtain legal advice.

10

Prudential Standards

The prudential regulator (APRA) has issued a number of Prudential Standards for the superannuation industry, including SPS 160 relating to the financial management and funding of defined benefit plans. I comment below on several requirements arising from SPS 160.

Shortfall Limit

The Trustee must determine a "Shortfall Limit" for each fund, being:

> "the extent to which the fund can be in an unsatisfactory financial position with the Trustee still being able to reasonably expect that, because of corrections to temporary negative market fluctuations in the value of the fund assets, the fund can be restored to a satisfactory financial position within a year".

I understand that the Scheme's Shortfall Limit, determined by the Trustee on the basis of previous actuarial advice, is 95%.

The Shortfall Limit is expressed as the coverage level of the defined benefits vested benefits by the defined benefit assets. It is appropriate to consider the following factors when determining if the Shortfall Limit remains appropriate:

- The guidance provided in the relevant Actuaries Institute Practice Guideline 499.08: Shortfall Limit Required under APRA Prudential Standard 160 dated March 2023;
- The investment strategy for defined benefit assets, particularly the benchmark exposure of 35% to "growth" assets;
- The results of this investigation regarding the extent to which the current and projected Vested Benefits are not linked to the investment return on defined benefit assets (i.e. defined benefit pensions).

Based on the above, I recommend the Trustee update the current Shortfall Limit to 98.2% in line with the current investment strategy.

Monitoring Process

SPS 160 also requires the Trustee to determine and implement a process for monitoring the defined benefit Vested Benefits coverage against the Shortfall Limit for each plan. If this monitoring process indicates that the vested benefits coverage has (or may have) fallen below the Shortfall Limit, then under SPS 160:

- An "Interim Actuarial Investigation" may be required (depending on the timing of the next regular actuarial investigation); and
- A Restoration Plan is required to be put in place if an Interim Actuarial Investigation finds the plan has breached its Shortfall Limit. The Restoration Plan must be designed to return the plan to a "satisfactory financial position", so that the Vested Benefits are fully covered, within a reasonable period that must not exceed 3 years and this must be submitted to APRA.

Requirements due to Unsatisfactory Financial Position

Restoration Plan

Under SPS 160, a Restoration Plan is also required to be put in place if the actuary finds in a regular Actuarial Investigation that a plan:

- Is in an unsatisfactory financial position (whether or not the Shortfall Limit is breached); or
- Is likely to fall into an unsatisfactory financial position.

The Restoration Plan must be designed to return the plan to a "satisfactory financial position", so that Vested Benefits are fully covered, within a reasonable period that must not exceed 3 years from the investigation date.

An SPS 160 Restoration Plan is not required if the plan is technically insolvent (in which case the insolvency rules must be followed). If an SPS 160 Restoration Plan is already in place then any changes to the contribution program (including its period) must be made within the framework of that Restoration Plan.

As I have determined that the Scheme is in an "unsatisfactory financial position", a Restoration Plan is required to be put in place. The recommendations in this report take into account the requirements of SPS160:

- The recommended contribution program is expected to result in at least 100% coverage of Vested Benefits by 31 December 2025, which is the maximum period of 3 years from the investigation date;
- The Restoration Plan is not expected to have any impact on benefit payments; and
- I consider that the "unsatisfactory financial position' does not necessitate any change to the investment strategy.

The Trustee will need to take the following actions after receipt of this report, as required by SPS 160:

- Provide a copy of this report to APRA within 15 business days of receipt;
- Consult with the University about implementing the recommended contribution program (I confirm that the University has indicated its willingness to accept the recommendations);
- Appoint an actuary to be responsible for advice to the Trustee during the restoration period
- Develop and approve a Restoration Plan within 3 months;
- Provide a copy of the Restoration Plan to APRA within 15 business days of approval; and
- Implement the Restoration Plan.

Actuary's Reporting Requirements

Section 130 of the SIS Act requires that if an actuary forms the opinion that a plan's financial position may be unsatisfactory, or may be about to become unsatisfactory, and that opinion was formed in performing an actuarial function, the actuary must advise both the Trustee and the prudential regulator (APRA) in writing immediately. An unsatisfactory financial position applies where assets are less than Vested Benefits.

These requirements apply, as an actuarial investigation is an actuarial function under the Act, and I am of the opinion that the Scheme is currently in an unsatisfactory financial position. I have previously made the necessary notifications to both the regulator (APRA) and the Trustee.

Statements Required by SPS 160

(a) The value of the Scheme's assets as at 31 December 2022 was $7,628,000. This value excludes assets held to meet the Operational Risk Financial Requirement.

(b) In my opinion, the value of the liabilities of the Scheme in respect of accrued benefits as at 31 December 2022 was $11,004,000. Hence, I consider that the value of the assets at 31 December 2022 is inadequate to meet the value of the accrued benefit liabilities of the Scheme as at 31 December 2022. Taking into account the circumstances of the Scheme, the details of the membership and the assets, the benefit structure of the Scheme and the industry within which the University operates, I consider that the assumptions and valuation methodology used are appropriate in relation to the determination of the accrued benefit liabilities for the purposes of this report. Further comments on the assumptions and valuation methodology are set out in Sections 4 and 6 of this report. Assuming that the University contributes in accordance with my recommendations based on the assumptions used for this actuarial investigation, I expect that assets will become sufficient to cover the value of accrued benefit liabilities over the period to 31 December 2025.

(c) In my opinion, the value of the liabilities of the Scheme in respect of vested benefits as at 31 December 2022 was $11,004,000. Hence I consider that the value of the assets at 31 December 2022 is inadequate to meet the value of the vested benefit liabilities of the Scheme as at 31 December 2022. Assuming that the University contributes in accordance with my recommendations based on the assumptions made for this actuarial investigation, I expect that assets will become sufficient to cover the value of vested benefit liabilities over the period to 31 December 2025.

I consider that the financial position of the Scheme should be treated as unsatisfactory as defined in SPS 160. The recommended contribution program, which satisfies the requirements of a Restoration Plan in accordance with SPS 160, is set out in Section 7 of this report, and other statements required by SPS 160 are set out above.

(d) A projection of the likely future financial position of the Scheme over the 3-year period following 31 December 2022, based on what I consider to be reasonable expectations for the Scheme for the purpose of this projection, is set out in Section 7 of this report.

(e) Based on the results of this investigation, I consider that the Shortfall Limit should be increased to 98.2%. Comments are set out earlier in this section.

(f) In respect of the 3-year period following 31 December 2022, I recommend that the University contributes to the Scheme at the rate of 1.2 times Professorial Salary, <u>and</u> makes the following contributions over the next three years:

- $370,000 in the year ending 31 December 2023;
- $1,600,000 in the year ending 31 December 2024; and
- $2,500,000 in the year ending 31 December 2025.

(g) In my opinion, there is not a "high degree of probability", as at 31 December 2022, that the Scheme will be able to meet the pension payments as required under the Scheme's governing rules. This is because the Scheme does not currently hold sufficient reserves to meet the "high degree of probability" test and the Actuaries Institute Professional Standard 410 does not allow future employer contributions to be taken into account in the assessment for the "high degree

of probability" statement. In practice, it is anticipated that the University will provide adequate funding to enable pensions to be paid in full.

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Actuarial Certification

Actuary's certifications

Professional standards and scope

I have prepared this report in accordance with generally accepted actuarial principles, Mercer's internal standards, and the relevant Professional Standards of the Actuaries Institute, in particular PS400 which applies to *"...actuarial investigations of the financial condition of wholly or partially funded defined benefit superannuation funds."*

Use of report

This investigation report should not be relied upon for any other purpose or by any party other than the Trustee of the Scheme. Mercer is not responsible for the consequences of any other use. This report should be considered in its entirety and not distributed in parts. The Trustee should share this report with the University who contributes to the Scheme. The University may consider obtaining separate actuarial advice on the recommendations contained in the report.

The advice contained in this report is given in the context of Australian law and practice. I have made no allowance for taxation, accountancy or other requirements in any other country.

Actuarial Uncertainty and Assumptions

An actuarial investigation report contains a snapshot of a Scheme's financial condition at a particular point in time, and projections of the Scheme's estimated future financial position based on certain assumptions. It does not provide certainty in relation to a Scheme's future financial condition or its ability to pay benefits in the future.

Future funding and actual costs relating to the Scheme are primarily driven by the Scheme's benefit design, the actual investment returns, the actual rate of pension indexation and any discretions exercised by the Trustee or the University. The Scheme's actuary does not directly control or influence any of these factors in the context of an actuarial investigation.

The Scheme's future financial position and the recommended University contributions depend on a number of factors, including the amount of benefits the Scheme pays, scheme expense, the level of taxation and the amount earned on any assets invested to pay the benefits. These amounts and others are uncertain and unknowable at the investigation date, but are predicted to fall within a reasonable range of possibilities.

To prepare this report, assumptions are used to select a single scenario from the range of possibilities. The results of that single scenario are included in this report.

However, the future is uncertain and the Scheme's actual experience will differ from those assumptions; these differences may be significant or material. In addition, different assumptions or scenarios may also be within the reasonable range and results based on those assumptions would be

different. For this reason, this report shows the impact on the Scheme's financial position if alternative assumptions were to be adopted.

Actuarial assumptions may also be changed from one investigation to the next because of mandated requirements, Scheme experience, changes in expectations about the future and other factors. I did not perform, and thus do not present, an analysis of the potential range of all future possibilities and scenarios.

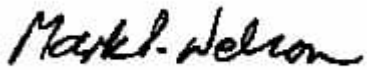
Because actual Scheme experience will differ from the assumptions, decisions about benefit changes, investment policy, funding amounts and benefit related issues should only be made after careful consideration of possible future financial conditions and scenarios, and not solely on the basis of a set of investigation results.

Additional information

The next **actuarial investigation** is required at a date no later than 31 December 2023. At that time, the adequacy of the University contribution levels will be reassessed.

Further Information

Please contact me to provide any supplementary information or explanations about this actuarial investigation as may be required.



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Mark Nelson

Fellow of the Institute of Actuaries of Australia

16 June 2023

I have reviewed this report under Mercer's professional Peer Review Policy. I am satisfied that it complies with the applicable professional standards and uses assumptions and methods that are suitable for the purpose.

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Timothy Simon Jenkins

Fellow of the Institute of Actuaries of Australia

Appendix A

Scheme Design

Summary of benefits

A summary of the main benefit provisions in respect of defined benefit members is set out below. Reference should be made to the formal governing documents for definitive statements.

Member Categories	Pensioners – Retired Professors
Professional Salary (PS)	The annual rate of professorial salary as advised by the University from time to time. $207,614 as at 31 December 2022
Pension Amounts	Depends upon the level of salary at the commencement of pensions and length of professorial service. Pensions are indexed in line with increase in the average weekly earnings (AWOTE).

Appendix B

Calculation of the Actuarial Value of Accrued Benefits

Defined Benefits

I have calculated the Actuarial Value of Accrued Benefits as the present value of expected future pension payments in respect of current pensioners.

The weighted average term of the accrued benefit liabilities is 6.0 years.

Methodology of Calculating the Actuarial Value of Accrued Benefits

The method used for the determination of Accrued Benefits is the same as that used at the previous investigation

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