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Actuarial Investigation as at 30 June 2022 of the South Australian Superannuation Scheme

Super SA

23 June 2023

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Purpose of Report

This report on the actuarial investigation as at 30 June 2022 of the South Australian Superannuation Scheme (the Scheme) has been prepared at the request of the State Superannuation Office (Super SA), a branch within the Department of Treasury and Finance (the Department) of the Government of South Australia (the Government), on behalf of the South Australian Superannuation Board (the Super SA Board).

The primary purpose of the actuarial investigation is to satisfy the requirements of section 21(4) of the *Superannuation Act 1988* (the Act). This section of the Act requires the Minister to obtain an actuary's report:

- On the cost of the Scheme to the Government at the time of the report and in the foreseeable future; and
- Estimating the proportion of future benefits under Part 5 of the Act (i.e. the Pension Scheme) that can be met from the assets of the South Australian Superannuation Fund (the Fund).

The costs of the Scheme have been estimated in two ways:

- The future service contribution rates for the employer share of benefits of the Scheme; and
- The Government's projected annual outlays for the employer share of benefits of the Scheme.

Additionally, the actuarial investigation considers:

- The experience of the Scheme since the previous investigation;
- The financial position of the Scheme; and
- The key risks to which the Fund and/or the employers are exposed.

I have undertaken the actuarial investigation in accordance with the requirements of the Actuaries Institute's Professional Standard 400, to the extent that these are relevant to the Scheme.

This actuarial investigation does **not** consider the adequacy of assets held by the Government outside the Fund to meet the Government's liabilities under the Scheme.

Key Results

Pension Scheme

As at 30 June 2022, the actuarial value of the Fund share of Scheme benefits (based on the existing Prescribed Proportion of 15%) is $1,221.5 million. The actuarial value of the assets of the Fund (including the value of future member contributions) as at 30 June 2022 is $1,610.3 million. Therefore, the assets of the Fund are projected to be more than sufficient to meet a Prescribed Proportion of 15%, provided the assumptions are borne out in practice. The expected excess of $388.8 million represents a margin of 31.8% over the Fund share of liabilities.

As at 30 June 2019, the calculated margin was $370.7 million, or 33.9% of the Fund share of liabilities. The change in margin reflects the experience of the Scheme since 30 June 2019 and the increase in the Prescribed Proportion from 1 July 2020. Although investment returns were higher than assumed, the positive impact of this was largely offset by:

- The increase in the Prescribed Proportion from 14% to 15%; and
- The change in financial assumptions adopted for this investigation: in particular the increase in the short-term CPI assumptions to reflect known CPI experience and the current short-term economic outlook.

Based on the actuarial assumptions used for this investigation, the Fund's assets are projected to support a **maximum** Prescribed Proportion of 19.9%. However, at this level, there would be no reserve in the Fund to provide a margin against adverse experience, such as lower than assumed investment returns or higher than assumed CPI indexation. Without a margin, the Prescribed Proportion would need to be reduced (and the employer share increased) in future if experience were less favourable than assumed.

The investigation results indicate that it would be feasible for the Government to consider increasing the Prescribed Proportion to 16%, which would reduce the expected excess of Fund assets over liabilities from 31.8% to 23.8%.

However, given the sensitivity of the margin to future experience, the current uncertainty in relation to inflation (in particular) and the potential for volatility in investment returns, it would be reasonable to maintain the current Prescribed Proportion of 15%.

The actuarial value of the employer share of benefits of the Pension Scheme expected to accrue to members after 30 June 2022 is $6.4 million. This represents an average future service cost of 20.1% of contributors' salaries (a decrease from the rate of 23.9% calculated at the previous investigation). Employers are currently required to contribute at the rate of 26.0% of salaries to meet the cost of accruing benefits.

Given that the contribution rate applies to a small, and rapidly decreasing, number of Pension Scheme contributors, it would be reasonable to maintain the existing employer contribution rate of 26.0% of contributors' salaries.

Lump Sum Scheme

As at 30 June 2022, the aggregate value of member accounts was $486.9 million, compared with the actuarial value of Fund assets of $471.2 million. The shortfall between the assets of the Fund and the aggregate value of members' accounts increased from $3.2 million (or 0.5% of member accounts) at 30 June 2019 to $15.7 million (or 3.2% of member accounts) at 30 June 2022. The growth in this shortfall is greater than expected and should be investigated.

The actuarial value of the employer share of benefits of the Lump Sum Scheme expected to accrue to members after 30 June 2022 is $59.4 million. This represents an average future service cost of 9.8% of contributors' salaries (a decrease from the rate of 13.3% calculated at the previous investigation). Employers are currently required to contribute at the rate of 14.75% of salaries to meet the cost of accruing benefits.

Although a decrease in the employer contribution rate could be considered, I understand that the current contribution rate has been in place for several years and that there is a preference for stability in the contribution rate. Given the funding arrangements for the Scheme, the employer contribution rate only affects how the employer costs are shared between the various employing agencies and the Government. Given that future service costs now represent a very small component of the total cost of providing the employer share of benefits, it would be reasonable to maintain the current employer contribution rate.

Projected Outlays

The Government's projected annual outlays for the employer share of benefits of the Scheme (including the Government's share of the Scheme expenses) over the next five years are shown in the table below:

Year Ending 30 June	Nominal Outlays ($ million) Pension Scheme	Lump Sum Scheme	Total
2023	537.0	139.5	676.5
2024	565.2	110.4	675.6
2025	573.4	101.3	674.7
2026	573.3	96.0	669.3
2027	572.4	86.7	659.1

Suitability of Policies

I am satisfied that the following policies adopted by the Board are generally suitable:

- The investment strategy in respect of Fund assets;
- The self-insurance arrangements; and
- The unit pricing policy.

However, the growth in the shortfall between the Lump Sum Scheme assets and member account balances indicates there is a mismatch between the investment earnings received by the Fund (net of Fund expenses) and those allocated to members. A more detailed review of the investment and unit pricing procedures should be undertaken to understand the reasons for the growth in shortfall. Appropriate steps can then be identified and implemented to manage and/or rectify the discrepancy.

Risks

The results in this report are 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.

Section 9 provides further information on the key risks and their potential impact on the Fund and/or the cost to employers of providing Scheme benefits.

The most significant risks in the Pension Scheme relate to investment returns, inflation and longevity. Lower than assumed investment returns, higher than assumed inflation or greater longevity than assumed would increase the costs of providing the Scheme benefits, and reduce the proportion of Scheme benefits which can be financed from Fund assets. This would increase the amounts which need to be financed by the employers.

The most significant risks in the Lump Sum Scheme are investment return and salary increases. Lower than assumed investment returns or higher than assumed salary increases do not affect the member component of Scheme benefits (which is financed from Fund assets) but would increase the cost of providing the employer component of Scheme benefits.

Recommendations

Based on the results of this actuarial investigation, I recommend that:

Pension Scheme:

- The Prescribed Proportion of the future Pension Scheme benefits that is met from the Fund be maintained at 15% or increased to no more than 16%.
- The employer contribution rate for the employer share of the future service cost of the Pension Scheme be maintained at 26.0% of contributors' salaries.

Lump Sum Scheme:

- The cause of the shortfall between the assets of the Fund and the aggregate value of members' accounts be investigated. Appropriate steps can then be identified and implemented to manage and/or rectify the discrepancy.
- The employer contribution rate for the employer share of the future service cost of the Lump Sum Scheme be maintained at 14.75% of contributors' salaries.

Section 2
Overview of the Scheme

Background

The Scheme exists pursuant to the *Superannuation Act 1988* (the Act). The Super SA Board is responsible for all aspects of the administration of the Act.

The Scheme's membership consists of current and former South Australian public sector employees, or their dependants. The Scheme has been closed to new contributors since May 1994. Contributors may, however, transfer employment between departments and agencies participating in the Scheme.

Benefits for members who joined prior to 31 May 1986 (i.e. old scheme contributors) are primarily provided in the form of a lifetime pension. The entitlements are set out in Part 5 of the Act. These benefits are also referred to as the Pension Scheme.

Benefits for members who joined on or after 31 May 1986 (i.e. new scheme contributors) are primarily provided in the form of a lump sum. The entitlements are set out in Part 4 of the Act. These benefits are also referred to as the Lump Sum Scheme.

A summary of the Scheme's benefits is set out in Appendix A.

The Scheme is not a regulated fund within the meaning of the Superannuation Industry (Supervision) (SIS) legislation and is therefore not required to comply with SIS. However, the Government has undertaken to observe the major principles of SIS under the Heads of Government Agreement between the Commonwealth and the States. The Scheme is classified as an exempt public sector superannuation scheme under SIS.

The Scheme is a constitutionally protected fund as defined in the *Income Tax Assessment Act 1997*. Therefore, the Scheme is not required to pay tax on income and benefits are paid to members as 'untaxed' benefits.

The previous actuarial investigation of the Scheme was conducted as at 30 June 2019 by Geoff Keen, FIAA. The results of that investigation are contained in a report dated 11 June 2020.

The SA Super Board in its annual report for 2019-20 confirmed that the recommendations of the previous actuarial report were adopted. That is, the employer contribution rate for the employer share of the future service cost of the Pension Scheme was maintained at 26.0% of contributors' salaries; the employer contribution rate for the employer share of the future service cost of the Lump Sum Scheme was maintained at 14.75% of contributors' salaries; and the Prescribed Proportion of the future Pension Scheme benefits to be met from the Fund was increased from 14% to 15%.

Scheme Financing

Payment of Scheme benefits is made as they fall due from a Special Deposit Account held by the Department or otherwise from the Government's Consolidated Account. The Special Deposit Account (or Consolidated Account) is then reimbursed from Fund assets for the member share of providing Scheme benefits. A variety of arrangements exist to reimburse the Special Deposit Account (or Consolidated Account) for the employer share of providing Scheme benefits.

Members' Contributions

Members make contributions to the Scheme based on a percentage of their salary. All members' contributions are paid into the Fund which are invested and managed by the Superannuation Funds Management Corporation of South Australia (Funds SA).

The member share of providing Scheme benefits is financed from the Fund's assets. The Fund has separate divisions for the contributions of Pension Scheme and Lump Sum Scheme members.

The member share for a Pension Scheme member is determined by the Super SA Board based on an actuarial assessment of the proportion of future benefits (the Prescribed Proportion) that can be met from the Fund's assets. Under the existing arrangement, 15% of pension payments (other than retrenchment pensions for members aged less than 60) are met from Fund assets.

The member share for a Lump Sum Scheme member is equivalent to their contributions which have accumulated in the Fund.

Employers' Contributions

As described above, the Super SA Board determines the proportion of Pension Scheme benefits to be paid from the Fund assets. This proportion is adjusted from time to time based on actuarial advice and the financial position of the Scheme as a whole. The Government is responsible for meeting the cost of the remainder of the benefit (the employer share).

In respect of the Lump Sum Scheme, the benefits comprise the member account balance (the member component) plus an employer financed benefit (the employer component).

The Government has a strategy to progressively finance its employer share of accrued past service superannuation liabilities by 30 June 2034. Regular contributions are paid by government departments to an Employer Contribution Account which are intended to meet the future service cost of contributors' accruing Scheme benefits. Additional contributions are paid by the Government to the Employer Contribution Account with the intention of fully financing the employer share of each Scheme's past service liabilities by the target date.

Pursuant to section 5 of the Act, the Super SA Board and various public authorities (i.e. SA Water and TAFE SA) have entered into arrangements to enable employees of those authorities to remain eligible as contributors of the Scheme. Under the arrangements, each authority is required to pay contributions to a relevant Employer Contribution Account sufficient to finance their employer share of providing Scheme benefits.

All employers' contributions paid into an Employer Contribution Account are invested and managed by Funds SA. The employer share of providing Scheme benefits is paid from the Employer Contribution Account to the Special Deposit Account (or Consolidated Account) as benefits arise.

Some public authorities (i.e. South Australian universities) do not finance their employer share of Scheme benefits from an Employer Contribution Account but instead reimburse the Special Deposit Account (or Consolidated Account) directly on a pay-as-you-go basis.

The scope of this report does not include an assessment of the adequacy of the various financing arrangements for the employer share of Scheme benefits, but does include a projection of the Government's expected annual outlays for the employer share of benefits of the Scheme (including the Government's share of the Scheme expenses)[1].

Amendments to Legislation

There have been a number of amendments to the Scheme's legislation since the date of the previous investigation, but none have materially affected the benefits provided or the financial operation of the Scheme:

- The *Education and Children's Services Act 2019* updated the reference in the definition of employee from "Education Act 1972" to "Education and Children's Services Act 2019".
- The definition of putative spouses was amended from "he or she is, on that date, cohabitating with the other person as his or her wife or husband de facto" to "the person is, on that date, cohabiting with the other person as that person's de facto spouse" by the *Statutes Amendment (Legalisation of Same Sex Marriage Consequential Amendments) Act 2019*.
- The Statutes Amendment (Fund Selection and Other Superannuation Matters) Act 2021 modified sections relating to the chief executive officer and staff of the Super SA Board.

Expenses of the Scheme

All expenses related to the management and investment of Fund assets are paid from Fund assets.

A percentage of the other costs of administering the Scheme is also met from the Fund's assets. This percentage is currently prescribed at 30% under regulation 46 of the *Superannuation Regulations 2016*.

The balance of the other costs of administering the Scheme (70%) is met from the Employer Contribution Accounts.

[1] Excluding amounts which will be reimbursed by the relevant public authorities via one of the mechanisms outlined above.

Insurance Arrangements

The Scheme provides benefits on the death or disablement of an active member. The Scheme does not insure these benefits, which means that:

- The Fund share of death and disablement benefits is met entirely from Scheme assets;
- The employer share of death and disablement benefits is met entirely by the employer.

Thus, there is a “self-insured” component to the extent that an additional benefit is payable in respect of death or disablement, over and above the accrued benefit which would be payable on resignation or retirement.

In the Pension Scheme, the self-insured components are now negligible, as for most members the actuarial value of the accrued retirement benefit exceeds the actuarial value of the invalidity and death benefits.

In the Lump Sum Scheme, self-insurance continues to be relevant in respect of the employer component of the benefit.

Section 3
Asset and Membership Data

Fund Assets

The Fund maintains separate divisions for the Pension Scheme and Lump Sum Scheme member contributions. Based on audited financial information provided by the Super SA Board, the net assets of the Fund available for member benefits amount to:

- $1,609.5 million in respect of the Pension Scheme; and
- $471.2 million in respect of the Lump Sum Scheme.

The movement in the value of the Fund's assets over the three years was as follows:

	Pension Scheme ($'000s)	Lump Sum Scheme ($'000s)	Total Fund ($'000s)
As at 1 July 2019	**1,602,579**	**611,520**	**2,214,099**
Contributions	1,201	31,027	32,228
Investment income	319,511	81,121	400,632
Other transfers or receipts	6	1,259	1,265
Benefit payments	(285,449)	(245,366)	(530,815)
Expenses	(28,329)	(8,408)	(36,737)
As at 30 June 2022	**1,609,519**	**471,153**	**2,080,672**

Source: Super SA Board Annual Reports for the financial years ended 30 June 2020, 2021 and 2022.

Investment Policy

Funds SA is responsible for the investments of the Fund.

Assets of the Pension Scheme are invested in a customised Defined Benefit Strategy investment portfolio. The objective of this portfolio is to achieve a long-term rate of return of CPI + 4.5% per annum net of fees and gross of tax.

Assets of the Lump Sum Scheme are invested in accordance with each member's investment choice. The Balanced investment portfolio is the default option if no choice is made.

Assets held in the Employer Contribution Accounts are also invested in the Defined Benefit Strategy investment portfolio.

The actual asset allocation as at 30 June 2022 for the Defined Benefit Strategy is shown in the table below, along with the portfolio's long-term strategic asset allocation:

As at 30 June 2022	Actual	Strategic
Australian Equities	19.4%	20%
International Equities	27.3%	30%
Property	18.3%	18%
Diversified Strategies - Growth	18.5%	16%
Diversified Strategies - Income	13.9%	14%
Cash	2.6%	2%
Total	**100.0%**	**100%**

Source: Funds SA Public Sector Superannuation Funds Performance Plan 2022-2023.

The target allocation to growth-type assets such as equities and property is currently 80%. 'Growth' assets are expected to earn higher returns over the long term compared to 'defensive' assets, but at the same time to exhibit more variation in returns from year to year.

A detailed review of the investment policy is outside the scope of this actuarial investigation. Based on the main features, I consider the current policy to be suitable, taking into account the financing approach for the Scheme, and the long-term nature of the benefit liabilities.

Unit Pricing Policy

Member contributions to the Scheme are converted to units. Investment earnings are credited to member accounts via changes in unit prices, reflecting the actual returns achieved by the investments of the Fund.

Based on the Scheme's Product Disclosure Statement, I understand that the main features of the unit pricing policy are as follows:

- Members are allocated units according to their chosen investment strategy;
- Unit prices change in line with the value of investments in the chosen strategy (as advised by Funds SA), less an allowance for expenses;
- Unit prices are generally declared twice weekly.

A detailed review of the unit pricing policy is outside the scope of this actuarial investigation. Based on the main features, I consider the current policy to be suitable.

Membership

I have relied upon membership data provided by the State Superannuation Office (Super SA) which was extracted from the database used for the ongoing administration of the Scheme.

Super SA is ultimately responsible for the validity, accuracy and comprehensiveness of the data. 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 quality of the data is sufficiently accurate for the purposes of this actuarial investigation. Any inaccuracies in the data are expected to have no material impact on the conclusions or recommendations in this report.

The membership of the Scheme as at 30 June 2022 is summarised below:

Contributors	Number of members	Average annual salary	Average contribution points	Average age (years)
Pension Scheme				
Teachers				
Males	19	$128,202	425	65.8
Females	28	$116,184	377	63.1
Non-Teachers				
Males	55	$119,378	430	61.7
Females	23	$105,385	397	60.7
Total Pension Scheme	**125**	**$117,429**	**411**	**62.5**
Lump Sum Scheme				
Teachers				
Males	118	$127,643	362	60.8
Females	277	$116,838	321	60.6
Non-Teachers				
Males	472	$120,507	359	60.3
Females	528	$99,569	312	59.6
Total Lump Sum Scheme	**1,395**	**$112,457**	**334**	**60.1**

Preserved Members	Number of members	Average annual salary	Average contribution points	Average age (years)
Pension Scheme				
Full preserved	53	$70,432	112	62.7
SG preserved	85	$66,690	160	64.7
Total Pension Scheme	**138**	**$68,127**	**141**	**63.9**
Lump Sum Scheme				
Full preserved	523	$81,530	97	58.2
SG preserved	266	$65,771	59	57.8
Total Lump Sum Scheme	**789**	**$76,217**	**78**	**58.0**

Pension Scheme Pensioners	Number of Members	Average Annual Pension	Average Age (years)
Age retirements	10,228	$53,183	76.7
Invalidity retirements	495	$43,807	77.4
Spouses	2,933	$28,204	82.4
Children	3	$10,373	17.2
Total	**13,659**	**$47,470**	**77.9**

The above figures, and the results presented in this report, may include a very small number of members of the Scheme whose benefits are provided under the *Superannuation (STA Employees) Regulations 2005* (i.e. TransAdelaide employees). The impact of including such members is expected to be negligible.

Section 4
Scheme Experience

Investment Returns

The table below shows the rates of investment earnings (net of fees and gross of tax) for the Defined Benefit Strategy investment portfolio over the three-year period to 30 June 2022:

Year ended	Rate of Return
30 June 2020	-1.2%
30 June 2021	23.7%
30 June 2022	-1.8%
Compound Annual Average	**6.3%**

Source: Funds SA 2021-22 Annual Review.

The actual rate of investment return was higher than the assumptions used for the previous investigation (-4.0% for 2019-20 then 6.5% pa). This has contributed to an improvement in the financial position of the Pension Scheme compared with the results of the previous investigation.

CPI Indexation

The following table shows the CPI rates which have been used since the previous investigation to index preserved benefits and pension payments:

Adjustment period	CPI Rate
October 2019	0.62%
April 2020	1.50%
October 2020	-0.69%
April 2021	1.66%
October 2021	1.12%
April 2022	2.21%
Compound Average (per annum)	**2.1%**

The actual rate of CPI indexation was marginally higher than the previous assumption of 2.0% per annum.

Salary Increases

The table below shows the average rate of increase in contributors' salaries over the three-year period to 30 June 2022:

Year ended	Average Increase (per annum)
Teachers	2.9%
Non-Teachers	3.2%
Total	**3.1%**

The average rate of salary increases of 3.1% per annum includes the impact of promotional increases as well as general inflationary increases. Actual salary increases were broadly in line with the previous assumption of 2.5% per annum plus promotional increases.

Employer Contributions

In accordance with the recommendations made at the previous actuarial investigation, the Government has been reimbursed from the assets of the Fund for 14% (for the year ended 30 June 2020) or 15% (for the period 1 July 2020 to 30 June 2022) of Pension Scheme benefits.

Scheme Administration Expenses

During the investigation period, the total expenses of administering the Scheme (excluding those relating to management of Fund assets) were $20.3m, of which $6.0 million (30%) were paid from Fund assets.

This is equivalent to an average of $395 per member per annum, compared with $220 assumed at the previous investigation.

Effective from 1 January 2021, the amount paid from Lump Sum Scheme assets has been set at 0.05% of member account balances (the deduction made from the investment earnings credited to member accounts) with the balance of the 30% paid from Pension Scheme assets.

The fact that expenses were higher than assumed will have had a small negative impact on the financial position of the Pension Scheme. It should not have affected the financial position of the Lump Sum Scheme provided the amount paid from Fund assets approximately matches the deduction made from the investment earnings credited to member accounts.

Membership Movements

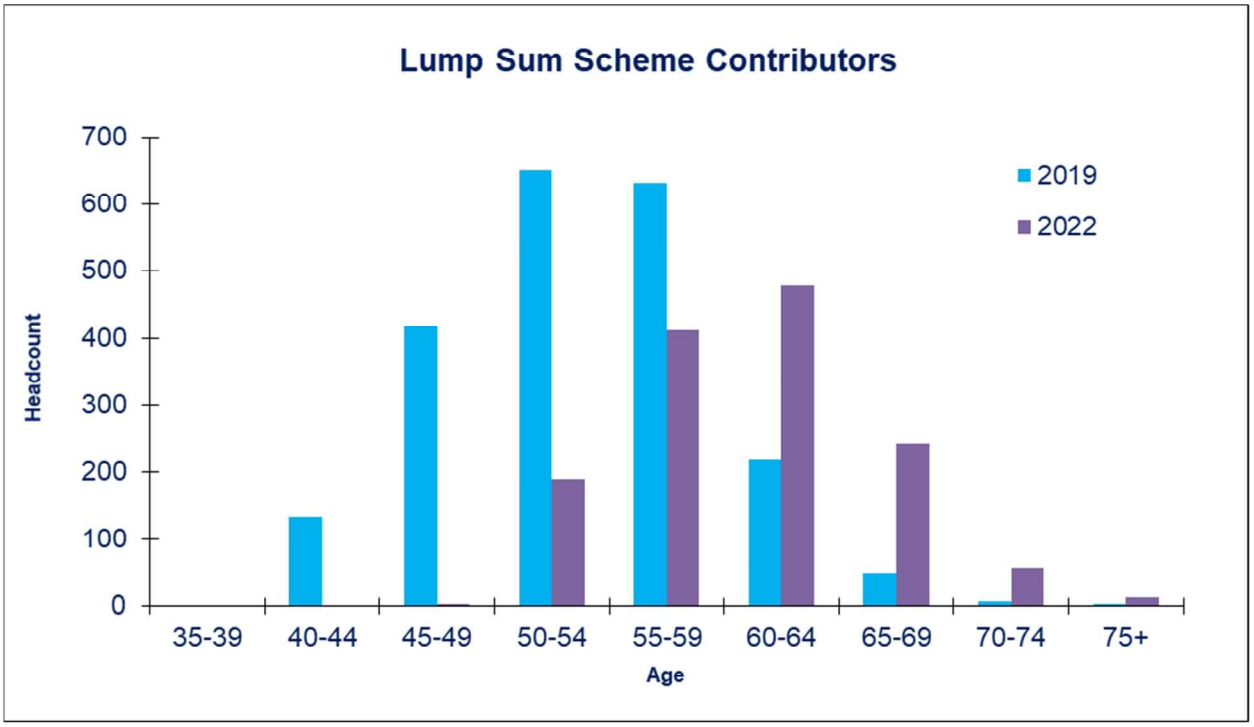
The table below shows a reconciliation of membership during the period since the previous actuarial investigation:

	Number of members at 1 July 2019	Increase / (decrease)	Number of members at 30 June 2022
Pension Scheme			
Contributor	303	(178)	125
Preserved	240	(102)	138
Retirement	10,987	(759)	10,228
Invalidity	565	(70)	495
Spouse	2,981	(48)	2,933
Children	8	(5)	3
Total Pension Scheme	**15,084**	**(1,162)**	**13,922**
Lump Sum Scheme			
Contributor	2,106	(711)	1,395
Preserved	1,006	(217)	789
Total Lump Sum Scheme	**3,112**	**(928)**	**2,189**

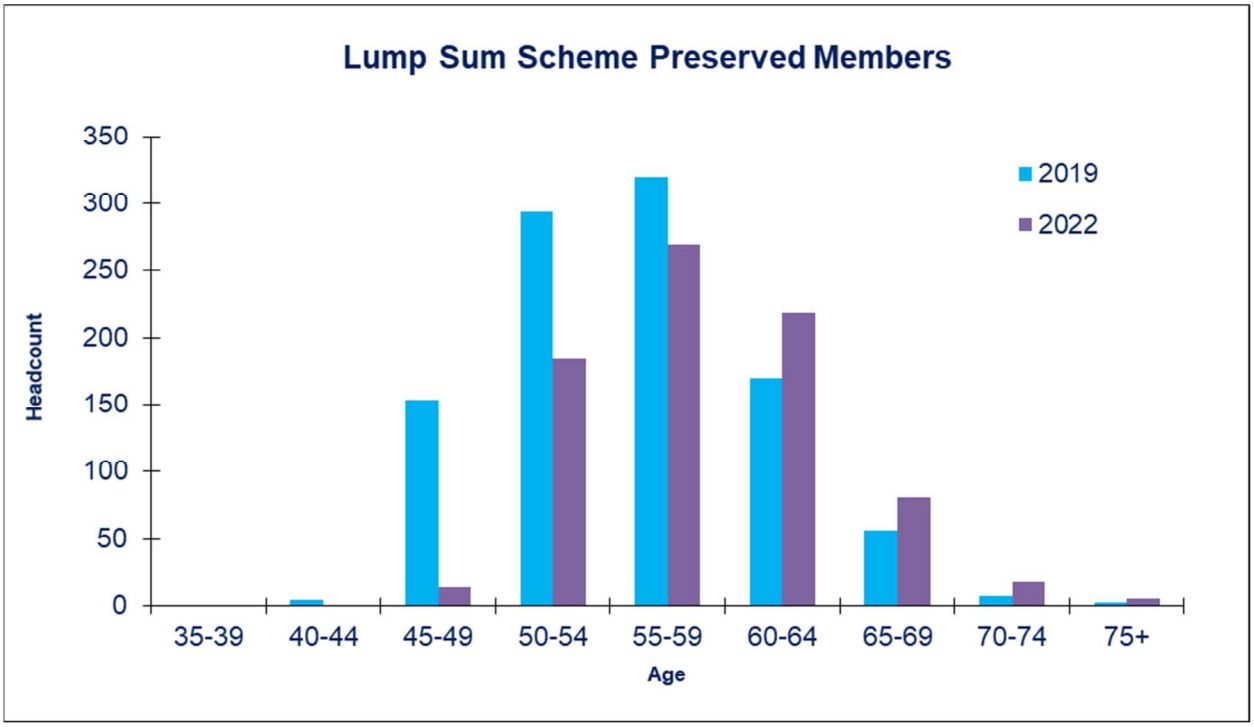
The most significant feature of the change in membership has been fewer than projected deaths of pensioners. As the number of pensioners continuing to receive payments is higher than assumed, the liability for benefits of the Pension Scheme is greater than previously projected.

The actual movement in membership relative to the actuarial assumptions has no impact on the financial position of the Lump Sum Scheme, but does impact the cost of providing the employer component of the benefits. The results of an analysis of the Scheme's decrement experience are shown in Appendix B.

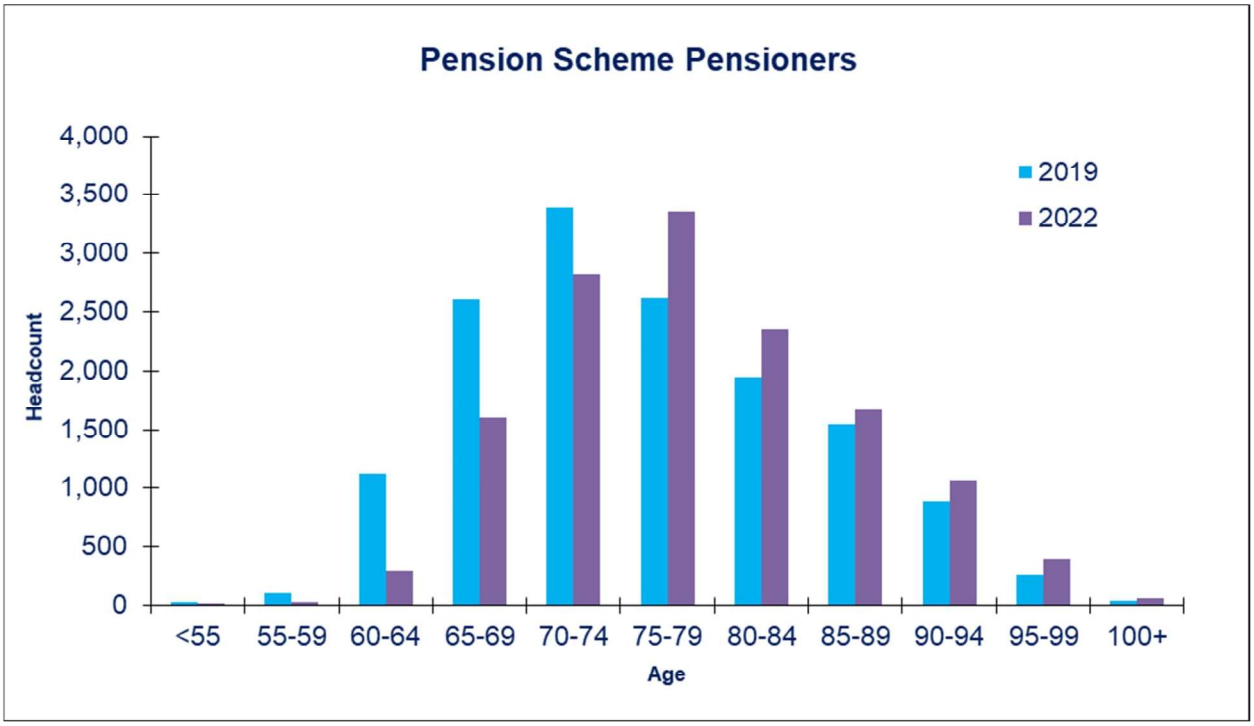
The following charts show a comparison of the age distribution as at 30 June 2022 with that at the previous investigation for the contributors and preserved members of the Lump Sum Scheme and the pensioners of the Pension Scheme:



The number of contributors remaining has reduced and the age distribution has shifted to the right as the closed group of members ages.



The chart illustrates that most preserved members have attained age 55 and are therefore eligible for a retirement benefit.



The change in the age distribution shows fewer pensioners at younger ages and more pensioners at older ages.

Section 5

Actuarial Assumptions and Method

In order to value the Scheme liabilities and estimate the cost to the employer of providing Scheme benefits, it is necessary to make assumptions regarding the incidence, timing and amount of future benefits and associated expenses. These assumptions fall into two broad categories:

- economic assumptions relating to the future rates of investment earnings, salary increases and pension indexation; and
- demographic assumptions relating to the type and timing of benefits to which Scheme members become eligible, and future pensioner mortality rates.

It is expected that the assumptions will not be precisely borne out in practice, but rather that, in combination, they will produce a model of possible future experience that is a suitable basis for estimating the costs of the employer share of benefits of the Scheme.

It must be appreciated that the ultimate cost of the employer share will depend on the actual experience of the Scheme, not on the assumptions used for the actuarial investigation.

Economic Assumptions

The key economic assumptions include:

- Future investment earnings for assets held in the Fund and the Employer Contribution Accounts;
- Future increases in members' salaries (as benefits are directly related to salary at the date of ceasing service); and
- Future increases in the CPI (as preserved benefits and pension payments are adjusted in line with increases in CPI).

It is the relationship between these economic assumptions that has a greater bearing on the results than any individual assumption in isolation. Accordingly, the economic assumptions have been set based on expectations for longer term trends and to be mutually consistent.

The key economic assumptions adopted for this investigation are shown in the table below. Assumptions for the previous investigation are also shown for comparative purposes.

Assumption	30 June 2022 (per annum)	30 June 2019 (per annum)
Investment returns	7.0%	6.5%
CPI indexation		
- First year (2022-23)	8.6%	2.0%
- Second year (2023-24)	4.0%	2.0%
- Thereafter (2024-25 onwards)	2.5%	2.0%
Salary increases for Teachers	4.0% **including** promotional increases	2.5% **plus** promotional increases
Salary increases for Non-Teachers		
- First three years (2022-25)	2.0%	2.5%
- Thereafter (2025-26 onwards)	4.0% **including** promotional increases	2.5% **plus** promotional increases
Long-term "real return" over CPI indexation	4.5%	4.5%
Long-term "real return" over salary increases	3.0%	4.0%^

^ Excluding promotional increases, which are estimated to average approximately 0.5% per annum.

Assumed investment earnings are determined by reference to the expected long-term returns on each asset class and the return objective set by Funds SA for the investments of the Fund[2] and the Employer Contribution Accounts (i.e. to achieve long-term returns of 4.5% per annum in excess of inflation).

The long-term salary increase assumption is based on 1.0% per annum real growth (i.e. salary increases in excess of price inflation) over the longer term, plus an implicit allowance of 0.5% per annum for promotional increases. This represents a change to the previous approach where an additional explicit allowance was made for promotional salary increases using an age-based scale.

The short-term salary increase assumption for non-teachers reflects the current Enterprise Bargaining Agreement (EBA) applying to the majority of South Australian public servants, which allows for general increases of 1.5% per annum for the first three years, plus an additional allowance of 0.5% per annum for promotional increases. Short-term assumptions are generally adopted only when there is expected to be a significant difference between short-term and longer term experience. As there is no current EBA in place for teachers, the short-term assumption is the same as the long-term assumption.

[2] Pension Scheme assets only. Lump Sum Scheme assets are invested in accordance with each members' investment choice.

Both the short-term and long-term assumptions for CPI indexation have increased since the previous investigation, reflecting changes in the outlook for inflation. The long-term assumption for CPI indexation represents the mid-point of the Reserve Bank of Australia's target range for inflation. The short-term assumptions reflect known experience to the date of this report and the current short-term outlook.

For the Pension Scheme, the most important economic assumption above is the long-term real return over CPI, which is unchanged since the previous investigation.

For the Lump Sum Scheme, the most important economic assumption is the long-term real return over salary increases. Allowing for the different approach in relation to promotional increases, the assumed long-term real return has reduced by approximately 0.5% per annum.

Alternative of Adverse Scenario

The potential consequence of actual future experience being worse than assumed is considered under an "adverse assumptions" scenario. The adverse assumptions scenario involves an immediate 10% fall in the value of the Fund's investments and 1% per annum higher rates of CPI indexation and salary increases.

As at 30 June 2022	Investigation Assumptions (per annum)	Adverse Assumptions (per annum)
Investment returns	7.0%	7.0%^
CPI indexation		
- First year (2022-23)	8.6%	9.6%
- Second year (2023-24)	4.0%	5.0%
- Thereafter (2024-25 onwards)	2.5%	3.5%
Salary increases for Teachers (including promotional increases)	4.0%	5.0%
Salary increases for Non-Teachers (including promotional increases)		
- First three years (2022-25)	2.0%	3.0%
- Thereafter (2025-26 onwards)	4.0%	5.0%
Long-term "real return" over CPI indexation	4.5%	3.5%
Long-term "real return" over salary increases	3.0%	2.0%

^ After an immediate -10% return as at 1 July 2022.

Demographic Assumptions

Assumptions for the rates of retirement, invalidity retirement, death and resignation reflect the results of a detailed analysis of the Scheme's membership experience. The results of the analysis for the three years to 30 June 2022 are shown in Appendix B. The changes to the demographic assumptions used for this investigation are discussed below. The assumptions are summarised in Appendix C.

Retirement

Assumed rates of retirement have been simplified. Previously, different assumptions were used for teachers and non-teachers. No distinction has been made for the purposes of this investigation. The number of teachers remaining makes up a small proportion of overall contributory membership. This simplification does not have a material impact on the results of the investigation.

In line with observed experience, rates of retirement from the Pension Scheme are assumed to remain generally higher than from the Lump Sum Scheme.

Rates of retirement at ages 55 and 60 for preserved members of the Lump Sum Scheme have been updated to align more closely with experience.

Invalidity Retirement

Assumed rates of invalidity retirement (disablement) are unchanged from the previous investigation.

Resignation

No resignations are assumed for Pension Scheme contributors. Very few remaining contributors are not already eligible for a retirement benefit.

Assumed rates of resignation from the Lump Sum Scheme have been simplified. Previously, different assumptions were used for teachers and non-teachers. No distinction has been made for the purposes of this investigation. This simplification does not have a material impact on the results of the investigation.

Mortality

Assumed mortality rates before retirement have been scaled down since the previous investigation. Assumed mortality rates for pensioners have been updated based on the Mercer 2012-17 Pensioner Mortality Investigation.

The assumed future improvements in mortality rates have been updated to reflect the short term (25 year experience) factors derived by the Australian Government Actuary and published in the Australian Life Tables 2015-17. The previous investigation assumed lower future improvements based on the average of the 25 year and 125 year factors derived by the Australian Government Actuary and published in the Australian Life Tables 2015-17.

Combined with changes to the assumed pensioner mortality rates, pensioners are generally assumed to live for longer than assumed for the previous investigation. This change has increased the projected cost to the Government as pensions are expected to be paid for a longer period (on average).

Benefit Options

The assumptions regarding the benefit options on resignation from the Lump Sum Scheme are unchanged from the previous investigation. As no allowance is made for resignations from the Pension Scheme, no assumptions regarding the resignation benefit options are necessary.

The proportion of the pension assumed to be commuted to a lump sum on retirement from the Pension Scheme is unchanged from the previous investigation. The assumed proportion of spouses who commute their pension on the death of the former contributor has been reduced from 13% to 10%. This change more closely matches the Scheme's emerging experience but does not have a material impact on the results of the investigation. The assumed proportion of invalid retirees who commute their pension has been reduced from 9% to 0%.

Expenses

Fund administration expenses have been valued based on an assumed annual cost per member of $520, indexed in line with assumed salary increases, and the projected future number of members of the Scheme. This is higher than the assumption used for the previous investigation. The increase in annual costs is based on an investigation of the actual expenses undertaken by Super SA.

The assumption that future expenses will change in line with the membership is considered reasonable for the purpose of the investigation, given that expenses represent a relatively small proportion of the total cost of providing the Scheme benefits. However, in practice many of the expenses associated with the Scheme are relatively fixed, meaning that the cost on a "per member" basis is likely to increase by more than salary increases. Therefore, it is likely that this approach will underestimate the future administrative costs, particularly in respect of the Lump Sum scheme which has a rapidly declining membership. Further analysis would be required to more accurately model future Scheme administration expenses.

Tax

It is assumed that income of the Scheme, including investment income on assets held in the Fund, remains exempt from income tax.

No allowance has been made for tax which is payable by the member such as Division 293 tax on contributions for those with high incomes.

Impact of Changes in Assumptions

The following table shows the impact of the change in the actuarial assumptions on the net financial position of the Pension Scheme (calculated as the actuarial value of the Fund share of future benefit payments and expenses, less the actuarial value of future member contributions):

Impact	Pension Scheme ($ million)
Economic assumptions	
Investment returns	23.7
CPI indexation	(117.3)
Salary increases	(0.1)
Demographic assumptions	
Contributors	-
Pensioners	(12.9)
Total	**(106.6)**

That is, the change in actuarial assumptions has **decreased** the expected excess of Fund assets over liabilities by $106.6 million.

The actuarial assumptions have no impact on the Fund share of Lump Sum Scheme liabilities.

Superannuation Guarantee

Superannuation Guarantee (SG) legislation requires employers to provide a minimum level of superannuation benefits for their employees. The SG rate is currently legislated to increase from 10.5% by 0.5% each year until it reaches 12% from 1 July 2025.

Should any shortfall exist between the benefit provided under the Scheme and the minimum SG benefit as described in the Scheme's actuarial Benefit Certificate, an amount equal to that shortfall is required to be credited to the member in the Triple S Scheme.

In estimating the costs of the Scheme, I have not explicitly allowed for the impact of future increases in the SG rate. The Scheme benefits are expected to be greater than the minimum SG benefit for most members, and any benefit augmentations which may be required are expected to be immaterial to the Government's costs of the Scheme.

Funding Method

The future service cost for each scheme has been determined using the “Attained Age Normal” method, which was also used at the previous investigation.

Under this method, the “normal cost” is the estimated level rate of Employer contributions required to provide benefits in respect of future service (i.e. service after the investigation date) for existing members. The normal cost ignores any surplus or deficiency of assets over accrued liabilities.

For the Pension Scheme, the proportion of future benefits which can be met from Fund assets has been estimated based on the “Aggregate Cost” funding method. This method involves determining an average, level contribution rate (share of benefits) that, together with future member contributions and existing assets, is sufficient to meet expected benefits and costs for existing members if the actuarial assumptions used are borne out in practice. This contribution rate represents the maximum share of benefits which could be met from the Fund. The “Aggregate Cost” funding method was also used at the previous investigation.

Method for Attributing Benefits to Past Membership

The past membership components of all benefits payable in the future from the Scheme in respect of current membership are projected forward allowing for future salary increases, credited investment earnings and pension indexation, and are then discounted back to the investigation date at the assumed investment return rate.

The past membership component for each type of benefit is calculated by adjusting the total expected benefit in proportion to the accrued contribution points at the investigation date divided by the accrued contribution points at the projected date of ceasing employment.

The calculation methodology is consistent with the requirements of PS402 *“Determination of Accrued Benefits for Defined Benefit Superannuation Funds”* issued by the Actuaries Institute.

The method used for the determination of the accrued benefit liabilities is the same as that used at the previous actuarial investigation.

Based on the actuarial assumptions used for this investigation, the weighted average term of the accrued liabilities of the Scheme is 8.3 years (8.8 years for the Pension Scheme and 4.5 years for the Lump Sum Scheme).

Section 6
Pension Scheme Results

Valuation Balance Sheet

The following table shows the financial position of the Pension Scheme in relation to the Fund share liabilities, where projected future payments have been converted to a present value by discounting at the rate of the assumed investment return, using the main assumptions described in Section 5. The results using more conservative "adverse assumptions" are also shown. In each case, the member share of providing Scheme benefits is calculated using the current Prescribed Proportion of 15%. The equivalent results from the previous investigation (updated to use the current Prescribed Proportion of 15%) are shown for comparison.

	30 June 2022		30 June 2019
As at	Investigation Assumptions ($'000s)	Adverse Assumptions ($'000s)	Previous Assumptions^ ($'000s)
Net value of Fund assets	1,609,519	1,448,567	1,461,302
Actuarial value of future member contributions	786	806	2,086
Total Assets	**1,610,305**	**1,449,373**	**1,463,388**
Actuarial value of Fund share of past service benefits	1,191,823	1,294,251	1,158,384
Actuarial value of Fund share of future service benefits	126	146	3,157
Actuarial value of Fund share of future Scheme expenses	29,536	32,652	8,244
Total Fund Share of Liabilities	**1,221,485**	**1,327,049**	**1,169,785**
Net Financial Position	**388,820**	**122,324**	**293,603**
Net Financial Position as a % of Total Liabilities	**31.8%**	**9.2%**	**25.1%**

^After adjustment for the expected negative return in 2019-20 and the increase in Prescribed Proportion from 14% to 15%.

The results above indicate that after allowing for the various changes in actuarial assumptions, and assuming that the current Prescribed Proportion is maintained at 15%, the Pension Scheme's net financial position has strengthened over the three years to 30 June 2022. Therefore, the assets of the Fund are projected to be more than sufficient to meet a Prescribed Proportion of 15%, provided the assumptions are borne out in practice. The expected excess of Fund assets over liabilities represents a margin of 31.8% of the Fund share of liabilities.

Based on the actuarial assumptions used for this investigation, the Fund's assets are projected to support a **maximum** Prescribed Proportion of 19.9%. However, at this level, there would be no reserve in the Fund to provide a margin against adverse experience, such as lower than assumed investment returns or higher than assumed CPI indexation.

In order to provide stability in the Prescribed Proportion (and therefore the employer share), it would be reasonable to maintain a reserve of between 10% and 20% of total liabilities. Adopting this approach, the Prescribed Proportion could be increased to:

- 18.1%, with a reserve of 10%; or
- 16.5%, with a reserve of 20%.

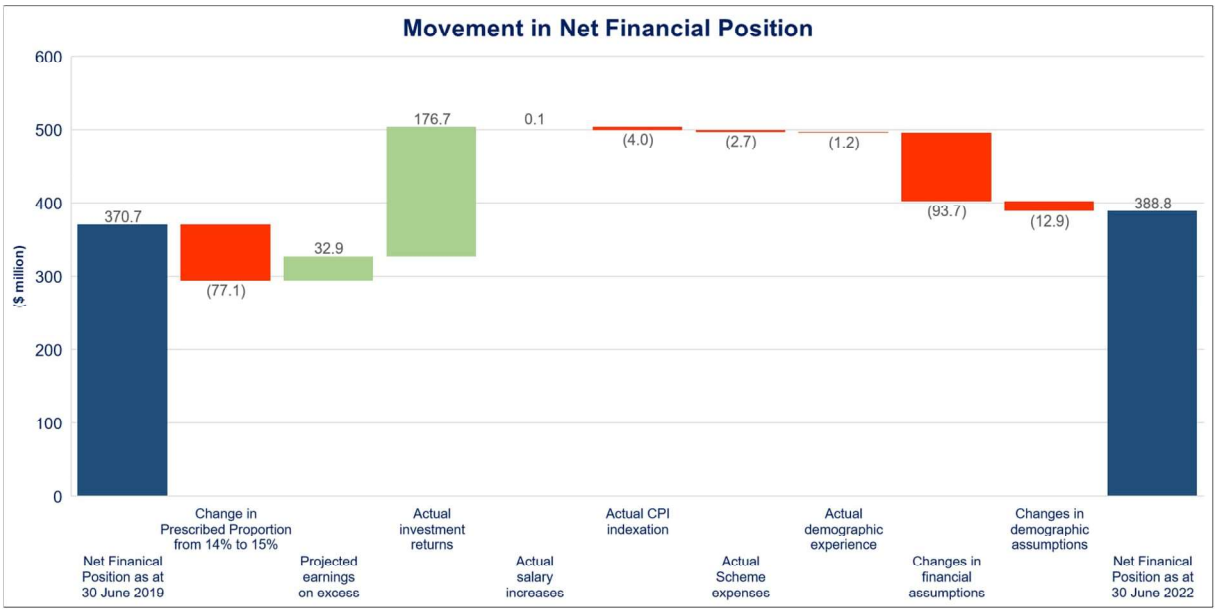
The results under the alternative "adverse assumptions" illustrate the sensitivity of the results to the assumptions adopted. Under the adverse assumptions, the expected excess of Fund assets over liabilities reduces to 9.2% of the Fund share of liabilities.

The above results indicate that it would be feasible for the Government to consider increasing the Prescribed Proportion to 16%, which would reduce the expected excess of Fund assets over liabilities to 23.8%.

However, given the sensitivity of the margin to future experience, the current uncertainty in relation to inflation (in particular) and the potential for volatility in investment returns, it would be reasonable to maintain the current Prescribed Proportion of 15%.

Analysis of Change in Financial Position

The major influences affecting the change in the net financial position over the three years to 30 June 2022 are quantified in the following chart:



Overall, the net financial position was similar to that disclosed as at 30 June 2019. The positive impact of investment returns being greater than assumed was largely offset by:

- The increase in the Prescribed Proportion from 14% to 15%; and
- The change in financial assumptions: in particular the increase in the short-term CPI assumptions to reflect known CPI experience and the current short-term economic outlook.

Experience Since 30 June 2022

Known CPI indexation since 30 June 2022 has been incorporated in the short-term actuarial assumptions. No other allowance has been made for Scheme experience since 30 June 2022. This will be reflected in the next actuarial review, which is due to be undertaken as at 30 June 2025.

I am not aware of any other significant events that have occurred since 30 June 2022 which would materially impact on the findings or recommendations in this report.

Accrued Employer Share of Scheme Liabilities

The following table shows the total estimated value of the employer share of liabilities in respect of service prior to 30 June 2022, and the employer share of future Scheme administration expenses in relation to current and future pensioners and preserved members. These liabilities are met by the employers rather than the Fund and are shown here for completeness only. The equivalent results as at 30 June 2019 (based on the current Prescribed Proportion of 15%) are also shown for comparison.

As at	30 June 2022 Investigation Assumptions ($'000s)	30 June 2022 Adverse Assumptions ($'000s)	30 June 2019 Previous Assumptions ($'000s)
Actuarial value of employer share of past service benefits	6,747,040	7,327,521	6,511,399
Actuarial value of employer share of past service Scheme expenses	68,777	76,042	19,140
Total	**6,815,817**	**7,403,563**	**6,530,539**

Employer's Future Service Contribution Rate

The employer's future service rate represents the rate of contributions (expressed as a percentage of contributors' salaries), which, when combined with the members' future contributions and accumulated with investment earnings, is expected to fully fund the Scheme benefits accruing to members based on their service after 30 June 2022.

The calculation of the employer's future service rate effectively ignores any excess or deficit of funding for the Scheme benefits which have accrued to members based on their service up to 30 June 2022. If the Scheme benefits which have accrued due to service up to 30 June 2022 were all fully funded, ongoing contributions at the employer's future service rate would be expected to maintain full funding of benefits over time.

In practice, regular contributions are paid by government departments to an Employer Contribution Account using an assessment of the employer's future service rate.

The calculation of the employer's future service rate as at 30 June 2022, based on the actuarial assumptions used for this investigation, is summarised in the table below. The results using more conservative "adverse assumptions" and from the previous investigation are also shown for comparison.

As at	30 June 2022 Investigation Assumptions ($'000s)	30 June 2022 Adverse Assumptions ($'000s)	30 June 2019 Previous Assumptions ($'000s)
Actuarial value of future service benefits	7,071	8,265	21,041
Actuarial value of 70% of future Scheme expenses relating to current contributors	141	208	135
Actuarial value of future member contributions	(786)	(806)	(2,086)
Future service liabilities to be financed by the Employer	**6,426**	**7,667**	**19,090**

As at	30 June 2022 Investigation Assumptions ($'000s)	30 June 2022 Adverse Assumptions ($'000s)	30 June 2019 Previous Assumptions ($'000s)
Actuarial value of 1% of contributors' future salaries	320	327	800
Employer's Future Service Rate as a % of salaries	**20.1%**	**23.4%**	**23.9%**

The employer's future service rate has decreased since the previous investigation, which is primarily due to the change in the demographic profile of the remaining contributors, together with changes in the actuarial assumptions. In particular, a significant number of the remaining contributors have accrued the maximum benefit in the Scheme.

Given that the contribution rate applies to a small, and rapidly decreasing, number of Pension Scheme contributors, it would in my view be reasonable to maintain the existing employer contribution rate of 26.0% of contributors' salaries.

Conclusions

Based on the actuarial assumptions used for this investigation:

- The assets of the Fund remain sufficient to maintain the Prescribed Proportion at 15%. Assuming the Prescribed Proportion is maintained at 15%, the expected excess of Fund assets represents a margin of 31.8% of total liabilities.
- The Prescribed Proportion could be increased to a maximum rate of 19.9%, but at this level there would be no reserve to provide a buffer against adverse experience, meaning the Prescribed Proportion would need to be decreased (and the employer share increased) if future experience were less favourable than assumed.
- The employer's future service rate is calculated to be 20.1% of contributors' salaries.

It would be feasible for the Government to consider increasing the Prescribed Proportion to 16%, which would reduce the expected excess of Fund assets over liabilities to 23.8%.

However, given the sensitivity of the margin to future experience, the current uncertainty in relation to inflation (in particular) and the potential for volatility in investment returns, it would be reasonable to maintain the current Prescribed Proportion of 15%.

The future service contribution rate for the employer share of benefits of the Pension Scheme can be maintained at 26.0% of contributors' salaries. Although a decrease in this rate could be considered, the financial impact of any change would be very small, given the number of contributors remaining in the Pension Scheme.

Section 7
Lump Sum Scheme Results

Financial Position for Accrued Member Accounts

The Fund share of Lump Sum Scheme liabilities are accumulation style liabilities, representing the accumulation of member contributions and roll-ins with investment earnings.

The value of Fund assets for the Lump Sum Scheme division should generally correspond to the aggregate value of individual member accounts in the Scheme at any point in time. Provided that investment returns which are allocated to member accounts are equal to the actual earning rate on the investments of the Fund (net of investment expenses and the appropriate share of Scheme administration costs), the value of the investments will move in line with the total of the member accounts. Small differences may arise due to discrepancies in the actual underlying investments (compared with members' investment choices) and/or the timing of earnings being allocated to members. However, these differences would normally be small, and would be expected to balance out over time.

The following table shows the financial position of the Lump Sum Scheme in respect of the Fund share of liabilities only: that is, the value of member accounts relative to the net Fund assets. The equivalent results from the previous investigation are shown for comparison.

As at	30 June 2022 ($'000s)	30 June 2019 ($'000s)
Net Value of Fund Assets	**471,153**	**611,520**
Member contribution accounts	467,326	585,748
Member roll-in accounts	19,539	29,063
Total Member Accounts	**486,865**	**614,811**
Net Financial Position	**(15,712)**	**(3,291)**
Net Financial Position as a % of Total Member Accounts	**(3.2%)**	**(0.5%)**

The shortfall between the assets of the Fund and the aggregate value of members' accounts has increased from 0.5% of member accounts at 30 June 2019 to 3.2% of member accounts at 30 June 2022. The growth in this shortfall is greater than expected and should be investigated. Once the cause of the difference is understood, appropriate steps can be identified and implemented to manage and/or rectify the discrepancy.

Accrued Employer Share of Scheme Liabilities

For the Lump Sum Scheme, the employer share of benefits is specified in the Act and is not affected by the value of member accounts (or the value of assets in the Fund). In general, the employer share of benefits is not affected by the rate of return on the Fund's investments.

The following table shows the estimated value of the employer share of liabilities in respect of service prior to 30 June 2022, and the employer share of future Scheme administration expenses in relation to preserved members. These liabilities are met by the employers rather than the Fund, and do not affect the financial position of the Fund. They are shown here for completeness only. The equivalent results at 30 June 2019 (based on the assumptions adopted for the actuarial investigation at that date) are also shown for comparison.

	30 June 2022		30 June 2019
As at	Investigation Assumptions ($'000s)	Adverse Assumptions ($'000s)	Previous Assumptions ($'000s)
Actuarial value of employer share of past service benefits	701,743	730,903	877,235
Actuarial value of employer share of past service Scheme expenses	1,325	1,389	2,496
Total Employer Share of Liabilities	**703,068**	**732,292**	**879,731**

Employer's Future Service Contribution Rate

The employer's future service rate represents the rate of contributions (expressed as a percentage of contributors' salaries), which, when combined with the members' future contributions and accumulated with investment earnings, is expected to fully fund the Scheme benefits accruing to members based on their service after 30 June 2022.

The calculation of the employer's future service rate effectively ignores any excess or deficit of funding for the Scheme benefits which have accrued to members based on their service up to 30 June 2022. If the Scheme benefits which have accrued due to service up to 30 June 2022 were all fully funded, ongoing contributions at the employer's future service rate would be expected to maintain full funding of benefits over time.

In practice, regular contributions are paid by government departments to an Employer Contribution Account using an assessment of the employer's future service rate.

The calculation of the employer's future service rate as at 30 June 2022, based on the actuarial assumptions used for this investigation, is summarised in the table below. The results using more conservative "adverse assumptions" and from the previous investigation are also shown for comparison.

As at	30 June 2022 Investigation Assumptions ($'000s)	30 June 2022 Adverse Assumptions ($'000s)	30 June 2019 Previous Assumptions ($'000s)
Actuarial value of future service benefits	95,017	101,426	183,734
Actuarial value of 70% of future Scheme expenses relating to current contributors	1,920	2,000	4,278
Actuarial value of future member contributions	(37,586)	(39,137)	(59,567)
Future service liabilities to be financed by the Employer	**59,351**	**64,289**	**128,445**
Actuarial value of 1% of contributors' future salaries	6,064	6,313	9,659
Employer's Future Service Rate as a % of salaries	**9.8%**	**10.2%**	**13.3%**

The employer's future service rate has decreased since the previous investigation, which is primarily due to the change in the demographic profile of the remaining contributors, together with changes in the actuarial assumptions. In particular, a significant number of the remaining members have accrued the maximum benefit in the Scheme.

Notwithstanding the reduction in the calculated future service rate, in my view it would be reasonable to maintain the existing employer contribution rate of 14.75% of contributors' salaries.

Although a decrease in the employer contribution rate could be considered, I understand that this contribution rate has been in place for several years and that there is a preference for stability in the contribution rate. Given the funding arrangements for the Scheme, the employer contribution rate only affects how the employer costs are shared between the various employing agencies and the Government. Given that future service costs now represent a very small component of the total cost of providing the employer share of benefits, it would be reasonable to maintain the current employer contribution rate.

Conclusions

Based on the actuarial assumptions used for this investigation:

- A shortfall exists between the assets of the Fund and the aggregate value of members' accounts. As at 30 June 2022, the shortfall was $15.7 million, or 3.2% of total member accounts. The cause of the difference between the assets and member account balances should be investigated to understand why a shortfall persists. Appropriate steps can then be identified and implemented to manage and/or rectify the discrepancy.
- The future service contribution rate for the employer share of benefits of the Lump Sum Scheme can be maintained at 14.75% of contributors' salaries.

Section 8
Projected Annual Outlays

Employer's Share of Benefits

The Government's projected annual outlays for the employer share of benefits of the Scheme over the next 20 years are shown in the table below. The outlays include the Government's share of the Scheme expenses but exclude benefits which are reimbursed by the Commonwealth Government (i.e. in respect of South Australian universities) and benefits which specific "Commercial" employers pay separately.

Year Ending 30 June	Nominal Outlays ($ million) Pension Scheme	Lump Sum Scheme	Total
2023	537.0	139.5	676.5
2024	565.2	110.4	675.6
2025	573.4	101.3	674.7
2026	573.3	96.0	669.3
2027	572.4	86.7	659.1
2028	570.7	78.3	649.0
2029	568.1	74.1	642.2
2030	564.3	63.6	627.9
2031	559.3	55.3	614.6
2032	553.0	49.4	602.4
2033	545.2	41.9	587.1
2034	535.7	35.9	571.6
2035	524.6	29.2	553.8
2036	511.5	22.8	534.3
2037	496.5	18.5	515.0
2038	479.7	14.0	493.7
2039	460.8	9.8	470.6
2040	440.1	5.9	446.0
2041	417.6	3.6	421.2
2042	393.4	2.3	395.7

Section 9
Key Risks

There are a number of risks relating to the operation and future funding of Scheme benefits. The more significant financial risks are:

Investment Returns

The risk is that investment returns will be lower than assumed and the cost to the Government for the employer share of benefits of the Scheme will be greater than projected.

For example, if the assumed future investment return was reduced by 1% pa with no change in other assumptions:

- the total Fund share of liabilities of the Pension Scheme as at 30 June 2022 would increase by $104.9 million;
- the accrued employer share of liabilities of the Pension Scheme as at 30 June 2022 would increase by $594.8 million;
- the accrued employer share of liabilities of the Lump Sum Scheme as at 30 June 2022 would increase by $23.5 million;
- the employer's future service rate for the Pension Scheme would increase by 0.5% of contributors' salaries; and
- the employer's future service rate for the Lump Sum Scheme would increase by 0.3% of contributors' salaries.

The actual investment return achieved by the Scheme in future may vary (positively or negatively) from the rate assumed at this investigation by much more than the illustrative (negative) 1% pa.

This risk also affects the assets invested in the Employer Contribution Accounts which finance the employer share of Scheme benefits, and the member component of benefits in the Lump Sum Scheme.

Asset Shock

The risk is that an investment market event causes a sudden reduction to the value of Fund assets and increases the cost to the Government for the employer share of benefits of the Pension Scheme.

The potential impact to the Pension Scheme of a fall in the value of the Fund's investments is demonstrated through the "adverse assumptions" results shown in Section 6. An actual asset shock may vary (positively or negatively) by much more than the illustrative 10% fall in investment values.

This risk also affects the assets invested in the Employer Contribution Accounts which finance the employer share of Scheme benefits, and the member component of benefits in the Lump Sum Scheme.

Salary Increases

The risk is that wages or salaries (on which future benefit amounts will be based) will rise more rapidly than assumed, increasing benefit amounts.

For example, if the assumed future salary increase rate was increased by 1% pa, with no change in other assumptions:

- the total Fund share of Liabilities of the Pension Scheme as at 30 June 2022 would increase by $0.4 million;
- the accrued employer share of liabilities of the Pension Scheme as at 30 June 2022 would increase by $2.3 million;
- the accrued employer share of liabilities of the Lump Sum Scheme as at 30 June 2022 would increase by $21.8 million;
- the employer's future service rate for the Pension Scheme would increase by 0.2% of contributors' salaries; and
- the employer's future service rate for the Lump Sum Scheme would increase by 0.3% of contributors' salaries.

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

Inflation

The risk is that future increases in CPI (which impacts the indexation of benefits) will be higher than assumed, increasing benefit amounts.

For example, if the assumed future CPI indexation were increased by 1% pa, with no change in other assumptions:

- the total Fund share of Liabilities of the Pension Scheme as at 30 June 2022 would increase by $101.8 million;
- the accrued employer share of liabilities of the Pension Scheme as at 30 June 2022 would increase by $577.2 million; and
- the employer's future service rate for the Pension Scheme would increase by 0.3% of contributors' salaries

The actual rate of future inflation may vary (positively or negatively) from the rate assumed at this investigation by much more than the illustrative (positive) 1% pa.

Longevity

The risk is that pensioners live longer than assumed, resulting in pension payments continuing for longer than projected and increasing the cost of providing pension benefits. For example, if all current and potential lifetime pensioners are assumed to have 10% lower mortality rates than currently assumed (e.g. a 3% probability of death becomes 2.7%), with no change in other assumptions:

- the total Fund share of Liabilities of the Pension Scheme as at 30 June 2022 would increase by $32.3 million;
- the accrued employer share of liabilities of the Pension Scheme as at 30 June 2022 would increase by $182.8 million; and
- the employer's future service rate for the Pension Scheme would increase by 0.2% of contributors' salaries

The actual experience of pensioner longevity may vary from that assumed at this investigation by much more than the illustrative 10% lower mortality rates.

Self-Insurance

The Scheme provides benefits on the death or disablement of an active member. The Scheme does not insure these benefits, which means that:

- The Fund share of death and disablement benefits is met entirely from Scheme assets;
- The employer share of death and disablement benefits is met entirely by the employer.

There is a "self-insured" component to the extent that an additional benefit is payable in respect of death or disablement, over and above the accrued benefit which would be payable on resignation or retirement.

In the Pension Scheme, the self-insured components are now negligible as for most members, the actuarial value of the accrued retirement benefit exceeds the actuarial value of the invalidity and death benefits.

In respect of pensioner members, the death of a member always reduces the Scheme's and the employer's liability. The main financial risk is that members will live longer than expected (i.e. longevity risk).

In the Lump Sum Scheme, self-insurance is only relevant in respect of the employer component of the benefit.

The following table shows the estimated increase in cost of benefits in the Lump Sum Scheme if all contributors were to die or become permanently disabled at the investigation date (rather than exit the Scheme in line with the actuarial assumptions):

As at 30 June 2022	Employer Share ($ million)	Fund Share ($ million)	Total ($ million)
Death	+77.0	-	+77.0
Invalidity	+90.4	-	+90.4

The reason for analysing the level of self-insurance maintained by the Scheme is that it gives rise to an additional source of uncertainty in relation to future benefit payments. Primarily, I am concerned with the risk that benefit payments could be significantly higher than expected, due to variation in the number of death or disablements occurring in any year. This volatility could be caused either by random variation, or by a one-off “catastrophic” event.

The figures above indicate that the potential for additional payments is small, relative to the total expected future benefit payments.

The Lump Sum Scheme is susceptible to the impact of an increase in deaths or disablements in the community as a whole, as has been observed during the COVID-19 pandemic. However, in considering the impact of a pandemic (or other scenario) I need to consider not only the impact on active members but also the impact on pensioner members (including future pensioners). In practice, the financial impact of any pandemic on the Lump Scheme in respect of active members is likely to be more than offset by the related impact on Pension Scheme active members and pensioners.

Having regard to these factors, I am satisfied that the self-insurance arrangements are suitable.

Investment Mismatch

The risk is that the investment returns credited to member accounts do not match the investment returns credited to the Fund, leading to a shortfall in the assets available to meet the member component of Lump Sum Scheme benefits. This risk is borne by the Government, as any shortfall in assets would mean the Fund could not fully reimburse the Consolidated Account for the member component of benefits.

The most likely sources of difference include:

- The underlying investments not matching members’ investment choices;
- Timing differences between the allocation of investment earnings to the Fund and the allocation of investment earnings to members;
- Differences between the expenses allocated to the Fund compared with the expense deduction allowed for in the unit pricing.

The total value of member account balances in the Lump Sum Scheme as at 30 June 2022 is $486.9 million, meaning that a 1% difference between the investment earnings credited to the Fund and those credited to members would result in an additional cost of approximately $4.9 million to the Government.

Legislative

The risk is that legislative changes could be made which increase the cost of providing the defined benefits – for example an increase in the rate of tax on superannuation funds.

Other

In addition to the above risks, Super SA’s Risk Management Strategy and Plan should identify a full range of risks faced by the Super SA Board, some of which could affect the future costs to the Government of the Scheme.

Section 10
Actuary's Certifications

Professional Standards

This report has been prepared 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."* Where requirements of PS400 are not relevant to or appropriate for the Scheme, I have omitted them.

Use of Report

This report should not be relied upon for any other purpose or by any party other than the Government and the Super SA Board. Mercer is not responsible for the consequences of any other use. Additional calculations may be required for other purposes. This report should be considered in its entirety and not distributed in parts.

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

I am not aware of any significant events that have occurred since the investigation date which would have a material impact on the recommendations in this report.

Actuarial Uncertainty and Assumptions

An actuarial investigation provides a snapshot of the 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 the 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 salary growth and CPI increases, any discretions exercised by the Super SA Board, or choices made by members. 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 estimated long-term cost depend on a number of factors, including the amount of benefits the Scheme pays, the cause and timing of member withdrawals, Scheme expenses, 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 a 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 minor in their overall effect, or they may be significant and material.

In addition, different sets of assumptions or scenarios may also be within a reasonable range and results based on those alternative assumptions would be different. For this reason, the impact on the results of various changes in assumptions are also shown in this report.

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

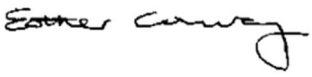
As actual Scheme experience will differ from the assumptions, decisions about benefit changes, investment policy, funding amounts and/or benefit related issues should be made only after careful consideration of possible future financial conditions and scenarios and not solely on the basis of a set of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

Next Actuarial Investigation

Under the Act, an actuarial report must be prepared every three years. The next actuarial investigation is scheduled to be conducted as at 30 June 2025. At that time, the estimated costs of the Scheme and the proportion of Pension Scheme benefits to be met from Fund assets will be reassessed.

Further Information

I am available to provide any supplementary information and explanation about this actuarial investigation as may be required.



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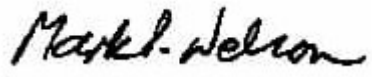
Esther Conway
Fellow of the Institute of Actuaries of Australia

23 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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Mark Nelson
Fellow of the Institute of Actuaries of Australia

Appendix A
Summary of Benefits

The Scheme's benefit entitlements are complex. A **summary** of the main benefit provisions is set out below. A full description of all the benefits is set out in the Act and accompanying Regulations, as amended from time to time. The summary below should not be relied upon to calculate benefits for individuals. Reference must be made to the formal governing documents for definitive statements.

Old (Pension) Scheme

Members elect to make contributions to the Scheme based on a percentage of their salary. Benefits are calculated as a percentage of final salary based on the member's aggregate number of contribution points.

Members may, from time to time, vary their contribution rate to 3%, 4.5%, 6%, 7.5%, 9%, or to cease contributing. One contribution point is awarded for each month of full-time contributory membership at the Standard Contribution Rate of 6% of salary. Proportional contribution points are awarded for contributions at rates other than the Standard Contribution Rate and for part-time contributory membership. No contribution points accrue if the member ceases contributing. The maximum number of points that count toward benefits is an average of one per month of membership.

Members are also able to roll-in amounts from other superannuation funds. These amounts, accumulated with investment earnings, are payable in addition to standard Scheme benefits, and are subject to general superannuation preservation rules.

Retirement

On or after reaching normal retirement age of 60 years, a lifetime pension calculated as:

$$FS \times A \times 2/3 \times (1 + X/E) + FS/100 + FS \times 7.4/100 \times n/420$$

where

FS = Final salary.

A = The ratio of the aggregate number of accrued contribution points and the greater of the number of months of membership or 360, subject to a maximum of 1.

X = The number of months by which the contributor's age at retirement exceeds age 60.

E = 600 if the number of months of contributory membership is 360 or more and 1,200 if the number of months of contributory membership is 300 or more but less than 360.

n = The number of contribution points that accrued from 1 July 1992, subject to a maximum of 420.

On or after reaching early retirement age of 55 years but before the normal retirement age of 60 years, a lifetime pension calculated as:

$$FS \times A \times (50/100 + 17.6/100 \times n_2/60) + FS \times n_1/420 \times (6/100 + 1.4/100 \times n_2/60)$$

where

FS = Final salary.

A = The ratio of the aggregate number of accrued contribution points and the greater of either the number of months of membership or 300 + n_2, subject to a maximum of 1.

n_1 = The number of contribution points that accrued from 1 July 1992, subject to a maximum of 420.

n_2 = The number of months by which the contributor's age at early retirement exceeds age 55.

The maximum retirement pension is equal to 75% of final salary.

Pensions are indexed twice yearly, in April and October, in line with changes in the Consumer Price Index (CPI) all groups for Adelaide.

Part or all of the retirement pension may be commuted to a lump sum. A summary of the commutation factors used for this purpose is shown below:

Age	Lump sum for $1 of annual pension commuted
55	$11.50
60	$10.50
65	$9.50
70	$8.20
75	$6.70

Resignation

On resignation prior to age 55, a contributor has two options:

1. An immediate lump sum equal to the balance of the accumulated contribution account plus a preserved lump sum payable on retirement on or after age 55 equal to.

   $$AFS \times 0.85/450 \times M + SG$$

   where

   AFS = Salary at resignation indexed to the date of retirement in line with changes in the CPI.

   M = The number of months of contributory membership between 31 December 1987 and 1 July 1992.

   SG = The superannuation guarantee benefit for membership after 1 July 1992 accumulated with interest to the date of retirement.

2. A benefit entitlement preserved until retirement on or after age 55.

   a) For a contributor with less than ten years of contributory membership, the benefit is a lump sum calculated as:

      E + 7/3 x A + AFS x 0.85/450 x M

   where

   E = The accumulated member contribution account.

   A = The lesser of the actual accumulated member contribution account and the notional accumulated member contribution account had contributions been made throughout at the Standard Contribution Rate.

   AFS = Salary at resignation indexed to the date of retirement in line with changes in the CPI.

   M = The number of months of contributory membership after 31 December 1987.

   b) For a contributor with ten or more years of contributory membership, the benefit is a lifetime pension calculated in the same manner as the retirement benefit which had accrued to the date of resignation but with salary indexed to the date of retirement in line with changes in the CPI.

Death

On the death of a current contributor, a spouse's lifetime pension is payable equal to 2/3rds of the prospective normal retirement benefit had contributory membership continued at the Standard Contribution Rate plus an additional proportion for each eligible dependent child. Where there is no eligible surviving spouse or eligible dependent children, a lump sum similar to the age retirement benefit of the Lump Sum Scheme is paid to the contributor's estate.

On the death of a retired contributor, a 2/3rds reversionary lifetime pension is payable to an eligible surviving spouse. The spouse may elect to commute part or all of the pension to a lump sum using prescribed commutation factors.

Invalidity

On termination of employment due to permanent invalidity, a lifetime pension equal to the prospective normal retirement benefit had contributory membership continued at the Standard Contribution Rate.

Prior to age 60, a maximum of 20% of the invalidity pension may be commuted to a lump sum. The invalidity pension may be fully commuted to a lump sum on attaining age 60.

Whilst employed, a temporary disability pension of up to 2/3rds of salary may be payable for a period of up to 12 months.

New (Lump Sum) Scheme

Members elect to make contributions to the Scheme based on a percentage of their salary. Benefits comprise the accumulated member contribution account balance (the member component) plus an employer financed benefit (the employer component).

Members are also able to roll-in amounts from other superannuation funds. These amounts, accumulated with investment earnings, are payable in addition to standard Scheme benefits, and are subject to general superannuation preservation rules.

Retirement

On or after reaching age 55, a lump sum calculated as:

$$E + FS \times 4.5 \times Y + FS \times M \times 3.4\%/12$$

where

E = The accumulated member contribution account.

FS = Final salary.

Y = The lesser of A and (1 – X/420).

A = The ratio of the aggregate number of accrued contribution points and 420, subject to a maximum of 1.

X = The number of months (if any) by which the contributor's age at retirement is less than 60 years.

M = The number of months of contributory membership after 30 June 1992.

Resignation

On resignation prior to age 55, a contributor has three options:

1. An immediate lump sum equal to the accumulated member contribution account plus a preserved lump sum payable on retirement on or after age 55 equal to the superannuation guarantee benefit for membership after 1 July 1992 accumulated with interest to the date of retirement.
2. A benefit entitlement preserved until retirement on or after age 55. The preserved benefit is a lump sum calculated in the same manner as the retirement benefit which had accrued at the date of resignation but with salary indexed to the date of retirement in line with changes in the CPI.
3. Transfer to an approved superannuation fund an amount equal to:

$$E + B + FS \times M \times 3.4\%/12$$

where

E = The accumulated member contribution account.

B = The lesser of the actual accumulated member contribution account and the notional accumulated member contribution account had contributions been made throughout at the Standard Contribution Rate.

FS = Final salary.

M = The number of months of contributory membership after 30 June 1992.

Death

On death prior to age 55, a lump sum is payable to an eligible surviving spouse calculated as:

$$E + FS \times 3.0 \times A + FS \times M \times 3.4\%/12$$

where

E = The greater of the accumulated member contribution account and 2 x FS.

FS = Final salary.

A = The ratio of the prospective aggregate number of accrued contribution points had contributory membership continued at the Standard Contribution Rate to age 60 and 420, subject to a maximum of 1.

M = The number of months of contributory membership after 30 June 1992.

An additional pension of up to 5% of final salary is payable for each eligible dependent child.

Where there is no eligible surviving spouse or eligible dependent children, a lump sum equal to the accrued retirement benefit is paid to the contributor's estate.

Invalidity

On termination of employment prior to age 55 due to permanent invalidity, a lump sum calculated as:

$$E + FS \times 3.86 \times A + FS \times M \times 3.4\%/12$$

where

E = The greater of the accumulated member contribution account and 2 x FS.

FS = Final salary.

A = "p" divided by 360, subject to a maximum of 1.

p = The aggregate number of accrued contribution points plus a proportion of the number of months from the date of invalidity to age 55. The proportion is equal to one less the extent of incapacity for workers' compensation purposes.

M = The number of months of contributory membership after 30 June 1992.

Whilst employed, a temporary disability pension of 2/3rds of salary may be payable for a period of up to 12 months.

Appendix B
Analysis of Decrement Experience

Contributors

The experience of contributors during the three years to 30 June 2022 has been examined and compared with that assumed at the previous actuarial investigation.

Retirement

The actual and expected numbers of age retirements for current and preserved contributors are shown in the tables below:

	Pension Scheme		Lump Sum Scheme	
Current Contributors	Male	Female	Male	Female
Actual	119	56	314	348
Expected	124	74	367	480
Ratio A / E	96%	76%	86%	73%

	Pension Scheme		Lump Sum Scheme	
Preserved Contributors	Fully preserved	SG preserved	Fully preserved	SG preserved
Actual	39	42	129	52
Expected	83	122	208	94
Ratio A / E	47%	34%	62%	55%

The actual number of retirements was less than expected, and the difference in the experience of teachers compared with non-teachers was not significant (although not detailed in the tables above). Assumed rates of retirement for current contributors have been simplified so that no distinction is made for teachers and non-teachers. The rates of retirement for preserved members of the Lump Sum Scheme have been reduced (from 20% to 7%) at age 55, and increased from (12% to 20%) at age 60 to align more closely with experience.

Resignation

The actual and expected numbers of resignations is shown in the table below:

	Pension Scheme		Lump Sum Scheme	
Current Contributors	Male	Female	Male	Female
Actual	-	-	13	28
Expected	1	1	14	23
Ratio A / E	n/a	n/a	92%	122%

Based on this analysis and the small number of Pension Scheme members below age 55, no resignations have been assumed for Pension Scheme contributors. Assumed rates of resignation from the Lump Sum Scheme have also been simplified so that no distinction is made for teachers and non-teachers.

Of the contributors who resigned from the Lump Sum Scheme, the following proportions of members elected the various benefit options:

Lump Sum Scheme Current Contributors	Male	Female
Fully preserved	31%	21%
SG preserved	-	21%
Transfer	69%	58%

The assumptions made at the previous investigation were that 30% of benefits would be preserved and 70% of benefits would be transferred to an approved superannuation fund. These assumptions have been maintained.

In the previous investigation, it was assumed that 2% per annum of Lump Sum Scheme preserved members under age 55 transferred their benefits to an approved superannuation fund. This assumption has been removed (set to 0%) as it does not have a material impact on the valuation.

Death

	Pension Scheme		Lump Sum Scheme	
Current Contributors	Male	Female	Male	Female
Actual	-	-	2	2
Expected	1	0	5	4

The analysis shows the previous mortality assumptions have overestimated the actual number of deaths during the investigation period. Assumed mortality rates before retirement have been scaled down to better align with the experience. However, the expected number of deaths is small, and experience could vary significantly from one period to the next.

Invalidity

	Pension Scheme		Lump Sum Scheme	
Current Contributors	Male	Female	Male	Female
Actual	1	-	-	-
Expected	-	-	1	1

The analysis shows the previous invalidity retirement (disablement) assumptions have been broadly in line with the actual experience during the investigation period. The existing assumed invalidity rates have been maintained.

Pensioners

The mortality experience of pensioners during the three years to 30 June 2022 has been examined and compared with that assumed at the previous actuarial investigation.

Age Retiree

The actual and expected numbers of deaths for age retiree pensioners are shown in the table below:

	Male			Female		
Age	Actual	Expected	Ratio A / E	Actual	Expected	Ratio A / E
55-59	1	0.3	336%	-	0.1	n/a
60-64	6	6.2	97%	6	1.2	552%
65-69	19	32.6	58%	5	4.8	104%
70-74	57	79.9	71%	9	10.2	88%
75-79	108	121.4	89%	14	16.3	86%
80-84	142	157.8	90%	27	26.3	103%
85-89	173	192.7	90%	40	36.2	110%
90-95	177	203.8	87%	47	39.1	120%
95-100	91	75.8	120%	33	28.0	118%
100+	10	11.4	88%	6	5.5	108%
Total	**784**	**881.9**	**89%**	**187**	**167.7**	**111%**

The analysis indicates the previous pensioner mortality assumptions have overestimated the actual number of deaths for males but underestimated the deaths for females.

The assumed mortality rates for retiree pensioners have been updated to reflect the Mercer 2012-17 Pensioner Mortality Investigation retiree pensioner mortality rates, with allowance for improvements in mortality based on the 25 year average improvement factors published in the Australian Life Tables 2015-17. Overall, these assumptions better match the observed experience, and represent lighter mortality for male retirees and heavier mortality for female retirees.

Spouse

The actual and expected numbers of deaths for spouse pensioners are shown in the table below:

	Male			Female		
Age	Actual	Expected	Ratio A / E	Actual	Expected	Ratio A / E
55-59	-	-	n/a	-	0.1	n/a
60-64	-	-	n/a	3	0.6	478%
65-69	-	0.4	n/a	3	2.8	108%
70-74	-	1.1	n/a	14	11.4	123%
75-79	-	1.6	n/a	19	26.0	73%
80-84	4	3.3	121%	49	63.6	77%
85-89	7	6.0	116%	136	139.0	98%
90-95	4	5.3	76%	180	196.9	91%
95-100	6	4.0	149%	106	116.1	91%
100+	-	-	n/a	26	32.1	81%
Total	**21**	**21.7**	**97%**	**536**	**588.6**	**91%**

The analysis indicates the existing spouse pensioner mortality assumptions have overestimated the actual number of deaths during the analysis period.

The assumed mortality rates for spouse pensioners have been updated to 90% of the population rates published in the Australian Life Tables 2015-17, with allowance for improvements in mortality based on the 25 year average improvement factors published in the Australian Life Tables 2015-17. For female spouse pensioners, these assumptions better match the observed experience, and represent lighter mortality overall. The number of male spouse pensioners is too small for the experience to be meaningful, and I have relied on the broader findings of the Mercer 2012-17 Pensioner Mortality Investigation.

Invalidity Retiree

Rates of mortality for invalidity pensioners are expected to be higher than for age retiree pensioners, especially in the first few years after invalidity retirement.

The rate of mortality for an invalidity pensioner was previously assumed to be 5% in the first year and 2% in the second year. There was only one new invalidity retiree during the investigation period. This is insufficient exposure on which to make meaningful observations. Therefore, the existing assumptions have been maintained.

The actual and expected numbers of deaths for invalidity pensioners who have survived at least two years are shown in the table below:

	Male			Female		
Age	Actual	Expected	Ratio A / E	Actual	Expected	Ratio A / E
55-59	-	0.1	n/a	1	0.1	1,784%
60-64	1	0.6	172%	-	0.1	n/a
65-69	1	2.4	42%	-	0.5	n/a
70-74	2	8.1	25%	1	1.3	78%
75-79	5	10.2	49%	5	1.7	297%
80-84	11	10.9	100%	2	2.1	98%
85-89	14	15.4	91%	1	2.8	36%
90-95	14	10.6	132%	5	4.6	109%
95-100	4	2.6	156%	2	1.0	205%
100+	-	-	n/a	-	1.0	n/a
Total	**52**	**60.9**	**85%**	**17**	**15.1**	**113%**

The analysis indicates the previous invalidity retiree mortality assumptions have overestimated the actual number of deaths for males and have been broadly consistent with the actual experience for females.

The assumed mortality rates for invalidity retiree pensioners have been updated to 100% of the population rates published in the Australian Life Tables 2015-17, with allowance for improvements in mortality based on the 25 year average improvement factors published in the Australian Life Tables 2015-17, based on the broader findings of the Mercer 2012-17 Pensioner Mortality Investigation.

Family Statistics

The average proportion of pensioners who died with an eligible surviving spouse, and the average age difference between the original member pensioner and their spouse, during the three years to 30 June 2022 is shown in the table below:

Pension Scheme	Percentage married (%)		Age of member less age of spouse (years)	
	Male	Female	Male	Female
Actual	58	14	+4.2	-1.5
Expected	62	26	+4.4	-1.8

Based on this analysis, the existing assumed family statistics remain unchanged from the previous investigation.

Pension Commutation

The actual and expected proportions of pension benefits commuted to a lump sum during the three years to 30 June 2022 are shown in the table below:

Pension type	Pension commuted to lump sum (%)	
	Actual	Expected
Retirement	8.8	6.0
Spouse	10.1	13.0
Invalidity	-	9.0

Based on this analysis and the analysis undertaken in the previous investigation:

- The proportion of the retirement pension assumed to be commuted to a lump sum is unchanged from the previous investigation. Although the amount commuted during the investigation period was higher than assumed, the longer term experience has been close to the assumption.
- The assumed proportion of spouses who commute their pension has been reduced from 13% to 10%.
- For simplicity, and given the small number of expected future invalidity retirements, no allowance is now made for invalidity retirees to commute the pension to a lump sum.

Appendix C
Summary of Demographic Assumptions

Future New Contributors

No allowance has been made for future new entrants to the Scheme. The Scheme has been closed to new contributors since May 1994. Contributors may, however, transfer employment between departments and agencies participating in the Scheme.

Contributors are assumed to continue contributing at their current rates until the maximum number of contribution points is reached.

Rates of Retirement

Age	Current Contributors		Preserved Contributors	
	Pension Scheme	Lump Sum Scheme	Pension Scheme	Lump Sum Scheme
55	0.08	0.06	0.25	0.07
56	0.10	0.06	0.25	0.07
57	0.13	0.06	0.25	0.07
58	0.17	0.08	0.25	0.07
59	0.20	0.08	0.25	0.07
60	0.43	0.21	0.50	0.20
61	0.30	0.13	0.25	0.12
62	0.30	0.13	0.25	0.12
63	0.30	0.13	0.25	0.12
64	0.30	0.20	0.37	0.12
65	0.30	0.35	0.50	0.50
66	0.30	0.30	0.50	0.50
67	0.30	0.30	0.50	0.50
68	0.30	0.30	0.50	0.50
69	0.30	0.30	0.50	0.50
70	1.00	1.00	1.00	1.00

Contributor Resignation Rates

Age	Pension Scheme	Lump Sum Scheme
45	-	2.21%
50	-	2.60%

No specific allowance is made for the possibility of future retrenchments or for the cost of future voluntary separation packages. The impact of any substantial retrenchment program would require separate assessment.

Resignation Benefit Options - Lump Sum Scheme

30% of contributors who resign from the Lump Sum Scheme are assumed to fully preserve their benefits within the Scheme until retirement and 70% are assumed to transfer their benefits to another superannuation fund. Preserved members are assumed to transfer their benefits out of the Scheme at a rate of 2% per annum for each age up to 55.

Contributor Mortality Rates

Age	Males (%)	Females (%)
45	0.057	0.033
50	0.078	0.049
55	0.114	0.070
60	0.168	0.098
65	0.242	0.147
70	0.387	0.248

Contributor Invalidity Retirement Rates

Age	Pension Scheme (%)	Lump Sum Scheme (%)
45	0.088	0.088
50	0.123	0.123
55	0.167	-
60	-	-

No allowance has been made for the cost of temporary disability pension payments as only a small proportion of the contributors are below the maximum age at which this benefit applies, being 55 years in the Lump Sum Scheme or 60 years in the Pension Scheme.

Family Statistics – Male members

Age	Percentage married	Age of member less age of spouse	Number of dependent children	Average age of dependent children
45	80	3	2	13
50	80	3	1	15
55	80	3	-	-
60	79	3	-	-
65	78	3	-	-
70	77	3	-	-
75	75	3	-	-
80	71	3	-	-
85	64	4	-	-
90	53	6	-	-

Family Statistics – Female members

Age	Percentage married	Age of member less age of spouse	Number of dependent children	Average age of dependent children
45	60	-3	1	14
50	60	-3	1	15
55	59	-3	-	-
60	58	-3	-	-
65	56	-3	-	-
70	54	-2	-	-
75	49	-2	-	-
80	42	-2	-	-
85	30	-1	-	-
90	16	-	-	-

Pension Commutation

Pension type	Pension commuted to lump sum (%)
Retirement	6.0
Spouse	10.0

Pension type	Pension commuted to lump sum (%)
Invalidity	-

Pensioner Mortality Rates

	Age retiree (%)		Spouse (%)		Invalidity retiree (%) after 2 years*	
Age	Males	Females	Males	Females	Males	Females
55	0.214	0.129	0.257	0.233	0.429	0.259
60	0.259	0.175	0.386	0.337	0.652	0.374
65	0.410	0.281	0.870	0.510	0.967	0.566
70	0.794	0.552	1.392	0.860	1.547	0.956
75	1.526	1.068	2.368	1.508	2.631	1.676
80	3.268	2.262	4.224	2.844	4.694	3.160
85	7.026	4.911	7.809	5.651	8.677	6.279
90	13.584	10.821	13.674	10.987	15.193	12.208
95	23.199	17.923	20.180	18.380	22.422	20.422
100	34.416	27.751	27.246	27.748	30.273	30.832
105	46.984	37.894	34.400	38.166	38.222	42.406

* The rate of mortality for an invalidity retiree is assumed to be 5% in the first year and 2% in the second year.

Rates of Pensioner Mortality Improvement

	Annual rates of decrease of age specific mortality rates (%)	
Age	Males	Females
60	2.553	2.163
70	2.986	2.396
80	2.350	2.029
90	0.889	0.801
100	0.081	-

Allowance is made for assumed future improvements (i.e. reductions) in the rates of pensioner mortality. The assumptions are based on the improvement factors published in the Australian Life Tables 2015-17. These factors have been derived from historical trends of the Australian population over the last 25 years.

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