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PSS and CSS

Long Term Cost Report

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DEPARTMENT OF FINANCE AND ADMINISTRATION

PSS and CSS

Long Term Cost Report

A report on the long term cost of the Public Sector Superannuation Scheme and the Commonwealth Superannuation Scheme

2002

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using data as at 30 June 2002

DEPARTMENT OF
FINANCE AND
ADMINISTRATION

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Chapter 1. Executive Summary

We are pleased to present this report on the actuarial investigation of the long term costs of the Public Sector Superannuation Scheme (PSS) and the Commonwealth Superannuation Scheme (CSS) prepared at the request of the Department of Finance and Administration. This investigation has been carried out based on membership data as at 30 June 2002.

The previous actuarial investigation of the PSS and the CSS was carried out by Dr Andrew Goddard, FIAA, FIA of Towers Perrin, based on data as at 30 June 1999.

Results Produced in this Report

1.1 The main aim of this investigation is to identify the long-term cost of the PSS and the CSS that will be charged to the Consolidated Revenue Fund (CRF). The long-term cost has been estimated in three ways:

- *Projection of Actual Commonwealth Employer Costs*

  We have projected the actual Commonwealth outlay in respect of superannuation benefits in each of the next 40 years and expressed these amounts as a percentage of projected Gross Domestic Product (GDP).

- *Unfunded Liability*

  We have estimated the total accrued superannuation liabilities of the Commonwealth in respect of service up to 30 June 2002 that will be charged to the CRF. The Unfunded Liability does not include any negative investment reserves in the PSS or CSS resulting from the declaration of a crediting rate in excess of the schemes' earning rate. Such negative reserves are to be funded by a further smoothing of crediting rates in the schemes.

- *Notional Commonwealth Employer Contribution Rates*

  These are the Commonwealth employer contribution rates necessary to ensure that employer-financed benefits from the PSS and CSS would remain fully funded in three years time, if they were fully funded now.

Results Of The Investigation

Projection of Actual Commonwealth Employer Costs

1.2 Actual Commonwealth Employer Costs are expected to reduce as a percentage of projected GDP from 0.4% in 2002 to 0.3% in 2041.

Present Value of Unfunded Liability

1.3 The accrued Unfunded Liability at 30 June 2002 for current members, deferred members, and pensioners has been calculated to be $58.4 billion, which is 8% of current GDP.

1.4 The corresponding figure at 30 June 1999 was $46.0 billion, which was 8% of GDP at that date.

1.5 The accrued Unfunded Liability has been calculated using actuarial assumptions that differ from those used at the last actuarial investigation. The assumptions have been developed based on current economic expectations and the demographic experience of the schemes over the past three years.

1.6 The accrued Unfunded Liability can be summarised as follows:

Accrued Unfunded Liability

	$ billion		
Report as at	**CSS**	**PSS**	**Combined**
30 June 1996	-	-	42.0
30 June 1999	40.3	5.7	46.0
30 June 2002	49.3	9.1	58.4

1.7 We have projected the accrued Unfunded Liability as at 30 June 1999 to 30 June 2002 on the basis of the actuarial assumptions used in the 30 June 1999 actuarial investigation and assuming a constant number of members in aggregate for the PSS and the CSS. The projected accrued Unfunded Liability on this basis at 30 June 2002 is $52.2 billion. The difference between the projected and actual results is largely due to the following factors:

- the assumptions adopted for the 2002 investigation are different to those adopted for the 1999 investigation. The single most significant increase in the schemes' unfunded liability due to the changed assumptions is the allowance that has been made for retrenchments. In order of materiality, other allowances that have been made are for improved levels of mortality, both pre and post retirement, for CSS age 54 resignations and for a higher proportion of members selecting pensions in the PSS; and
- differences between the actual experience of the schemes over the period and the experience anticipated in terms of the actuarial basis used for the 1999 PSS and CSS Long Term Cost Report. In particular the larger number of exits than anticipated, resulting in a higher number of pensioners than anticipated with higher liabilities as a result of the benefits accruing on exit (particularly retrenchments and CSS age 54) being of larger value than anticipated.

Notional Commonwealth Employer Contribution Rates

1.8 The Notional Commonwealth Employer Contribution Rates for the two schemes (including contributions towards the 3% productivity superannuation benefit) are shown below.

Notional Commonwealth Employer Contribution Rates

Report as at	Contribution as a percentage of superannuation salaries		
	CSS	PSS	Combined
30 June 1996	21.9%	13.1%	16.9%
30 June 1999	21.9%	14.2%	17.2%
30 June 2002	28.3%	15.4%	19.3%

1.9 The Notional Commonwealth Employer Contribution Rates as at 30 June 2002, excluding the employer productivity contribution rate of approximately 3%, are:

	CSS	PSS
30 June 2002	25.3%	12.4%

The CSS rate of 25.3% of superannuation salaries is the actual CSS 2002 rate for those agencies with separate productivity superannuation arrangements.

1.10 The combined rate represents the cost to the Commonwealth of the superannuation benefits that are accruing for Commonwealth employees at the present time.

1.11 The contribution rate for the CSS at 30 June 2002 has increased by 6.4% of superannuation salaries. The main reason for this is the impact of changes to the Experience Assumptions in the valuation basis. These changes have been made to reflect the experience and trends of the schemes over the past three years.

1.12 The contribution rate for the PSS has increased by 1.2% of superannuation salaries. The main reason for this increase is that the assumptions adopted for the 2002 investigation are different to those adopted for the 1999 investigation. In particular, an increase in the percentage of members assumed to take their PSS benefit as a pension and an allowance for improved mortality has been made.

Scheme Membership

1.13 The following table summarises the membership of the schemes since 1996.

Contributing Membership			
	CSS	PSS	Total
30 June 1996	76,864	115,873	192,737
30 June 1999	52,880	106,141	159,021
30 June 2002	39,986	129,683	169,669

1.14 Whilst during the three years to 30 June 2002, there have been a larger number of terminations of contributory members in both the PSS and the CSS than anticipated in the actuarial basis, the number of new members in the PSS has been such as to increase the overall membership.

1.15 The larger than expected number of terminations of contributory members is reflected in a correspondingly larger than expected number of deferred benefit and pensioner members at 30 June 2002.

Methodology

1.16 For the purposes of this investigation, we have used the method adopted for the 1999 investigation.

1.17 The investigation has been performed having regard to all relevant legislation that has been enacted.

Assumptions

1.18 The key financial assumptions adopted for this investigation are shown in the table below. The assumptions adopted for the previous investigation are shown for comparative purposes.

Item	Assumption	1999 Investigation
CPI Increases	2.5% per annum	3.5% per annum
Investment Returns	6.0% per annum (nominal) 3.5% per annum (real)	7.0% per annum (nominal) 3.5% per annum (real)
General Salary Increases	4.0% per annum (nominal) 1.5% per annum (real)	5.0% per annum (nominal) 1.5% per annum (real)
GDP Increases	2.1%* per annum (real)	2.5% per annum (real)

* The GDP increase rate is the average of the annual rates over the period from 2002 to 2042. Details are shown in Appendix B

1.19 The differences between the key financial assumptions for the 30 June 2002 investigation are the same as the corresponding differences in 1999. Therefore, the change in assumption relating to Consumer Price Index (CPI) increases will not lead to a material change in the results of the investigation.

1.20 As the schemes are unfunded, our view is that the best determinant of the investment return is the expected return on government bonds, as this would be the cost to the Commonwealth were they to “fund” the schemes via borrowings. Based on historic margins between the yield on Government bonds and the rate of inflation we believe that a real yield of 3.5% per annum (6% per annum nominal) is appropriate. The real investment return derived from our methodology is consistent with that used at the previous investigation.

1.21 The gap between the investment return rate (which is the implied discount rate used in the actuarial investigation) and expected salary increases is of more relevance than expected real salary increases. Based on historical data, a gap of 2% has been maintained.

1.22 The change in the nominal values of the investment return and salary increase rate must be viewed together and has little impact on the investigation result, as the gap between the two assumptions has been maintained. The funding methodology effectively projects the contributor liabilities at the salary escalation rate and then discounts them to a present day value using the discount rate – this is similar to using a valuation rate equal to the "gap" between the expected investment return and the salary escalation rate.

1.23 The change in the nominal values of the investment return and CPI increase rate must be viewed together and also has little impact on the investigation result, as the gap between the two assumptions has been maintained. The funding methodology effectively projects the pensioner liabilities (where indexed) at the CPI increase rate and then discounts them to a present day value using the discount rate – this is similar to using a valuation rate equal to the "gap" between the expected investment return and the CPI increase rate. It is only in the case of non-indexed pensions where the reduction in the nominal investment return has an impact on the valuation result, however the impact of this reduction is small.

1.24 We have made changes to the assumptions relating to the future decisions of the members of the schemes. The significant changes relate to the number of members who retain their benefits within the schemes, the percentage of PSS benefits that are taken as a pension and the number of CSS resignations at age 54.

1.25 In the case of the PSS, we have assumed that 60% of members who joined the scheme before 1 July 1999 and resign will retain their member accumulation within the scheme. All members who join the PSS after 1 July 1999 must retain their member accumulation within the scheme if they resign. The corresponding assumption made in the previous report was that 35% of all members who resign would retain their member accumulation within the scheme.

1.26 In the case of the CSS, we have assumed that 90% of the total benefit of males and females exiting due to resignation or retrenchment will be retained within the CSS. The assumption made in preparing the previous report was that 75% of the benefits would be retained within the CSS.

1.27 Based on experience over the last three years there has been a significant increase in the number of members of the CSS resigning at age 54. Based on this trend and the actual experience over the last three years, we have assumed a continuing increase in this trend, with the result that 50% of CSS males and 35% of CSS females (a combined rate for males and females of 45.6%) will resign at age 54.

1.28 Based on the experience over the last three years we have assumed that, on average, 50% of all eligible PSS lump sum benefits will be converted to pensions (compared to 40% assumed in the previous report).

1.29 Based on the experience over the past three years an allowance for retrenchments has been introduced into the valuation basis. Whilst retrenchment rates can vary markedly, we consider that it is preferable to use historical levels of retrenchments rather than to make no allowance at all. As the incidence of retrenchments affects the Unfunded Liability and the Notional Commonwealth Employer Contribution Rates it was deemed appropriate to allow for this decrement in the Experience Assumptions.

1.30 These changes in assumptions have resulted in an increase in the Unfunded Liability and the Notional Commonwealth Employer Contribution Rates for both the PSS and CSS.

Clawback

1.31 The liabilities of the PSS and the CSS form part of the Commonwealth's overall liabilities. If the Commonwealth did not provide these benefits, then it would incur increased Age Pension outlays and reduced taxation receipts. This theoretical impact on the Unfunded Liability is referred to as clawback.

1.32 At the previous investigation an estimate of the clawback was made. No estimate of clawback has been included in this long term cost report.

1.33 Any estimate of clawback is highly subjective and very sensitive to the assumptions used in preparing the estimate. In addition, the clawback estimate is a subjective value and does not affect the main aim of this investigation, which is to identify the long-term costs of the PSS and the CSS that will be charged to the CRF.

Chapter 2. Introduction

Background

2.1 This report estimates the long term cost of providing superannuation benefits to members of the Public Sector Superannuation Scheme (PSS) and the Commonwealth Superannuation Scheme (CSS). The estimate has been determined based on an actuarial investigation of the schemes as at 30 June 2002.

2.2 This investigation has been carried out by Martin Stevenson, FIAA, FIA and Tony Snoyman, FIAA, FIA of Mercer Human Resource Consulting Pty Ltd at the request of the Department of Finance and Administration.

2.3 This report satisfies the requirements of Professional Standard No. 401 of The Institute of Actuaries of Australia, to the extent that the Standard is relevant to the investigation. Professional Standard No. 401 relates to the preparation of reports commenting on the financial condition of defined benefit superannuation funds.

Purpose of the Investigation

2.4 The main aim of this investigation is to identify the long-term cost of the PSS and the CSS that will be charged to the Consolidated Revenue Fund (CRF). The long term cost has been estimated in three ways:

- *Projected Actual Commonwealth Employer Costs*

  We have projected these costs over the next 40 years and expressed them as a percentage of projected Gross Domestic Product (GDP).

- *Unfunded Liability*

  We have estimated the total accrued superannuation liabilities of the Commonwealth in respect of service up to 30 June that will be charged to the CRF.

- *Notional Commonwealth Employer Contribution Rates*

  These are the Commonwealth employer contribution rates necessary to ensure that employer-financed benefits payable from the PSS and CSS would remain fully funded in three years time, if they were fully funded now.

2.5 In identifying the long-term cost of superannuation benefits provided by the Commonwealth, allowance has been made for the future transfer values payable by the Commonwealth in respect of transferred members. The amounts for transferred members are based on the values included in the 30 June 2002 financial statements of the Telstra and Australia Post superannuation funds.

2.6 Dr Andrew Goddard, FIAA, FIA of Towers Perrin carried out the previous actuarial investigation of the schemes as at 30 June 1999. The results of that investigation were set out in a report dated 19 June 2000 (the "previous report").

Chapter 3. The PSS and the CSS

3.1 The PSS was established on 1 July 1990 on the basis of a Policy Statement ("the Reform Statement") made by the then Minister for Finance on 15 October 1989. The Superannuation Act 1990 and a Trust Deed and Rules govern its operations. Employees of Commonwealth agencies are eligible for membership of the PSS. All permanent employees of Commonwealth agencies, except where agencies have other approved superannuation arrangements, must participate in the PSS.

3.2 The CSS was introduced on 1 July 1976. Its operations are governed by the Superannuation Act 1976, as amended, and associated regulations. The CSS has been closed to new members since 1 July 1990. All CSS contributors at 1 July 1990 were given the option of transferring to the PSS. A further option to transfer to the PSS was provided in 1996 for a limited period of time. The current membership of the CSS covers all Commonwealth employees who were members on 30 June 1990 and who did not transfer to the PSS.

3.3 Prior to July 1976 the superannuation of Commonwealth public servants was covered by the Superannuation Act 1922. Currently there are no members contributing under the Superannuation Act 1922. However, some pensioners and deferred beneficiaries remain entitled to benefits under this Act and the liabilities in respect of these beneficiaries are included in the CSS Unfunded Liability.

3.4 The PSS and the CSS are defined benefit schemes. In the PSS, the primary benefit is expressed as a lump sum based on a multiple of final average salary that is related to a member's average contribution rate and total service. On exit, the benefit may be wholly or partially taken as an indexed pension.

3.5 The CSS provides an indexed pension and a non-indexed pension. The indexed pension is based on a percentage of final salary and total service. Unless the member elects to have the amounts taken as a lump sum benefit, the non-indexed pension is purchased from the sum of:

- the accumulated value of member contributions paid by the member; plus
- the accumulated value of productivity superannuation contributions paid by the employer in respect of the member.

3.6 Generally, agencies pay productivity superannuation contributions in respect of their employees to the PSS or the CSS. However, there are some agencies that have made alternative arrangements in respect of their CSS members.

3.7 Member and productivity superannuation contributions paid to the PSS and the CSS are invested by the trustees of the two schemes, the PSS Board and the CSS Board respectively ("the Trustees"). These contributions are accumulated at an interest rate (based on the investment returns achieved by the scheme assets) periodically declared by the Trustees.

3.8 The PSS and CSS are partly funded to the extent that real assets are held in respect of member contributions and productivity superannuation contributions. These assets, as appearing in the reports of the PSS Board and the CSS Board, were:

Assets of the PSS and the CSS ($millions)			
Date	**PSS**	**CSS**	**Total**
30 June 1996	2,076	4,870	6,946
30 June 1999	3,481	5,591	9,072
30 June 2002	4,468	5,337	9,805

Changes to Benefits Since 1999

3.9 Due to general superannuation preservation requirements members who join the PSS after 1 July 1999 are required to retain all their benefit, including the member accumulation, within the PSS on resignation.

3.10 From 1 July 2000, the employer component of a PSS or CSS retrenchment benefit is generally not available as an immediate lump sum to members who are retrenched before reaching minimum retiring age (usually age 55). Instead the employer component must either be preserved in a rollover institution or taken as pension or preserved within the schemes. The member component of a retrenchment benefit can continue to be paid as a lump sum to a retrenched member, except in respect of any member component accrued from 1 July 1999, which is required to be preserved in the superannuation system or taken as a scheme pension.

3.11 Changes were made in 1999 to the *Income Tax Assessment Act 1936* and the regulations under the *Superannuation Industry (Supervision) Act 1993* to ensure that schemes would continue to comply with the general superannuation supervisory requirements where a pension is commuted to meet any post-retirement surcharge assessment. In addition, the lump sum resulting from the commutation of the pension in those circumstances is not an eligible termination payment.

3.12 The *Superannuation Legislation Amendment (Post-Retirement Commutations) Act 2001* allows these arrangements to apply to, and in respect of, former members of the CSS. Changes to the PSS Rules were also made to apply these arrangements to former members of the PSS in receipt of pensions. The ability to access this option in the CSS and PSS commenced on 22 August 2001.

3.13 The changes allow a former member of the PSS and the CSS to commute all or part of his or her scheme pension to a lump sum to meet all or part of the outstanding surcharge assessment. A former member to whom the Australian Taxation Office (ATO) has issued an assessment after his or her cessation or membership of the relevant scheme could use these provisions.

3.14 The changes also allow reversionary beneficiaries to commute all or part of a pension for these purposes where they become liable to pay an outstanding surcharge assessment.

3.15 Prior to the *Superannuation Legislation Amendment (Indexation) Act 2001* generally pensions payable that are subject to indexation were indexed on an annual basis, an increase being payable from the first payday in July, based on any annual increase in the Consumer Price Index (CPI) as measured in the preceding March quarter.

3.16 That Act provided that, from January 2002, indexed pensions payable from the CSS may be increased in January and July of every year. Pensions will be increased where, after any offsets, there has been a half yearly increase in the CPI as measured at the previous September or March quarter respectively.

3.17 Changes to the PSS Rules were also made to provide for twice yearly indexation of pensions paid from the PSS with effect from January 2002.

3.18 Details of the benefits provided by the PSS and the CSS are set out in Appendix A.

Chapter 4. Membership and Data

4.1 ComSuper, the schemes' administrator, provided data relating to the membership of the PSS and the CSS for the purposes of this investigation, on behalf of the PSS and CSS Boards. Data provided included:

- contributory members, pensioners and deferred beneficiaries of the PSS and the CSS as at 30 June 2002; and
- exits from the PSS and the CSS during the three years to 30 June 2002.

4.2 A range of checks has been carried out to test the integrity of the data.

4.3 We are satisfied that the data is sufficiently accurate for the purposes of this report.

4.4 The Tables below summarise the total membership of the CSS and the PSS as at 30 June 2002.

CSS Membership as at 30 June 2002			
	Males	**Females**	**Total**
Number of Contributors	27,263	12,723	39,986
Salaries - Total - Average	$1,766 m $64,754	$706 m $55,505	$2,472 m $61,811
Number of Deferred Beneficiaries	10,289	3,680	13,969
Number of Age Pensioners	46,152	14,308	60,460
Number of Invalidity Pensioners	17,704	5,206	22,910
Number of Reversionary Pensioners	1,165	26,765	27,930

PSS Membership as at 30 June 2002			
	Males	**Females**	**Total**
Number of Contributors	55,170	74,513	129,683
Salaries - Total - Average	$2,828 m $51,263	$3,394 m $45,542	$6,222 m $47,976
Number of Deferred Beneficiaries	31,407	44,950	76,357
Number of Age Pensioners	3,650	2,932	6,582
Number of Invalidity Pensioners	520	496	1,016
Number of Reversionary Pensioners	116	215	331

4.5 The number of contributors to the schemes reduced significantly over the six years to 30 June 1999 as can be seen from the following table, but increased by 6.7% in the most recent three years to 30 June 2002.

Movements in Contributing Membership			
	CSS	**PSS**	**Total**
30 June 1993	109,591	97,891	207,482
30 June 1996	76,864	115,873	192,737
30 June 1999	52,880	106,141	159,021
30 June 2002	39,986	129,683	169,669

4.6 Since 1999 the number of CSS contributory members has reduced by 24%.

4.7 The number of PSS contributory members has increased by 22% since 1999.

Chapter 5. Valuation Methodology

5.1. The main aim of this investigation is to identify the long-term cost of the PSS and the CSS that will be charged to the CRF. The long term cost has been estimated in three ways:

- Projected Actual Commonwealth Employer Costs
- Unfunded Liability
- Notional Commonwealth Employer Contribution Rates

5.2 This Chapter of the report describes the methodology adopted in determining the above estimates.

Actual Commonwealth Employer Costs

5.3 When a member becomes entitled to a benefit from the PSS or the CSS, the member's accumulation accounts (i.e. funded member and productivity contributions plus interest) are paid by the Trustees of the schemes to the CRF. The total benefit payment to the member is then made from the CRF.

5.4 The indexed pension benefit from the CSS is therefore financed from the CRF on an unfunded basis. Similarly the benefit from the PSS after deducting the accumulated value of the member contributions and productivity superannuation contributions is also financed from the CRF on an unfunded basis.

5.5 Hence, the Actual Commonwealth Employer Cost in each year is defined as being as follows:

- Productivity superannuation contributions paid by the employer to the PSS and CSS Funds; plus
- benefit payments made by the CRF (including payments made under the Superannuation Act 1922 and transfer value payments included in the 30 June 2002 financial statements of the Telstra and Australia Post superannuation funds); less
- payments made from the PSS and CSS Funds to the CRF.

5.6 We have calculated the projected Actual Commonwealth Employer Cost (as defined above) over the next 40 years. This has been done by projecting the membership into the future based on the assumptions set out in Chapter 6 relating to the level of future salary increases, the timing and nature of exits from the schemes and the profile of new entrants to the PSS.

Unfunded Liability

5.7 The Unfunded Liability represents superannuation benefits accrued by members as at 30 June 2002 payable from the CRF for which the Commonwealth holds no assets.

5.8 The Unfunded Liability has been calculated as the present value of expected benefit payments from the CRF in respect of service accrued to 30 June 2002 less the expected accumulation of member and productivity superannuation contributions.

5.9 The unfunded benefits represent the unfunded superannuation liabilities of the Commonwealth.

5.10 Chapter 8 of this report sets out the Unfunded Liability of the Commonwealth as at 30 June 2002. The Unfunded Liability has been estimated using the method adopted for the 1999 Long Term Cost Report. The method is a variant of the Projected Unit Credit Method and assumes that all unfunded benefits accrue uniformly over total service.

5.11 The steps involved in this process are as follows:

- The membership of each scheme as at 30 June 2002 is projected into the future based on assumptions relating to future salary growth and rates of exit of members (as set out in Chapter 6). No allowance is made for new entrants in this process.

- The total value of unfunded benefits payable to the projected exits in each future year is determined.

- As unfunded benefits are assumed to accrue uniformly over the total service of each member, the projected benefit in each future year deemed to accrue by 30 June 2002 is determined as follows:

$$\begin{array}{c}\text{Projected Unfunded Benefit}\\ \text{at the midpoint of the year}\\ \text{of exit}\end{array} \quad \text{X} \quad \frac{\text{Service at 30 June 2002}}{\begin{array}{c}\text{Service at the midpoint of the}\\ \text{year of exit}\end{array}}$$

- The Unfunded Liability as at 30 June 2002 is determined as the sum of the present values of the accrued projected unfunded benefits.

Notional Commonwealth Employer Contribution Rates

5.12 Chapter 9 of this report sets out our estimate of the Notional Commonwealth Employer Contribution Rates for the PSS and the CSS. The Notional Commonwealth Employer Contribution Rates are the employer contribution rates necessary to ensure that employer-financed benefits payable from the PSS and the CSS would remain fully funded in three years time, if they were fully funded now.

5.13 The method used is a variant of the Projected Unit Credit Method and assumes that all unfunded benefits accrue uniformly over total service.

5.14 The calculation method is as follows:

- It is assumed that the Unfunded Liability calculated above is in fact fully covered by assets as at 30 June 2002.

- The Unfunded Liability is projected to 30 June 2005 based on the projected membership at that date using the assumptions set out in Chapter 6. To project the Unfunded Liability to 30 June 2005 for the purposes of estimating the Notional Commonwealth Employer Contribution Rates, it is also assumed that no new entrants join the PSS.

- The unfunded component of the expected benefit payments to exits during the three years to 30 June 2005 is estimated.

- The Notional Commonwealth Employer Contribution Rate is set at a rate such that:
    - employer contributions at that rate; plus
    - notional assets at 30 June 2002 (which are equal to Unfunded Liability at that date) plus
    - any interest earned on the above amounts,

  are adequate to cover the expected benefits payable during the three years and the Unfunded Liability as at 30 June 2005.

- The Notional Commonwealth Employer Contribution Rates are increased by 3% of superannuation salaries to allow for the cost of future productivity superannuation contributions.

5.15 The method adopted to calculate the Notional Commonwealth Employer Contribution Rates at this investigation is the same as the method adopted in the investigation carried out in 1999.

Chapter 6. Assumptions

6.1 The assumptions for this investigation are set out in this Chapter.

6.2 In order to value liabilities, it is necessary to make assumptions regarding the incidence, timing and amount of future benefits. These assumptions fall into two broad categories:

- Assumptions that are not directly related to the scheme membership (termed General Assumptions); and

- Assumptions that relate to the experience of the membership of the scheme (termed Experience Assumptions).

General Assumptions

Financial Assumptions

6.3 The factors of major significance in the valuation process are as follows:

- future increases in the CPI which links to the level of pension increases;

- the future rate of investment return, based on the rate at which the Government would be required to borrow were it to have to fund the schemes;

- general increases in salaries (i.e. increases in salaries other than those arising from promotions); and

- the rate of increase in GDP).

6.4 In most instances, the relationships between the assumptions adopted for these factors have a greater bearing on the long term cost estimates of a superannuation scheme than do their nominal values. This is due to the effect of one of the assumptions being used to project the liability into the future (e.g future salary increases) and the other assumption being used to discount that liability to current day values (discount rate or investment return).

6.5 At the previous investigation, an assumed rate of increase in the CPI of 3.5% per annum was adopted. Given the average rate of CPI increase over the last ten years (2.3% per annum), the current outlook for inflation and the Reserve Bank target inflation level of 2% to 3% per annum, we have adopted a lower rate of 2.5% per annum for this investigation.

6.6 At the previous investigation, a real rate of investment return of 3.5% per annum was adopted.

The rate of investment return assumption is to be the rate at which the Commonwealth borrows money. The rate is derived as follows:

The average real cash rate over the five years to 31 December 2001 was 3.0% per annum and the current real cash rate is 2.0% per annum. Accordingly we consider that a real cash rate of 2.5% per annum (i.e. currently a nominal cash rate of 5% per annum) is appropriate.

Over the past ten years the average premium of Commonwealth bonds over nominal cash has been:

Term	Average Premium over ten years
3 years	0.7%
5 years	1.0%
10 years	1.4%

This results in the following nominal bond assumptions:

Term	Nominal Return
3 years	5.7%
5 years	6.0%
10 years	6.4%

The above suggests that a rate of investment return of 6.0% per annum nominal (3.5% per annum real) is reasonable.

6.7 At the previous investigation, a real rate of salary increase of 1.5% per annum was adopted.

Rather than assessing a real rate of salary increase we believe it most appropriate to investigate the relationship between long term expected salary increases and the discount rate. Based on historical evidence we believe that a difference ("gap") of 2% is appropriate. This implies that a real rate of salary increase of 1.5% per annum be maintained.

6.8 At the previous investigation, a real GDP growth rate of 2.5% p.a. was adopted (based on a population growth assumption of 1% per annum, which implied a real rate of increase of 2.5% per annum in the total Australian wage bill that is also the assumed rate of increase in GDP).

At the current investigation we have changed from using a single GDP growth rate to a series of GDP rates. The Department of the Treasury has recommended this approach. The GDP growth rates are based on Treasury projections of nominal GDP values, developed on the assumption adopted in the investigation of a real wages growth rate of 1.5% per annum. The growth rates also incorporate long term effects of demographic and labour force change.

6.9 The following table summarises the assumptions adopted for this investigation. The assumptions used at the previous investigation are also shown:

Item	Assumption	1999 Investigation
CPI Increases	2.5% per annum	3.5% per annum
Investment Returns	6.0% per annum (nominal) 3.5% per annum (real)	7.0% per annum (nominal) 3.5% per annum (real)
General Salary Increases	4.0% per annum (nominal) 2.0% "gap"	5.0% per annum (nominal) 2.0% "gap"
GDP Increases	2.1%* per annum (real)	2.5% per annum (real)

* The GDP increase rate is the average of the annual rates over the period from 2002 to 2042. Details are shown in Appendix B

6.10 The change in the CPI assumption has no material impact on the results of the valuation as the relationships between the assumed rate of increase of CPI, investment returns and general salary growth remain unchanged.

Future size of the schemes

6.11 This actuarial investigation of the PSS and the CSS includes a projection of superannuation liabilities in each of the next 40 years. In order to project liabilities, it is necessary to make an assumption regarding the future growth in the membership of the relevant schemes.

6.12 The previous actuarial investigation of the PSS and the CSS as at 30 June 1999 assumed that the growth in combined membership of the PSS and the CSS would remain stable in the long term.

6.13 As at 30 June 1999, the combined membership of the PSS and the CSS was 159,021. Three years later the combined membership has increased to 169,669. For the purposes of the calculation of the projections of actual Commonwealth employer costs and superannuation liabilities in this investigation, we have assumed that the combined membership of the schemes will remain stable in the long term.

Taxation

6.14 Allowance has been made for 15% tax payable on superannuation productivity contributions.

6.15 The PSS and CSS are treated as complying superannuation funds within the meaning of the *Superannuation Industry (Supervision) Act 1993* and tax is payable at a concessional rate of 15% on net investment earnings, employer contributions and capital gains with deductions allowable for administration expenses.

6.16 No adjustment has been made for tax in determining the employer cost of the unfunded portion of the benefits paid from the PSS and the CSS.

Superannuation Guarantee

6.17 It has been assumed that the Superannuation Guarantee rate will be maintained at 9% of salaries.

Experience Assumptions

6.18 Based on a detailed analysis of the membership experience for the three years from 1 July 1999 to 30 June 2002, the following decisions regarding the assumptions to be used in this investigation have been made.

Promotional Increases in Salaries

6.19 The actual salary experience of members of the PSS and the CSS over the three years from 1 July 1999 to 30 June 2002 has been broadly in line with the rates of promotional salary increase assumed for the investigation at 30 June 1999. Therefore, the same rates have been adopted for the investigation as at 30 June 2002.

Invalidity

6.20 The analysis of data for the three years to 30 June 2002 suggests that the overall rate of invalidity experience of members has been lower than expected based on the rates adopted at the previous investigation. We have thus revised the rates to more closely reflect the actual experience of the schemes. Details of the revised rates adopted for this investigation are set out in Appendix B.

Mortality of Contributors

6.21 The analysis of data for the three years to 30 June 2002 suggests that the overall rate of mortality experience of contributors has been lower than expected based on the rates adopted at the previous investigation. We have thus revised the rates to more closely reflect the actual experience of the schemes. Details of the revised rates adopted for this investigation are set out in Appendix B.

Retirement Assumptions

6.22 The analysis of data for the three years to 30 June 2002 suggests that members are in fact retiring at later ages than those implied by the rates adopted at the last investigation. The pattern of retirements has also been found to be different between the PSS and CSS. We have thus introduced different retirement assumptions for each scheme. At the last investigation the same assumptions were used for both schemes. A set of revised retirement assumptions for each scheme is set out in Appendix B.

Resignation

6.23 This investigation has shown that an age and duration dependent model holds for resignation in both schemes. We have thus incorporated changes to the assumptions for each scheme. These changes are discussed separately below.

CSS

6.24 In the CSS there has been an increasing trend for members to resign at age 54 and to preserve their benefit. This is because in certain cases the member may receive a greater pension than under other circumstances.

6.25 Over the last three years there has been a significant increase in this behaviour, with males averaging 32.6% and females averaging 24% over the three years. For 2001-02 the actual experience was 44.7% of males and 30.9% of females which represents a combined rate for males and females of 40%. We have therefore set the 2002 basis to allow for 35% of females and 50% of males to resign at age 54.

6.26 While the low investment return in 2001-2002 will have reduced the incentive for members to resign at age 54 it would require low investment returns for several more years for the incentive to resign at age 54 to fall away. We believe that it is appropriate to include an allowance in the basis to allow for the resignations at age 54.

6.27 The inclusion of an allowance in the basis for the resignations at age 54 leads to an increase in the Notional Commonwealth Employer Contribution Rates and the level of Unfunded Liability.

6.28 At other ages the resignation experience has also differed from expected based on the rates assumed in the previous actuarial investigation basis. The CSS resignation experience over the last three years has been lower than expected at all ages for females. For males there have been more resignations than expected at older ages. We have thus revised the rates to more closely reflect the actual experience of the scheme. Details of the revised rates adopted for this investigation are set out in Appendix B.

PSS

6.29 For females, the PSS resignation experience over the last three years has been lower than expected compared to the rates assumed in the previous actuarial investigation basis. For males, the trend is less clear with fewer resignations than expected at young ages, and more resignations than expected at older ages. We have revised the rates to more closely reflect the actual experience of the scheme. Details of the revised rates adopted for this investigation are set out in Appendix B.

Retrenchments

6.30 In previous investigations no allowance was made for the effect of retrenchments since, because of their nature, retrenchments can be intermittent and unpredictable and the numbers may vary considerably from year to year.

6.31 As the incidence of retrenchments affects the Unfunded Liability and the Notional Commonwealth Employer Contribution Rates we believed it necessary to investigate the retrenchment experience within the schemes. We consider that it is preferable to use historical levels of retrenchments rather than to make no allowance at all.

6.32 Based on this investigation we have introduced a retrenchment decrement into the Experience Assumptions. The assumed retrenchment rates are shown in Appendix B.

Mortality of Pensioners

6.33 The analysis of data for the three years to 30 June 2002 suggests that the overall rate of mortality experience of age retirement pensioners has been lower than the rates adopted at the last investigation. The overall pattern of mortality of age retirement pensioners was also different from the previous assumptions with lower rates of mortality from ages 60-85 and higher rates of mortality after age 85. We have thus revised the rates to more closely reflect the actual experience of the scheme. Details of the revised rates adopted for this investigation are set out in Appendix B.

6.34 The analysis of data for the three years to 30 June 2002 suggests that the overall rate of mortality experience of dependent pensioners has been lower than the rates expected based on the assumptions adopted at the last investigation. We have revised the rates to more closely reflect the actual experience of the scheme. Details of the revised rates adopted for this investigation are set out in Appendix B.

6.35 For the purposes of the previous investigation different mortality rates were adopted for invalidity pensioners who commenced receiving their pensions before and after 1 July 1990. The rates in respect of those pensioners who retired after 1 July 1990 were significantly higher than those for invalidity pensioners who retired prior to 1 July 1990.

6.36 The change in the criteria for invalidity retirement effective 1 July 1990 was expected to result in increased mortality rates for those members who subsequently retired on the grounds of invalidity. The increase in mortality rates would be expected to be most significant during the initial few years of invalidity retirement.

6.37 The observed mortality rates have shown a strong dependence on the duration since the member retired due to ill health. The experience shows a higher mortality rate in the first year than assumed based on the rates used in the previous actuarial investigation and lower rates than assumed in subsequent years. We have thus changed the mortality rates adopted for this investigation, by introducing a select mortality period of three years - where the rate of mortality is based on the duration since the member retired on ill health.

6.38 The actual mortality experience of ill health pensioners who retired more than three years ago was much lower than the rates assumed in the last actuarial investigation. We have thus determined new rates of invalid mortality. These rates have been calculated based on the Australian Life Tables 1995-97 life tables and allow for mortality improvement. Details of the revised rates adopted for this investigation are set out in Appendix B.

Future Mortality Improvements

6.39 For the purposes of this investigation, allowance for future improvements in the mortality rates of age pensioners has been made in accordance with the short and long term rates derived by the Australian Bureau of Statistics in conjunction with the Australian Government Actuary (as published in the Australian Life Tables 1995-97). These rates are the same as the rates used by the Australian Bureau of Statistics in their most recent projections of the Australian population.

6.40 In previous investigations no allowance was made for the improvement in mortality of invalidity pensioners. As discussed above, in this report we have made an allowance for the improvement in mortality of invalidity pensioners after the end of the select period.

Retention of Benefits

6.41 Members are generally required to retain their employer-financed benefits within the schemes.

6.42 For members who joined the schemes before 1 July 1999 the member-financed benefits may be taken as a lump sum on termination of service, subject to general superannuation preservation requirements, or retained within the schemes.

6.43 General superannuation preservation requirements provide that members who joined superannuation schemes on or after 1 July 1999 are required to retain all their benefits within the superannuation environment until they have attained their preservation age. In the PSS, these members are required to retain their benefits within the scheme until preservation age.

6.44 The benefit payable from the PSS or CSS when a member is retrenched is not required to be retained in the schemes. Members can instead choose to transfer their retrenchment benefit to another complying superannuation scheme.

PSS

6.45 Analysis of resignations, during the three years to 30 June 2002, of members who joined the PSS prior to 1 July 1999, shows that there has been a large increase in the number of members retaining their member-financed benefit in the scheme. This behaviour results from the fact that should a member elect to take a lump-sum of any portion of the member-financed benefit, the member loses their right to convert their remaining benefit into a pension in the PSS.

6.46 We have assumed that 60% of members who joined the PSS prior to 1 July 1999, who resign or are retrenched, will retain their member-financed benefit within the PSS.

6.47 We have assumed that the 100% of the member-financed benefits for members who joined on or after 1 July 1999 will be retained within the PSS.

6.48 The corresponding assumption made in the previous report was that 35% of all members would retain their benefits within the scheme.

6.49 An increase in the proportion of members assumed to be retaining their benefits within the scheme leads to an increase in the Notional Commonwealth Employer Contribution Rates and the level of Unfunded Liability.

CSS

6.50 CSS members who elect not to retain their member-financed benefit within the CSS on termination of service forfeit a significant part of their employer-financed benefit. Therefore, the assumptions relating to the number of the members retaining their benefits within the CSS have a significant impact on the results of the actuarial investigation.

6.51 The actual experience over the three years to 30 June 2002 shows that 90% of all exits under age 55 retain their benefits within the CSS. This percentage has increased from the 1999 investigation and is expected to increase further as a result of general superannuation preservation requirements. At age 55 and over, all exits are entitled to an immediate benefit from the scheme.

6.52 Based on this information, we have assumed that 90% of the total benefit of all exiting members under age 55 will be retained within the CSS. The assumption made in preparing the previous report was that 75% of the total benefit of terminating members would be retained within the CSS.

6.53 Increasing the percentage of members who retain their benefits within the scheme leads to an increase in the Notional Commonwealth Employer Contribution Rates and the level of Unfunded Liability.

Pension Option in the PSS

6.54 Members retiring from the PSS have the option of converting part or all of their lump sum to a pension.

6.55 Due to the terms of conversion to a pension, there is an incentive for members to take a pension. Therefore, the assumption regarding the level of conversion of lump sums to pensions has a significant effect on estimated long term costs.

6.56 The actual experience over the three years to 30 June 2002 suggests that 50% of all members' benefits that were eligible to be taken as a pension were taken as a pension.

6.57 Therefore, we have assumed that on average, 50% of all lump sum benefits that would be payable in respect of members who are eligible to take a pension on exiting the scheme will be converted to pensions (compared to 40% assumed in the previous report). The change in assumption leads to an increase in the Notional Commonwealth Employer Contribution Rate and the level of Unfunded Liability.

6.58 We have retained the assumption that 50% of the lump sums of members who have preserved their member-financed benefit in the PSS will be converted to pensions. This is consistent with the assumption for active members.

Member Contributions to the PSS

6.59 Members of the PSS are able to contribute at any integral rate from 2% to 10% of superannuation salary and the rate of benefit accrual is dependent on this contribution rate. As at 30 June 2002, the average contribution rate to the PSS was 5.3%.

6.60 Therefore, we have retained the assumption that, on average, members will contribute at the 5% rate throughout their future membership.

New Entrants

6.61 The data for the three-year period to 30 June 2002 shows that new entrants are generally joining the PSS at slightly older ages than assumed at the last actuarial investigation. Appendix B of this report sets out an age distribution for new entrants, which reflects this trend.

6.62 The salary distribution of the new entrants is based on the experience of the new entrants adjusted to allow for salary inflation in the three years ending 30 June 2002. Details are given in Appendix B.

6.63 For this actuarial investigation we have assumed that when a member leaves the PSS or CSS they are replaced in the PSS by another member of the same sex.

Spouse Assumptions

6.64 The assumptions relating to the percentage of members married at the date of their death are set out in Appendix B.

6.65 It has been assumed that male members will, on average, be 2 years older than their spouses and that female members will be 2 years younger than their spouses. As no scheme specific information was available, this assumption reflects the experience of the general population. At the previous investigation it was assumed that male members would, on average, be 4 years older than their spouses and that female members would be 2 years younger that their spouses.

Chapter 7. Projection Of Actual Commonwealth Employer Costs

7.1 The actual outlay in respect of superannuation for the Commonwealth in any year is equal to the total benefit paid to exiting members in that year less the accumulated balance of member contributions and productivity superannuation contributions of those members plus actual productivity superannuation contributions made by the Commonwealth to the PSS and CSS Funds.

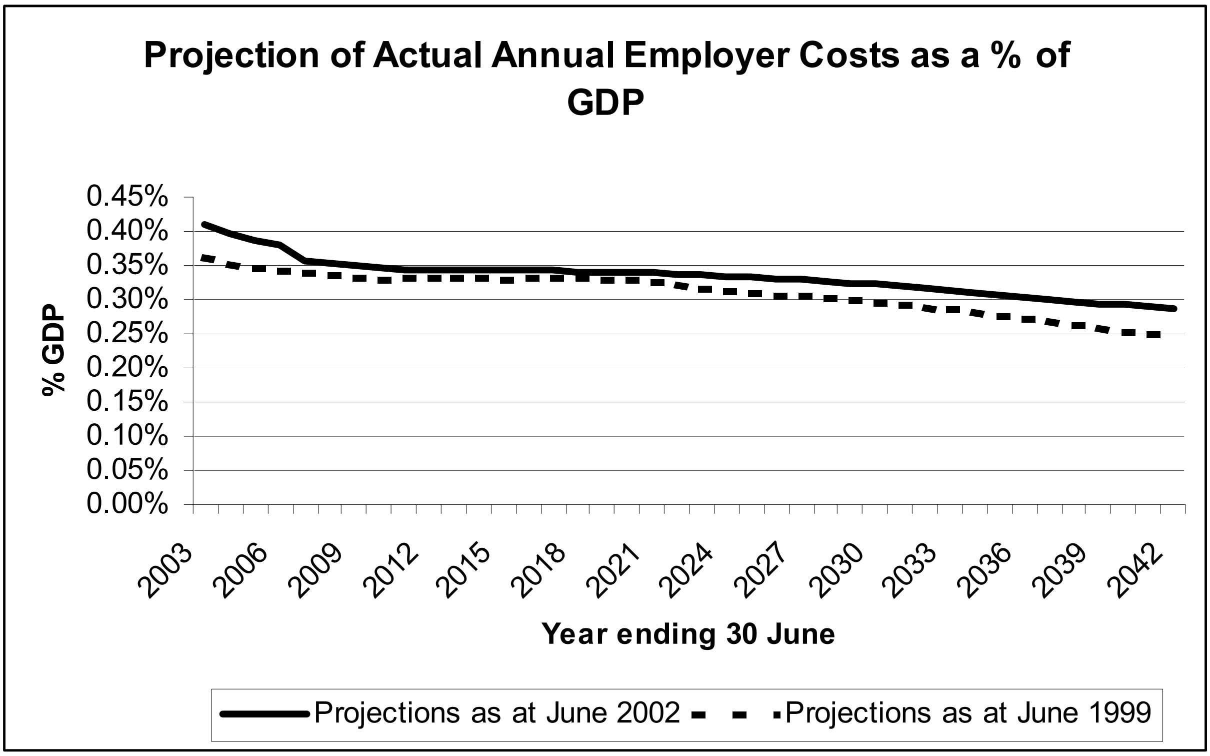
7.2 We have projected the outlay for the next 40 years based on the assumptions set out in Chapter 6. The table below summarises the projected outlay separately for the CSS and the PSS and for the two schemes combined.

Projection of Estimated Costs				
Year ending 30 June	**CSS ($ million)**	**PSS ($ million)**	**TOTAL ($ million)**	**As % of GDP**
2003	2,535	318	2,853	0.41
2004	2,419	329	2,748	0.40
2005	2,356	342	2,698	0.39
2006	2,293	354	2,647	0.38
2007	2,121	367	2,488	0.36
2012	1,826	460	2,286	0.34
2017	1,568	572	2,140	0.34
2022	1,275	689	1,964	0.34
2027	979	788	1,767	0.33
2032	703	861	1,564	0.32
2037	469	894	1,363	0.30
2042	285	907	1,192	0.29

Notes: 1. The figures in the above table have been adjusted to 2002 dollars using the discount rate of 6% per annum.
2. Productivity superannuation contributions by approved agencies to schemes outside the CSS are included.

7.3 As can be seen, the projected employer costs as a percentage of GDP decrease over the next 40 years.

7.4 The graph on the next page shows projected outlays expressed as a percentage of GDP over the next 40 years, and for comparison purposes, the equivalent figures from the previous report.



7.5 The above graph shows that the current projected costs are a higher percentage of projected GDP than the corresponding figures at the last investigation, particularly in the longer term.

7.6 The 2002 GDP assumptions have been used in both projections and thus the change in the future GDP assumption has no effect on the graph.

7.7 The main reasons for the increase are related to the change in the Experience Assumptions from the 1999 to the 2002 investigation. The three main factors are:

- The change in mortality assumptions to reflect the improved experience of the scheme membership means that pensions are paid for longer. This increases the annual Commonwealth employer costs in future years.
- The increase in the proportion of PSS members who preserve their benefit. In particular the assumption that all members who joined the scheme after 1 July 1999 will preserve their entire benefit within the scheme increases costs in future years as more members are able to select the higher value pension option on reaching retirement age.
- The increase in the proportion of PSS members who take a pension. This is particularly relevant in the longer term when a greater proportion of the cost is associated with PSS members.

Chapter 8. Unfunded Liability

8.1 The Unfunded Liability represents superannuation benefits accrued by members as at 30 June 2002 payable from the CRF for which the Commonwealth holds no assets. The present value of these liabilities is set out in this Chapter of the report.

8.2 The Unfunded Liability has been calculated as the present value of expected benefit payments from the CRF in respect of service accrued to 30 June 2002 less the expected accumulation of member and productivity superannuation contributions.

8.3 The Unfunded Liability does not include any negative investment reserves in the PSS or CSS resulting from the declaration of a crediting rate in excess of the schemes' earning rate. Such negative reserves are to be funded by a further smoothing of crediting rates in the schemes.

8.4 The table below shows a comparison of the Unfunded Liabilities for the PSS and CSS as at 30 June 2002 with the results as at the two previous investigation dates. The liabilities are split between the liabilities in respect of contributors, pensioners, deferred members (former members who have preserved their benefits) and transferred members (based on the values included in the 30 June 2002 financial statements of the Telstra and Australia Post superannuation funds).

Unfunded Liability			
	$ billion as at 30 June		
Liability for	**1996**	**1999**	**2002**
- Contributors	15.2	14.4	19.1
- Pensioners	22.4	24.4	30.5
- Deferred Members	1.8	4.1	6.0
- Transferred Members	2.6	3.1	2.8
Unfunded Liability	42.0	46.0	58.4
Unfunded Liability (as a percentage of GDP)	9%	8%	8%

Note: The figures have not been adjusted to 2002 dollars.

8.5 The Unfunded Liability in respect of contributors has increased significantly since 1999. An increase in liabilities in nominal terms would have been anticipated based on the actuarial basis at the 1999 actuarial investigation, due to anticipated salary increases and further benefit accrual. The extent of the increase has however been mitigated by a higher than anticipated number of exits from contributory membership. Whilst these exits have been replaced by new contributory members, the new members only have limited accrued benefits.

8.6 The changes to the valuation assumptions, including the introduction of the retrenchment decrement (in particular) and an allowance for an improvement in mortality and for age 54 resignations, have increased the Unfunded Liability.

8.7 The liability in respect of pensioners and deferred members has increased over the three years to 30 June 2002. This is mainly due to the exits from contributory membership during this period, which were higher than expected. The allowance for an improvement in mortality has also contributed to the increase.

8.8 The Unfunded Liability in respect of transferred members has fallen over the period. This is due to low and negative interest credited to the outstanding liability in addition to the payments made in relation to these members. The amounts for transferred members are based on the values included in the 30 June 2002 financial statements of the Telstra and Australia Post superannuation funds.

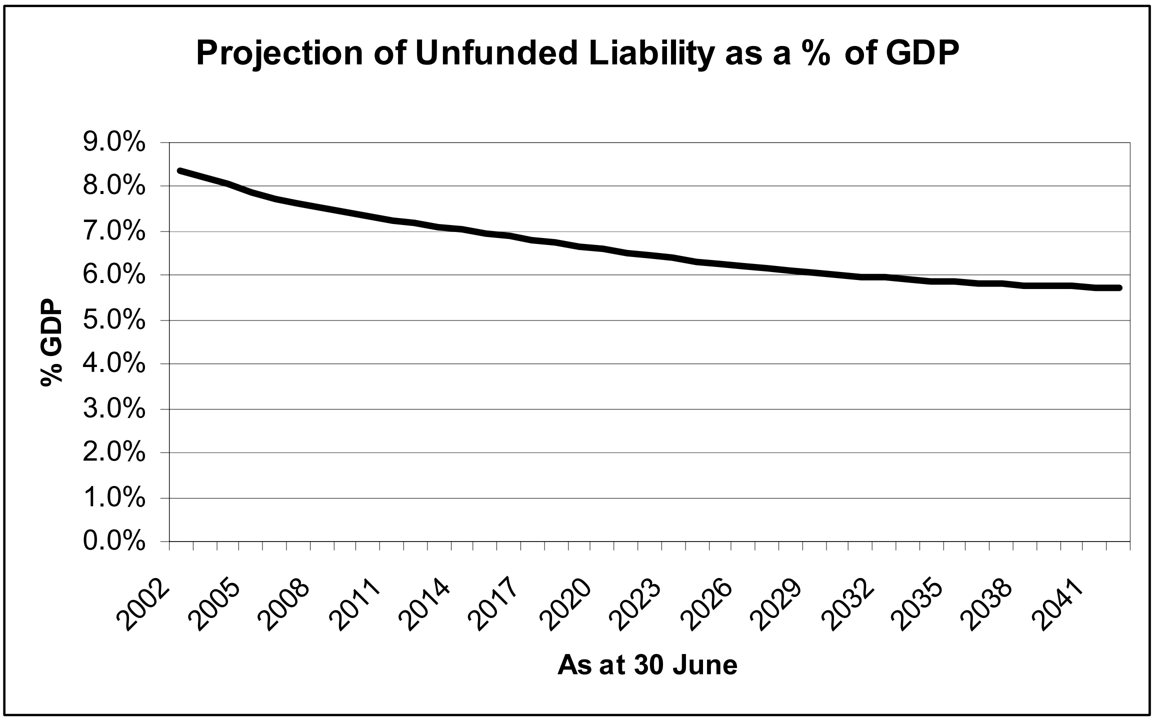
8.9 The table above shows that the Unfunded Liability as a percentage of GDP has remained constant over the past three years.

8.10 The table below shows the projected Unfunded Liability separately for the CSS and the PSS and for the two schemes combined. It also reflects the combined Unfunded Liability as a percentage of future GDP.

Projection of Unfunded Liability				
Year ending 30 June	**CSS ($ billion)**	**PSS ($ billion)**	**TOTAL ($ billion)**	**As % of GDP**
2002	49.3	9.1	58.4	8.4
2003	47.5	9.7	57.2	8.2
2004	45.7	10.3	56.0	8.1
2005	43.8	11.0	54.8	7.9
2006	42.0	11.6	53.6	7.7
2007	40.3	12.3	52.6	7.6
2012	31.8	15.4	47.2	7.2
2017	23.9	18.1	42.0	6.8
2022	17.1	19.9	37.0	6.5
2027	11.6	21.0	32.6	6.2
2032	7.6	21.3	28.9	6.0
2037	4.8	21.0	25.8	5.8
2042	3.0	20.3	23.3	5.7

Notes: 1. The figures in the above table have been adjusted to 2002 dollars using the discount rate of 6% per annum.

8.11 The graph below shows the projected Unfunded Liability as a percentage of future GDP.



8.12 The above graph and table shows that there is a steady decrease in the Unfunded Liability as a percentage of projected GDP over time. The two main reasons for this are set out below.

8.13 The CSS is closed to new members. Therefore over time the CSS membership will reduce and the PSS will become the dominant scheme. As the Unfunded Liability in the PSS is lower as a percentage of superannuation salaries than is the CSS, over time the Unfunded Liability as a percentage of GDP is likely to reduce.

8.14 GDP is projected to increase at 2.1% per annum in real terms, however the combined superannuation salaries of the PSS and CSS are only projected to increase at 1.5% per annum in real terms. As most of the accruing Unfunded Liability is related to salary, GDP is projected to grow quicker than the Unfunded Liability and the Unfunded Liability as a percentage of GDP is likely to reduce.

Chapter 9. Notional Commonwealth Employer Contribution Rates

9.1 The Notional Commonwealth Employer Contribution Rates are the employer contribution rates necessary to ensure that employer-financed benefits payable from the PSS and CSS would remain fully funded in three years time, if they were fully funded now.

9.2 The table below sets out our estimate of the Notional Commonwealth Employer Contribution Rates as at 30 June 2002. The corresponding rates calculated at previous investigations have also been shown for comparison purposes. These rates include the contributions towards the productivity superannuation benefit of approximately 3% of superannuation salaries.

	Contribution as a percentage of superannuation salaries		
Report as at	**CSS**	**PSS**	**Combined**
30 June 1996	21.9%	13.1%	16.9%
30 June 1999	21.9%	14.2%	17.2%
30 June 2002	28.3%	15.4%	19.3%

Note: The combined rates are weighted average rates based on the superannuation salaries of the members of the two schemes

9.3 The Notional Commonwealth Employer Contribution Rates as at 30 June 2002, excluding the employer productivity contribution rate of approximately 3%, are:

	CSS	**PSS**
30 June 2002	25.3%	12.4%

The CSS rate of 25.3% of superannuation salaries is the actual CSS 2002 rate for those agencies with separate productivity superannuation arrangements.

9.4 The combined rate represents the cost to the Commonwealth of the superannuation benefits that are accruing for Commonwealth employees at the present time.

9.5 The contribution rate for the CSS at 30 June 2002 has increased by 6.4% from that calculated at the last investigation.

9.6 The contribution rate for the PSS has increased by 1.2% of superannuation salaries.

Chapter 10. Clawback

10.1 The liabilities of the PSS and the CSS form part of the Commonwealth' s overall liabilities. If the Commonwealth did not provide these benefits, then it would incur increased Age Pension outlays and reduced taxation receipts. This theoretical impact on the Unfunded Liability is referred to as clawback.

10.2 The estimation of clawback presents special problems. As well as basic assumptions that current taxation and social security legislation will remain in a generally unchanged format, assumptions must be made about:

- future benefit levels; and
- the private savings and spending behaviour of former PSS and CSS members.

10.3 In practice there have been major changes in the taxation and social security legislation over time and changes to the future taxation legislation are currently being discussed (for example the maximum level of superannuation surcharge tax).

10.4 Combined with the other assumptions any estimate of clawback is extremely subjective in nature as the results are very sensitive to the assumptions used.

10.5 As the estimate of clawback is not one of the main aims of this investigation and is extremely subjective we consider that it is not appropriate to include an estimate of the clawback in the Long Term Cost Report.

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February 2003

Appendix A
Summary of Benefit Provisions

THE SUPERANNUATION ACT 1990 (PSS)

Membership

In general terms, all employees permanently appointed to the Australian Public Service or other participating employers on or after 1 July 1990 must contribute to the PSS.

Superannuation Salary

Generally, superannuation salary is basic salary plus any recognised allowances. Superannuation salary is the salary on commencement subject to adjustment on each birthday.

Final Average Salary

Final Average Salary (FAS) is generally the average superannuation salary on the three birthdays before leaving the PSS.

Member Contributions

Members can choose to contribute at any rate between 2% and 10% of superannuation salary. The rate of contribution can be varied at any time.

Benefits

The benefits from the PSS consist of three parts:

- <u>the employer-financed component</u> is determined as the Total Benefit net of the productivity and member component. This component is an untaxed benefit.

- <u>the productivity component</u> is made up of accumulated productivity contributions. This is a "taxed benefit".

- <u>the member-financed component</u> is made up of accumulated member contributions. The investment earnings are a "taxed benefit".

Total Benefit

A member's Total Benefit is calculated by multiplying the member's Benefit Multiple by his or her FAS. A member's Benefit Multiple increases with each contribution made. The Benefit Multiple consists of the Member's share and the Employer's share.

Total Benefit Multiple
= Member's share of Benefit Multiple + Employer's share of Benefit Multiple

Member's share of Benefit Multiple = Member Contribution Rate (per year of service)

Employer's share of Benefit Multiple = Member Contribution Rate + 0.11 (per year of service)

10 year Rule - Restriction on Employer's Share of Benefit Multiple

Employer's share of Benefit Multiple cannot be greater than that which would have accrued if member contributions had been made at 5% for 10 years (or total membership if less) and 10% for any membership in excess of that 10 years.

On death or disablement the 5% maximum average applies to prospective service until the 10-year period is notionally completed.

Maximum Benefit

The maximum benefit allowable under the PSS is known as the Maximum Benefit Limit (MBL). The MBL is broadly 8 times the members Final Average Salary. On reaching the MBL, a member will cease contributing to the scheme.

Retirement Benefits

Retirement benefits are payable upon retirement on or after minimum retiring age (usually age 55), subject to general superannuation preservation rules.

The options on retirement are as follows:

- <u>Total pension</u> - The benefits can be taken in the form of a total pension.
- <u>Lump sum benefit</u> - The three benefit components can be taken as a lump sum.
- <u>Lump sum plus pension benefit</u> - The benefits can be taken as a pension (subject to a minimum of 50% of the total benefit) and a lump sum.
- <u>Preserve total benefit</u> - The total benefit can be preserved in the PSS and later taken as a lump sum, indexed pension or a combination of both.

While a benefit is being deferred in the PSS, member and productivity components are increased at the Scheme allocation rate and the employer-financed component is adjusted annually in accordance with changes in the CPI.

Invalidity Retirement

The following benefit choices are available on retirement on medical grounds:

- <u>Invalidity pension with no lump sum</u> - This option provides for the payment of the three benefit components as an indexed pension. Under this option, the total benefit is calculated based on potential service to age 60 (assuming that the member will continue to contribute at their rate at retirement or 5% if more, but subject to a maximum average contribution of 5% for the first 10 years of service, actual or potential). The total benefit is converted to an indexed pension using the same factors used to convert a lump sum to a pension on age retirement but assuming that the member is aged 60 at the time of invalidity retirement.

- <u>Invalidity pension with a lump sum</u> - Under this option, the member component can be taken as a lump sum. The remainder must be taken as an indexed pension.

  The total benefit is calculated based on potential service to age 60 and the amount in excess of the member component is converted to an indexed pension.

Death of a Contributor

- <u>Full pension with no lump sum</u>
  A pension payable at the rate of 67% of the invalidity pension that would have been payable to the deceased plus 11% of the invalidity pension for each eligible child (until age 16 or if a full-time student, until age 25) with total pension limited to 100% of the invalidity pension.

- <u>Part pension and part lump sum</u>

  The spouse can convert up to half of the pension to a lump sum. The lump sum value of any children's pensions for children not living with the spouse is deducted from the lump sum. The benefits for the children are paid as a pension.

- <u>Maximum lump sum and no pension</u>

  This allows the spouse to take the benefit wholly as a lump sum except for the lump sum value of any pension payable to children who are not living with the spouse.

Death of a Pensioner

Pension payable based on the percentages that apply in respect of the death of a contributor, but using the pension payable to the deceased at the time of death. Therefore, if the retirement benefit was taken wholly as a lump sum then no further benefit is payable to the spouse or children.

Resignation

Benefit options are as follows:

- Preserve all benefits in the PSS.
- Immediate refund of member-financed benefit and preserve all employer-financed benefits in the PSS. Note that due to general superannuation preservation rules and the Scheme Rules under most circumstances all post 1 July 1999 contributions will be preserved within the scheme.
- Transfer all benefits to an eligible superannuation scheme.

Retrenchment

On retrenchment, a PSS member has the option of:

(a) taking his/her personal contributions and interest in cash, up to the limit allowed under general superannuation preservation rules, and preserving the rest of the benefit in the PSS; or

(b) preserving the whole of the benefit in the PSS; or

(c) transferring his/her benefit to another complying superannuation scheme; or

(d) transferring his/her benefit to an eligible superannuation fund

(e) taking his/her personal contributions and interest in cash, up to the limit allowed under general superannuation preservation rules, and taking the rest of the benefit as an immediate, non-commutable, indexed pension; or

(f) taking the whole benefit in the form of an immediate, non-commutable, indexed pension that has reference to a person's age.

Indexation

Pensions are indexed twice yearly in line with changes in the CPI.

THE SUPERANNUATION ACT 1976 (CSS)

Membership

The CSS has been closed to new entrants since 1 July 1990.

Salary

The salary used for contribution purposes is, in most cases, the annual rate of salary. Generally, the annual rate of salary is basic salary plus any recognised allowances on a member's last birthday

Final Salary

The salary used for calculating benefits is, in most cases, the annual rate of salary on a member's date of exit.

Member Contributions

Basic contributions are 5% of salary. Supplementary contributions of up to a further 5% may be made. Contributions are accumulated with interest based on the crediting rates of the CSS Fund.

Retirement Benefits

Retirement benefits are payable upon retirement at maximum retirement age (usually age 65) or early retirement at ages 55 or above.

The amount of retirement benefit is the sum of:

- <u>employer-financed indexed</u> pension being a percentage of final salary based on the period of contributory service and discounted for early retirement before age 65;
- <u>productivity</u> component made up of accumulated productivity contributions or if a member elects can be taken as a non-indexed pension; and
- <u>member-financed benefit</u> made up of accumulated basic and supplementary contributions or an equivalent non-indexed pension.

Employer-financed indexed pension

The employer-financed pension is calculated as a percentage of final salary based on the period of contributory service and discounted for early retirement before age 65.

The discount factors for retirement prior to age 65 are age-dependent. They reduce at the rate of 0.02 per year from 1 at age 65 to 0.90 at age 60 and then at the rate of 0.03 per year to 0.75 at age 55.

The accrual rates are based on years of contributory service and on whether the member joined the:

- CSS before 1 July 1976,

- Former Provident Account before 1 July 1976, or

- CSS after 30 June 1976.

Generally, the accrual rates are 2% per annum for the first 20 years of membership, 1% per annum for the next 10 years, and 0.25% per annum for each of the next 10 years. The maximum percentage is 52.5% of salary.

Invalidity Retirement

The following benefits are payable on invalidity retirement:

- an <u>employer-financed indexed pension</u> being a percentage of final salary based on the period of prospective service to maximum retirement age (usually 65)

- a <u>lump sum</u> of accumulated basic contributions or an <u>additional non-indexed pension</u> being a percentage of final salary based on the period of prospective service to maximum retirement age (usually age 65).

- a <u>lump sum</u> of accumulated supplementary and productivity contributions.

Death of a Contributor

A pension payable at the rate of 67% of the invalidity pension that would have been payable to the deceased, plus 11% of the invalidity pension for each eligible child (until age 16 or if a full-time student, until age 25) with total pension limited to 100% of the invalidity pension.

The accumulated productivity contributions and any supplementary contributions are also payable.

Death of a Pensioner

A pension payable based on the percentages that apply in respect of the death of a contributor, but using the pension payable to the deceased at the time of death.

Resignation

A lump sum benefit of accumulated member and productivity contributions is payable on resignation. A minimum employer-financed benefit of the SG contributions, accumulated with investment earnings is payable.

Alternatively, the member may elect to receive a deferred benefit. Under this option, generally on reaching age 55 and having retired from the workforce, the member will receive the following:

- an indexed pension based on 2.5 times the basic contributions accumulated to the date of payment converted to a pension;
- productivity contributions accumulated to the date of payment or if the member elects can be taken as a non-indexed pension; and
- member contributions (basic and supplementary) accumulated to the date of payment or an equivalent non-indexed pension.

Alternatively, the member can choose to take a transfer value of 3.5 times the accumulated basic contributions plus supplementary and productivity contributions, to an eligible superannuation arrangement.

Retrenchment

The benefit options available to a CSS member who is retrenched are similar combinations of pension (based on age) and lump sum as are available on age retirement.

In addition, the member may choose to preserve all benefits in the scheme, roll over the accrued benefit to a preservation fund if aged less than 55, or take the accrued benefit as a cash lump sum if aged 55 or more. For the purposes of rollover the accrued benefit is a lump sum of 2.5 times personal basic (5%) contributions together with all personal contributions and interest and any productivity contributions plus interest. Where the rollover is chosen the member may take their member contributions and interest in cash up to the limit allowed under the superannuation regulatory regime.

Indexation

Pensions are indexed twice yearly in line with changes in the CPI. Pensions purchased with accumulated member contributions and productivity contributions are fixed in dollar terms and not subject to indexation.

Appendix B
Detailed Assumptions
General Assumptions

Financial Assumptions

The following table summarises the assumptions adopted for this investigation.

Item	Assumption
CPI Increases	2.5% per annum
Investment Returns	6.0% per annum (nominal) 3.5% per annum (real)
General Salary Increases	4.0% per annum (nominal) 1.5% per annum (real)

GDP Increase Rates

The table below reflects a sample of the expected nominal and real rates of GDP growth over the next 40 years.

Year	Rate per annum (nominal)	Rate per annum (real)
2002/2003	5.6%	3.1%
2007/2008	5.1%	2.6%
2012/2013	4.8%	2.3%
2017/2018	4.5%	2.0%
2022/2023	4.3%	1.8%
2027/2028	4.2%	1.7%
2032/2033	4.2%	1.7%
2037/2038	4.2%	1.7%
2042/2043	4.1%	1.6%

Taxation

Allowance has been made for 15% tax payable on superannuation productivity contributions.

Superannuation Guarantee

Allowance has been made for the Superannuation Guarantee rate to remain at 9% of salaries from 1 July 2002.

Experience Assumptions

Promotional salary scales

The following tables show examples of the assumed salary progression scale (excluding general salary increases due to inflation). Promotional salary increases are assumed to depend on both age and duration for the first 8 years of service and on age only thereafter.

Salary Progression (females)						
Entry Age	**Years of membership**					**Attained Age**
	0	**2**	**4**	**6**	**8**	
17	349	470	633	671	712	25
22	582	652	730	763	798	30
27	690	756	829	854	881	35
32	756	810	869	891	913	40
37	768	820	875	894	913	45
42	779	827	877	895	913	50
47	824	850	877	895	913	55
52	843	860	877	895	913	60
57	843	860	877	895	913	65

Salary Progression (males)						
Entry Age	**Years of membership**					**Attained Age**
	0	**2**	**4**	**6**	**8**	
17	302	392	510	558	610	25
22	495	564	642	690	742	30
27	609	665	726	766	809	35
32	701	743	789	819	850	40
37	782	825	872	895	920	45
42	830	866	904	918	933	50
47	893	906	918	926	933	55
52	904	911	918	926	933	60
57	904	911	918	926	933	65

Death and Invalidity Assumptions

Death and Invalidity Assumptions (per 1000 active members at age shown)						
Age	**PSS & CSS Deaths**		**PSS Invalidities**		**CSS Invalidities**	
	Males	**Females**	**Males**	**Females**	**Males**	**Females**
25	0.26	0.13	0.20	0.12	0.20	0.12
30	0.29	0.16	0.35	0.32	0.35	0.32
35	0.32	0.23	0.63	0.61	0.63	0.61
40	0.38	0.31	0.88	1.03	0.88	1.03
45	0.53	0.50	1.45	1.64	1.45	1.64
50	0.83	0.75	2.75	2.55	2.75	2.55
55	1.39	1.27	3.93	3.89	4.45	4.26
60	2.89	2.07	n/a	n/a	8.08	6.46
64	4.98	2.91	n/a	n/a	9.80	8.04

Age Retirement Assumptions

Age Retirement Assumptions CSS (per 1000 active members at age shown)		
Age	**Males**	**Females**
55	35	50
56	45	55
57	55	65
58	55	80
59	75	90
60	100	160
61	105	160
62	110	160
63	130	175
64	130	175
65	1000	1000

Age Retirement Assumptions PSS (per 1000 active members at age shown)		
Age	**Males**	**Females**
55	60	85
56	60	75
57	60	90
58	60	85
59	90	90
60	110	110
61	100	135
62	100	190
63	100	240
64	100	240
65	1000	1000

Contributor exits by Resignation

Resignation Assumptions – PSS				
Age Attained	**Males (per 1000)**		**Females (per 1000)**	
	Membership 0	**Membership 10**	**Membership 0**	**Membership 10**
20	109.7	0.0	104.1	0.0
25	121.0	60.1	125.7	36.8
30	106.4	53.1	108.9	61.2
35	93.1	46.7	90.0	43.9
40	81.3	41.1	75.9	33.8
45	69.3	32.7	66.6	27.6
50	60.2	29.6	61.0	26.9
Factor*	**0.86**	**0.89**	**0.92**	**0.95**

Resignation Assumptions – CSS				
Age Attained	**Males (per 1000)**		**Females (per 1000)**	
	Membership 0	**Membership 10**	**Membership 0**	**Membership 10**
20	86.2	0.0	59.2	0.0
25	84.0	45.5	62.2	30.7
30	71.5	35.5	49.3	43.3
35	70.3	30.8	47.1	36.5
40	74.0	29.4	41.1	30.2
45	74.9	28.7	33.0	24.4
50	81.7	31.2	30.1	23.2
54**	500.0	500.0	350.0	350.0
Factor*	**0.88**	**0.91**	**0.90**	**0.95**

* These factors are used to determine rates for membership periods other than 0 and 10. The rate for membership period"y" where "y" is in the range 0-9 is derived by multiplying the membership 0 rate by the membership 0 factor raised to the power of "y". For membership periods greater than 10 the rate for membership 10 is multiplied by the membership 10 factor raised to the power of "y-10".

** The factor is not applied to the CSS resignation decrement at age 54.

Retrenchments

The table below shows the retrenchment rates assumed for PSS and CSS members from 2002/03 onwards.

Retrenchment Assumptions				
Age Attained	**Males (per 1000)**		**Females (per 1000)**	
	CSS	**PSS**	**CSS**	**PSS**
20	0.0	3.0	0.0	1.7
25	43.8	7.0	21.6	6.7
30	37.1	10.9	25.3	12.7
35	28.9	14.2	22.2	15.4
40	25.9	16.4	18.9	15.0
45	28.2	19.0	22.4	14.6
50	50.0	25.6	31.1	16.4
55	94.7	36.2	50.9	26.8
60	134.6	54.8	73.3	38.0

Preservation on resignation or retrenchment

Members are generally required to retain their employer-financed benefits within the schemes. Members who join the PSS after 1 July 1999 are required to retain all their benefits within the scheme. For members who joined the scheme before 1 July 1999 the member-financed benefits may be taken as a lump sum on termination of service (subject to general preservation rules) or retained within the scheme. CSS members who elect not to retain their member-financed benefit within the CSS on termination of service forfeit a significant part of their employer-financed benefit.

In the PSS it has been assumed that 60% of male and female members that joined the scheme prior to 1 July 1999 who resign will also retain their member accumulations within the PSS. Of the members who retain their member-financed benefits within the scheme it has been assumed that 50% of the lump sums will be converted to pensions.

In the CSS, it has been assumed that 90% of all benefits are retained within the scheme.

Rate of take up of pension

It has been assumed for the PSS that 50% of lump sum entitlements of age retirees and spouses of deceased contributors and 50% of the lump sum entitlements of members, who resign and preserve their entire benefit, will be converted to pensions. Invalid retirees must take a pension and members who do not preserve their member accumulations on resignation cannot take a pension.

Generally in the CSS, the employer component of the benefit must be taken as a pension.

Pensioner Mortality

The table below shows the mortality rates assumed for normal and dependent pensioners in the 2002/2003 year.

Pensioner Mortality (per 1000 pensioners at age shown)				
	Males		**Females**	
Age	**Age Retired**	**Widow (female)**	**Age Retired**	**Widower (male)**
20		0.34		1.10
30		0.41		1.29
40		0.80		1.64
50		2.05		3.53
55	2.43	3.28	2.32	5.97
60	4.17	4.99	3.62	9.86
65	8.05	7.76	5.90	16.33
70	15.48	12.87	10.08	27.84
75	28.65	21.65	16.84	43.84
80	55.47	39.71	32.03	71.39
90	175.78	132.29	124.36	184.16
100	386.42	384.99	384.99	386.42

The table below shows the mortality rates assumed for invalid pensioners in the 2002/2003 year. The duration in the table refers to the time since the member became an invalid pensioner.

Invalid Retirement Pensioner Mortality (per 1000 pensioners at age shown)								
Age	**Males of Duration**				**Females of Duration**			
	0-1 years	**1-2 years**	**2-3 years**	**3+ years**	**0-1 years**	**1-2 years**	**2-3 years**	**3+ years**
20	65.00	45.00	30.00	0.96	70.00	40.00	25.00	0.39
30	65.00	45.00	30.00	1.07	70.00	40.00	25.00	0.47
40	65.00	45.00	30.00	1.48	70.00	40.00	25.00	0.91
50	65.00	45.00	30.00	2.98	70.00	40.00	25.00	2.18
55	65.00	45.00	30.00	4.84	70.00	40.00	25.00	3.64
60	65.00	45.00	30.00	8.53	70.00	40.00	25.00	5.86
65	65.00	45.00	30.00	15.34	70.00	40.00	25.00	9.62
70	n/a	n/a	n/a	25.90	n/a	n/a	n/a	16.07
75	n/a	n/a	n/a	41.43	n/a	n/a	n/a	27.98
80	n/a	n/a	n/a	70.98	n/a	n/a	n/a	52.70
90	n/a	n/a	n/a	181.24	n/a	n/a	n/a	165.63
100	n/a	n/a	n/a	386.42	n/a	n/a	n/a	384.99

Improvements in Pensioner Mortality

Improvements in pensioner mortality have been taken from Australian Life Tables 1995 – 97, which is the standard used by the Australian Government Actuary and the Australian Bureau of Statistics for projections of the Australian population.

The following table summarises the assumed rates of improvement in future mortality of age, dependent and invalid pensioners.

Assumed Rates of Mortality Reduction (% per annum)				
	Male		**Female**	
Age	2002/06	2006 +	2002/06	2006 +
60	3.01	1.21	2.04	0.91
70	2.04	0.88	1.74	0.51
80	1.40	0.72	1.08	0.82
90	0.43	0.36	0.44	0.69
100	0.29	0.23	0.31	0.40

Member Contributions to the PSS

Members of the PSS are assumed to contribute at the rate of 5% of superannuation salary throughout their future membership.

New Entrants

The table below summarises, for each 1000 new entrants, the number and assumed average salary of members entering at that age.

	Males		**Females**	
Age	**Number (per 1000)**	**Average Salary**	**Number (per 1000)**	**Average Salary**
16	0	n/a	0	n/a
20	15	33,780	20	32,179
25	38	37,625	45	37,760
30	34	41,971	36	40,335
35	30	45,423	27	41,394
40	28	47,107	27	41,560
45	22	48,921	20	41,660
50	15	49,301	12	41,807
55	9	49,301	7	41,807
60	3	49,301	1	41,807
64	1	49,301	0	n/a

Note: Numbers shown are the proportion out of every 1000 new entrants that are assumed to enter at the Age shown. If all ages were shown the number column would add to 1000.

It has been assumed that when a member leaves the PSS or CSS they are replaced in the PSS by another member of the same sex.

Spouse Assumptions

It has been assumed that the proportion of males who are married at death will gradually increase with age to 75% at age 42, remain constant to age 72 and then reduce.

The corresponding figures for females are 55% by age 27, remaining constant to age 62 and then reducing.

It is assumed that male members would, on average, be 2 years older than their spouses and that female members would be 2 years younger that their spouses.