



Australian Government

Australian Government Actuary

# MILITARY SUPERANNUATION SCHEMES

*Review of long-term costs*

As at 30 June 2017





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**MILITARY SUPERANNUATION SCHEMES  
REVIEW OF LONG-TERM COSTS AS AT  
30 JUNE 2017**

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# SUMMARY

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This report sets out estimates as at 30 June 2017 of the long-term costs of superannuation benefits payable in respect of the members of the four defined benefit superannuation schemes covering the vast majority of Australian Defence Force (ADF) personnel. The previous report was prepared using data as at 30 June 2014.

The schemes covered in this report are:

- the ADF Cover scheme which provides insurance type benefits to those ADF personnel under the new ADF Super accumulation arrangements which cover new ADF personnel with effect from 1 July 2016;
- the Military Superannuation and Benefits Scheme (MSBS) which commenced on 1 October 1991 and which closed to new ADF personnel from 1 July 2016;
- the Defence Force Retirement and Death Benefits Scheme (DFRDB) which commenced on 1 October 1972 and which has been closed to new members since the commencement of the MSBS; and
- the Defence Forces Retirement Benefits Scheme (DFRB) which commenced on 1 July 1948 and only covers those who were in receipt of a pension at the time DFRDB commenced, or their reversionary dependants.

## Changes to military superannuation since the previous report

The major change to military superannuation since the previous report has been the closure of MSBS to new ADF personnel from 1 July 2016 and its replacement by the new accumulation ADF Super arrangements. The associated ADF Cover scheme provides death and invalidity insurance cover for those covered by the ADF Super arrangements.

This report does not include cash outlays for employer superannuation contributions to the new ADF Super arrangements as they are fully funded accumulation arrangements. The report does cover the cash outlays for the benefits and unfunded liabilities of the associated ADF Cover scheme. ADF Cover is an unfunded defined benefit scheme which provides death and invalidity insurance cover for those under the ADF Super arrangements.

These changes to scheme arrangements are discussed in Chapter 2.

## Changes in assumptions since the previous report

The assumptions adopted and changes since the previous report are discussed in Chapter 4. The most significant change was to assume increased invalidity exit rates for MSBS contributors. These assumptions are also used for ADF Cover. Recent years have seen a dramatic increase in the numbers of new MSBS invalidity pensions commencing and the assumptions have been changed to reflect recent experience. These pensions are payable for life and the benefit formula includes prospective service to age 60. As these pensions are generally paid to younger members with relatively short periods of service, these are expensive benefits relative to the period of service of these individuals and hence have a high cost. Substantial increases in the numbers of MSBS invalidity exits thus have a significant impact on the underlying costs. There is considerable uncertainty relating to future rates of invalidity exits given the recent experience in this area. Further details of these assumptions are given in Chapter 4, including extensive consideration of invalidity exits issues.

There was also a change to the economic assumptions, namely a one percentage point reduction in the interest rate used for the valuation. This change does not materially affect projected Commonwealth outlays and the underlying costs of the schemes but it does significantly increase the estimates of the unfunded liabilities and the notional employer contribution rates. There have been a number of other minor changes to assumptions which have had a much smaller impact on reported scheme costs.

## Notional employer contribution rates

For MSBS and DFRDB, the notional employer contribution rate is the estimated employer contribution rate that would be required to fund the defined benefits accruing to serving ADF members over the next three years, expressed as a percentage of superannuation salary. The contribution rate is sensitive to the economic assumptions adopted. For the purposes of this calculation, superannuation benefits are assumed to accrue uniformly over the period until a member exits from the scheme or reaches his or her maximum benefit limit, whichever occurs first. The following table shows the notional employer contribution rates for the MSBS and the DFRDB as calculated for this report and the previous report as at 30 June 2014. These rates include the 3 per cent productivity contributions but do not include the additional employer contributions paid as a result of the application of the OTE earnings base in calculating an employer's Superannuation Guarantee (SG) obligations from 1 July 2008. The additional employer SG contributions currently amount to around 0.8 per cent of superannuation salary across the membership of both schemes and are paid to the ancillary section of the MSBS Fund. There is no contribution rate for the DFRB as it comprises only pensioner members.

A different approach has been taken for ADF Cover. ADF Cover only provides insurance type benefits. The notional employer contribution rate for ADF Cover has also been calculated as a percentage of the superannuation salaries of scheme members. It represents the estimated contribution rate, on the assumptions made, that would be required to pay a notional premium for the insurance cover provided to those members.

#### **NOTIONAL EMPLOYER CONTRIBUTION RATE AS A PERCENTAGE OF SUPERANNUATION SALARY**

<b>Report as at</b>	<b>MSBS<sup>1</sup> (%)</b>	<b>DFRDB (%)</b>	<b>ADF Cover (%)</b>
2014 Report	33.2	35.9	-
Current Report	52.0	43.0	21.6

1. The MSBS rates exclude the cost of the retention benefit.

The increase in the notional employer contribution rate for DFRDB is almost entirely due to a change in the economic assumptions made for this report, namely a one percentage point reduction in the interest rate assumed relative to assumed CPI increases.

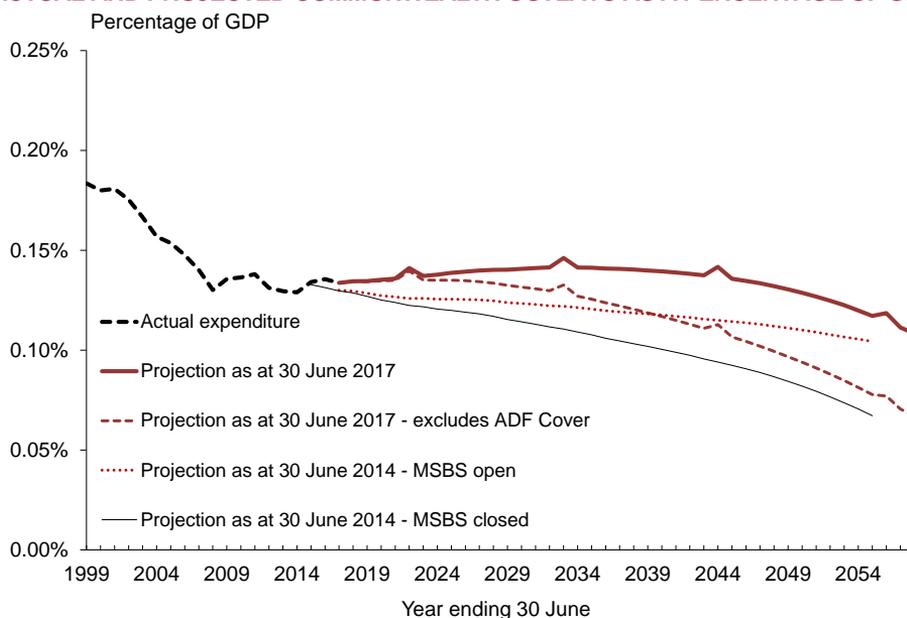
Around half of the increase in the notional employer contribution rate for MSBS is due to the change in economic assumptions. Around half of the increase is due to assuming higher rates of invalidity exits, particularly those that result in invalidity A pensions being payable. The last three years have seen a dramatic increase in the numbers of new invalidity pensions. This feature has resulted in a substantial increase in the estimated underlying cost of MSBS.

ADF Cover projections were not included in the previous report as details of the benefit structure were not known at that time. It should be noted that the notional insurance premium is expected to increase over time to around 30 per cent of the relevant superannuation salaries. While not covered by this report, under the ADF Super arrangements, employer contributions at the rate of 16.4% of ordinary time earnings are paid to the superannuation fund of the individual's choice.

## Projection of employer cash costs

Direct Commonwealth outlays that will be required under the current method of funding benefits have been projected for the next 40 years and expressed as a percentage of Gross Domestic Product (GDP) so that the amounts of the cash outlays can be matched against a relevant base. The following chart shows actual cash costs since 1999 and projected costs for the next 40 years, together with the cash costs that were projected in the Long-Term Cost Report as at 30 June 2014 (the '2014 Report'). The 2014 Report included two scenarios, one assuming the MSBS was closed to new ADF personnel from 1 July 2016 and the other that the MSBS remained open. As the 2014 Report did not include projections for ADF Cover under the scenario with MSBS being closed, a projection as at 30 June 2017 excluding ADF Cover has been included for comparison purposes. Note that the outlays do not include employer contributions under the ADF Super arrangements.

### ACTUAL AND PROJECTED COMMONWEALTH OUTLAYS AS A PERCENTAGE OF GDP



Annual cash costs represent approximately 0.13 per cent of GDP at present, increasing slightly to around 0.14 per cent of GDP in the medium term before falling to around 0.12 per cent of GDP in the long term.

The current projections are higher than the projections in the 2014 Report. As can be seen in the chart above this is primarily due to the inclusion of ADF Cover in the projections. However, even allowing for the inclusion of ADF Cover, there has been a significant increase in projected outlays.

This is a consequence of the substantial increases in the rates of assumed invalidity exits for MSBS. The MSBS invalidity exit assumptions have also been used for ADF Cover. The factors leading to this result are further discussed in Chapter 6. The current projections also factor in the impact of the occasional years where there are 27 pension pay days instead of the usual 26 pension pay days which lead to extra expenditure in those years. This feature was not modelled in the 2014 Report. These occur around every 11 years.

## Present value of unfunded liabilities

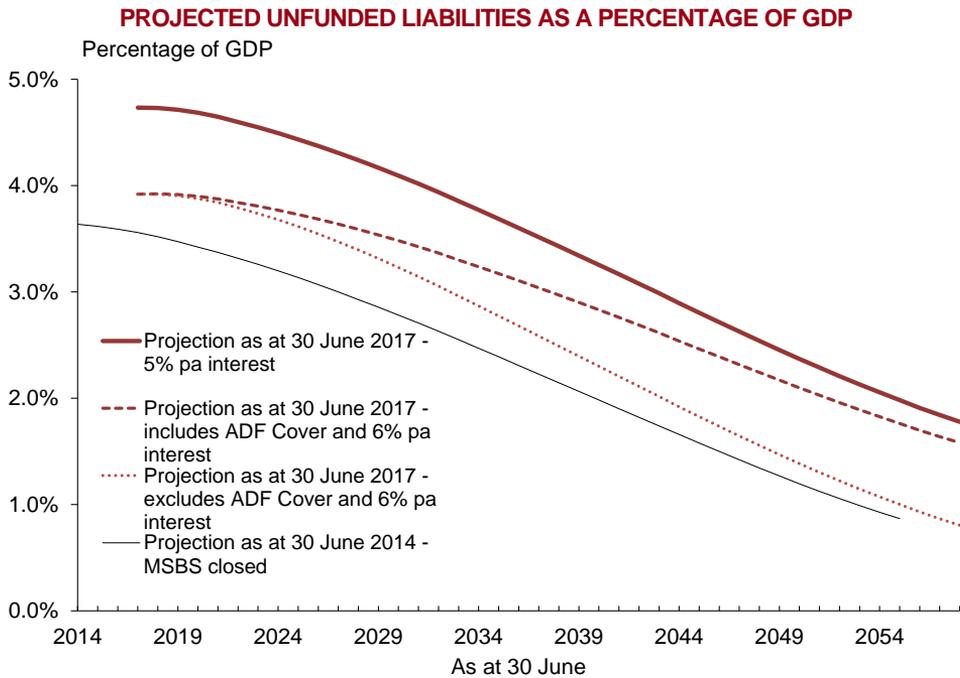
The unfunded liability in respect of benefits that have already accrued for current employees, former employees and pensioners has been estimated as \$83.1 billion as at 30 June 2017 of which \$0.4 billion relates to the DFRB, \$34.3 billion to the DFRDB, \$48.3 billion to the MSBS and \$0.0 billion to ADF Cover. This is 4.7 per cent of GDP. This compares with the figure appearing in the 2014 Report of \$57.5 billion or 3.6 per cent of GDP as at 30 June 2014.

The following chart illustrates the projected fall off in the total unfunded liabilities as a percentage of GDP. The trend is clearly favourable with this measure of liabilities falling by around 50 per cent over the 40 year projection period. The chart also gives the projection from the 2014 Report assuming MSBS was closed to new ADF personnel from 1 July 2016.

As the one percentage point reduction in the interest rate from 6.0 per cent per annum to 5.0 per cent per annum has a significant bearing on the reported unfunded liabilities, two additional projections have been included. These show the impacts of the various changes to the approach used for the 2014 Report.

The first additional projection uses the interest rate from the 2014 Report of 6.0 per cent per annum and excludes ADF Cover. This projection is thus directly comparable with the projection in the 2014 Report assuming MSBS was closed. The difference largely reflects the changes in the demographic assumptions, principally the increase in the assumed rates of invalidity exits for serving ADF personnel in MSBS.

The second additional projection is the same as the first additional projection but includes ADF Cover. This second additional projection can then be compared with the projection for this report using an interest rate of 5.0 per cent per annum to gauge the impact from the one percentage point reduction in the interest rate. This is the primary reason for the increase in unfunded liability in 2017 compared to the 2014 projections. However, the increases in the invalidity exit rates are also a factor. The factors leading to these results are discussed further in Chapter 7.



## Scheme membership

Over the three years to 30 June 2017, the total number of serving ADF personnel covered by the schemes increased to around 59,950 individuals, approximately 2,200 more than in 2014. The total number of pensioner members across all schemes has increased by around 3,000, with almost 70,000 pensioners being valued for the current review. The number of MSBS members with a preserved benefit increased by approximately 11,000 over the three years from 2014 to 2017, to over 108,000. More details on the scheme membership are provided in Chapter 3.

# CHAPTER 1: INTRODUCTION

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- 1.1 This report has been prepared by the Australian Government Actuary, Mr Guy Thorburn, FIAA, and members of his office at the request of the Department of Defence. It sets out estimates of the long-term superannuation costs of the Military Superannuation and Benefits Scheme (MSBS), the Defence Force Retirement and Death Benefits Scheme (DFRDB), Defence Forces Retirement Benefits Scheme (DFRB) and ADF Cover that will be charged to the Consolidated Revenue Fund (CRF). The estimates are based on scheme data supplied by the Commonwealth Superannuation Corporation (the schemes' administrator) as at 30 June 2017.
- 1.2 Estimates of the long-term costs of military superannuation have been provided by the Australian Government Actuary in a series of reports since the commencement of the DFRDB on 1 October 1972. The most recent estimate of the long-term costs of the military superannuation schemes was carried out using data as at 30 June 2014 and was presented in my predecessor, Mr Peter Martin's report dated June 2015.
- 1.3 This report has been completed in accordance with the principles recommended in the separate actuarial paper 'The Financing and Costing of Government Superannuation Schemes'.
- 1.4 Three measures of long-term costs are provided:
  - Notional employer contribution rate

This is the employer contribution rate that would be required to fund the defined benefits for the MSBS and the DFRDB accruing over the next three years, on the basis that superannuation benefits are accrued uniformly over the period until a member exits from the scheme or reaches his or her maximum benefit limit, whichever occurs first. It represents the estimated employment cost, based on the assumptions made, that arises from the superannuation schemes, and has been expressed as a percentage of the defined benefit superannuation salaries.

ADF Cover only provides insurance type benefits and the notional employer contribution rate represents the estimated contribution rate, on the assumptions made, that would be required to pay a notional premium for the insurance cover provided to those members.

- Projection of actual employer cash costs

This is a projection of the actual cash outlays payable annually by the Commonwealth in respect of superannuation benefits for ADF personnel excluding the employer superannuation contributions under the ADF Super arrangements. The items included are set out in paragraph 2.27. The cost has been projected over the next 40 years in nominal dollars and expressed as a percentage of gross domestic product (GDP).

- Net present value of unfunded liabilities

This is the excess of the accrued Commonwealth liability for superannuation benefits in respect of service up to 30 June 2017 over the value of assets held by the schemes.

- 1.5 The measures of costs above represent the Commonwealth's direct costs for these superannuation arrangements. If these costs are incurred by the Commonwealth, there should be some consequential reduction in the Commonwealth's Age and Service Pension outlays and increase in taxation receipts. I have not provided estimates of these items in this report. Such estimates would be highly uncertain, involving assumptions about future Age Pension and taxation parameters as well as the private savings and spending behaviour of scheme members.
- 1.6 The purpose of the triennial reviews is to assess the financial position of the schemes over the long term. Estimates of the net present value of the unfunded liabilities have also been produced on an annual basis for inclusion in the Department of Defence Financial Statements. These annual estimates are calculated in accordance with Australian Accounting Standard AASB 119 and are not directly comparable to the estimates provided here.

## **Closure of MSBS to new ADF personnel and its replacement by ADF Super and ADF Cover**

- 1.7 The Military Superannuation and Benefits Scheme (MSBS) was closed to new ADF personnel with effect from 1 July 2016. From 1 July 2016, new ADF personnel have retirement superannuation provided under the ADF Super arrangements where employer superannuation contributions of 16.4 per cent of Ordinary Time Earnings are paid to the superannuation fund of the individual's choice.
- 1.8 For those under the ADF Super arrangements, insurance type cover for death and invalidity is provided by the associated ADF Cover scheme.

- 1.9 The ADF Super arrangements are via fully funded accumulation arrangements. Once the employer superannuation contributions have been paid, there is no residual unfunded liability or employer risk. This report deals with defined benefit schemes and where there is residual employer risk. As such, ADF Super projections have not been included in this report.
- 1.10 By contrast, ADF Cover is both a defined benefit scheme and has no advance funding. Accordingly, projections for ADF Cover have been included in this report.

## **Future Fund**

- 1.11 In 2006, the Government established a Future Fund to offset unfunded superannuation liabilities, contribute to national savings and increase net worth. The assets of the Future Fund are intended to reduce calls on the budget to meet the liabilities of the Commonwealth's superannuation schemes when spending pressures associated with an ageing population are projected to emerge. However, since the assets of the Future Fund are not held by the schemes, the unfunded liabilities projected in this report have not been reduced to take account of the assets held by the Future Fund. Similarly, the projected outlays have not been reduced to take account of any drawdowns from the Future Fund.
- 1.12 The current investment mandate for the Future Fund is to achieve a return, on average, over the long term of four to five percentage points higher than CPI increases. This is higher than interest rate assumed for this report of two and a half percentage points higher than CPI increases. Were this report to adopt an interest rate consistent with the investment mandate for the Future Fund, the estimates of the notional employer contribution rates and the unfunded liabilities would be lower than in this report. The sensitivity analysis in Appendix E can be used to gauge the impact of different economic assumptions.

## **Compliance with professional standards**

- 1.13 The report has had regard to the Institute of Actuaries of Australia Professional Standard 400 (Investigations of Defined Benefit Superannuation Funds) and complies with the Standard insofar as it deals with unfunded superannuation schemes. Professional Standard 400 is designed to primarily apply in the context of funded private sector defined benefit superannuation funds. The schemes under review in this report operate on an unfunded or substantially unfunded basis with an implicit Government guarantee.



## CHAPTER 2: THE MILITARY SUPERANNUATION SCHEMES

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- 2.1 Current and former Australian Defence Force personnel (other than Reservists who are not rendering continuous full-time service) are covered under one of four superannuation arrangements: the Defence Forces Retirement Benefits Scheme (DFRB); the Defence Force Retirement and Death Benefits Scheme (DFRDB), the Military Superannuation and Benefits Scheme (MSBS) and the combined ADF Super and ADF Cover arrangements. It is possible for individuals to have benefits in all of the DFRDB, the MSBS and the combined ADF Super and ADF Cover arrangements.

### The Defence Forces Retirement Benefits Scheme

- 2.2 The DFRB was established under the *Defence Forces Retirement Benefits Act 1948*. It was closed on 1 October 1972 when the DFRDB was introduced. At that time, all contributory members were transferred to the DFRDB. Existing pensioners and their reversionary beneficiaries continue to receive pensions payable under the DFRB legislation. This scheme represents a very small proportion of the total liability.
- 2.3 The DFRB is a defined benefit scheme. It is unfunded since it does not hold any assets. The Scheme has no external insurance arrangements. Benefits are financed from Consolidated Revenue as they become due for payment. The Scheme is untaxed and no tax is levied on employer contributions. The Scheme is an exempt public sector superannuation scheme under the *Superannuation Industry (Supervision) Act 1993*.

### The Defence Force Retirement and Death Benefits Scheme

- 2.4 Under the *Defence Force Retirement and Death Benefits Act 1973*, the DFRDB was deemed to have come into existence on 1 October 1972. The documents setting out the provisions of the DFRDB are the Act itself, as amended, together with the associated Regulations and the Defence Force (Superannuation) (Productivity Benefit) Determinations made under the *Defence Act 1903*. The DFRDB was closed to new members on 30 September 1991. Contributory members at that time were given the option of transferring to the MSBS under the transitional arrangements associated with the introduction of the new scheme.

2.5 The DFRDB is a defined benefit scheme. It is unfunded since it does not hold any assets. The Scheme has no external insurance arrangements. Benefits are financed from Consolidated Revenue as they become due for payment. The Scheme is untaxed and no tax is levied on employer contributions. The Scheme is an exempt public sector superannuation scheme under the *Superannuation Industry (Supervision) Act 1993*.

## The Military Superannuation and Benefits Scheme

2.6 The Military Superannuation and Benefits Scheme was introduced on 1 October 1991. It was closed to new ADF personnel with effect from 1 July 2016. Former serving members with a preserved benefit can re-join MSBS on re-joining the ADF. The documents setting out the provisions of the MSBS are the *Military Superannuation and Benefits Act 1991* and the Trust Deed and Rules of the Scheme. MSBS members still make up over 85 per cent of serving personnel but this will decline over time.

2.7 The MSBS is a defined benefit scheme. The Scheme has no external insurance arrangements. The Scheme is a complying superannuation fund under the *Superannuation Industry (Supervision) Act 1993*.

2.8 The MSBS has an ancillary section which provides fully funded accumulation benefits which arise from a number of sources. Contributions to the ancillary section include employer salary sacrifice contributions and employer Superannuation Guarantee contributions in respect of Ordinary Time Earnings (OTE) items that are not included in superannuation salary.

2.9 The employer provided defined benefit component of MSBS is largely unfunded, apart from the 3 per cent Productivity Benefit component which is funded. Generally, member financed accounts in MSBS are fully funded. Ancillary benefits in MSBS are fully funded. Any benefits that are not paid from MSBS Fund assets are financed from Consolidated Revenue as they become due for payment.

## ADF Super and ADF Cover

2.10 The ADF Super and associated ADF Cover arrangements apply to new ADF personnel from 1 July 2016. The documents setting out the provisions of ADF Super are the *Defence Act 1903* and the *Australian Defence Force Superannuation Act 2015*. The documents setting out the provisions of ADF Cover are the *Australian Defence Force Cover Act 2015*.

2.11 ADF Cover is a defined benefit scheme. The Scheme has no external insurance arrangements. The Scheme is an exempt public sector superannuation scheme under the *Superannuation Industry (Supervision) Act 1993*.

2.12 Summaries of the benefits payable under the MSBS, the DFRDB, ADF Super and ADF Cover are set out in Appendices A, B and C respectively. They can be described briefly as follows:

**DFRDB:** An indexed pension benefit based on a multiple of final salary and total service. Part commutation of the pension to a lump sum is permitted on age retirement.

**MSBS:** A member financed benefit equal to member contributions accumulated with fund earnings plus an employer financed lump sum benefit based on a multiple of final average salary and total service. On age retirement, the employer financed lump sum may be wholly or partially converted to an indexed pension.

**ADF Super and ADF Cover:** The payment of employer superannuation contributions of 16.4% of the individual's Ordinary Time Earnings (OTE) to the accumulation superannuation fund of their choice. The associated ADF Cover provides separate invalidity pensions and lump sum death benefits which a surviving spouse can choose to convert into a pension.

## Changes to military superannuation over the review period

### Closure of MSBS to new ADF personnel from 1 July 2016

2.13 As noted earlier, the MSBS was closed to new ADF personnel from 1 July 2016. For new ADF personnel, MSBS was replaced by a new accumulation scheme known as ADF Super.

2.14 A separate unfunded defined benefit arrangement, known as ADF Cover, provides death and invalidity cover benefits for members of the new accumulation scheme.

- 2.15 As part of the legislation package for the new ADF Super and ADF Cover arrangements, changes were made to DFRDB benefit provisions from 1 July 2016. Before 1 July 2016, DFRDB pensioners who re-joined the ADF for 12 months or more could re-join DFRDB as a serving member. In this situation, the pension was cancelled and, on a subsequent exit from the ADF, benefits would be based on the combined periods of ADF service and the superannuation salary for the subsequent exit with an adjustment made for any previous lump sum commutation payments made. There was also an option to have the DFRDB pension suspended while in the ADF and have superannuation benefits for the new period of service from MSBS. In most instances, the option to re-join DFRDB as a serving member was financially attractive and the majority of DFRDB pensioners who re-joined the ADF for 12 months or more elected to re-join DFRDB.
- 2.16 From 1 July 2016, the DFRDB pension continues to be paid when a DFRDB pensioner re-joins the ADF and the individual's superannuation benefits for the new period of service are those from ADF Super and ADF Cover. There is no longer an option for DFRDB pensioners to re-join DFRDB as a serving member.

### **Funding and payment of benefits**

- 2.17 In respect of the employer provided component of the MSBS defined benefit arrangements, after-tax productivity superannuation contributions are accumulated with interest at the actual investment earning rates of the MSBS Fund. When employer provided defined benefits are first paid to a member, the accumulated productivity contributions are transferred to the Consolidated Revenue Fund (CRF) and the employer benefit is financed from the CRF on an unfunded basis. In any given year, the unfunded benefits paid from CRF will be the total amount of benefits paid less the transfers from the MSBS Fund relating to members who have exited in that year.
- 2.18 The unfunded component of employer financed benefits from the MSBS is untaxed and no tax is levied on employer contributions for this component of benefits. Employer contributions for the 3 per cent Productivity Benefit are taxed at 15 per cent when received by the MSBS Fund.

- 2.19 In respect of the standard member account (non-ancillary account) in MSBS, member contributions are accumulated with interest at the actual investment earning rates of the MSBS Fund. When a benefit from the member account is paid, the payment is made directly to the individual, or the individual's nominated fund in the case of a roll over payment. Where an MSBS member has an unfunded component of his or her member account as a result of earlier membership of DFRDB, payment of that component of the benefit is made from CRF.
- 2.20 Member contributions to the DFRDB are paid direct to the CRF and not accumulated in a fund. All benefits from the DFRDB (and DFRB pensions) are provided from the CRF on an unfunded basis.
- 2.21 All benefits from ADF Cover are provided from the CRF on an unfunded basis.
- 2.22 Since 1 July 2008, employers with personnel in defined benefit schemes have been required to assess their Superannuation Guarantee (SG) obligations against ordinary time earnings (OTE). OTE for ADF personnel includes allowances which are not included in the schemes' definitions of superannuation salary.
- 2.23 In order to ensure compliance with SG obligations for DFRDB and MSBS, employer contributions of up to 9.5 per cent of certain allowances which do not form part of superannuation salary are currently being paid into the ancillary section of the MSBS. In determining the amount of employer superannuation contributions for an individual, the maximum earnings base for SG purposes is taken into account. The additional employer contributions apply for both DFRDB and MSBS members and amounted to approximately \$39 million in 2016-17 based on the applicable SG rate of 9.5 per cent.
- 2.24 For the purposes of the projections in this report, it has been assumed that the OTE base for SG employer contributions will represent a steady proportion of ADF salaries. A starting point of \$39 million for 2017-18 has been used for projections of SG contributions going forward. The projections allow for the scheduled increases in the SG contribution rate from its current level to an eventual 12 per cent over the period from 1 July 2021 to 1 July 2025.
- 2.25 Employer SG contributions in respect of certain allowances which do not form part of superannuation salary are taxed at 15 per cent when received by the MSBS Fund.

2.26 There are a number of other contributions made to the MSBS ancillary benefits section. Government co-contributions and low income superannuation contributions for all superannuation schemes are made via the Australian Taxation Office (ATO) and accounted for via that program. Accordingly, no allowance has been made in the projections for the Commonwealth cash expenditure associated with government co-contributions and low income superannuation contributions (for reference, these amounted to \$3.3 million in 2016-17). Transfer amounts, personal, spouse and salary sacrifice contributions paid to the ancillary benefits section are made at an individual's discretion, rather than determined under scheme rules. They have not been included in the projections. Any employer contributions to the ancillary benefits section are taxed at 15 per cent when received by the MSBS Fund.

2.27 The estimates in Chapter 6 of this report relate to the actual employer cash cost payable by the Commonwealth, with the cost in each year being calculated as follows:

**(i) MSBS**

Funded productivity superannuation contributions paid to the MSBS Fund  
plus

Unfunded benefits paid from the CRF (after netting off transfers from the MSBS Fund)

**(ii) DFRDB**

Benefits (entirely unfunded) paid from the CRF  
less

Member contributions paid to the CRF

**(iii) DFRB**

Pensions (entirely unfunded) paid from the CRF

**(iv) Superannuation Guarantee Contributions (OTE assessment)**

Funded contributions paid to the ancillary section of the MSBS Fund

**(v) ADF Cover**

Benefits (entirely unfunded) paid from the CRF.

## Retention benefit

- 2.28 The *Military Superannuation and Benefits Act 1991* also provides for a retention benefit which is payable to eligible personnel who, on completion of 15 years' service, undertake to complete a further five years' service. The benefit is a lump sum of one year's salary which is paid directly to the individual at the time he or she commits to the additional service and is taxed as assessable income in the hands of the individual. As the retention benefit is not a superannuation benefit (being payable prior to exit from service), the benefit outgo and associated employer costs have not been included in this report.
- 2.29 Access to the retention benefit ceased for new members entering the ADF on 5 October 2005. Retention benefit provisions have been retained for those who were members of the MSBS prior to that date. The last retention benefit payments can therefore be expected to occur in 2020.
- 2.30 Since 2005, there have been a number of retention initiatives introduced, including more targeted completion bonus payments. As with the MSBS retention benefit, these payments are not superannuation benefits, nor do they form part of superannuation salary for the purposes of the defined benefits payable under the MSBS, the DFRDB and ADF Cover. They do, however, form part of OTE and, as such, give rise to Superannuation Guarantee contributions for individuals in DFRDB or MSBS which have been included in the cashflows reported in Chapter 6.



# CHAPTER 3: MEMBERSHIP, DATA AND ASSETS

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## Data

- 3.1 This report has been based on data supplied by the Commonwealth Superannuation Corporation (CSC) which administers the schemes. CSC put a considerable effort into supplying data in a form suitable for actuarial analysis. A number of checks were carried out to ensure that the data was sufficiently accurate for the purpose of the report.
- 3.2 Details of the main data checks are included below. These checks indicate that the data is substantially complete and hence I am satisfied that the data is sufficiently accurate for the purposes of this report.
- 3.3 Checks were also done on the internal consistency of individual records and, where necessary, queries were followed up with CSC. Where it could be established that the information on the data supplied was inaccurate, records were amended to enable a more accurate valuation.

## Membership

3.4 A summary of the contributory membership valued is set out below.

### CONTRIBUTORS (AS AT 30 JUNE 2017)

	Number	Salaries (\$m pa)
<b>DFRDB</b>		
Male officers	675	102
Female officers	34	5
Male other ranks	997	103
Female other ranks	34	3
<b>Total DFRDB</b>	<b>1,740</b>	<b>213</b>
<b>MSBS</b>		
Male officers	9,852	1,195
Female officers	2,441	278
Male other ranks	33,334	2,636
Female other ranks	5,877	444
Cadets	867	46
<b>Total MSBS</b>	<b>52,371</b>	<b>4,598</b>
<b>ADF Cover</b>		
Male officers	287	29
Female officers	91	7
Male other ranks	3,451	152
Female other ranks	1,308	55
Cadets	702	27
<b>Total ADF Cover</b>	<b>5,839</b>	<b>269</b>
<b>Total All Schemes</b>	<b>59,950</b>	<b>5,081</b>

Note: Contributors include MBL members who have ceased paying contributions.

- 3.5 The number of MSBS contributors valued is 52,371, a decrease of around 2,600 compared to the equivalent figure of 54,974 for the 2014 Report. Data on MSBS contributors provided by the Department of Defence showed 51,443 contributing members as at the last payday of 2016-17 plus 412 non-effective members and 692 members not contributing. Superannuation salary related checks did not reveal any cause for concern. In my opinion, the MSBS contributor data valued was effectively complete.
- 3.6 The number of DFRDB contributors valued is 1,740, a decrease of around 1,000 compared to the equivalent figure of 2,686 for the 2014 Report. Data on DFRDB contributors provided by the Department of Defence showed 1,661 contributors as at the last payday of 2016-17 plus 5 non-effective members and 65 members not contributing. Superannuation salary related checks did not reveal any cause for concern. In my opinion, the DFRDB contributor data valued was effectively complete.

- 3.7 A summary of the pensioners valued is set out below. There are also a number of children's pensions payable, refer footnote two, below.

**PENSIONERS (AS AT 30 JUNE 2017)**

	Number	Pensions <sup>1</sup> (\$m pa)
<b>DFRB</b>		
Age pensioners	381	6
Invalid pensioners	520	11
Reversionary pensioners <sup>2</sup>	1,583	26
Associate pensioners <sup>3</sup>	0	0
<b>Total DFRB</b>	<b>2,484</b>	<b>42</b>
<b>DFRDB</b>		
Age pensioners	41,898	1,206
Invalid pensioners	2,040	85
Reversionary pensioners <sup>2</sup>	7,760	167
Associate pensioners <sup>3</sup>	649	8
<b>Total DFRDB</b>	<b>52,347</b>	<b>1,467</b>
<b>MSBS</b>		
Age pensioners	5,476	164
Invalid pensioners	8,911	364
Reversionary pensioners <sup>2</sup>	443	11
Associate pensioners <sup>3</sup>	103	1
<b>Total MSBS</b>	<b>14,933</b>	<b>541</b>
<b>ADF Cover</b>		
Invalidity pensioners	3	0
<b>Total ADF Cover</b>	<b>3</b>	<b>0</b>
<b>Total All Schemes</b>	<b>69,767</b>	<b>2,051</b>

Note: Pension amounts may not add up to totals due to rounding.

1. The pension amounts include the July 2017 pension increase.
2. Reversionary pensions are pensions that are payable to the surviving spouse and any eligible children following the death of a pensioner or contributory member. The figures in the above table do not, as far as possible, include the pensions payable in respect of children.
3. Associate pensioners are pensioners who receive a pension as a result of a superannuation split following a Family Law settlement in respect of a pensioner in the MSBS, the DFRB or the DFRDB.

- 3.8 The equivalent figures for pensioners as at 30 June 2014 were 10,837 MSBS pensioners with total annual pensions of \$326 million, 52,831 DFRDB pensioners with total annual pensions of \$1,396 million and 3,118 DFRB pensioners with total annual pensions of \$52 million.
- 3.9 The 2016-2017 CSC Annual Report has the number of MSBS pension accounts as 14,969 compared to the 14,933 pensioners valued. The corresponding figures for the DFRDB are 52,494 (including children's pensions) and for DFRB are 2,495 (including children's pensions).

- 3.10 Checks were also done for the DFRB, the DFRDB and the MSBS by comparing the pensions valued with the CSC pension payroll figures for the last two pays of 2016-17 and the first two pays of 2017-18. The payroll figures showed payments being made to 2,495 DFRB pensioners, 52,493 DFRDB pensioners and 14,968 MSBS pensioners on the first pension payday of the 2017-18 financial year. The equivalent annual pension amounts paid were \$43 million for the DFRB, \$1,491 million for the DFRDB and \$577 million for the MSBS. These numbers include children's and orphan's pensions.
- 3.11 Given, the apparent discrepancy between the payroll check for the first pay of 2017-18 and the DFRDB pension data valued, the payrolls for the second pay of 2017-18 and the last pay of 2016-17 were looked at. Both of these had lower payroll amounts that were consistent with the pension data valued. This suggests that there were noticeable amounts of back payments of pension included in the first pay of 2017-18. It is not uncommon for the first pay of the financial year to have significant amounts of back payments of pension. Taking all factors into account, this suggests that the pension data was essentially complete.
- 3.12 The checks on the pension payroll for MSBS indicated the possibility of missing MSBS pension records in the data supplied. As was the case for the 2014 Report, the explanation for this related to the invalidity assessment process. Assessment procedures for invalidity exits can take some time to complete and hence there would be some back payments made on commencement. Rough checks based on the commencement rates of invalidity pensions confirmed that the explanation was reasonable and I am thus satisfied that the pension data supplied was essentially complete in relation to pensions actually in payment on 1 July 2017.
- 3.13 This explanation again raises the issue of how to value MSBS contributor exits who may be part way through the invalidity assessment procedures at 30 June 2017 and who subsequently become invalidity pensioners with an effective pension commencement date prior to 1 July 2017. I have decided to include an approximate adjustment to the valuation results to allow for those who were part way through the invalidity assessment procedures at 30 June 2017 and are ultimately found to have an invalidity pension entitlement pre-dating the valuation date. Details of this are set out in Chapter 4.
- 3.14 Preserved benefits from the MSBS are payable on attaining age 55, although in certain limited circumstances they may be payable earlier. There were 108,597 preserved beneficiaries valued, with total nominal preserved benefits of \$10,146 million. At 30 June 2014, there were 97,139 preserved beneficiaries with total nominal preserved benefits of \$8,062 million.

3.15 At 30 June 2017, there were 2,480 non-pensioner associate beneficiaries in the MSBS with total associate benefit amounts, both funded and unfunded, of \$376 million. Associate benefit accounts are set up in the MSBS as a result of superannuation splits following Family Law settlements. Non-pensioner associate benefits are accumulation style lump sum benefits.

## Assets

3.16 The assets of the MSBS are invested in a wide range of investments including the short term money market, Australian and overseas fixed interest, Australian and overseas equities, property trusts, private equity, infrastructure and hedge funds. Based on the Financial Statements as at 30 June 2017, the net assets of the MSBS amounted to \$8,299 million. The equivalent figure as at 30 June 2014 was \$5,763 million.

3.17 The net assets of the MSBS include an Operation Risk Reserve (ORR). The ORR is a requirement of the prudential regulator, the Australian Prudential Regulation Authority (APRA). It is a provision within a scheme's assets designed to provide the funds to cover corrective actions in the event of operational type failures. The ORR at 30 June 2017 was \$28 million.

3.18 Most of the net assets relate to member accounts and the 3% Productivity employer account. However, aside from the ORR, approximately \$1,015 million relates to the fully funded ancillary accounts.

3.19 The MSBS assets are unitised. Members have a number of investment options from which to choose. The investment strategy for the MSBS assets is structured to be consistent with the investment options chosen by members. As such, the investment policies of the MSBS Fund appear suitable.

3.20 For the MSBS, the total of the funded components from all individual records valued, plus the amount of ancillary benefits, was compared to the MSBS Fund as recorded in the Financial Statements. This check again suggested that the data was suitable for valuation purposes. It also suggests that the MSBS Fund approach for allocating investment earnings to accounts is suitable.

3.21 The DFRDB and DFRB are totally unfunded and thus do not hold any assets.



# CHAPTER 4: ASSUMPTIONS

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- 4.1 Estimates of superannuation costs over the future are, by necessity, based on assumptions about the future. These assumptions can be divided into two categories:
- those which are not directly related to the scheme membership (termed General Assumptions); and
  - those which are based on the experience of the membership of the scheme (termed Experience Assumptions).
- 4.2 This Chapter sets out a broad outline of the main assumptions adopted for this report and comments on the changes made from the assumptions used in preparing the 2014 Report.
- 4.3 Appendix E to this report provides a sensitivity analysis of the results to changes in assumptions, mainly relating to changes in economic assumptions.

## General assumptions

### Future size of the schemes

- 4.4 The following table shows the numbers of serving ADF personnel by scheme valued since the 1993 review.

#### CONTRIBUTORY MEMBERSHIP AT LAST NINE REVIEWS

Valuation year	MSBS <sup>1</sup>	DFRDB	ADF Cover <sup>2</sup>	Total
1993	36,933	26,595	-	63,528
1996	38,610	20,271	-	58,881
1999	37,041	14,511	-	51,552
2002	42,113	9,571	-	51,684
2005	44,491	7,072	-	51,563
2008	49,307	5,076	-	54,383
2011	55,769	3,728	-	59,497
2014	54,974	2,686	-	57,660
2017	52,371	1,740	5,839	59,950

1. Excludes those in DFRDB who only have an ancillary benefit in MSBS.

2. Covered for insurance only. Retirement benefits are provided under the fully funded ADF Super accumulation arrangements.

- 4.5 The experience over the twenty four years falls into several distinct periods. The first of these periods saw a significant fall in the combined MSBS and DFRDB membership from 1993 to 1999. This was followed by six years of relatively stable membership. From 2005 to 2011, there was strong growth in contributory membership, particularly from 2008 to 2011. From 2011 until 2017 membership has been relatively stable and little or no further growth is expected in the short term. As would be expected, DFRDB membership has fallen significantly over the last 24 years. However, it is anticipated to be around another 15 to 20 years before DFRDB contributory membership is close to zero. With the closure of MSBS to new ADF personnel with effect from 1 July 2016, the contributory membership of MSBS has started to decline.
- 4.6 The cost projections for this report require an assumption regarding future growth in the membership of the relevant schemes over the long term. Given the expectation of short term stability and uncertainty about long-term movements in ADF numbers, I have assumed that the total serving ADF personnel covered by the MSBS, the DFRDB and ADF Cover will remain constant at the size existing at the valuation date. It should be noted this implies that the number of serving ADF personnel in the schemes will represent a declining proportion of the Australian population.
- 4.7 Since both the DFRDB and MSBS are closed to new members, their contributory membership will decline. To compensate for this, the ADF Cover membership is assumed to increase at the rate required to replace the members leaving the DFRDB and the MSBS. The projected declines in DFRDB and MSBS contributory membership is based on the exit assumptions adopted, as discussed below.

### **Economic assumptions**

- 4.8 The significant financial assumptions made in assessing the long-term cost of the Commonwealth's military superannuation commitments are:
- the rate of future increases in those pensions and benefits which are linked to increases in the consumer price index (CPI);
  - the level of future general increases in salaries (that is, increases other than those relating to promotion or length of service, etc). This is shown below as the excess of nominal wage growth over the increase in the CPI;

- the level of future pension increases for DFRB and DFRDB pensioners aged 55 or more. The methodology used to determine increases is such that, over the long term, pensions would be expected to increase in line with Male Full Time Average Weekly Earnings (MTAWE). MTAWE increases would be expected to be similar to future general increases in salaries. This is also shown below as the excess of nominal wage growth over the increase in the CPI; and
- the rate of interest to be used to discount future cashflows to a present value. Again, this is shown below as the excess over the increase in the CPI.

4.9 The relationships between these rates are significant factors affecting the long-term cost estimates. Changes of equal magnitude in the absolute levels of each of the rates can have a major effect on nominal cashflows but will have only a minor effect on the unfunded liability and notional employer contribution rate. On the other hand, changes in the relationships between the rates can have quite substantial effects on the unfunded liability and notional employer contribution rate estimates. Care is therefore needed when setting the economic assumptions.

4.10 I have reviewed the financial assumptions and decided that changes in our views of future economic circumstances warrant a change in the financial assumptions which have effectively remained unchanged since the 1996 Report.

4.11 The CPI and general salary increase assumptions are the same assumptions that were adopted for the 2014 Report. However, the interest rate assumption has been reduced by one percentage point from that which was adopted in the prior report. I have thus decided to adopt the following assumptions:

<b>CPI increases</b>	2.5 per cent per annum (base)
<b>General salary increases and MTAWE increases</b>	1.5 per cent per annum (in excess of CPI) (4.0 per cent nominal)
<b>Interest rate</b>	2.5 per cent per annum (in excess of CPI) (5.0 per cent nominal)

4.12 The CPI increases assumption of 2.5 per cent per annum has been retained as it is still in the middle of the Reserve Bank of Australia's target band for average inflation over economic cycles. It is also consistent with Treasury's expectation for long term CPI inflation rates.

- 4.13 In Australia, historically, salary increases have averaged around 1.5 percentage points more than CPI increases. This has been the prime rationale underpinning our assumption around general salary increases. Although Australia is currently experiencing a period of subdued wage growth, Treasury's expectation is for a return to historical norms, noting that it may be a number of years before this happens.
- 4.14 As the military schemes have many components that are long term salary linked and this report is concerned with long term costs, I have decided to assume a return to historical norms. Accordingly, I have retained our previous long term assumption for this report.
- 4.15 I have reviewed the long term interest rate assumption adopted in this report. This assumption has next to no bearing on the future cash flows of the schemes. This assumption is used in the determination of the net present value of the liability and when calculating the Notional Employer Contribution Rate (NECR). This assumption is based on the expectation of long run yields of long term government debt. This change reflects:
- The relationship between economic assumptions, in particular the low level of interest rates, has been commented on in the Australian Government Actuary's previous two reports (2011 & 2014). Yields have been at historic low levels for some time;
  - The 2014 report noted that there is uncertainty whether the relationships between price inflation, salary increases and interest rates will return to the averages observed over the past forty years and, if so, over what time frame. Assessment of this question may be simpler if it were possible to attribute the current level of real yields to a single specific cause. Many factors have been suggested by commentators, including monetary policy settings since the global financial crisis and the stability of inflation over the longer term reducing the inflation risk premium required by markets in bond yields. Whilst there are signs that some factors may be starting to gradually draw to a close, this is not uniform across all factors. This suggests that, whilst the assumptions adopted in this report are intended to reflect long term averages, persistent recent experience needs to be considered; and

- A potential reference point when considering the long term bond yield assumption is provided by considering long term expectations for nominal GDP growth. GDP growth can be considered as the combined outcome of productivity growth, employment growth and underlying inflation. Intergenerational Report projections anticipate average long term productivity growth of 1½ per cent per annum, employment growth of broadly 1¼ per cent per annum (noting employment growth is expected to fall over time due to the impact of ageing and slowing population growth on the labour force) and price inflation of 2½ per cent per annum. This suggests that a realistic expectation for long term nominal GDP growth is in the order of 5¼ per cent per annum.
- 4.16 While it has had no direct bearing on the economic assumptions I have adopted, I note that the Future Fund now has a substantial body of assets. These assets are hypothecated against the unfunded liabilities of the Commonwealth superannuation schemes which include DFRB, DFRDB and MSBS. In 2017, the investment mandate of the Future Fund reduced its targeted long term average investment return by half of one percentage point to target a long-term average investment return of at least 4.0 to 5.0 per cent per annum in excess of the CPI.
- 4.17 Appendix E provides a sensitivity analysis of the results to changes in economic assumptions. This enables the impact of alternative scenarios around the future trajectory of the key macroeconomic parameters to be assessed.
- 4.18 Assumptions regarding the rate of increase in GDP are also required. Based on the above assumptions for inflation and wage growth, Treasury has produced a projection of annual GDP growth rates (included in Appendix D). This projection has been generated specifically for the purpose of this report and so it is not to be regarded as an official Commonwealth Treasury projection. The GDP growth rates incorporate the long-term effects of demographic and labour force change. The change to the GDP growth assumption has no effect on nominal dollar outlays. However, the variation in growth rates does affect the outlays and liabilities reported as a percentage of GDP.

## Experience assumptions

- 4.19 Experience assumptions are set having regard to the assumptions adopted in the previous report, the experience over the intervening period and the likely impact of any factors expected to affect future experience but not yet apparent in the data. For the experience analysis, detailed data was not readily available for 2016-17 and hence the analysis was largely based on the three year period from 2013-14 to 2015-16.

4.20 Analysis of the data over the long term indicates that experience may differ according to scheme, gender, and the rank of the member (whether officer, officer cadet or other rank). Assumptions have been set accordingly. Details of assumptions are given in Appendix D.

### Mortality of contributors

4.21 The assumed contributor mortality rates are unchanged from those used for the 2014 Report. The assumed rates are higher than those experienced over the three years. This allows for a margin to cover the possibility of serious accidents which result in multiple deaths.

### Invalidity

4.22 Invalidation retirements can impose a significant cost on the MSBS and ADF Cover, particularly when they affect young members. As a result, considerable care needs to be taken in setting invalidity assumptions. At the same time, invalidity experience in recent years has not been stable with there being substantial increases in the annual numbers of MSBS invalidity pensions commencing.

4.23 The table below shows the number of new MSBS invalidity pensions commencing in each of the last 8 years.

Year	Invalidity A	Invalidity B	Total	Invalidity A %
2009-10	147	152	299	49%
2010-11	182	142	324	56%
2011-12	289	236	525	55%
2012-13	364	224	588	62%
2013-14	325	390	715	45%
2014-15	496	362	858	58%
2015-16	537	322	859	63%
2016-17	754	305	1059	71%

4.24 We also obtained data on new invalidity pensions from the Commonwealth Superannuation Corporation (CSC) for the first nine months of the current financial year. The number of new MSBS invalidity A and B pensioners was 952 of which 777 were invalidity A and 175 invalidity B. Commencements are seasonal and factoring this in suggests that the number of new invalidity pensioners for 2017-18 will be of the order of 1,200.

4.25 One notable feature of the recent experience has been the increase in the proportion of new pensions commencing that are the larger and more expensive invalidity A pensions.

- 4.26 This experience is very difficult to interpret from an assumptions setting perspective and there is clearly substantial uncertainty about the likely underlying long term invalidity exit rates.
- 4.27 For the 2014 Report, there were significant increases in the assumed invalidity A exit rates relative to the 2011 Report. At that time, it was thought that the increasing invalidity exits rates were likely to be correlated with the ending of overseas deployments. If this was so, then it might be expected that the annual numbers of new invalidity pensions commencing in the future years might well reduce to something closer to the previous historical levels. The 2014 Report thus assumed a level of invalidity exit experience that was part way between that observed in the intervaluation period for the 2011 Report and that observed for the intervaluation period for the 2014 Report.
- 4.28 With the benefit of hindsight, the assumptions made for the 2014 Report were too low. We have met with both Defence and CSC personnel to try to obtain a better understanding of the current and likely future experience. There was an acknowledgement that there had been changes in the workplace environment which meant that there had been permanent changes in the underlying likely levels of invalidity exits.
- 4.29 One of the main changes has been a growing acknowledgment of Post-Traumatic Stress Disorder (PTSD) conditions and other mental health conditions for military personnel and the consequences thereof. In particular, those suffering from such conditions often have difficulties in maintaining a normal life in terms of work and relationships. CSC advised that the proportion of new invalidity pensions relating to these conditions had increased significantly.
- 4.30 Defence has also encouraged individuals in the ADF to report injuries, incidents and conditions that might affect the health of the individual earlier. In the past, there has tended to be a culture within the ADF to hold back on reporting these for fear of hindering the individual's ability to undertake certain types of work or operations. While this earlier reporting enables Defence to be better able to help these individuals while in the Defence Forces, it has also made the individuals more aware of the opportunities to claim military compensation payments and invalidity pensions. That is, from a cultural perspective, it has become more acceptable for individuals to claim these benefits. This is likely to be a partial explanation of the increases in new invalidity pensions seen in recent years.

- 4.31 In any year, there are a number of new invalidity pensions that commence where the individual left the Defence Forces quite some time before the pension commenced and, in some instances, many years before. We term these pensions retrospective invalidities. Essentially, the individual involved argues that, with the benefit of hindsight, the individual should have exited the Defence Forces with an invalidity benefit. Where this is accepted, the pension is deemed to have commenced on exit from the Defence Forces and the individual receives back payments of the pension.
- 4.32 As noted, these retrospective pensions have been a feature of the experience for many years, typically representing around 10 per cent of the new invalidity pensions commencing each year. Recent years have seen an increase in the numbers of new retrospective invalidity pensions. Much of this increase is again associated with PTSD/other mental health conditions claims. Anecdotal evidence suggests that the increase is driven partly by word of mouth and partly by Defence welfare associations alerting former ADF personnel of their ability to claim these benefits.
- 4.33 CSC has noticed a very sharp increase in the number of enquiries in the last two years from former ADF personnel in regard to possible claiming of an invalidity pension. The proportion of new invalidity pensions that are retrospective in nature, if anything, seems to have increased recently.
- 4.34 There also seems to be the view that the flow on from the ending of many overseas deployments is a factor in the recent experience. That is, individuals with an injury or condition that is acquired during deployment have been reluctant to acknowledge its presence while involved in active deployment. However, as many end their service due to the wind down of overseas operations, this could lead to an increase in the number of new invalidity pensions commencing.
- 4.35 While recent years have seen substantial increases in the numbers of new invalidity pensions commencing, Defence has only seen modest increases in the numbers of annual medical discharges. General reasoning would suggest that new invalidity pensions would usually arise from medical discharges and hence there should be some correlation between them. We discussed this apparent inconsistency with Defence and CSC with a view to setting assumptions for the current report.

- 4.36 There was no clear single explanation for the apparent difference in the trends for medical discharges and the commencements of new invalidity pensions. However, there was a view that many of the factors behind the increases in the annual numbers of new invalidity pensions were coming to an end. For instance, the Defence awareness campaign on earlier reporting of injuries has happened and overseas deployments have been winding down for some time. Accordingly, it would not be unreasonable for valuation purposes to assume invalidity exit rates at something like the current levels and this is what has been done.
- 4.37 In very broad terms, the 2014 Report assumed that the level of new MSBS invalidity pensions commencing each year would be around 450. For the current report, we have assumed for MSBS and ADF Cover combined that the ongoing level of new invalidity pensions each year will be around 1,000. This change in assumptions substantially increases the estimated costs relative to the 2014 Report.
- 4.38 Consistent with recent experience, compared to the 2014 Report, we have assumed that proportionately more of the invalidity pensions commencing are invalidity A pensions. These pensions are larger than invalidity B pensions and have a higher cost.
- 4.39 For the current report, we have explicitly modelled new retrospective invalidity pension commencements for MSBS. This is a change from previous practice. This has been done for two reasons. The first is that it seems sensible to use the ongoing MSBS invalidity exit rates for ADF Cover as the underlying populations exposed to the risk of invalidity should have similar characteristics. The second is that there has been a growing awareness of the ability to make a claim for a possible retrospective invalidity pensions as has been evidenced by the sharp increase in the number of enquiries made to CSC about this. For the current report we have assumed that there will be a high level of new retrospective pensions in the near term, dropping off as the impact of the growing awareness wears off. Specifically, 150 new retrospective invalidity pensions are assumed for each of 2017-18 and 2018-19; 110 new retrospective invalidity pensions for 2019-20; 80 new retrospective invalidity pensions for 2020-21; 50 new retrospective invalidity pensions for 2021-22; and 20 new retrospective invalidity pensions for 2022-23.
- 4.40 While the above has looked at changes in invalidity rates, there appear to be other changes to the experience of invalidity pensioners that seem to be associated, and consistent, with these changes.

## Chapter 4: Assumptions

- 4.41 The first is that the proportions married on the death of MSBS male invalidity pensioners were much lower than for other types of pensioners. If, as seems likely, a much greater proportion of these pensions are as a result of PTSD/mental health conditions where it is often difficult to maintain relationships, this would not be a surprising outcome. The proportions of male MSBS invalidity pensioners assumed to be married on death have been reduced for this report.
- 4.42 The second is that pensioner mortality rates have reduced. This may well reflect a trend away from invalidity pensioners being largely as a result of physical impairment to a situation where there is a much larger component resulting from mental impairment.
- 4.43 There is very little experience for ADF Cover as it has only been in operation for a year. We have assumed the ongoing MSBS invalidity exit rates will be applicable for ADF Cover.
- 4.44 It needs to be emphasised that there is considerable uncertainty about future invalidity exit rates for MSBS and ADF Cover given recent experience. While we believe the assumptions adopted for the current report are not unreasonable, there is clearly a risk that the numbers of new invalidity pensions commencing each year will continue to increase. Given this uncertainty, I have included a scenario in the sensitivity analysis in Appendix E which allows for the ongoing level of invalidity exits rates to be 40 per cent higher than the assumed rates. This sensitivity analysis effectively assumes that there would be around 1,400 new invalidity pensions commencing each year.
- 4.45 As with the 2014 Report, we have assumed that all future DFRDB invalidity exits will be invalidity A exits. The design of the DFRDB scheme means that the invalidity B benefit for members who have served for 23 or more years (the bulk of the remaining DFRDB contributors) is less than the retirement benefit. Actual DFRDB invalidity exits, primarily invalidity A exits, for other ranks were a little higher than those expected. The invalidity exit rates assumptions do not have a material impact on projected costs for DFRDB and a uniform invalidity A exit rate has been assumed for both officers and other ranks and for all ages.
- 4.46 Invalidity C benefits are similar to the benefits payable on resignation and, for the DFRDB, the two modes of exit have been combined in a single withdrawal rate. A separate invalidity C exit rate is included for the MSBS but is immaterial in a valuation context.

- 4.47 Historically, the invalidity rates for the MSBS have been higher than the comparable DFRDB rates and this remains very much the case for the current valuation.
- 4.48 This feature may be partly attributable to differences in scheme design. For example, invalidity benefits in the DFRDB must be taken wholly in pension form, while those who take a normal retirement benefit may elect to convert part of the benefit to a lump sum. As a result, those in DFRDB who wish to access a lump sum benefit may well consider taking a normal retirement benefit rather than the invalidity benefit. However, it would appear likely that there are other factors in play which are not obvious.
- 4.49 As noted earlier in the report, there is a significant number of contributor exits who are part way through the invalidity assessment process at 1 July 2017. When the invalidity assessment process is complete, their pensions will have a pension start date prior to 1 July 2017. That is, with the benefit of hindsight, these individuals were invalidity pensioners as at 1 July 2017 but were not in the pensioner data at that date. I have decided to incorporate an approximate adjustment to the MSBS unfunded liability of \$250 million for the current long-term cost report. This is to cover the financial strain imposed by these future invalidity pensions for those currently being assessed that will be backdated to a commencement date before 1 July 2017. I have also approximately increased future MSBS benefit payments to be consistent with the assumed increase in the unfunded liability for MSBS.

## Resignation

- 4.50 Resignation assumptions have been made by scheme and duration of service.
- 4.51 DFRDB resignation rates in the past have been strongly influenced by the scheme design, which sees a minimal benefit paid on resignation prior to completion of 20 years' service and a lifetime pension paid once that threshold is achieved. With the closure of the DFRDB in 1991, all contributory DFRDB members now have the 20 years of service needed to qualify for a pension benefit on resignation.
- 4.52 The observed exits for DFRDB were significantly lower than those assumed for the 2014 Report. Given the relatively flat exit rates observed for both officers and other ranks, a uniform exit rate by duration was set separately for officers and other ranks reflecting the lower observed exit rates.

- 4.53 Exit rates for MSBS other ranks were a little lower than assumed for the 2014 Report and the rates for the current report were reduced to reflect the observed experience. The differences between male and female experience were not found to be significant enough to justify setting separate assumptions. As such, exit rates for MSBS other ranks have been adopted which apply to both genders.
- 4.54 Exit rates for MSBS officers were lower than expected for the 2014 Report but exhibited a broadly similar pattern by duration. The rates for the current report were generally reduced to reflect the observed experience. As with the other ranks, the differences between male and female experience were not found to be significant enough to justify setting separate assumptions. As such, exit rates for MSBS officers have been adopted which apply to both genders.

### Retirement

- 4.55 The compulsory retirement age for most ADF personnel was effectively increased from age 55 to age 60 from 1 July 2007. Prior to the change to the compulsory retirement ages, only a very small group of ADF personnel served beyond age 55 and it was assumed that any members still serving at this age would exit on their 55<sup>th</sup> birthday. This assumption was retained for the 2008 Report.
- 4.56 In the 2011 Report, it was noted that there was a growing group of contributors aged 55 or more and that the assumption of universal exit at age 55 was no longer tenable. At the same time, there was minimal experience on actual exit rates for this group and the somewhat arbitrary assumption that the exits of those still in service at age 55 would be evenly spread over the period to age 60 was adopted. Individuals over age 60 at the valuation date were assumed to immediately retire.
- 4.57 The experience for this group for both the 2014 Report and the current Report does not appear to be grossly inconsistent with the assumption adopted for the 2011 Report. Accordingly, the assumption that the exits of those still in service at age 55 would be evenly spread over the period to age 60 has been retained.

### Retrenchment and redundancy

- 4.58 No allowance has been made for the effect of retrenchments and redundancies as their occurrence is unpredictable and impossible to model with any confidence. Generally, the effect of retrenchments and redundancies is to advance outlays.

## **New entrants**

- 4.59 With the closure of MSBS to new ADF personnel with effect from 1 July 2016, there are only a few former MSBS contributors who were MSBS preserved members re-joining MSBS at the current time. These numbers are small enough to be ignored and it is assumed for valuation purposes that there will be no further new contributor members of MSBS.
- 4.60 For ADF cover projections, it is necessary to model new ADF personnel. The size of the total membership covered by DFRDB, MSBS and ADF Cover is assumed to remain at the level at 1 July 2017. That is, for every contributor exit from DFRDB or MSBS, it is assumed that there will be one more individual under the ADF Cover “insurance” arrangements.
- 4.61 For modelling the future ADF Cover population, we have generally used the MSBS new entrant distribution assumptions and the MSBS promotional increases from the 2014 Report updated for actual general salary increases over the period.

## **Promotional increases in salaries**

- 4.62 For other ranks in both MSBS and DFRDB, promotional increases appear to be related to period of service. The promotional increases adopted for the 2014 Report do not appear inconsistent with the observed experience and they have been retained for the current report.
- 4.63 For MSBS cadets and officers, promotional increases appear to be related to both period of service and the age at joining. The level of promotional increases observed was higher than for the 2014 Report and the promotional increases assumed have been adjusted to reflect this.
- 4.64 In the past, a similar approach had previously been taken with DFRDB officers but the small number of remaining members and the sparseness of available experience no longer justified this degree of sophistication and a simple service duration based promotional scale has been used for this group.

## **Mortality of pensioners**

- 4.65 The numbers of deaths of age and reversionary pensioners (that is, pensioners other than invalid pensioners) were generally close to what was expected based on the assumptions adopted for the 2014 Report after allowing for mortality improvement at the assumed rates over the intervening period.

- 4.66 For males, the rates were largely consistent with the 2014 assumptions (after allowing for mortality improvement) but slightly lower. The rates were accordingly slightly reduced for the current report. Overall, the rates adopted for males are around the same or a little less than the mortality rates for the general population.
- 4.67 For spouse females (widows), the rates were also broadly consistent with the 2014 assumptions (after allowing for mortality improvement) but slightly higher. The 2014 assumptions (with no allowance for mortality improvement from 2014 to 2017) have been adopted for this report.
- 4.68 For age retirement females, the rates were noticeably lower than for spouse females (widows). To date, the practice has been to use combined experience rates for both spouse females and age retirement females as there was not enough experience to analyse for age retirement females on a stand-alone basis. Given the experience, we have decided to have separate assumptions for age retirement females and spouse females.
- 4.69 There is still insufficient experience to be able to set detailed rates for age retirement females. However, given the obvious difference in the experience, we have nevertheless adopted rates to reflect the lighter mortality for age retirement females compared to spouse females.
- 4.70 It is conceivable that MSBS pensioners will have lower mortality rates than DFRB or DFRDB pensioners of the same age. This is because most MSBS members have a choice between pension and lump sum on retirement whereas members of the two closed schemes do not. The ability to choose the form of benefit means that those with poorer life expectancies might be expected to opt for the lump sum and, conversely, those who consider themselves healthier are more likely to choose the pension option. It is not possible to gauge the impact of this selection effect as the number of MSBS pensioners from age retirement is insufficient to allow a proper analysis. Thus, for the time being, generally the same assumptions are used across all three schemes. In this context, it is relevant to note that, to date, a high proportion of MSBS retirees have chosen to take at least part of their benefit as a pension. This suggests that the impact on future MSBS pensioner mortality rates due to MSBS retirees selecting a full lump sum because of their poorer life expectancies is likely to be small.
- 4.71 As noted in the invalidity exit assumptions discussion, the rates of mortality for invalidity pensioners have been reduced in line with the changing experience.

- 4.72 Allowances for future improvements in mortality rates of age and reversionary pensioners have again been made in accordance with the trend in improvements shown in the series of Australian Life Tables published over a period of 40 years to 2000-02. No allowance was made for improvement in the mortality of invalidity pensioners.
- 4.73 There is no obvious evidence from the experience that mortality improvement rates have changed for the military superannuation schemes. However, there does appear to be recent evidence from population mortality rates from around the world of a reduction in the rates of population mortality improvement for developed countries. It is thus conceivable that the 2020 Long Term Cost Report may see a slowdown in the rates of mortality improvement.

### **Retirements of preserved beneficiaries in the MSBS**

- 4.74 The 2014 Report assumed that all preserved benefits in the MSBS would be taken when first eligible. That is, the benefit would be taken at age 55 or immediately if the individual was already over age 55. This assumption has been in place since the first Long Term Cost Report covering the MSBS using data as at 30 June 1993. This approach was taken because there was little experience to analyse and the approach was conservative in that the reported costs of the MSBS would be slightly higher.
- 4.75 With the passage of time, there are now more preserved benefit members retiring and there is meaningful experience to analyse. From the analysis, it is clear that preserved benefit members retire over a range of ages although most take their employer benefit at age 55 or age 56. The bias towards the earlier access of the preserved benefit is not surprising as it has a higher actuarial value at these ages.
- 4.76 The experience was that those individuals with larger benefits were more likely to take the employer benefit in pension form. Those who had small employer benefits were relatively more likely to take the benefit as a lump sum. Those that chose pension benefits generally accessed the benefit earlier, typically at age 55 or age 56. Those that chose lump sums tended to take the benefit at a later age.
- 4.77 For current preserved benefit members, the retirement assumptions have been changed to reflect that benefits are taken over a range of ages but that the majority of employer benefits are taken at age 55 or age 56.
- 4.78 For current serving members who exit with a preserved benefit entitlement, it has been assumed that, on average, the preserved benefit would be taken at age 55 which is unchanged from the 2014 Report.

## Proportions married and age differences

- 4.79 There was no evidence to suggest that the assumptions on age differences between spouses should be altered from those adopted in the 2014 Report. The assumptions that married male members are four years older than their wives on death and female members three years younger than their husbands were therefore retained. The data on proportions married suggested that the assumptions for males should be slightly reduced relative to those adopted for the 2014 Report and this has been done.
- 4.80 As noted in the discussion around invalidity exits above, there is clear evidence that the proportions married on death for MSBS invalidity pensioners are much lower than for other pensioners. However, there is insufficient experience on which to base detailed assumptions. For this report, we have arbitrarily used the assumed female proportions married for male MSBS invalidity pensioners to reflect the lower average proportions married on death.

## Pension option in the MSBS

- 4.81 Members retiring from the MSBS (other than on the grounds of invalidity) have the option to convert all or part of their employer financed lump sum to a pension. This assumption has an impact on the reported costs of the MSBS as the actuarial value of the pension is significantly greater than the value of the lump sum given up. Over time, there appears to have been a trend towards a greater take up of the pension option.
- 4.82 For previous reports, we have adopted different assumptions for officers and other ranks, with there being higher pension take up rates for officers. Within each of these groups there has been a uniform assumption regarding take up rates irrespective of the route to retirement. The 2014 report assumed that 75 per cent of the employer benefit would be taken in pension form for other ranks where an option was available. The equivalent take up rate for officers was 85 per cent.

- 4.83 For the current report, the experience analysis looked at the route to retirement. For those that retired directly from service, there were very high take up rates of the pension option. This is probably not a surprise as most of these individuals are likely to have large benefits due to their length of service. The lump sum member account would provide enough readily accessible funds in retirement meaning that the lack of flexibility and accessibility with the pension is not perceived as a drawback. Again, there were higher take up rates for officers compared to other ranks. Based on the experience, we have assumed a pension take up rate for these direct retirements of 100 per cent for officers and 90 per cent for other ranks.
- 4.84 The experience analysis for those who exited service, became preserved members and then retired some time later was different from those that retired directly from service. The pension take up rates were much lower. Again, officers had a higher pension take up rate compared to other ranks.
- 4.85 A notable feature of the experience analysis was that those with small employer benefits were much more likely to take benefits in lump sum form compared to those with large employer benefits. At the current time, many of those who joined MSBS shortly after its commencement are now reaching retirement age and many of these will have short periods of service. The current crop of preserved member retirements may thus have smaller benefits on average than future generations of preserved member retirements.
- 4.86 Based on the experience of recent preserved member retirements and allowing for the trend to these preserved member retirements having larger benefits in future, we have assumed a pension take up rate for the current preserved members of 85 per cent for officers and 65 per cent for other ranks. For those current serving members who are projected to exit with a preserved benefit and then retire some time later, we have assumed a pension take up rate of 90 per cent for officers and 80 per cent for other ranks. This factors in that future serving member exits are likely to have larger preserved benefits on average than the current preserved member population.

## Commutation option in the DFRDB

4.87 Members retiring from the DFRDB (other than on the grounds of invalidity A or B) have the option to convert part of their pension to a lump sum. Experience over the last two decades suggests that members choose to take the maximum allowable lump sum. As the conversion factors generally provide for a lump sum which is greater than the actuarial value of the forgone pension at most ages, this is not a surprising outcome. Accordingly, it has been assumed that all retiring members take advantage of this option to the maximum extent permissible.

## MSBS Associate accounts

4.88 Following a Family Law superannuation split for a non-pensioner member of the DFRDB or the MSBS, associate accounts are set up for the non-member spouse in the MSBS. The benefit provided for the non-member spouse is an accumulation lump sum that is payable on the non-member spouse satisfying a release provision under the *Superannuation Industry (Supervision) Act 1993*.

4.89 A non-member spouse can have two associate accounts. The Associate A account is a fully funded accumulation account. As it is fully funded, there are no unfunded cash flows or liabilities associated with this account. The Associate B account is an unfunded accumulation account. Interest is added to this account at a rate derived from the yields on Commonwealth bonds. For deriving the cash expenditure for these accounts, it is assumed that the account will be paid out when the non-member spouse attains age 60, or be paid out immediately if the non-member spouse were over age 60 at 30 June 2017.

## ADF Cover

4.90 At 30 June 2017, ADF Cover had only been in place for a year. As a consequence, there was no meaningful experience to analyse.

4.91 The key assumptions affecting costs for ADF Cover are the invalidity exit rates. In the absence of other information, the MSBS experience is likely to provide the best guide for the likely future invalidity exit experience of ADF Cover. Generally, other assumptions for ADF Cover are also those used for the MSBS.

- 4.92 There are good reasons for expecting that invalidity exit rates would be lower for ADF Cover than MSBS. The main reason is that with the decline in the operational tempo for the ADF, fewer personnel will be involved in overseas missions compared to the past. This should result in lower invalidity rates for those under ADF Cover due to less exposure to the risk of accidents and injuries, and less exposure to situations that might result in PTSD/mental health conditions. It is very difficult to quantify what, if any, difference there will be in invalidity exit rates between the two arrangements.
- 4.93 As noted, it might be expected that ADF Cover would have lower invalidity exit rate assumptions than those for MSBS. However, given the difficulties of quantifying any difference and the underlying uncertainties around the MSBS invalidity exit rates themselves, I have adopted the MSBS invalidity exit assumptions for ADF cover.
- 4.94 There is a feature of practice around medical discharges and invalidities that needs to be factored in to the projected costs for ADF Cover. When an individual has an incident or injury that might lead to a medical discharge, that medical discharge normally does not happen immediately after the incident. In most instances, Defence retains that individual in the ADF aiming to manage the individual's condition with the intention of rehabilitating the individual so that they can continue to serve. If it subsequently becomes clear that the individual can no longer continue in the ADF, the individual is medically discharged. This means that it is often 12 to 24 months between the date of the incident or injury and the date of discharge when an invalidity pension might be payable.
- 4.95 ADF Cover is a new arrangement where the number of individuals being covered by the insurance benefits is growing rapidly. If the MSBS invalidity exit rates were used unadjusted for ADF Cover, it would result in an overstatement of cash outlays, particularly in the short term. To allow for current Defence practice with medical discharges, it has been assumed that of all incidents and injuries that eventually result in an invalidity pension in a particular year, 20 per cent exit in that year, 50 per cent exit in the following year and the remaining 30 per cent exit two years after.
- 4.96 The assumed mortality rates for serving ADF personnel are those used for the other schemes which are unchanged from those used for the 2014 Report. The spouse pension take up rates where a death benefit is payable are the same as for MSBS.

4.97 The serving ADF personnel population covered by the insurance arrangements needs to be projected. The demographic assumptions used are those for MSBS. The new entrant assumptions used are generally those used for MSBS in the 2014 Report updated for the general salary increases over the period from 2014 to 2017.

### **Changes to future Superannuation Guarantee Contribution Rates**

4.98 From 1 July 2014 to 30 June 2021, the Superannuation Guarantee (SG) rate will remain at 9.5 per cent, and will increase to 12 per cent by 1 July 2025. The cashflow projections in the current report have taken this into account.

### **Taxation**

4.99 The DFRDB, DFRB and ADF Cover are entirely unfunded. They are untaxed schemes and hence no tax is levied on the schemes. The current valuation for the DFRDB assumes that the full Commonwealth Bond rate (without any reduction for notional investment tax) will be credited to the notional productivity benefit payable in accordance with the Determination made under the *Defence Act 1903*. For the purposes of the valuation, the interest rate credited is assumed to be the same as the valuation interest rate, that is, 2.5 per cent per annum in excess of the CPI assumption.

4.100 In calculating the accumulation of productivity contributions for MSBS, allowance has been made for the 15 per cent contributions tax payable on employer contributions made to the MSBS Fund. Investment earnings of the Fund are also taxable at 15 per cent. For the purposes of the valuation, the after tax return on Fund assets is assumed to be the same as the valuation interest rate, that is, 2.5 per cent per annum in excess of the CPI assumption.

## Superannuation surcharge

4.101 The superannuation surcharge was a tax on notional employer superannuation contributions in respect of those with high incomes. The tax was assessed on a year-by-year basis but for unfunded schemes, such as the DFRDB and the MSBS, does not need to be paid to the Australian Taxation Office (ATO) until a benefit is payable. The tax commenced in 1996 and was abolished from 1 July 2005 but those individuals who incurred a surcharge liability and have not yet taken their benefit will, for the most part, still have a surcharge debt account. When the benefit becomes payable, the actual benefit paid to the individual is reduced to take account of the superannuation surcharge amount payable to the ATO by the scheme. I have assumed that the schemes' liability to pay the superannuation surcharge to the ATO will be offset by the value of the benefit reductions resulting from the payment to the ATO. No specific allowances have thus been made in this report for the effects of the superannuation surcharge.

## Division 293 tax

4.102 The Division 293 tax was introduced from 1 July 2012. The Division 293 tax applies to individuals whose income for Division 293 purposes is greater than \$250,000 and imposes an additional 15 per cent tax on the employer's notional superannuation contributions for the individual (or the component thereof which results in the income for Division 293 purposes exceeding \$250,000 if less).

4.103 In a similar manner to the superannuation surcharge, members of defined benefit superannuation funds are eligible to defer their Division 293 tax liabilities until benefits become payable.

4.104 As with the superannuation surcharge, I have assumed that the schemes' liability to pay the Division 293 tax liabilities to the ATO on behalf of the individual tax payer will be offset by the value of the benefit reductions resulting from the payment to the ATO. No specific allowances have thus been made in this report for the effects of the Division 293 tax.

## Early release of preserved benefits in the MSBS

4.105 Early release of preserved benefits in the MSBS is permitted on the basis of disablement or hardship. No allowance has been made for early release of preserved benefits.

## **Conflict situations**

4.106 A number of ADF personnel are currently serving in various conflict situations (including peace-keeping duties). At any one point in time, the bulk of personnel are not on deployment, but a number are likely to spend some time overseas involved in a conflict situation. The long-term costs reported here implicitly assume that average future levels of ADF deployment will not be unusually high. If levels of deployment in a war or warlike situations were to significantly increase, the assumptions adopted here may not hold. In particular, death and invalidity rates could be higher, as could ADF personnel numbers.

## CHAPTER 5: NOTIONAL EMPLOYER CONTRIBUTION RATES

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- 5.1 A notional employer contribution rate has been calculated for DFRDB and MSBS to illustrate the effective cost of the defined benefits being provided by the Commonwealth as a percentage of the superannuation salaries of scheme members. It represents the estimated contribution rate, on the assumptions made, that would be required to fund the defined benefits accruing to serving members over the next three years on the basis that benefits are attributed to periods of service under the AASB 119 accrual methodology. In other words, if the scheme was exactly fully funded in respect of AASB 119 methodology accrued benefits at the beginning of the three years and contributions were made at the calculated rate, then the scheme would be expected to be exactly fully funded at the end of the period. The AASB 119 accrual methodology effectively assumes that benefits for MSBS are accrued either on a pro rata basis over service to exit or attaining MBL, if earlier.
- 5.2 ADF Cover only provides insurance type benefits. The notional employer contribution rate for ADF Cover has also been calculated as a percentage of the superannuation salaries of scheme members. It represents the estimated contribution rate, on the assumptions made, that would be required to pay a notional premium for the insurance cover provided to those covered at 30 June 2017.
- 5.3 The table below shows the notional employer contribution rates for the schemes. These rates include the 3 per cent productivity contributions for the MSBS and DFRDB, but do not include the additional employer contributions paid as a result of the application of the OTE earnings base in calculating Superannuation Guarantee obligations from 1 July 2008. The additional OTE contributions that are paid to the ancillary section of the MSBS Fund amounted to around \$39 million in 2016-17. This equates to 0.8 per cent of superannuation salary across the membership of both schemes. The DFRB scheme has no serving ADF personnel members and hence has no notional employer contribution rate. For comparison, the rates from the 2014 Report are also shown.

### NOTIONAL EMPLOYER CONTRIBUTION RATES AS A PERCENTAGE OF SUPERANNUATION SALARY

	MSBS <sup>1</sup> (%)	DFRDB (%)	ADF Cover (%)
2014 Report	33.2	35.9	n/a
Current Report	52.0	43.0	21.6

1. The MSBS rates exclude the cost of the retention benefit.

- 5.4 There are two main reasons for the increase in the MSBS notional employer contribution rate from that disclosed in the 2014 Report. The first is due to the changes to economic assumptions, namely the one percentage point reduction in the assumed real interest rate used for the valuation. This accounts for around 10 percentage points of the increase. The second reason was the substantial increases in the assumed rates of invalidity exits of serving personnel. This accounts for around 10 percentage points of the increase. Other changes in assumptions only had a minor impact on the notional employer contribution rate.
- 5.5 The DFRDB is now closed to new entrants. The increase in the DFRDB notional employer contribution rate is almost entirely attributable to the changes to economic assumptions, namely the one percentage point reduction in the assumed real interest rate used for the valuation.
- 5.6 The actuarial method used for calculating the notional employer contribution rate for MSBS and DFRDB in both this report and the previous report is known as the Projected Unit Credit (PUC) method as set out in AASB 119.
- 5.7 As noted above, there is a different approach for calculating the notional employer contribution rate for ADF cover. The notional employer contribution rate is a notional insurance premium for the relevant population covered.
- 5.8 It is important to note that the cost of the notional insurance premium for ADF Cover will increase over time from the initial levels. This reflects that, in future, individuals who exit through invalidity will receive both a lifetime pension based on prospective service to age 60 and a temporary top up pension based on completed service to exit. As ADF Cover only commenced with effect from 1 July 2016, those currently covered only have very short periods of service to date and on exit would only have very small temporary top up pensions. As the average size of the temporary top up pensions increases, so will the notional insurance premium. Over time, based on the current assumptions, we would expect the notional insurance premium to increase to around 30 per cent of superannuation salaries of those covered.

# CHAPTER 6: PROJECTION OF OUTLAYS

6.1 A projection of annual Commonwealth cash outlays has been carried out to show the cash impact to the Commonwealth from the schemes in the long term. The Table below shows the actual outlays for 1991-92, 1992-93, every third year thereafter and for each of the years since 2010-11 for the DFRB, DFRDB, the MSBS, ADF Cover and the four schemes combined. Prior to 2010-11, DFRB outlays are included in DFRDB outlays. It also shows projected outlays for the next eight years and then every fifth year from 2024-25.

## ACTUAL AND PROJECTED COMMONWEALTH OUTLAYS<sup>1</sup>

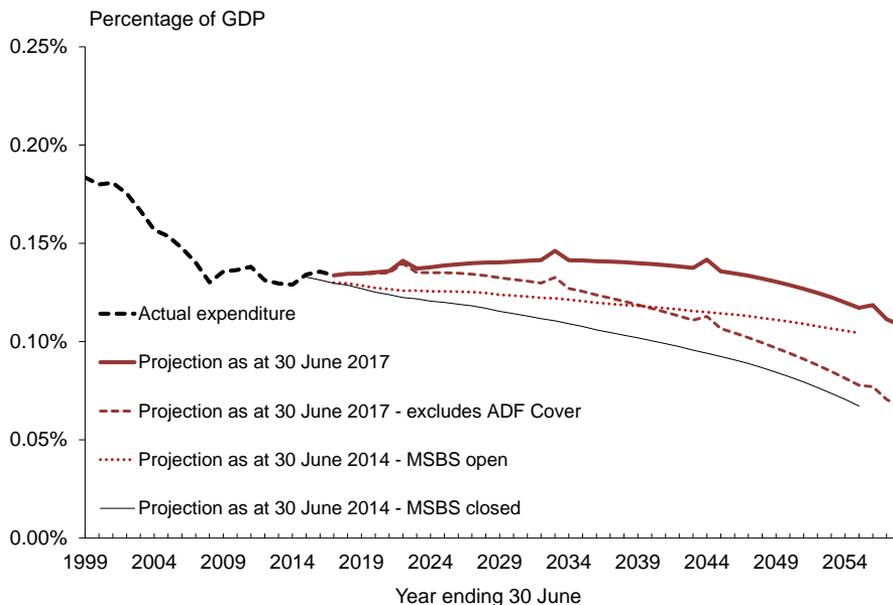
Year	DFRB <sup>2</sup> (\$m)	DFRDB (\$m)	MSBS (\$m)	SG contributions (\$m)	ADF Cover (\$m)	Total (\$m)	As a percentage of GDP
<b>Actual<sup>3</sup></b>							
1991-92		600	32	-		632	0.16
1992-93		703	139	-		842	0.21
1995-96		801	153	-		954	0.20
1998-99		986	158	-		1,144	0.19
2001-02		1,160	171	-		1,331	0.18
2004-05		1,222	202	-		1,424	0.16
2007-08		1,295	249	-		1,543	0.14
2010-11 <sup>4</sup>	65	1,423	386	44		1,918	0.13
2011-12	59	1,445	405	41		1,950	0.13
2012-13	55	1,434	446	40		1,975	0.13
2013-14	53	1,455	505	28		2,041	0.13
2014-15	50	1,504	571	33	-	2,158	0.13
2015-16	47	1,514	642	39	-	2,243	0.14
2016-17	46	1,549	712	39	0	2,346	0.13
<b>Projected</b>							
2017-18	41	1,587	816	39	2	2,485	0.13
2018-19	40	1,631	903	37	5	2,617	0.13
2019-20	38	1,678	1,007	36	11	2,770	0.14
2020-21	37	1,724	1,116	34	19	2,931	0.14
2021-22	37	1,833	1,271	34	33	3,208	0.14
2022-23	34	1,803	1,363	35	48	3,283	0.14
2023-24	32	1,840	1,498	35	70	3,475	0.14
2024-25	31	1,875	1,646	35	96	3,683	0.14
2029-30	24	2,026	2,446	28	312	4,837	0.14
2034-35	18	2,116	3,437	22	701	6,293	0.14
2039-40	13	2,146	4,567	14	1,303	8,044	0.14
2044-45	8	2,064	5,865	7	2,166	10,111	0.14
2049-50	4	1,849	7,161	1	3,338	12,352	0.13
2054-55	2	1,515	8,054	-	4,846	14,416	0.12

Note: The components may not add exactly to the total due to rounding.

1. These figures have **not** been adjusted to 2017 dollars and do not include cash outlays relating to the new accumulation superannuation scheme ADF Super.
2. Prior to 2010-11, DFRB outlays are included in the DFRDB figures.
3. The figures up to 2016-17 reflect the actual expenditure in those years.
4. 2010-11 was a 27 pension pay day year and hence had higher expenditure than normal.

- 6.2 DFRB outlays are rapidly declining both in nominal dollar and GDP terms. DFRDB outlays are increasing slowly in nominal dollar terms but are declining in GDP terms. This is not surprising as there are few serving ADF personnel left in DFRDB and the deaths of pensioners reduces the expenditure in GDP terms. MSBS outlays are still increasing in both nominal dollar and GDP terms. Most members of MSBS are still under age 55 and generally not entitled to receive benefits until sometime in the future. ADF Cover is a new scheme and will provide insurance type benefits to new ADF personnel. Its outlays will increase as the number of ADF personnel covered grows.
- 6.3 The chart below shows total projected outlays as a percentage of GDP over the next 40 years. For comparison purposes, actual outlays since 1999 and the projection of the equivalent figures taken from the 2014 Report under both the MSBS remains open and the MSBS was closed scenarios are also shown. As the 2014 Report did not include ADF Cover outlays, to enable a direct comparison with the 2014 Report figures assuming MSBS was closed, a projection of the outlays over the next 40 years excluding ADF Cover is included in the chart.

**ACTUAL AND PROJECTED COMMONWEALTH OUTLAYS AS A PERCENTAGE OF GDP**



- 6.4 In GDP terms, the projection as at June 2017 is noticeably higher than the projection as at June 2014 assuming MSBS was closed to new members from 1 July 2016. The main reason for this is that the 2014 Report did not include projected cash for ADF Cover as details of its benefits were not known at that time. However, even if ADF Cover outlays are excluded, the projected outlays for this report are still higher than those in the 2014 Report assuming MSBS was closed to new members.
- 6.5 The projection as at June 2017 is also a little higher than the projection as at June 2014 assuming MSBS remained open to new members. The reason behind this somewhat surprising outcome, is the substantial increase in invalidity exit rates for MSBS relative to the 2014 Report which was discussed earlier in the report. These rates have also been used for ADF Cover. The higher rates lead to increased costs and pension expenditure. Overall, the combined projected cash outlays for MSBS and ADF Cover for this report are higher than the projected cash outlays for MSBS from the 2014 Report were MSBS assumed to remain open to new members.
- 6.6 A further factor behind the increase in cash outlays expressed as a percentage of GDP was that over the three years to 2017, growth in nominal GDP was lower than projected in the 2014 Report.
- 6.7 It should be noted that there has been a change in practice relating to years where there are 27 pension pay days as opposed to the normal 26 pay day years. There is approximately 11 years between the years with the extra pension pay day. In these years there are extra cash outlays due to the extra pension pay day. Previously, this extra expenditure had been ignored as not being material in the overall valuation context. For this report, we were asked to include the extra expenditure in the projections. The most recent year where there were 27 pension pay days was 2010-11.
- 6.8 Actual outlays, in dollar terms, in 2014-15, 2015-16 and 2016-17 were slightly lower than the projections made in the 2014 Report. For MSBS, outlays were similar to those projected. However, for DFRDB, pension indexation rates over the period were lower than those assumed for the 2014 Report resulting in smaller outlays. In GDP terms, the outlays were a little higher than those projected in the 2014 Report.

## Chapter 6: Projection of outlays

- 6.9 Overall, the projected outlays in nominal dollar terms for the next 40 years are higher than the projections from the 2014 Report. This is mainly due to the inclusion of ADF Cover expenditure in the current report. However, even if the expenditure for ADF Cover is removed, outlays would still have been higher and this is largely due to the increased invalidity exit rates for MSBS contributors. This also applies to the projections expressed in GDP terms.
- 6.10 Over most of the next 40 years, outlays are projected to remain at broadly similar levels to recent years in GDP terms. Towards the end of the period, there is a declining trend. Given this, the existence of the Future Fund and the implicit Commonwealth guarantee to pay benefits, I believe that the current method of funding benefits is adequate from the perspective of the continuing financial viability of the schemes.

## CHAPTER 7: UNFUNDED LIABILITIES

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- 7.1 The unfunded liabilities are the liabilities for superannuation entitlements in respect of service already rendered to the ADF for which no assets are held. For this purpose, as discussed in paragraph 1.11, assets held in the Future Fund are not considered to be held against the scheme liabilities. These liabilities do not fall due until the rules of the schemes provide for benefits to be payable, which is generally when members retire, and so they are spread over many years into the future. They have been calculated as the present value of all of the liabilities accrued in respect of past service less the value of the assets held in the MSBS Fund.
- 7.2 The assets attributable to the fully funded ancillary section of MSBS and the associated accumulation benefit liabilities are excluded from this calculation.
- 7.3 The net present value of unfunded liabilities was calculated to be \$83.1 billion as at 30 June 2017. This is 4.7 per cent of GDP. The net present value of unfunded liabilities reported as at 30 June 2014 was \$57.5 billion or 3.6 per cent of GDP.
- 7.4 The 2014 Report projected that unfunded liabilities would be \$66.3 billion as at 30 June 2017, or 3.6 per cent of GDP for 2017. Liabilities are therefore higher than was projected at the last report in dollar and GDP terms. The key driver of this outcome has been the one percentage point reduction in the interest rate used. This has added around \$14 billion to the unfunded liability which is equivalent to 0.8 per cent of GDP. The increased invalidity exit rates assumed for MSBS contributors are also a significant contributory factor.
- 7.5 Had the assumptions used for the 2014 Report been retained for this report, the unfunded liabilities would have been \$65.0 billion.
- 7.6 The unfunded liability for the DFRB is \$0.4 billion, for the DFRDB is \$34.3 billion and the equivalent figure for the MSBS is \$48.3 billion. These figures are lower than the estimates used for the Financial Statements for the Department of Defence as at 30 June 2017 of \$0.5 billion for the DFRB, of \$43.0 billion for the DFRDB and \$63.5 billion for MSBS. The major reason for this is the interest rates which are required to be used under the relevant accounting standard, AASB 119, to value the liabilities for Financial Statement purposes. The nominal interest rates used for AASB 119 reporting were 3.5 per cent per annum for MSBS, 3.4 per cent per annum for DFRDB and 2.7 per cent per annum for DFRB compared with the nominal 5 per cent per annum used for this report. The lower the discount rate used, the higher the unfunded liability. The issues associated with reporting under AASB 119 are discussed further, later in this chapter.

## Chapter 7: Unfunded liabilities

- 7.7 The unfunded liability for ADF Cover for this report and AASB 119 is \$0.0 billion when rounded to the nearest \$100 million.
- 7.8 A breakdown of the unfunded liabilities between contributors, pensioners, preserved members and non-pension associate members by scheme is shown in the following table.

### ESTIMATE OF UNFUNDED LIABILITIES AS AT 30 JUNE 2017

Category of members	DFRB (\$b)	DFRDB (\$b)	MSBS (\$b)	ADF Cover (\$b)
Contributors	-	3.4	24.2	-
Pensioners	0.4	30.9	13.8	0.0
Preserved members	-	-	10.0	-
Non-pension associate members	-	-	0.3	-
<b>Total</b>	<b>0.4</b>	<b>34.3</b>	<b>48.3</b>	<b>0.0</b>

Note: Components may not add up to totals due to rounding.

- 7.9 The table below shows the projected unfunded liability for the DFRB, the DFRDB, the MSBS, and ADF Cover and for the four schemes combined. The projections are in nominal dollars and have **not** been adjusted to 2017 dollars. To enable a proper comparison of the projected liabilities with the position in 2017, projections of the combined unfunded liability as a percentage of GDP are also shown.

### PROJECTED UNFUNDED LIABILITIES <sup>1</sup>

Year ending 30 June	DFRB (\$b)	DFRDB (\$b)	MSBS (\$b)	ADF Cover (\$b)	Total (\$b)	As a % of GDP
2017	0.4	34.3	48.3	0.0	83.1	4.7
2018	0.4	34.5	52.4	0.1	87.4	4.7
2019	0.4	34.6	56.5	0.3	91.7	4.7
2020	0.4	34.7	60.4	0.5	96.0	4.6
2025	0.3	34.2	79.6	3.7	117.8	4.4
2030	0.2	32.6	97.6	10.4	140.7	4.0
2035	0.1	29.7	113.3	21.1	164.2	3.6
2040	0.1	25.8	125.7	36.1	187.6	3.2
2045	0.0	20.9	132.4	55.6	208.9	2.7
2050	0.0	15.6	132.1	79.8	227.5	2.3
2055	0.0	10.5	124.7	108.8	244.0	1.9

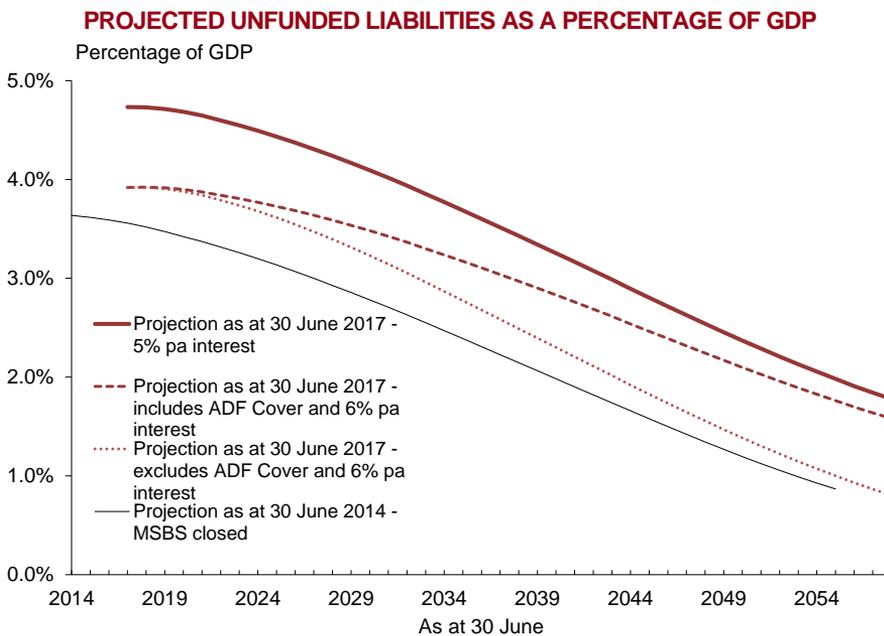
Note: Totals may differ from the sum of DFRB, DFRDB, MSBS and ADF Cover due to rounding.  
1. These figures have **not** been adjusted to 2017 dollars.

- 7.10 The chart below shows the projected unfunded liabilities as a percentage of GDP together with the equivalent projection from the 2014 Report.

7.11 As the reduction in the interest rate from 6.0 per cent per annum to 5.0 per cent per annum has a significant bearing on the reported unfunded liabilities, two additional projections have been included. These show the impacts of the various changes to the approach used for the 2014 Report.

7.12 The first additional projection uses the interest rate from the 2014 Report of 6.0 per cent per annum and excludes ADF Cover. This projection is thus directly comparable with the projection in the 2014 Report assuming MSBS was closed. The difference largely reflects the changes in the demographic assumptions, principally the increase in the assumed rates of invalidity exits for serving ADF personnel in MSBS.

7.13 The second additional projection is the same as the first additional projection but includes ADF Cover. This second additional projection can then be compared with the projection for this report using an interest rate of 5.0 per cent per annum to gauge the impact from the one percentage point reduction in the interest rate.



7.14 Over the longer term, the main feature of the projection is the steady fall in unfunded liabilities relative to GDP. There are three main reasons for this:

- it is assumed that the total number of ADF personnel will stay at the same level as at 30 June 2017, that is, that the number of ADF personnel as a percentage of the population will fall;
- the MSBS is partially funded whereas the DFRDB is wholly unfunded; and

- the partially funded MSBS is now closed to new ADF personnel, being replaced by the fully funded ADF Super accumulation arrangements and the unfunded ADF Cover arrangements which combined have an overall higher level of funding.

7.15 The general trend is clearly favourable with liabilities at the end of the period being around 50 per cent of their current level relative to GDP.

7.16 Relative to the 2014 Report, the projected unfunded liabilities as a proportion of GDP are noticeably higher. This is primarily due to the one percentage point reduction in the interest rate assumed for the valuation. However, from the chart in paragraph 7.13, it is clear that the inclusion of ADF Cover in the current report is a significant factor. The higher MSBS invalidity exit rates assumed, which have also been used for ADF Cover are also an influence.

## AASB 119

7.17 Since the 2005-06 financial year, the Department of Defence has been required to comply with Australian Accounting Standard AASB 119 — Employee Benefits in reporting on superannuation obligations in its financial statements. The discount rate assumption required under AASB 119 differs from the assumption used in this report. The requirement for the AASB 119 discount rate to be based on Government bond rates at the reporting date is likely to result in changes in economic assumptions from year to year. All else being equal, movements in interest rates will lead to volatility in reported liabilities under AASB 119.

7.18 Up until the 2011 Report, the interest rates used in calculating the unfunded liabilities for financial statements under this Standard had been within one percentage point of the interest rate used for this report. In recent years, the interest rates used for AASB 119 have been significantly lower than that used for this report. This has had the effect of significantly increasing the relative value of the reported liabilities under AASB 119.

7.19 Under AASB 119, the interest rate is set separately for each scheme. The interest rate is based on the relevant Commonwealth bond whose mean discounted term approximates the mean discounted term of the liabilities. The table below sets out the interest rates used as at 30 June 2017.

<b>Scheme</b>	<b>Interest rate (per cent per annum)</b>
ADF Cover	3.5
MSBS	3.5
DFRDB	3.4
DFRB	2.7

## AASB 1056

- 7.20 Since the 2016-17 financial year, CSC has been required to comply with Australian Accounting Standard AASB 1056 Superannuation Entities in reporting on superannuation obligations in its financial statements for MSBS. AASB 1056 Superannuation Entities replaced AAS 25 Financial Reporting by Superannuation Plans.
- 7.21 The previous AAS 25 Standard only required the MSBS to include the value of the vested benefits in the financial statements. The new AASB 1056, in addition requires the inclusion of an accrued liability figure in the financial statements. The accrued liability is the combined liability for accrued funded and unfunded components of benefits.
- 7.22 The assumptions for AASB 1056 are set by CSC. One of the key assumptions in the accrued benefit calculations is the expected return on a portfolio of assets. CSC's current investment objective for the default balanced investment option is a return of 6.0 per cent per annum and this was the assumption set by CSC for AASB 1056 purposes.
- 7.23 For the accrued liability as at 30 June 2017, CSC set the economic assumptions as being those from the 2014 Long Term Cost Report. In particular, the economic assumptions set were investment returns of 6.0 per cent per annum; general salary increases of 4.0 per cent per annum; and CPI increases of 2.5 per cent per annum.
- 7.24 The accrued liability reported for MSBS was \$43.5 billion of which \$8.3 billion was the funded component and \$35.2 billion was the unfunded component. The unfunded component is less than the unfunded liability for MSBS included in this report of \$48.3 billion. The main reason for the difference is the interest rate used for this report is one percentage point lower than the rate of investment returns assumed by CSC. However, the changes to the demographic assumptions, particularly the assumed rates of MSBS invalidity exits, made for this report also account for some of the difference.

7.25 The current report is focussed on the financial implications of the military superannuation arrangements over the long term. As noted earlier, it is important in a long-term cost report not to introduce unnecessary volatility which might mask genuine changes in experience. Accordingly, in my view, this is a more appropriate document for considering liabilities in a long-term context than the Department of Defence Financial Statements.

A handwritten signature in black ink, appearing to read 'Guy Thorburn', with a long horizontal flourish extending to the right.

Guy Thorburn FIAA  
Australian Government Actuary

15 June 2018

# APPENDIX A

## Summary of membership, contribution and benefit provisions of the Military Superannuation and Benefits Scheme (MSBS)

The MSBS is governed by a Trust Deed and Rules established under the *Military Superannuation and Benefits Act 1991*. The Act, Trust Deed and Rules set out the full membership, contribution and benefit provisions of the MSBS. The provisions of the Scheme are complex and a summary of the principal provisions of the Scheme is set out below. It should not be used to calculate benefits for individuals.

### Membership

Membership of the Scheme is closed to new ADF personnel with effect from 1 July 2016.

### Definitions

**Salary:** Salary is actual salary including higher duties allowance, service allowance, and some qualifications and skills allowances.

**Final average salary:** Average annual salary received over the last three years prior to termination of service.

**Accrual rates:** The accrual rate is variable and calculated on a daily basis. The rate is 18 per cent for each of years of service 0 to 7, 23 per cent for each of years 8 to 20 and 28 per cent for year 21 and each year thereafter.

**Total accrued multiple:** The sum of the accrual rates for the total period of service.

### Member contributions

Contributions rates are variable. There is a set base rate of 5 per cent of salary with an option to contribute additional amounts of up to 5 per cent in increments of 1 per cent (maximum contributions are thus 10 per cent of salary).

## Scheme structure

**Member component** This consists of the member contributions paid into the MSBS together with accumulated earnings on the contributions.

**Employer component** This consists of a defined benefit equal to:

$$\text{Total accrued multiple} \times \text{Final average salary}$$

**3 per cent benefit** This consists of employer contributions of 3 per cent of salary less 15 per cent employer contribution tax together with accumulated earnings.

The 3 per cent benefit forms part of the employer component.

## Retirement benefits (on or after age 55)

On retirement the member would be entitled to a lump sum of:

$$\text{Member component} + \text{Employer component}$$

The member has an option to convert between 50 per cent and 100 per cent of the employer component to a pension. The terms of conversion are determined by the member's age at the date of conversion. At age 55, \$12 of lump sum is converted to \$1 per annum of pension. At age 60, \$11 of lump sum is converted to \$1 per annum of pension.

## Resignation benefit (before age 55)

On resignation, the member would be entitled to:

- an immediate lump sum of the Member component; and
- a Preserved Employer Benefit of the Employer component

The Preserved Employer Benefit is paid at age 55, or earlier in certain circumstances. The funded portion of the Preserved Employer Benefit (the 3 per cent benefit) is accumulated with Fund Earnings between the date of exit and the date of payment. The unfunded portion of the Preserved Employer Benefit (the portion in excess of the 3 per cent benefit) is increased in line with movements in the CPI between the date of exit and the date of payment.

When the Preserved Employer Benefit is paid the member has the same pension option as applies to retirement benefits.

### Retrenchment or redundancy

The benefit is calculated in the same way as the resignation benefit. The member may elect one of two options with the employer financed part of the benefit:

- take a Preserved Employer Benefit; or
- convert all of the Preserved Employer Benefit into an immediate pension. The conversion factor is dependent on the member's age.

### Invalidity benefits

Invalidity and death benefits depend on retirement age. For virtually all members, retirement age is 60 and the conversion factor at age 60 is 11. The relevant references to retirement age in the following formulae have been marked with an asterisk (\*).

The invalidity benefit payable depends on the level of invalidity suffered by the member.

Invalidity classification	Degree of incapacity
A	60% — 100%
B	30% — 59%
C	Less than 30%

#### Invalidity A benefit

A benefit equal to:

- an immediate lump sum of the member component; plus
- a pension calculated as follows:

$$\frac{\text{Total Accrued Multiple at Retirement Age}^* \times \text{Final Average Salary}}{\text{Conversion Factor at Retirement Age}^*}$$

#### Invalidity B benefit

A benefit equal to:

- an immediate lump sum of the member component; plus

- a pension equal to the better of:

(i)  $50\% \times \frac{\text{Total Accrued Multiple at Retirement Age}^* \times \text{Final Average Salary}}{\text{Conversion Factor at Retirement Age}^*}$  ; and

(ii)  $\frac{\text{Total Accrued Multiple (to date of exit) } \times \text{Final Average Salary}}{\text{Conversion Factor at Age at Exit}}$

### Invalidity C benefit

The invalidity C benefit is the same as the resignation benefit.

### Death benefits for contributory members

The death benefit for a contributory member is:

- an immediate lump sum of the member component; plus
- an employer financed lump sum equal to:

$$\text{Total Accrued Multiple at Retirement Age}^* \times \text{Final average salary.}$$

The surviving spouse of the member may convert between 50 per cent and 100 per cent of the employer financed lump sum into a pension. The amount of the pension is calculated as:

$$67\% \times \frac{\text{Employer Financed Lump Sum } \times \text{Proportion Converted}}{\text{Conversion Factor at Retirement Age}^*}$$

If the pension option is taken and there are dependent children, an additional pension is paid.

### Pensions

Pensions are payable for the life of the pensioner and are increased twice each year in line with the movement in the Consumer Price Index (CPI). On the death of the pensioner, a pension of 67 per cent of the member's pension is paid to the surviving spouse (if any). An additional pension is payable in respect of children under age 16 (or age 25 if still in full time education). If there is no surviving spouse then in some circumstances orphan's pensions or a lump sum may be payable.

## **Ancillary benefits**

The ancillary section of the MSBS provides fully funded accumulation benefits. Ancillary benefits can arise in various ways including superannuation guarantee employer contributions, additional voluntary member contributions, salary sacrifice employer contributions, Government co-contributions, spouse contributions and transfers into the MSBS.

## **Superannuation guarantee**

With effect from 1 July 2008, additional employer contributions have been payable to the ancillary section of the MSBS on a quarterly basis to ensure compliance with Superannuation Guarantee (SG) requirements. The contributions are paid in respect of eligible allowances that are not included in superannuation salary for both DFRDB and MSBS members at the applicable SG rate (currently 9.5 per cent). The additional contributions are subject to a maximum of the applicable SG rate multiplied by the maximum quarterly earnings base for Superannuation Guarantee less the applicable SG rate multiplied by the superannuation salary for the quarter.



## APPENDIX B

### Summary of membership, contribution and benefit provisions of the Defence Force Retirement and Death Benefits Scheme (DFRDB)

The DFRDB is established under the *Defence Force Retirement and Death Benefits Act 1973*. The Act and associated Regulations, and the Defence Force (Superannuation) (Productivity Benefit) Determination under the *Defence Act 1903* set out the full membership, contribution and benefit provisions of the DFRDB. The provisions of the Scheme are complex and a summary of the principal provisions of the Scheme is set out below. It should not be used to calculate benefits for individuals.

#### Membership

Membership of the Scheme is closed to new entrants and consists of members of the Scheme as at 30 September 1991 who did not transfer to the MSBS.

#### Definitions

- Salary:** Salary is the highest incremental salary for substantive rank plus service allowance and some qualifications and skills allowances.
- Final salary:** Salary at the date of termination of service.
- Statutory retirement age:** Varies between age 47 and 60 depending on rank for officers, age 55 for other ranks.

#### Member contributions

Member contributions are 5.5 per cent of salary.

#### Retirement pay (pension)

Members who separate from the ADF on other than invalidity grounds are entitled to retirement pay on separation after completion of a minimum of 20 years' service or, if they have reached statutory retiring age for their rank, on completion of 15 years' service.

**RETIREMENT PAY**

<b>Years of service</b>	<b>Per cent of final salary</b>	<b>Years of service</b>	<b>Per cent of final salary</b>
15	30.00	28	47.50
16	31.00	29	49.25
17	32.00	30	51.25
18	33.00	31	53.25
19	34.00	32	55.50
20	35.00	33	57.75
21	36.50	34	60.25
22	38.00	35	62.75
23	39.50	36	65.25
24	41.00	37	67.75
25	42.50	38	70.50
26	44.00	39	73.50
27	45.75	40	76.50

Officers who voluntarily retire or are discharged on disciplinary grounds before reaching notional retiring age (generally five years below the statutory retiring age) have a penalty applied to the calculation of their retirement pay. The penalty is a 3 per cent reduction in retirement pay for each year that their age on retirement is less than their notional retiring age.

**Commutation**

A portion of retirement pay may be commuted to a lump sum. The maximum sum is currently five times the annual retirement pay. The residual pension after commutation is calculated by use of an expectation of life factor ranging from 40.18 at age 31 to 15.60 at age 60 for males, and from 45.53 to 19.51 respectively for females.

**Resignation benefit (no entitlement to retirement pay)**

On resignation prior to being entitled to retirement pay, a benefit of a refund of the member contributions is paid.

**Retrenchment or redundancy benefit**

There is no special retrenchment or redundancy benefit and the benefit is either the retirement pay or resignation benefit as appropriate.

## Invalidity benefits

The invalidity benefit payable depends on the level of invalidity suffered by the member.

Invalidity classification	Degree of incapacity
A	60% — 100%
B	30% — 59%
C	Less than 30%

### Invalidity A benefit

A pension of 76.5 per cent of final salary.

### Invalidity B benefit

A pension of 38.25 per cent of final salary.

### Invalidity C benefit

A lump sum of 1.5 times member contributions.

## Death benefits for contributory members

If the member is survived by a spouse, the spouse receives a pension of 62.5 per cent of the pension that would have been paid to the member on being classified Invalidation A. An additional pension may be paid in respect of dependent children. The surviving spouse has an option to convert part of the pension to a lump sum. The maximum lump sum is twice the member's final salary at death.

If the member is not survived by a spouse but is survived by dependent children under age 25, orphan's pensions may be payable.

If the member is not survived by a spouse or dependent children, a lump sum of 1.5 times member contributions is paid.

## Pensions

Pensions are payable for the life of the pensioner and indexed pensions are increased twice each year according to the age of the pensioner. Members may not be able to take all of their retirement pay in the form of an indexed pension. Any balance may be taken as a non-indexed pension.

## Appendix B

For pensioners less than age 55, indexed pensions are indexed in line with the movement in the Consumer Price Index (CPI). For pensioners aged 55 or more, indexed pensions are indexed using the same methodology as currently applies for indexation of Age and Service pensions. At the present time, Age and Service pensions are increased by the greater of the CPI and the Pensioner and Beneficiary Living Cost Index (PBLCI), and benchmarked against a percentage of Male Total Average Weekly Earnings (MTAWE) (currently at 27.7 per cent of MTAWE for a single person).

On the death of the pensioner, a pension of 62.5 per cent of the member's pension prior to commutation is paid to the surviving spouse (if any). An additional pension is payable in respect of children under age 16 (or age 25 if still in full time education). Where the pension is paid following the death of a retired member, part of the pension is unindexed.

If there is no surviving spouse, orphans' pensions may be payable in some circumstances.

### **Productivity (3 per cent) superannuation benefit**

A productivity superannuation benefit based on a notional contribution of 3 per cent of superannuation salary accumulated with interest at a rate based on the long-term Commonwealth Bond rate is paid in addition to the benefits set out above.

### **Superannuation Guarantee top up**

A top up benefit may be payable in addition to the benefits payable above in order to ensure that the benefits payable from the Scheme are at a level which meets Superannuation Guarantee requirements in respect of DFRDB superannuation salary. Note that with effect from 1 July 2008, additional employer contributions in respect of eligible allowances that are not included in the DFRDB superannuation salary have been paid to the MSBS ancillary section to ensure compliance with the Superannuation Guarantee requirements following the removal of the protected earnings base for the DFRDB.

## APPENDIX C

### Summary of membership, contribution and benefit provisions of the ADF Super and ADF Cover schemes

The principal provisions of these arrangements are set out below. They should not be used to calculate benefits for individuals.

The documents setting out the provisions of ADF Super are the *Defence Act 1903* and the *Australian Defence Force Superannuation Act 2015*. The documents setting out the provisions of ADF Cover are the *Australian Defence Force Cover Act 2015*.

#### Membership

The ADF Super and ADF Cover arrangements apply to all new ADF personnel with effect from 1 July 2016.

#### ADF Super

Under the ADF Super arrangements, employer superannuation contributions of 16.4 per cent of the individual's Ordinary Time Earnings (OTE) are paid to the accumulation superannuation fund of the individual's choice. If the individual does not choose a superannuation fund, the default fund is the ADF Super fund administered by CSC.

#### ADF Cover

ADF Cover provides associated death and invalidity cover for ADF personnel under the ADF Super arrangements.

#### Death in service benefits

The benefits provided under ADF Cover on the member's death in service can be summarised as follows:

A lump sum equal to:

- $(60 - \text{Member's age in years at the date of death}) \times 25\% \times \text{Superannuation salary at exit}$ ; or

If there is a surviving spouse, the surviving spouse may instead of the lump sum, opt for an annual lifetime pension of:

- $(60 - \text{Member age in years at the date of death}) \times 1.5\% \times \text{Superannuation salary at exit}$

The lifetime pension is indexed twice a year for CPI increases. Additional pension benefits may be payable if there are dependent children.

## Invalidity benefits

The invalidity benefit payable depends on the level of invalidity suffered by the member.

Invalidity classification	Degree of incapacity
A	60% — 100%
B	30% — 59%
C	Less than 30%

The benefits provided on a member's invalidity exit under ADF Cover where the individual is classified invalidity Class A can be summarised as follows:

- A lifetime pension of:  
 $(60 - \text{Member's age in years at invalidity exit}) \times 2.2\% \times \text{Superannuation salary at exit}$ ; plus
- A temporary top up pension payable to age 60 of  
 $\text{Completed years of service at exit} \times 2.2\% \times \text{Superannuation salary at exit}$

Both the lifetime pension and the temporary top up pension are indexed twice a year for CPI increases. If the invalid pensioner were to die, and there were to be a surviving spouse, a lifetime reversionary pension would be payable to the surviving spouse at 67% of the rate of lifetime pension that would have been payable to the invalidity pensioner. Additional pension benefits may be payable to the reversionary spouse if there are dependent children. There is no reversionary pension payable in respect of the temporary top up pension.

The benefits provided on a member's invalidity exit under ADF Cover where the individual is classified invalidity Class B are half of those provided where the individual is classified invalidity Class A. That is, the benefit percentage of 2.2% in the formula for calculating invalidity Class A benefits is replaced by 1.1%.

No benefits are provided under ADF Cover where the individual is classified invalidity Class C.

## APPENDIX D

### Demographic assumptions

Set out below is a summary of the demographic assumptions for the DFRDB, MSBS and ADF Cover.

#### Contributor exits by death and invalidity

The tables below set out the rates adopted for death and invalidity per 1,000 contributors at each age shown. The rates for males and females are assumed to be the same.

#### MSBS AND ADF COVER DEATH AND INVALIDITY RATES (PER 1,000 CONTRIBUTORS)

Age	Death	Invalidity 'A'		Invalidity 'B'		Invalidity 'C'	
		Officers and cadets	Other ranks	Officers and cadets	Other ranks	Officers and cadets	Other ranks
20	0.49	2.95	5.19	1.50	4.50	1.60	1.50
25	0.54	3.44	13.17	3.00	8.35	2.69	1.50
30	0.56	3.44	16.80	3.00	8.56	1.26	1.50
35	0.58	3.69	18.51	3.00	8.56	0.96	1.50
40	0.59	4.92	18.51	3.00	8.56	0.78	1.50
45	0.61	6.15	18.51	3.00	8.56	0.75	1.50
50	0.76	6.27	18.51	3.00	8.56	0.75	1.50
55	1.30	6.27	18.51	3.00	8.56	0.75	1.50
59	1.92	6.27	18.51	3.00	8.56	0.75	1.50

#### DFRDB DEATH AND INVALIDITY RATES (PER 1,000 CONTRIBUTORS)

Age	Death	Invalidity 'A'		Invalidity 'B'	
		Officers and cadets	Other ranks	Officers and cadets	Other ranks
40	0.59	3.68	3.68	0.00	0.00
45	0.61	3.68	3.68	0.00	0.00
50	0.76	3.68	3.68	0.00	0.00
55	1.30	3.68	3.68	0.00	0.00
59	1.92	3.68	3.68	0.00	0.00

Note the service durations of DFRDB contributors are such that, for a large and increasing majority of members, the invalidity B benefit provides a lower pension than the pension which would be paid on retirement. Accordingly, it is assumed that there will be no future invalidity B exits from the DFRDB.

Invalidity 'C' exits from the DFRDB are included in the resignation assumptions.

## Contributor exits by resignation

The tables below set out the rates adopted for resignation for contributors. Resignation is assumed to only occur below age 55. The figures represent the numbers leaving per 1,000 contributors by duration of service. Retirement rates for those aged 55 or more are a separate assumption.

Resignation rates for MSBS and ADF Cover are set out below.

### MSBS AND ADF COVER RESIGNATION RATES (PER 1,000 CONTRIBUTORS)

Years of service	Officers & Cadets	Other ranks
	Male & female	Male & female
0	140	130
1	75	70
2	50	35
3	40	35
4	38	120
5	37	80
6	45	100
7	39	100
8	39	70
9	37	40
10	60	90
11	40	70
12	60	63
13	50	60
14	44	50
15	43	45
16	42	40
17	41	38
18	40	35
19	40	38
20	60	45
21	55	60
22	50	50
23	45	45
24	40	40
25	35	35
26	30	33
27	30	30
28	30	28
29	39	30
30	48	33

For DFRDB members younger than 55, the assumed resignation rates are set out below.

**DFRDB SERVICE DURATION RESIGNATION RATES FOR AGE LESS THAN 55  
(PER 1,000 CONTRIBUTORS)**

Years of service	Officers	Other Ranks
	Male & Female	Male & Female
20	84	79
21	84	79
22	84	79
23	84	79
24	84	79
25	84	79
26	84	79
27	84	79
28	84	79
29	84	79
30	84	79
31	84	79
32	84	79
33	84	79
34	84	79
35	84	79
36	84	79
37	84	79
38	84	79
39	84	79
40	84	79

Note: The DFRDB has been closed to new entrants since 1991.

DFRDB resignation rates include exits under the Invalidity 'C' provisions.

## Contributor exits by retirement

The following retirement rates have been assumed for all serving members in both the MSBS and DFRDB from age 55. Members attaining age 60 are all assumed to retire.

**MSBS, DFRDB AND ADF COVER RETIREMENT RATES FROM AGE 55  
(PER 1,000 CONTRIBUTORS)**

Age	Rate
55	167
56	200
57	250
58	333
59	500

## Contributor exits by retrenchment and redundancy

No allowance has been made for the effects of retrenchments and redundancies as the retrenchment and redundancy decision is unpredictable and impossible to model with any confidence.

## New entrants (ADF Cover)

The following table shows figures for the assumed age distribution and average salaries of male and female new entrants.

### NEW ENTRANTS

Age	Officers			Other ranks			Cadets		
	Males %	Females %	Average salary (\$)	Males %	Females %	Average salary (\$)	Males %	Females %	Average salary (\$)
17				9.7	10.0	51,681	20.7	20.7	41,985
18	0.5		58,135	18.9	20.0	52,105	31.5	31.5	42,755
19	1.0		60,342	16.0	15.0	52,530	13.1	13.1	45,227
20	1.5		62,550	10.6	10.0	52,848	8.6	8.6	47,721
21	2.0	1.0	64,757	8.2	8.0	53,167	5.6	5.6	50,238
22	3.4	4.1	66,964	6.8	6.5	53,485	5.0	5.0	52,649
23	6.0	6.0	69,172	5.6	5.5	53,803	4.3	4.3	53,637
24	6.3	10.0	71,379	4.4	4.5	54,122	3.7	3.7	54,445
25	5.5	8.2	73,586	3.5	3.6	54,440	3.1	3.1	54,913
26	5.2	7.2	75,794	2.9	2.9	54,652	2.5	2.5	55,378
27	5.1	6.1	78,001	2.4	2.5	54,864	1.9	1.9	55,556
28	4.5	5.3	80,208	1.9	2.0	55,077	1.2	1.2	55,841
29	4.1	4.5	82,416	1.6	1.6	55,289	0.6	0.6	56,126
30	3.5	3.9	84,623	1.3	1.4	55,501			
31	3.3	3.4	86,830	1.1	1.2	55,713			
32	3.0	3.0	89,037	1.0	1.0	55,926			
33	2.9	2.8	91,245	0.8	0.9	56,138			
34	2.7	2.5	93,452	0.7	0.7	56,582			
35	2.5	2.4	95,659	0.6	0.6	57,605			
36	2.5	2.3	97,867	0.5	0.5	58,659			
37	2.4	2.2	100,000	0.4	0.4	59,739			
38	2.4	2.2	100,000	0.4	0.4	60,836			
39	2.4	2.2	100,000	0.3	0.3	61,942			
40	2.4	2.2	100,000	0.3	0.3	63,050			
41	2.4	2.2	100,000	0.2	0.2	64,152			
42	2.4	2.2	100,000						
43	2.4	2.2	100,000						
44	2.4	2.2	100,000						

**NEW ENTRANTS (CONTINUED)**

Age	Officers			Other ranks			Cadets		
	Males %	Females %	Average salary (\$)	Males %	Females %	Average salary (\$)	Males %	Females %	Average salary (\$)
45	2.4	2.2	100,000						
46	2.4	2.2	100,000						
47	2.4	2.2	100,000						
48	2.1	2.2	100,000						
49	1.8	1.2	100,000						
50	1.5		100,000						
51	1.2		100,000						
52	0.9		100,000						
53	0.6		100,000						

**Promotional salary increases**

MSBS and ADF Cover officer and cadet promotional salaries are dependent on the period of service and entry age. Since the salary scale is two-dimensional, a cross-section of the salary scales is presented below for a selection of entry ages. DFRDB officer salaries, and ADF Cover, MSBS and DFRDB other rank salaries only relate to period of service.

**DFRDB, MSBS AND ADF COVER SALARY PROGRESSION**

Duration	MSBS and ADF Cover Officers			MSBS and ADF Cover Cadets			DFRDB Officers	Other Ranks
	Entry Age 20	Entry Age 23	Entry Age 27	Entry Age 18	Entry Age 21	Entry Age 25		
0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1	1.089	1.088	1.073	1.125	1.060	1.040	1.065	1.100
2	1.174	1.173	1.144	1.272	1.134	1.081	1.130	1.194
3	1.257	1.255	1.212	1.444	1.291	1.250	1.194	1.242
4	1.336	1.333	1.277	1.557	1.423	1.426	1.259	1.284
5	1.412	1.408	1.340	1.688	1.554	1.570	1.309	1.321
6	1.484	1.479	1.400	1.814	1.673	1.686	1.337	1.357
7	1.554	1.547	1.457	1.938	1.790	1.798	1.365	1.390
8	1.620	1.611	1.512	2.059	1.901	1.904	1.392	1.421
9	1.682	1.672	1.565	2.176	2.010	2.007	1.420	1.451
10	1.742	1.729	1.615	2.288	2.113	2.104	1.447	1.480
11	1.798	1.783	1.662	2.394	2.210	2.195	1.474	1.507
12	1.851	1.834	1.707	2.494	2.302	2.281	1.502	1.533
13	1.900	1.881	1.749	2.590	2.390	2.362	1.529	1.559
14	1.947	1.924	1.788	2.681	2.472	2.440	1.557	1.583

**DFRDB, MSBS AND ADF COVER SALARY PROGRESSION (CONTINUED)**

Duration	MSBS and ADF Cover Officers			MSBS and ADF Cover Cadets			DFRDB Officers	Other Ranks
	Entry Age 20	Entry Age 23	Entry Age 27	Entry Age 18	Entry Age 21	Entry Age 25		
15	1.990	1.964	1.825	2.766	2.550	2.513	1.622	1.607
16	2.030	2.001	1.859	2.847	2.624	2.581	1.689	1.629
17	2.066	2.034	1.891	2.923	2.692	2.645	1.755	1.651
18	2.100	2.064	1.920	2.993	2.756	2.705	1.820	1.672
19	2.130	2.090	1.947	3.059	2.815	2.760	1.883	1.693
20	2.157	2.113	1.971	3.119	2.870	2.811	1.946	1.712
21	2.180	2.133	1.992	3.175	2.920	2.858	2.004	1.731
22	2.200	2.149	2.011	3.225	2.964	2.900	2.058	1.749
23	2.217	2.161	2.027	3.271	3.005	2.938	2.108	1.767
24	2.231	2.172	2.040	3.311	3.040	2.972	2.154	1.784
25	2.242	2.183	2.051	3.347	3.071	3.001	2.197	1.800
26	2.253	2.194	2.061	3.377	3.097	3.025	2.237	1.816
27	2.265	2.205	2.071	3.403	3.119	3.046	2.273	1.831
28	2.276	2.216	2.082	3.424	3.138	3.065	2.305	1.845
29	2.287	2.227	2.092	3.443	3.155	3.081	2.334	1.859
30	2.299	2.238	2.102	3.461	3.171	3.097	2.359	1.873
31	2.310	2.249	2.113	3.479	3.187	3.113	2.381	1.886
32	2.322	2.261	2.123	3.496	3.203	3.129	2.401	1.898
33	2.333	2.272	2.134	3.514	3.219	3.144	2.420	1.909
34	2.345	2.283	2.145	3.531	3.236	3.160	2.437	1.921
35	2.357	2.295	2.155	3.549	3.252	3.176	2.452	1.931
36	2.369	2.306	2.166	3.567	3.268	3.192	2.466	1.941
37	2.380	2.318	2.177	3.585	3.284	3.208	2.478	1.951
38	2.392	2.329	2.188	3.602	3.301	3.224	2.491	1.960
39	2.404	2.341	2.199	3.620	3.317	3.240	2.502	1.969

As an example, consider an MSBS cadet who joined at age 21. The salary of such a person at age 31 would, in the absence of inflation, be assumed to be 2.113 times the commencing salary at age 21.

**Pensioner mortality**

The table below shows the mortality rates assumed for pensioners for DFRB, DFRDB, MSBS and ADF Cover. The age retired rates are based on DFRDB experience, while invalidity rates are based on combined MSBS and DFRDB experience. Male spouse rates are assumed to be the same as male age retired rates, while female spouse rates are derived from DFRDB female spouse pension experience.

**PENSIONER MORTALITY (PER 1,000 PENSIONERS)**

Age	Males			Females		
	Age retired	Invalid retired	Spouse	Age retired	Invalid retired	Spouse
20	0.13	1.91	0.13	0.07	1.91	0.13
30	0.23	1.91	0.23	0.11	1.91	0.23
40	0.67	2.43	0.67	0.34	2.43	0.68
50	1.62	4.25	1.62	0.96	4.25	1.91
55	2.97	6.06	2.97	1.58	6.06	3.17
60	5.39	9.54	5.39	2.43	9.54	4.86
65	8.66	16.70	8.66	3.80	16.70	7.61
70	15.24	27.75	15.24	6.34	27.75	12.68
75	26.39	42.82	26.39	10.65	42.82	21.30
80	47.05	65.67	47.05	18.23	65.67	36.46
90	131.21	145.37	131.21	88.09	145.37	117.46
100	268.67	276.89	268.67	263.74	276.89	263.74

**Improvements in pensioner mortality**

The following table summarises the assumed rates of improvement in future mortality of age retirements. No allowance has been made for future improvements in mortality for invalidity retirements.

**ASSUMED RATES OF MORTALITY REDUCTION (PER CENT PER ANNUM)**

Age	Male	Female
60	2.4	1.9
70	2.0	2.0
80	1.5	1.9
90	1.1	1.3
100	1.3	1.1

**MSBS retirement ages for preserved members**

The following table summarises the assumed rates of retirements for current preserved members. Preserved members aged 65 or more at the valuation date are assumed to retire immediately.

**PRESERVER RETIREMENTS (PER 1,000 PRESERVED MEMBERS)**

Age	Age Retirement
55	650
56	300
57-60	150
61-64	100
65	1,000

Current serving members who become preserved members in the future are assumed to retire at age 55.

### Proportions married at death and age differences

The assumed proportions married at death at each age are shown below.

#### PROPORTIONS MARRIED

Age	Males non-invalidity (%)	Males invalidity (%)	Females (%)
20	1	7	7
30	30	55	55
40	69	55	55
50	70	55	55
60	70	50	50
70	70	37	37
80	63	16	16
90	49	6	6

Married male members are assumed to be married to females four years their junior on death. Married female members are assumed to be married to males three years their senior on death.

### MSBS pension take up rates for retirements

For those members retiring from ADF service aged 55 or more, it is assumed that 100 per cent of the lump sum would be converted to a pension for officers and 90 per cent would be converted for other ranks.

### MSBS pension take up rates for preserved members

For current preserved members retiring aged 55 or more, it is assumed that 65 per cent of the lump sum would be converted to a pension for former other ranks and 85 per cent would be converted for former officers.

For current serving members who become preserved members in the future who retire aged 55 or more, it is assumed that 80 per cent of the lump sum would be converted to a pension for former other ranks and 90 per cent would be converted for former officers.

### DFRDB commutation

Those members retiring from ADF service are assumed to take the maximum commutation lump sum available. This is generally 5 times the retirement pay prior to commutation.

## Accrual recognition

For pensioners and preserved benefits all of the cash flows and associated unfunded liabilities are accrued at the valuation date.

For MSBS serving members (contributors), the proportion of the benefit taken to be accrued is as follows:

- for retirement and resignation benefits, the employer component of the benefit is assumed to accrue uniformly over the period from the date of commencement of the current period of service to the projected date of exit, or the projected date of attaining MBL status, whichever is earlier.
- for death and invalidity A and B benefits, the employer component of the benefit is assumed to accrue uniformly over the period from the date of commencement of the current period of service to the projected date of exit.

For DFRDB serving members (contributors), the proportion of the benefit taken to be accrued is as follows:

- for all benefits, the employer component of the benefit is assumed to accrue uniformly over the combined periods of service that count for benefit purposes to the projected date of exit. That is, where the serving member is a re-entered recipient, prior periods of service to the current period are included.
- For serving members under the ADF Super arrangements that have insurance type cover provided by ADF Cover, there is no unfunded liability in respect of ADF Cover in respect of events (incidents and injuries) that are expected to occur in the future. There is, however, an Incurred But Not Reported type of reserve included to cover those that have incurred an injury or condition prior to the measurement date that will result in an invalidity pension commencing after the measurement date. This reserve is calculated on the basis that of the injuries or conditions incurred during a year, 20 per cent of them will result in an invalidity pension commencing in the same year, 50 per cent will result in an invalidity pension commencing in the subsequent year and 30 per cent will result in an invalidity pension commencing in the year after.

## GDP increases adjusted for inflation

GDP growth rates are based on Commonwealth Treasury projections of nominal GDP values adjusted for consistency with the inflation and wage growth assumptions adopted for this valuation. Given this adjustment, they should not be regarded as official Commonwealth Treasury projections.

**GDP GROWTH RATES (ADJUSTED FOR CPI INFLATION)**

<b>Year</b>	<b>Per cent per annum</b>
2017-18	2.7
2018-19	2.7
2019-20	2.8
2020-21	2.8
2021-22	2.8
2022-23	2.8
2023-24	2.8
2024-25	2.7
2025-26	2.7
2026-27	2.7
2027-28	2.7
2028-29	2.7
2029-30	2.7
2030-31	2.7
2031-32	2.7
2032-33	2.8
2033-34	2.8
2034-35	2.8
2035-36	2.8
2036-37	2.7
2037-38	2.7
2038-39	2.7
2039-40	2.7
2040-41	2.7
2041-42	2.7
2042-43	2.7
2043-44	2.7
2044-45	2.7
2045-46	2.7
2046-47	2.7
2047-48	2.6
2048-49	2.6
2049-50	2.6
2050-51	2.6
2051-52	2.6
2052-53	2.5
2053-54	2.5
2054-55	2.5
2055-56	2.5
2056-57	2.5
2057-58	2.5

## Sensitivity Analysis

Some sensitivity analyses have been undertaken on a variety of factors to show their impact on the unfunded liabilities for all schemes and the notional employer contribution rates for the DFRDB, MSBS and ADF Cover.

The key sensitivities around the costs of the schemes relate to the economic parameters. Accordingly, six scenarios which illustrate the impacts of changes to the economic assumptions have been modelled, specifically:

- a decrease of 1 percentage point in the annual interest rate used (to 4% pa);
- an increase of 1 percentage point in the annual interest rate used (to 6% pa);
- a decrease of 1 percentage point in the assumed annual rate of general salary (and MTAWWE) inflation (to 3% pa);
- an increase of 1 percentage point in the assumed annual rate of general salary (and MTAWWE) inflation (to 5% pa);
- a decrease of 1 percentage point in the assumed annual rate of CPI inflation (to 1.5% pa); and
- an increase of 1 percentage point in the assumed annual rate of CPI inflation (to 3.5% pa).

In each case, it is assumed that the other economic assumptions are unchanged. The nominal base assumptions for this purpose are those adopted for the Long-Term Cost Report, namely:

- Interest rate                      5.0% pa
- General salary inflation      4.0% pa
- CPI increases                      2.5% pa

It should be noted that the general salary inflation assumption is not only used for the indexation of military salaries but is also used for the indexation of DFRB and DFRDB pensions for those aged 55 or more.

## Appendix E

In addition, the impacts of a 100% pension take-up rate for MSBS and increased MSBS invalidity rates on the unfunded liabilities of all schemes have been modelled.

It is highly unlikely that a situation will ever be reached where 100 per cent of employer financed benefits for MSBS are converted to a pension. However, this scenario represents an upper bound on the costs and is therefore included to provide a measure of how much further costs might rise from this source.

As noted earlier in the report, MSBS invalidity rates have significantly increased in recent years. In this sensitivity analysis, it is assumed that invalidity exit experience continues to increase, with around 1,400 new invalidity pensions commencing each year. This represents a 40 per cent increase in assumed invalidity rates. A summary of the invalidity A and B exit assumptions for MSBS underlying this analysis are set out at the end of this Appendix.

The results of the analyses are as follows:

	DFRB & DFRDB			MSBS		ADF Cover	
	DFRB Unfunded Liability	DFRDB Unfunded Liability	Notional Employer Contribution Rate	MSBS Unfunded Liability	Notional Employer Contribution Rate	ADF Cover Unfunded Liability	Notional Employer Contribution Rate
	\$m	\$m	(%)	\$m	(%)	\$m	(%)
<b>2017 Long-Term Cost Report</b>	424	34,282	43.0	48,327	52.0	18	21.6
<b>Interest rate (4% pa)</b>	462	39,895	53.0	62,005	73.9	19	27.0
<b>Interest rate (6% pa)</b>	391	29,856	35.6	38,515	39.9	17	17.8
<b>Salary increases (3% pa)</b>	392	30,108	35.8	46,526	48.4	18	21.6
<b>Salary increases (5% pa)</b>	459	39,409	52.5	50,379	56.1	18	21.6
<b>Inflation (1.5% pa)</b>	424	34,083	42.8	40,078	43.4	15	17.8
<b>Inflation (3.5% pa)</b>	424	34,492	43.3	58,876	63.4	23	27.0
<b>100% pension take up</b>	424	34,282	43.0	51,111	53.7	18	21.6
<b>Higher invalidity rates</b>	424	34,282	43.0	49,883	56.9	18	30.1

The first six analyses highlight the sensitivity of the estimates of the unfunded liability and the notional employer contribution rates to changes in economic assumptions. As DFRB and DFRDB pensions are now linked to salary (MTAWE) inflation for most of the period while in payment, these schemes are much more sensitive to the salary (MTAWE) increase assumption than the CPI increase assumption which only applies to pension indexation for those under age 55. For the MSBS, the large unfunded components of the preserved benefits as well as pensions are CPI inflation linked. Most contributors will end up with a preserved benefit on exit from the ADF and are likely to take a pension on eventual retirement. As a result, MSBS costs are much more sensitive to the CPI inflation assumption than the salary increase assumption.

The pension take up scenario primarily affects the MSBS. When an individual in MSBS opts to receive a pension on retirement, the actuarial value of the pension is much greater than the value of the lump sum benefit foregone. Higher pension take up rates increase costs. This scenario provides a theoretical upper bound on the cost impact from this process. In practice, a more realistic upper bound is probably around half the increase in costs reported here as there are likely to always be some individuals who will prefer the lump sum over the alternative pension.

There are situations where individuals commencing benefits in the DFRDB and ADF Cover have a choice between pension benefits and lump sums benefits. Sensitivities to these choices have not been modelled as the results are not materially sensitive to reasonably conceivable changes in take up behaviour.

The increased invalidity exit rates (for MSBS contributors) scenario has about the same impact as assuming salary increases were one percentage point higher. It is worth bearing in mind that were this scenario borne out in practice, it would represent a significant increase in the underlying cost of MSBS.

A summary of the invalidity A and B exits rates used for the higher invalidity rates scenario are set out in the table below:

#### **MSBS INVALIDITY RATES (PER 1,000 CONTRIBUTORS)**

Age	Invalidity 'A'		Invalidity 'B'	
	Officers and cadets	Other ranks	Officers and cadets	Other ranks
20	4.13	7.27	2.10	6.30
25	4.82	18.44	4.20	11.69
30	4.82	23.52	4.20	11.99
35	5.17	25.91	4.20	11.99
40	6.89	25.91	4.20	11.99
45	8.61	25.91	4.20	11.99
50	8.77	25.91	4.20	11.99
55	8.77	25.91	4.20	11.99
59	8.77	25.91	4.20	11.99

