



**Australian Government**  

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**Australian Government Actuary**

**THE FEDERAL CIRCUIT COURT OF AUSTRALIA  
DEATH AND INVALIDITY SCHEME  
A REPORT ON THE LONG TERM COSTS, CARRIED  
OUT BY THE AUSTRALIAN GOVERNMENT ACTUARY  
USING DATA TO 30 JUNE 2014**

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## **1 SUMMARY**

This report sets out estimates, as at 30 June 2014, of the long term costs arising under the Federal Circuit Court of Australia Death and Invalidity Scheme, which is governed by the *Federal Circuit Court of Australia Act 1999* (the Act). The *Federal Circuit Court of Australia Act 1999* (formerly titled the *Federal magistrates Act 1999*) was altered so as to allow for the provision of lump sum death and invalidity pensions to then Federal Magistrates (now Federal Circuit Court of Australia Judges) with effect from September 2007. For the purposes of this report, we have called these arrangements the 'Federal Circuit Court of Australia Death and Invalidity Schemes'. This is the second report on the long-term costs of the Scheme.

### *Experience and Assumptions*

Membership of Federal Circuit Court of Australia Death and Invalidity Scheme is relatively small, and as such, there is insufficient scheme experience on which to base demographic assumptions. The key assumptions used to estimate the costs of the Scheme are those used to value the Judges' Pension Scheme, as the experience of Federal Circuit Court of Australia Judges is likely to be somewhat similar to that of members of the Judges' Pension Scheme. However, as the report notes, there is considerable uncertainty around likely scheme experience and actual cost may well be significantly different from those derived using the same assumptions as for the Judges' Pension Scheme.

### *Future premium costs and cash expenditure*

Projections of premium costs and cash expenditure over the period to 2034-35 have been made.

Future premium costs are the estimated future notional insurance premiums required to insure against the expected benefit payments arising from death and invalidity claims in each future projection year. Premium costs are projected to be 2.6 per cent of salaries over the projection period.

Future cash expenditure is the estimated expected amount of cash payable in each future projection year. Cash expenditure in nominal dollars is projected to increase from \$329,000 in 2014-15 to just under \$1.4 million in 2034-35. It should be noted, however, that cash expenditures for a small scheme providing only insurance benefits are highly uncertain.

### *Accrued liabilities*

The direct Commonwealth unfunded liability arising under the Scheme in respect of the one current pensioner has been calculated as \$1.402 million.

## **2 INTRODUCTION**

- 2.1 This report has been prepared within the Office of the Australian Government Actuary at the request of the Department of Finance (Finance). It sets out estimates of the long-term death and invalidity costs arising under the *Federal Circuit Court of Australia Act 1999* (the Act). The *Federal Circuit Court of Australia Act 1999* was altered so as to allow for the provision of lump sum death benefits and invalidity pensions to Federal Circuit Court of Australia Judges with effect from September 2007. For the purposes of this report, we have termed these arrangements the Federal Circuit Court of Australia Death and Invalidity Scheme (the Scheme). The estimates are based on an examination of scheme data supplied by the Department of Finance which in turn included data from the Family Court and Federal Circuit Court of Australia.
- 2.2 This is the second long-term valuation of the Federal Circuit Court of Australia Death and Invalidity Scheme since its inception in 2007. Initial calculations for the Attorney-General's Department suggested that the cost of the Scheme would be very uncertain, but could be around 6 per cent of salaries. The first report on the Scheme estimated a long-term cost of around 2.6 per cent of salaries.
- 2.3 This report provides estimates of the following:
- projected future premium costs for each year to 2034-35;
  - projected future cash expenditure for each year to 2034-35; and
  - accrued liability.
- 2.4 The future premium costs are the estimated future notional insurance premiums required to insure against the expected benefit payments arising from death and invalidity claims in each future projection year. Future cash expenditure is the estimated expected amount of cash payable in each future projection year. As the premium cost includes the capitalised value of all invalidity pension payments (and associated superannuation contributions) arising from an invalidity claim, these premiums will be higher than the cash expenditure in the short term. In the long term, premium costs and cash expenditure would be expected to be of a similar order but with cash expenditure generally higher than premium costs.
- 2.5 On the approach adopted, the unfunded liability of the Scheme at inception was zero. A non-zero unfunded liability arise equal to the actuarial value of the pension(s) payable to invalidity claimant(s) (and superannuation contributions) only when there is an invalidity pension in payment. The first claim for an invalidity benefit occurred in the 6 months to 31 December 2009. This claim is still in payment and, as a result, there is an unfunded liability. While outside the

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scope of this report, we note that a second invalidity pension commenced after 30 June 2014.

- 2.6 Due to a combination of the relatively small size of the Scheme and the low probabilities of events, the numbers of claims made per year are expected to be volatile. As a result, actual cashflows may differ significantly from cashflow projections.
- 2.7 I consider that this report complies with the Institute of Actuaries of Australia Professional Standard 400 (PS400) (Investigations of Defined Benefit Superannuation Funds) allowing for the fact that the Federal Circuit Court of Australia Death and Invalidity Scheme is unfunded, has an underlying Commonwealth government guarantee and only covers death and invalidity benefits. For reference, PS400 is primarily designed to cover funded (private sector) superannuation schemes where actual contributions paid into the scheme and solvency matters are important.

### 3 THE FEDERAL CIRCUIT COURT OF AUSTRALIA DEATH AND INVALIDITY SCHEME

- 3.1 The legislation covering the Federal Circuit Court of Australia Death and Invalidity Scheme is the *Federal Circuit Court of Australia Act 1999*. It provides for payment of an invalidity pension and a death benefit. The Scheme is an exempt public sector superannuation scheme under the *Superannuation Industry (Supervision) Act 1993*.
- 3.2 The Scheme is unfunded and does not hold any assets. The Scheme has no external insurance arrangements. Judges of the Federal Circuit Court of Australia do not contribute to the Scheme and the Commonwealth meets all of the costs of benefits.
- 3.3 Benefits are paid out of Consolidated Revenue as they are due. This is an acceptable method of funding as the Scheme has an underlying Commonwealth Guarantee.
- 3.4 The main benefits payable from the Scheme are summarised below.
- Federal Circuit Court of Australia Judges who retire due to permanent disability or infirmity are paid a pension until the age of 70 years or until he or she dies (whichever happens first). The annual rate of the pension is 60% of the annual rate of salary the Judges would have been entitled to if he or she had not retired. At 1 July 2014, the base salary for a Judge was \$348,160 and for the Chief Judge was \$412,550. This means the current pension payable to a retired Judge is \$208,896 per annum (and \$247,530 per annum is payable to a retired Chief Judge). Pensioners also receive Commonwealth superannuation contributions of 15.4% of their base salary until the age of 65.
  - A death benefit is payable where a serving Judge dies before age 65 leaving an eligible spouse or children. The benefit consists of a lump sum of the amount of the Commonwealth superannuation contributions that the Judge would have been entitled to if the Judge had not died, over the period from the Judge's death to age 65. The death benefit is also paid to eligible spouses or children of Judges receiving an invalidity pension under the Scheme who die before age 65.
- 3.5 From 1 July 2012, the Commonwealth superannuation contributions are equivalent to 15.4% of the Judge's annual salary. Prior to this, Commonwealth superannuation contributions were equivalent to 13.1% of the Judge's annual salary.

## **4 MEMBERSHIP AND DATA**

- 4.1 We have been supplied with data by the Department of Finance and the Family Court. I am satisfied that the data provided is accurate for the purposes of this report.
- 4.2 At 1 July 2014 there were 65 serving Federal Magistrates as set out in the table below.

<b>SERVING FEDERAL CIRCUIT COURT OF AUSTRALIA JUDGES at 1 July 2014</b>		
	<b>Number</b>	<b>Total Salaries (\$ pa)</b>
Males	40	13,990,790
Females	25	8,704,000
<b>Total</b>	<b>65</b>	<b>22,694,790</b>

- 4.3 The average age of serving Judges at 1 July 2014 was nearly 59 years, with just under half (46 per cent) being aged between 50 and 60 years. Just under one-quarter of Judges (23 per cent) were aged between 60 and 65. One-fifth (20 per cent) of Judges were more that 65 year old as at 1 July 2014.
- 4.4 At 1 July 2014 there was one retired Judge in receipt of an annual invalidity pension of \$208,896.

## 5 ASSUMPTIONS

- 5.1 The Federal Circuit Court of Australia Death and Invalidity Scheme is a relatively small scheme which, as at the valuation date, had been in operation for less than 8 years. As such, there is little existing experience on which to base demographic assumptions. As a result, we have based the assumptions, for the most part, on those adopted for the Long Term Cost Report on the Judges' Pension Scheme as at 30 June 2014. We note that most of these assumptions are based on the assumptions used for the most recent Commonwealth Superannuation Scheme (CSS) in the PSS and CSS Long Term Cost Report as at 2014.
- 5.2 Details of the assumptions used are provided in Appendix A.

### *Financial Assumptions*

- 5.3 The significant financial assumptions made in determining the long term cost of the Scheme, are:
- the level of future increases in the Judge's salary on which pensions are based; and
  - the interest rate that is assumed for discounting projected benefit payments to give a present day value.
- 5.4 For this report, the following assumptions have been adopted:

Interest Rate: 6.0% per annum

Long Term General Salary Increases: 4.0% per annum

These assumptions represent a 2.0 per cent per annum real rate of return over the rate of salary increases. These are the same assumptions as those used for other Commonwealth schemes. Note that it is the gap between the two assumptions that will impact most on the estimates of the unfunded liability.

### *Demographic assumptions*

- 5.5 Note that from a benefits perspective there is no difference between age retirement and resignation. Accordingly, I have used the term resignation to refer to any exit from the scheme which does not give rise to a death or invalidity benefit.
- 5.6 Between 1 July 2011 and 30 June 2014 there were three resignations. During this time there were no retirements due to invalidity and there were no deaths. As at 1 July 2011, there were 61 Federal Circuit Court of Australia Judges, and as at 30 June 2014 there were 65 Federal Circuit Court of Australia Judges.



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- 5.7 The limited experience available suggests that resignation rates are relatively low for Federal Circuit Court of Australia Judges. As such, we do not believe it is unreasonable to assume a low uniform resignation rate for Judges aged less than 55 years, and then assume increasing rates of resignation up to age 70. On attaining age 70, a Federal Circuit Court of Australia Judge must retire.
- 5.8 The costs of the Scheme are sensitive to the invalidity rates assumed. Establishing a realistic set of invalidity assumptions is difficult for a number of reasons. The main reason is that the small numbers of members of the Scheme coupled with invalidity retirement being a low probability exit event results in few exits for analysis. This is evidenced by the fact that there has only been one invalidity retirement from the Scheme since its establishment. The absence of meaningful scheme experience means that we need to rely on external information in setting invalidity assumptions.
- 5.9 In these circumstances, it would be normal to seek to base the valuation assumptions on those adopted for other comparable schemes with larger memberships and more invalidity exits. Given the similarity of the working conditions of Federal Circuit Court of Australia Judges and the Commonwealth judiciary, it would make sense to base the Federal Circuit Court assumptions on those used for the Judges' Pension Scheme. However, in the Federal Circuit Court of Australia Scheme, the invalidity retirement benefit is higher than the resignation benefit at all ages. In the Judges' Pension Scheme, there is no difference between the invalidity retirement benefit and the resignation benefit once eligibility for the retirement pension benefit is attained. Commonwealth judges are eligible to receive a full pension on, or after, age 60 with a minimum of 10 years' service. Hence, some "standard age" retirements from the Judges' Pension Scheme after age 60 may be "de facto" invalidity retirements as there is nothing to be gained by these judges applying for invalidity retirement.
- 5.10 The invalidity element of the benefit design for the Scheme where the invalidity retirement benefit is higher than the resignation benefit at all ages is somewhat unusual. This increases the risk that simply adopting a set of invalidity retirement rate assumptions used for a different scheme might result in an underestimate of the Scheme's cost. Nonetheless, we have decided, on balance, to assume that the rates of invalidity retirements from the Scheme will be the same as those adopted for the Judges' Pension Scheme as at 30 June 2014.
- 5.11 In the light of the sensitivity of the costs of the Scheme to the invalidity rates assumed and the inherent uncertainty about the rates themselves, particularly those for older ages, we have illustrated the sensitivity of the cost estimates to the assumed invalidity rates in section 9.
- 5.12 There were no deaths among serving Federal Circuit Court of Australia Judges or invalid pensioners between 1 July 2011 and 30 June 2014. Given this lack of

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data, the mortality rates of serving Federal Circuit Court Judges and invalid pensioners are assumed to be the same as those adopted for serving Judges and invalid pensioners for the 2014 Long-Term Cost Report on the Judges' Pension Scheme respectively.

- 5.13 We assume that all Judges who die, resign, or retire on invalidity grounds are replaced by new entrants in to the Scheme. Using the observed ages at entry of all Federal Circuit Court Judges from June 2000 to September 2013, we have made assumptions on the new entrant age distribution from ages 35 to 69. Detailed assumptions are set out in Appendix A. These entry age assumptions are the same as those used in the last long-term cost report.
- 5.14 We have assumed the same proportions married as were adopted for the long-term cost report on the Judges' Pension Scheme as at 30 June 2014.

## **6 PROJECTION OF PREMIUM COSTS**

- 6.1 The premium cost of the Scheme represents the estimated present value of the cost of all future payments arising from deaths and invalidity retirements which will be expected during each projection year. That is, it is the amount which, if invested, would, together with assumed interest, be expected to be sufficient to meet the cost of all payments in respect of the claims for that projection year. The premium costs are also represented as a percentage of annual salaries for each year. It should be noted that the dollar costs given are in nominal dollars and have not been adjusted to 2014 dollars.
- 6.2 Based on the data supplied and on the assumptions made, we have calculated the premium costs, as at 30 June 2014, to be around \$608,000 in 2014-15, which equates to 2.6 per cent total salaries. The Table below shows the estimated premium costs for each of the next twenty years. Premium costs are estimated to remain around 2.6 per cent of salaries over the projection period. Variations as a percentage of salaries are due to the projected changes to the age structure of the membership over time and thus depend upon the demographic assumptions made, particularly those regarding the age distribution of new entrants.

<b>Year</b>	<b>Premium cost (\$000s)</b>	<b>Premium cost (as % of total salaries)</b>
2014-15	608	2.6
2015-16	632	2.6
2016-17	694	2.8
2017-18	727	2.8
2018-19	730	2.7
2019-20	735	2.6
2020-21	741	2.6
2021-22	765	2.5
2022-23	781	2.5
2023-24	804	2.5
2024-25	825	2.4
2025-26	870	2.5
2026-27	899	2.4
2027-28	944	2.5
2028-29	1,005	2.5
2029-30	1,057	2.6
2030-31	1,119	2.6
2031-32	1,117	2.6
2032-33	1,208	2.6
2033-34	1,248	2.6
2034-35	1,295	2.6

## **7 PROJECTION OF CASHFLOWS**

- 7.1 As well as estimating the premium costs, we have estimated the projected cashflows arising under the scheme. As the Scheme is relatively new, the early cashflows under the new Scheme will be low initially, increasing thereafter. Note that the projected payments include the pension payments to the sole invalidity pensioner as at 1 July 2014.
- 7.2 The Table below shows the estimated cashflows for each of the next twenty years. It should be noted that the dollar costs given are in nominal dollars and have not been adjusted to 2014 dollars.

<b>Year</b>	<b>Total cashflow (\$000s)</b>
2014-15	329
2015-16	407
2016-17	440
2017-18	542
2018-19	645
2019-20	747
2020-21	830
2021-22	677
2022-23	751
2023-24	842
2024-25	857
2025-26	938
2026-27	1,003
2027-28	1,006
2028-29	1,047
2029-30	1,038
2030-31	1,035
2031-32	1,171
2032-33	1,278
2033-34	1,368
2034-35	1,393

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- 7.3 There is some volatility in cashflows from year to year. This is due to the age structure of the current member population. Due to the small size of the population and clusters of members around particular ages, there will be years where the cashflow decreases compared to the previous year. For example, when a member in receipt of an invalid pension turns 65, the superannuation contributions component of their invalidity benefit ceases. If several members turn 65 in a particular year, this may have the overall effect of reducing expected cashflow costs in that year. This effect is magnified at age 70 when the invalidity pension ceases.
- 7.4 It is important to note that the cashflows given above are based on averages. In practice, cashflows will depend on the incidences of claims and the details of each claim and could vary significantly from those above. For example, a death claim could lead to a “one off” claim in the range of \$0 to \$1.5 million depending on the age of the individual concerned. Thus, the cashflows shown are only indicative of the trend and magnitude of cash expenditure rather than being accurate forecasts.
- 7.5 Cash expenditure initially lags behind premium costs as shown in Section 6. This is because premium costs include the capitalised value of all invalidity pension payments (and associated superannuation contributions) arising from an invalidity claim. Cash payments arising from an invalidity claim are spread over a number of years and will initially lag behind premium costs. In the longer term, the two would be expected to be of the same order but with cash expenditure generally higher than premium costs.

## **8 ACCRUED LIABILITY**

- 8.1 Based on the data supplied and on the assumptions made, we have calculated the accrued death and invalidity liabilities as at 30 June 2014 to be \$1.40 million. This is the present value of the future invalidity pension payments (and associated superannuation contributions) payable in respect of the one pensioner of the Scheme as at 30 June 2014. As the Scheme holds no assets, the accrued liability is equal to the unfunded liability.
- 8.2 The accrued liability set out in the above paragraph is consistent with an insurance premium approach. Under an insurance premium approach, an insurance company would receive a premium to cover the claims that could arise for that year. The insurance company would then be responsible for paying the claims that related to the premium year. This would include pension payments in future years for any invalidity claims that arose during the premium year. The insurance company's liability at the end of any premium year would be the value of any future pension payments to those that were in receipt of a pension at the end of the year which commenced in the just finished premium year and any prior premium year.
- 8.3 There is an alternative approach for calculating the accrued liability which is used for the majority of the other Commonwealth defined benefit superannuation arrangements. Under this alternative approach, not only are the current pensioners included in the accrued liability but an allowance for part of the future potential invalidity and death claims relating to serving members is made. The allowance for serving members is on the basis that potential future invalidity and death benefits are accrued uniformly over the period of service to the expected dates of invalidity and death. It should be noted that the approach taken for these other schemes is applied to all forms of exit including those leading to retirement and resignation benefits. The incorporation of the insurance premium approach for the non-cash service element of the death and invalidity benefits of these schemes could be argued to be an internally inconsistent valuation methodology as there are no external insurance arrangements in place. This issue is not relevant to this Scheme which only covers 'insurance' type death and invalidity benefits. The use of the alternative approach is conservative for this Scheme and would result in an accrued liability of \$2.93 million.

## 9 SENSITIVITY ANALYSIS

- 9.1 As discussed in Section 5, the costs of the Scheme are sensitive to the invalidity rates assumed. The uncertainty around the underlying rates is greatest for the older ages.
- 9.2 To provide some guide to the possible cost implications of this uncertainty, we have estimated the projected costs assuming higher invalidity rates for serving members aged 60 and older. The assumed invalidity rates for males and females are outlined in the table below. For serving members aged 60 years, invalidity rates are 1.3 times higher than those under the base assumptions, increasing to 5 times higher for serving members aged 69 years.

<b>INVALIDITY RATE ASSUMPTIONS</b>				
	<b>Females</b>		<b>Males</b>	
<b>Age</b>	<b>Base assumptions</b>	<b>Alternative invalidity assumptions</b>	<b>Base assumptions</b>	<b>Alternative invalidity assumptions</b>
60	0.00646	0.00840	0.00601	0.00781
61	0.00679	0.01086	0.00631	0.01010
62	0.00711	0.01422	0.00664	0.01328
63	0.00757	0.01893	0.00682	0.01705
64	0.00804	0.02412	0.00693	0.02079
65	0.00851	0.03404	0.00704	0.02816
66	0.00898	0.04490	0.00715	0.03575
67	0.00944	0.04720	0.00726	0.03630
68	0.00991	0.04955	0.00737	0.03685
69	0.01038	0.05190	0.00748	0.03740

- 9.3 Under these alternative invalidity rate assumptions, approximately 30 per cent of exits from the Scheme would be due to invalidity retirements, compared with around 10 per cent under the base invalidity assumptions.

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9.4 The sensitivity of the premium and cash costs to a change in the assumed invalidity rates are outlined in the table below:

<b>PROJECTED COSTS FOR SERVING MEMBERS AS AT 30 JUNE 2014</b>						
	<b>Premium costs (\$000s)</b>		<b>Premiums (as % of salaries)</b>		<b>Cash costs * (\$000s)</b>	
	<b>Base assumptions</b>	<b>Alternative invalidity assumptions</b>	<b>Base assumptions</b>	<b>Alternative invalidity assumptions</b>	<b>Base assumptions</b>	<b>Alternative invalidity assumptions</b>
2014-15	608	855	2.6	3.7	67	119
2015-16	632	897	2.6	3.7	141	244
2016-17	694	1,006	2.8	4.0	219	356
2017-18	728	1,091	2.8	4.2	314	537
2018-19	730	1,104	2.7	4.2	411	716
2019-20	735	1,204	2.6	4.3	506	904
2024-25	825	1,399	2.4	4.1	857	1,465
2029-30	1,057	1,612	2.6	3.9	1,038	1,626
2034-35	1,295	2,007	2.6	4.0	1,393	2,163

\*Excludes cash costs associated with current pensions.

9.5 Under the alternative invalidity assumptions, annual premium costs increase by between approximately 40 per cent and 70 per cent over the next 20 years. These premium costs equate to just over 4 per cent of salaries, an increase from 2.5 per cent of salaries under the base assumptions. As expected, cash costs of the Scheme also increase (in nominal dollars) under these alternative invalidity assumptions.

9.6 It should be noted that the actual costs of the Scheme will depend on actual experience which will only be known with the benefit of hindsight. It is possible that actual costs will be outside the range outlined above.



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24 August 2015



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**APPENDIX A**

**DETAILED ACTUARIAL ASSUMPTIONS**

*Financial Assumptions*

The long term financial assumptions adopted were as follows:

Interest Rate	6.0% per annum
General Salary Increases	4.0% per annum
Pension Increases	4.0% per annum

*Resignation/Retirement Rates*

The rates set out in the table below are the resignation/retirement rates applying to serving members. On attaining age 70, any serving Federal Circuit Court of Australia Judge must retire.

Attained Age	Retirement Rate
59 and younger	0.005
60	0.010
61	0.015
62	0.020
63	0.025
64	0.030
65	0.050
66	0.075
67	0.100
68	0.150
69	0.200
70	1.000

*Mortality and Invalidity Retirement*

The table below illustrates the decrement rates used for deaths and invalidity retirements. The figures represent the number of deaths and invalidity retirements expected per 100,000 contributors at each age.

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Age	Deaths		Invalid Retirements	
	Males	Females	Males	Females
35	38	20	57	61
40	47	26	79	103
45	63	41	127	164
50	88	62	194	255
55	124	106	305	426
60	183	173	601	646
65	274	269	704	851

*Pensioner Mortality*

The table below shows the mortality rates assumed for invalidity pensioners.

Age	Males	Females
40	0.00116	0.00092
50	0.00203	0.00205
55	0.00321	0.00350
60	0.00575	0.00572
61	0.00655	0.00627
62	0.00745	0.00690
63	0.00842	0.00764
64	0.00952	0.00848
65	0.01076	0.00943
66	0.01213	0.01052
67	0.01368	0.01177
68	0.01523	0.01299
69	0.01691	0.01437

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*Proportion Married*

The Table below shows the proportions married assumed.

<b>Age</b>	<b>Male Proportion Married</b>	<b>Female Proportion Married</b>
40	0.950	0.950
50	0.950	0.950
55	0.950	0.950
60	0.950	0.950
65	0.950	0.950
69	0.950	0.901

*New entrant assumptions*

The following table below shows assumed age distribution per 10,000 new entrants.

<b>Age at entry</b>	<b>New entrants (per 10,000)</b>
35	12
36	24
37	104
38	112
39	137
40	175
41	223
42	277
43	334
44	391
45	445
46	495
47	537
48	572
49	597
50	611
51	615
52	607

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<b>Age at entry</b>	<b>New entrants (per 10,000)</b>
53	589
54	559
55	520
56	471
57	415
58	354
59	288
60	222
61	156
62	95
63	42
64	5
65	5
66	3
67	3
68	3
69	2
<b>Total</b>	<b>10,000</b>

Federal Circuit Court of Australia new entrants are assumed to commence on a salary of \$348,160 in 2014-15 and indexed at 4% per annum.