Office of the Superintendent of Financial Institutions Canada
Office of the Chief Actuary

Bureau du surintendant des institutions financières Canada
Bureau de l'actuaire en chef

ACTUARIAL REPORT

on the Pension Plan for the

ROYAL CANADIAN MOUNTED POLICE

as at 31 March 2015

Canada

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24 June 2016

The Honourable Scott Brison, P.C., M.P.
President of the Treasury Board
Ottawa, Canada
K1A 0R5

Dear Minister:

Pursuant to section 6 of the *Public Pensions Reporting Act*, I am pleased to submit the report on the actuarial review as at 31 March 2015 of the pension plan for the Royal Canadian Mounted Police. This actuarial review is in respect of pension benefits and contributions which are defined by Parts I, III, and IV of the *Royal Canadian Mounted Police Superannuation Act*, the *Special Retirement Arrangements Act* and the *Pension Benefits Division Act*.

Yours sincerely,

Jean-Claude Ménard, F.S.A., F.C.I.A.
Chief Actuary
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I. Executive Summary

This actuarial report on the pension plan for the Royal Canadian Mounted Police (RCMP pension plan) was made pursuant to the *Public Pensions Reporting Act* (PPRA).

This actuarial valuation is as at 31 March 2015 and is in respect of pension benefits and contributions defined by Parts I, III, and IV of the *Royal Canadian Mounted Police Superannuation Act* (RCMPSA), the *Special Retirement Arrangements Act* (SRAA), which covers the Retirement Compensation Arrangement (RCA), and by the *Pension Benefits Division Act* (PBDA).

The previous actuarial report was made as at 31 March 2012. The date of the next periodic review is scheduled to occur no later than 31 March 2018.

A. Purpose of Actuarial Report

The purpose of this actuarial valuation is to determine the state of the Royal Canadian Mounted Police (RCMP) Superannuation Account, Pension Fund and Retirement Compensation Arrangements Account, as well as to assist the President of the Treasury Board in making informed decisions regarding the financing of the government's pension benefit obligation.

B. Valuation Basis

The *Royal Canadian Mounted Police Superannuation Regulations* were amended effective 7 June 2013. The amendments are mostly text changes such as modernization of language and repeal of outdated provisions; they do not have any material impact on this valuation. This report is based on pension benefit provisions enacted by legislation, which are summarized in Appendices 1 and 2. Member contribution rates for calendar year 2016 (as approved by Treasury Board) and for calendar years 2017 and 2018 (estimated) have been updated since the last valuation and are assumed to be equal to the contribution rates of Group 1 contributors under the pension plan for the Public Service of Canada (PS pension plan).

The financial data on which this valuation is based are composed of invested assets that the government has earmarked for the payment of benefits for service since 1 April 2000 (the Pension Fund), the Superannuation Account established to track the government's pension benefit obligations for service prior to 1 April 2000 and the RCA Account for benefits in excess of those that can be provided under the *Income Tax Act* limits for registered pension plans. These pension assets and account balances are summarized in Appendix 3. The membership data provided by the Department of Public Services and Procurement Canada (PSPC) is summarized in Appendix 4.

The valuation was prepared using accepted actuarial practices in Canada, methods and assumptions which are summarized in Appendices 5 to 8.

All actuarial assumptions used in this report are best-estimate assumptions. They are, individually and in aggregate, reasonable for the purposes of the valuation at the date of this report.

Actuarial assumptions used in the previous report were revised based on economic trends and demographic experience. A complete description of the assumptions is shown in Appendices 6 to 8. A summary of the ultimate economic assumptions used in this report and those used in the previous report is shown in the following table.

Table 1 Ultimate Best-Estimate Economic Assumptions

	31 March 2015 Valuation	31 March 2012 Valuation
Assumed level of inflation	2.0%	2.2%
Real increase in average pensionable earnings	0.9%	1.0%
Real rate of return for the Pension Fund	4.1%	4.1%
Real projected yield on the Superannuation Account	2.8%	2.8%

C. Main Findings

The proposed amounts to be credited to (or debited from) the Accounts and the Pension Fund are shown on a calendar year basis in this section beginning with calendar year 2017 which is the first calendar year that follows the expected tabling of this report. Valuation results on a plan year[1] basis are shown in Section II.

1) Superannuation Account (Service prior to 1 April 2000)

As at 31 March 2015, the recorded balance of the Superannuation Account is $13,203 million and the actuarial liability for service prior[2] to 1 April 2000 is $13,428 million. The resulting shortfall is $225 million.

In accordance with the RCMPSA, the actuarial shortfall could be amortized over a maximum period of 15 years beginning on 31 March 2017. If the shortfall is amortized over the maximum period, 15 equal annual credits of $20 million could be made to the Superannuation Account, taking into account a special credit of $12 million to be made on 31 March 2016 in accordance with the previous special credits schedule. The time, manner and amount of such credits are to be determined by the President of the Treasury Board.

2) Pension Fund (Service since 1 April 2000)

a) Current Service Cost[3]

The RCMPSA total current service cost, borne jointly by the contributors and the government, is $470 million for calendar year 2017. The estimated member contributions are $214 million and the estimated government contributions are $256 million for calendar year 2017. Administrative expenses are estimated at $4 million (included in the total current service cost) for calendar year 2017. The following table shows the projected current service cost expressed as a percentage of the expected pensionable payroll[4] and in dollar amounts for the three calendar years following the expected laying date of this report. The ratio of government current service cost to contributor current service cost is also shown. Projected current service costs shown in this table are based on the member contribution rates shown in Section II-C-2.

1 Any reference to a given *plan year* in this report should be taken as the 12-month period ending 31 March of the given year.
2 The actuarial liability for service prior to 1 April 2000 refers to the actuarial liability for service accrued prior to that date except for service elections since 1 April 2000 with respect to periods prior to 1 April 2000 that are deemed to be service accrued since that date.
3 Also called normal cost.
4 Pensionable payroll means the aggregate of pensionable earnings of all contributors with less than 35 years of service.

Table 2 RCMPSA Current Service Cost on a Calendar Year Basis

Calendar Year	Current Service Cost (% of pensionable payroll)			Current Service Cost ($ millions)			Ratio of Government to Contributor Current Service Cost
	Contributors	Government	Total	Contributors	Government	Total	
2017	10.31	12.37	22.68	214	256	470	1.20
2018	10.36	12.31	22.67	221	262	483	1.19
2019	10.33	12.38	22.71	227	273	500	1.20

b) Financial Position and Amortization of Actuarial Surplus (Deficit)

As at 31 March 2015, the actuarial value of the assets in respect of the Pension Fund is $7,286 million and the actuarial liability is $7,440 million, resulting in an actuarial deficit of $154 million.

In accordance with the RCMPSA, actuarial deficits can be amortized over a period of up to 15 years. If the actuarial deficit of $154 million is amortized over the maximum period, 15 equal annual payments of $9 million could be made to the Pension Fund beginning on 31 March 2017, considering the special payment of $74 million determined by the President of the Treasury Board to be made on 31 March 2016. The final time, manner and amount of any special payments are to be determined by the President of the Treasury Board.

c) Non-permitted Actuarial Surplus

If there exists in the opinion of the President of the Treasury Board a non-permitted surplus[1] in the Pension Fund, no further government contributions are permitted. Further, member contributions to the Fund may also be reduced in a manner determined by the Treasury Board or the non-permitted surplus may be paid out of the Fund and into the Consolidated Revenue Fund. The results of this valuation do not indicate the existence of a non-permitted surplus as at 31 March 2015.

3) RCA

As at 31 March 2015, the balance of the RCA Account is $66 million and the actuarial liability is $55 million resulting in an actuarial excess of $11 million.

The SRAA does not allow for an adjustment to be made to the RCA Account to track the actuarial liability when there is an actuarial excess.

The RCA total current service cost, borne jointly by the contributors and the government, is $1 million per year for calendar years 2017, 2018 and 2019. The estimated member contributions are $130,000 per year and the estimated government costs are 6.5 times the members' contributions, i.e. $845,000 per year for calendar years 2017, 2018 and 2019. The following table shows the projected current service

[1] A non-permitted surplus exists when the amount by which the value of assets exceeds liabilities for service since 1 April 2000 is greater than the lesser of (a) and (b), where:
(a) is 20% of the amount of liabilities for service since 1 April 2000, and
(b) is the greater of (i) and (ii) where:
(i) is twice the estimated amount, for the calendar year following the date of that report, of the total of
(A) the current service cost contributions that would be required of contributors, and
(B) the current service cost contributions that would be required of the government, and
(ii) is 10% of the amount of liabilities for service since 1 April 2000.

cost expressed as a percentage of the expected pensionable payroll[1] and in dollar amounts for the three calendar years following the expected laying date of this report. The ratio of government current service cost to contributor current service cost is also shown.

Table 3 RCA Current Service Cost on a Calendar Year Basis

Calendar Year	Current Service Cost (% of pensionable payroll)			Current Service Cost ($ millions)			Ratio of Government to Contributor Current Service Cost
	Contributors	Government	Total	Contributors	Government	Total	
2017	0.01	0.04	0.05	0.130	0.845	0.975	6.5
2018	0.01	0.04	0.05	0.130	0.845	0.975	6.5
2019	0.01	0.04	0.05	0.130	0.845	0.975	6.5

[1] Pensionable payroll means the aggregate of pensionable earnings of all contributors with less than 35 years of service.

II. Valuation Results

This report is based on pension benefit provisions enacted by legislation, summarized in Appendices 1 and 2, and the financial and membership data, summarized in Appendices 3 and 4. The valuation was prepared using accepted actuarial practices in Canada, methods and assumptions summarized in Appendices 5 to 8. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent reports.

Projections of the Superannuation Account and Pension Fund are shown in Appendices 9 and 10, respectively.

A. RCMPSA – Financial Position

Beginning on 1 April 2000, member and government contributions to the RCMP pension plan are no longer credited to the RCMP Superannuation Account. Rather, they are credited to the RCMP Pension Fund, and the total amount of contributions net of benefits paid and administrative expenses is transferred to the Public Sector Pension Investment Board (PSPIB) and invested in the financial markets. The valuation results of this section show the financial position for both RCMPSA financing arrangements as at 31 March 2015. The results of the previous valuation are also shown for comparison.

Table 4 State of the Superannuation Account
(Service prior to 1 April 2000)
($ millions)

	As at 31 March 2015	As at 31 March 2012
Recorded Account Balance		
Account Balance	13,197	13,016
Present value of prior service contributions	6	8
Total Recorded Account Balance	13,203	13,024
Actuarial Liability		
Regular Members		
Contributors	2,368	3,265
Retirement pensioners	8,452	7,546
Disability pensioners	1,008	774
Surviving dependents	542	460
Civilian Members		
Contributors	215	331
Retirement pensioners	630	530
Disability pensioners	89	80
Surviving dependents	34	25
Administrative expenses	90	78
Pension modernization cost	-	52
Total Actuarial Liability	13,428	13,141
Actuarial Excess/(Shortfall)	(225)	(117)

In accordance with the RCMPSA, the actuarial shortfall of $225 million could be amortized over a maximum period of 15 years beginning on 31 March 2017. If the shortfall is amortized over the maximum period, 15 equal annual credits of $20 million could be made to the Superannuation Account, taking into account a special credit of $12 million to be made on 31 March 2016 in accordance with the previous special payments schedule. The time, manner and amount of such credits are to be determined by the President of the Treasury Board. It is expected that the government will amortize the actuarial shortfall through a one-time special credit to the Superannuation Account of $234 million as at 31 March 2017.

Table 5 Balance Sheet – Pension Fund
(Service since 1 April 2000)
($ millions)

	As at 31 March 2015	As at 31 March 2012
Assets		
Market value of assets	8,082	4,570
Actuarial smoothing adjustment	(809)	(59)
Present value of prior service contributions	13	15
Total Actuarial Value of Assets	7,286	4,526
Actuarial Liability		
Regular Members		
Contributors	4,613	3,598
Retirement pensioners	1,476	855
Disability pensioners	374	168
Surviving dependents	29	18
Civilian Members		
Contributors	715	513
Retirement pensioners	189	107
Disability pensioners	39	19
Surviving dependents	5	2
Pension modernization cost	-	27
Total Actuarial Liability	7,440	5,307
Actuarial Surplus/(Deficit)	(154)	(781)

In accordance with the RCMPSA, actuarial deficits can be amortized over a period of up to 15 years. If the actuarial deficit of $154 million is amortized over the maximum period, 15 equal annual payments of $9 million could be made to the Pension Fund beginning on 31 March 2017, considering the special payment of $74 million determined by the President of the Treasury Board to be made on 31 March 2016. The final time, manner and amount of any special payments are to be determined by the President of the Treasury Board.

B. RCMPSA – Reconciliation of the Changes in Financial Position

The following table shows the reconciliation of the changes in the financial positions of the Superannuation Account and the Pension Fund. Explanations of the elements largely responsible for the changes follow the table.

Table 6 Reconciliation of RCMPSA Financial Position
($ millions)

	Superannuation Account Actuarial Excess/ (Shortfall)	Pension Fund Actuarial Surplus/ (Deficit)
As at 31 March 2012	(117)	(781)
Recognized investment gains as at 31 March 2012	-	59
Special credits/payments	24	205
Expected interest on financial position	(19)	(109)
Data corrections	95	(58)
Experience gains and losses	105	1,534
Revision of actuarial assumptions	(313)	(195)
Unrecognized investment gains as at 31 March 2015	-	(809)
As at 31 March 2015	(225)	(154)

1. Recognized Investment Gains as at 31 March 2012

An actuarial asset valuation method that minimizes the impact of short-term fluctuations in the market value of assets was used in the previous valuation report, causing the actuarial value of the Pension Fund assets to be $59 million less than their market value.

2. Special Credits/Payments

In the previous valuation, an annual credit of $12 million was calculated to amortize the Account shortfall over a 15-year period, with the first credit beginning on 31 March 2014. The sum of the annual credits calculated for the 31 March 2014 and the 31 March 2015 amounted to $24 million.

In the 2012 valuation, an annual instalment of $71 million was calculated to amortize the Pension Fund actuarial deficit over a 15-year period, with the first instalment beginning on 31 March 2014. As determined by the President of the Treasury Board, annual instalments were recalculated over a shorter period and special payments of $74 million were made on 31 March 2014 and 31 March 2015. Together with a special payment of $57 million determined by the President of the Treasury Board and made on 31 March 2013, the sum of the special payments made in the intervaluation period amounted to $205 million.

3. Expected Interest on Financial Position

The expected interest to 31 March 2015 on the resulting Account shortfall of $93 million, taking into account the calculated credits of $24 million amounted to $19 million as at 31 March 2015. The expected interest to 31 March 2015 on the resulting Pension Fund actuarial deficit of $517 million, taking into account the unrecognized investment gains as at 31 March 2012, the amortization payments of

$148 million and the special payment of $57 million determined by the President of the Treasury Board amounted to $109 million.

4. Data Corrections

The corrections of data, in particular corrections to the member's credited years of service, upon which the 2012 report was based, decreased the Superannuation Account shortfall by $95 million and increased the Pension Fund actuarial deficit by $58 million as at 31 March 2015.

5. Experience Gains (Losses)

Since the previous valuation, experience gains and losses have decreased the Superannuation Account actuarial shortfall by $105 million and have decreased the Pension Fund actuarial deficit by $1,534 million. The main items are described in the following table.

Table 7 Experience Gains and Losses
($ millions)

	Superannuation Account	Pension Fund
Demographic experience(i)		
Seniority and promotional increases	5	25
Mortality of disabled members	(19)	(5)
Mortality of healthy members	(17)	(5)
Withdrawals	(3)	(14)
Retirements	6	8
Proportion married	(8)	-
Mortality of widow(er)s	(7)	-
Disabilities	2	(1)
New entrants	-	1
Total	(41)	9
Interest and investment earnings (ii)	(7)	1,533
Pension indexation (iii)	144	22
Cost/Contributions difference (iv)	-	(28)
Modernization expenses (v)	17	9
PBDA payments (vi)	(8)	(13)
YMPE increases	(1)	(3)
Administration expenses	(2)	(1)
MPE increases	-	1
Miscellaneous	3	5
Net experience gains (losses)	105	1,534

(i) The net impact of the demographic experience increased the Superannuation Account shortfall by $41 million and decreased the Pension Fund actuarial deficit by $9 million. The most important items are as follows:

- Seniority and promotional salary increases were less than expected. The Superannuation Account shortfall decreased by $5 million and the Pension Fund actuarial deficit decreased by $25 million.

- Mortality experience of disabled members was lower than expected. The Superannuation Account shortfall increased by $19 million and the Pension Fund actuarial deficit increased by $5 million.
- Mortality experience of healthy members was lower than expected. The Superannuation Account shortfall increased by $17 million and the Pension Fund actuarial deficit increased by $5 million.
- The number of withdrawals was more than expected. The Superannuation Account shortfall increased by $3 million and the Pension Fund actuarial deficit increased by $14 million.
- The number of retirements was less than expected. The Superannuation Account shortfall decreased by $6 million and the Pension Fund actuarial deficit decreased by $8 million.

(ii) The interest earnings credited to the Superannuation Account were marginally less than the corresponding projected Account yields in the previous valuation; consequently the experience loss was $7 million. Financial markets performed strongly over the three-year intervaluation period. The Pension Fund rates of return for plan years 2013, 2014 and 2015 were 10.7%, 16.3% and 14.5% compared to expected returns of 5.1%, 5.2% and 5.3%. Consequently, the Pension Fund experienced an investment gain of $1,533 million.

(iii) The January 2014 and 2015 pension indexation rates were lower than the projected pension indexing in the previous valuation by 1.1% and 0.3% respectively. As a result, the Superannuation Account gained $144 million and the Pension Fund gained $22 million.

(iv) The government contributions for plan year 2013 were based on the cost certificate of the 2011 valuation report and were lower than the government portion of the current service cost shown in the cost certificate of the 2012 valuation report. This resulted in an increase of $28 million to the Pension Fund actuarial deficit.

(v) In the previous valuation, it was expected that modernization expenses would extend up to plan year 2016 and the sum of the annual expenses were estimated to $57 million for the Superannuation Account and $30 million for the Pension Fund. The modernization project was completed in plan year 2015 and the actual annual expenses were different than estimated (the sum was $40 million and $21 million respectively for the Superannuation Account and the Pension Fund). With interest, the Superannuation Account gained $17 million and the Pension Fund gained $9 million.

(vi) The underlying assumptions used for the valuation of the payments made under the PBDA being different than those used for funding purposes caused an experience loss of $8 million for the Superannuation Account and an experience loss of $13 million for the Pension Fund.

6. Revision of Actuarial Assumptions

Actuarial assumptions were revised based on economic trends and demographic experience as described in Appendices 6 and 7. This revision has increased the Superannuation Account actuarial liability by $313 million and increased the

Pension Fund actuarial liability by $195 million. The impact of these revisions is shown in the following table and the most important items are discussed thereafter.

Table 8 Revision of Actuarial Assumptions
($ millions)

Assumptions	Superannuation Account	Pension Fund
Economic assumptions		
Real yields and rates of return	(323)	(310)
Real increases in pensionable earnings	45	144
Pension indexation and inflation	(5)	(23)
Total	(283)	(189)
Mortality of disabled members	(74)	(63)
Mortality of widow(er)s	85	16
Pensionable retirements	21	52
Mortality improvement factors	(49)	(15)
Disability	(3)	(39)
Seniority and promotional increases	4	36
Administrative expenses	(18)	-
Mortality of healthy members	4	7
Net impact of revisions on financial position	(313)	(195)

The net impact of the revision of the assumptions is largely attributable to the changes in economic assumptions as well as mortality and pensionable retirement assumptions.

The following revisions were made to the economic assumptions used in the previous report:

- real new money rates are lower in the next eight years following the valuation date; consequently, real projected yields on the Superannuation and RCA Accounts are on average 0.3% lower in the next 24 years following the valuation date;
- real projected rates of return on the Pension Fund are on average 0.5% lower in the next nine years following the valuation date;
- ultimate real increase in average pensionable earnings decreased from 1.0% to 0.9%;
- short-term inflation was lower than expected, impacting the assumed pension indexing for the first 2 years following the valuation date combined with a decrease of the ultimate level of inflation from 2.2% to 2.0%.

Details of the changes in economic assumptions are described in Appendix 6.

7. Unrecognized Investment Gains

The actuarial asset valuation method described in the 31 March 2012 valuation report, the role of which is to minimize the impact of short-term fluctuations in the market value of assets, was also used for this valuation. For this valuation, the method resulted in an actuarial value of assets that is $809 million less than the market value of the Pension Fund assets as at 31 March 2015.

C. RCMPSA – Cost Certificate

1. Current Service Cost

The details of the current service cost for plan year 2016 and a reconciliation with the 2013 current service cost are shown below.

Table 9 Current Service Cost for Plan Year 2016
($ millions)

Member required contributions	185
Government current service cost	274
Total current service cost	459
Expected pensionable payroll[1]	1,999
Total current service cost as % of expected pensionable payroll	22.96%

Table 10 Reconciliation of RCMPSA Current Service Cost
(% of pensionable payroll[1])

For plan year 2013	22.65
Expected current service cost change	(0.14)
Data corrections	(0.01)
Experience gains and losses	0.02
Changes in assumptions	
Economic assumptions	
Real rates of return	1.01
Real increases in pensionable earnings	(0.64)
Pension indexation and inflation	0.09
Demographic assumptions	
Pensionable retirements	(0.21)
Mortality of disabled members	0.21
Seniority and promotional increases	(0.20)
Pensionable disabilities	0.16
Mortality improvement factors	0.05
Mortality of widow(er)s	(0.04)
Administrative expenses	0.04
Mortality of healthy members	(0.03)
For plan year 2016	22.96

The RCMPSA current service cost is the weighted average of the separate current service costs for Regular Members and Civilian Members. For plan year 2016, the current service cost of 22.96% of pensionable payroll is composed of 23.38% for Regular Members and 21.09% for Civilian Members. The difference in current service costs is mainly attributable to the more advantageous early retirement provisions available to Regular Members.

2. Projection of Current Service Cost

The current service cost is borne jointly by the members and the government. The member contribution rates have been changed since the last valuation. Contribution rates are assumed to be equal to the contribution rates of Group 1 contributors under

[1] Pensionable payroll means the aggregate and pensionable earnings of all contributors with less than 35 years of service.

the pension plan for the Public Service of Canada. The contribution rates shown after calendar year 2016 are estimates and subject to change. The contribution rates are as follows:

Member Contribution Rates

Calendar Year	Below YMPE	Above YMPE
2015	8.15%	10.40%
2016	9.05%	11.04%
2017	9.55%	11.68%
2018	9.53%	11.62%

The following RCMPSA current service costs in dollar amount are also expressed as a percentage of the projected pensionable payroll[1] in each given plan year. Current service costs are shown below on a plan year basis; member contributions and the government current service costs are also shown on a calendar year basis in the Executive Summary.

Table 11 Projection of Current Service Cost on a Plan Year Basis

Plan Year	Current Service Cost ($ millions)			Current Service Cost As a % of Pensionable Payroll[1]			Portion Borne by
	Members	Government	Total	Members	Government	Total	Members : Government
2016	185	274	459	9.25	13.71	22.96	40% : 60%
2017	203	259	462	9.99	12.74	22.73	44% : 56%
2018	217	255	472	10.42	12.24	22.66	46% : 54%
2019	222	265	487	10.34	12.33	22.67	46% : 54%
2020	229	275	504	10.32	12.40	22.72	45% : 55%

3. Administrative Expenses

Based upon the assumptions described in section B of Appendix 7, the Pension Fund administrative expenses are included in the total current service costs. As for the previous report, the expected administrative expenses exclude the PSPIB operating expenses as these are recognized implicitly through a decrease in the real rate of return. The Pension Fund administrative expenses are estimated to be $4.1 million for plan year 2016, increasing to $4.4 and $4.7 million for plan years 2017 and 2018, respectively.

The Superannuation Account administrative expenses have been capitalized and increase the liability for service prior to 1 April 2000.

4. Contributions for Prior Service Elections

Based on the valuation data and the assumptions described in section B of Appendix 7, member and government contributions for prior service elections were estimated as follows:

[1] Pensionable payroll means the aggregate and pensionable earnings of all contributors with less than 35 years of service.

Table 12 Estimated Contributions for Prior Service
($ millions)

	Superannuation Account		Pension Fund	
Plan Year	Members	Government	Members	Government
2016	0.3	0.3	1.0	1.5
2017	0.3	0.3	1.0	1.3
2018	0.2	0.2	1.0	1.2

D. Sensitivity of Valuation Results to Variations in Longevity Improvement Factors

This valuation assumes that the current mortality rates applicable to members of the RCMP pension plan will improve over time. This assumption is based on the longevity improvement assumption contained in the 26th Actuarial Report on the Canada Pension Plan. The following table measures the effect of varying the longevity improvement assumptions on the plan year 2016 current service cost and liabilities.

Table 13 Sensitivity of Valuation Results to Variations in Longevity Improvement Factors

	Current Service Cost as a percentage of pensionable payroll		Actuarial Liability ($ millions) Service prior to 1 April 2000		Service since 1 April 2000		Life Expectancy of a Regular Member aged 65 as at 31 March 2015	
Longevity improvement	2016	Effect		Effect		Effect	Male	Female
Current basis	22.96	None	13,428	None	7,440	None	22.1	24.5
- if 0%	22.16	(0.80)	12,935	(493)	7,203	(237)	20.9	23.5
- if ultimate 50% higher	23.16	0.20	13,482	54	7,484	44	22.2	24.7
- if ultimate 50% lower	22.81	(0.15)	13,373	(55)	7,395	(45)	22.0	24.4
- if kept at 2016 level	23.66	0.70	13,754	326	7,629	189	23.0	25.1

E. Sensitivity to Variations in Key Economic Assumptions

The information required by statute, which is presented in this report, has been derived using best-estimate assumptions regarding future demographic and economic trends. The key best-estimate assumptions, i.e. those for which changes within a reasonable range have the most significant impact on the long-term financial results, are described in Appendices 6 and 7. Given the length of the projection period and the number of assumptions required, it is unlikely that the actual experience will develop precisely in accordance with best-estimate assumptions that underlie the actuarial estimates. Individual sensitivity tests have been performed using alternative assumptions.

The following table measures the effect on the plan year 2016 current service cost and liabilities when key economic assumptions are varied by one percentage point per annum.

Table 14 Sensitivity of Valuation Results to Variations in Key Economic Assumptions

	Current Service Cost as a percentage of pensionable payroll		Actuarial Liability ($ millions) Service prior to 1 April 2000		Service since 1 April 2000	
Assumption(s) Varied	2016	Effect		Effect		Effect
None (i.e. current basis)	22.96	None	13,428	None	7,440	None
Investment yield						
- if 1% higher	18.26	(4.70)	11,828	(1,600)	6,193	(1,247)
- if 1% lower	29.46	6.50	15,408	1,980	9,089	1,649
Pension indexing						
- if 1% higher	26.16	3.20	15,234	1,806	8,453	1,013
- if 1% lower	20.41	(2.55)	11,930	(1,498)	6,612	(828)
Salary, YMPE and MPE						
- if 1% higher	25.40	2.44	13,503	75	7,874	434
- if 1% lower	20.91	(2.05)	13,356	(72)	7,059	(381)
All economic assumptions						
- if 1% higher	22.50	(0.46)	13,369	(59)	7,325	(115)
- if 1% lower	23.47	0.51	13,488	60	7,560	120

The differences between the results above and those shown in the valuation can also serve as a basis for approximating the effect of other numerical variations in one of the key assumptions to the extent that such effects are linear.

F. RCA – Financial Position

This section shows the financial position of the RCA account as at 31 March 2015. The results of the previous valuation are also shown for comparison.

1. RCA – Financial Position

Table 15 State of the RCA Account
($ millions)

	As at 31 March 2015	As at 31 March 2012
Recorded Account balance	33	31
Tax credit (CRA refundable tax)	33	30
Total	66	61
Actuarial liability		
Contributors	18	15
Pensioners	37	28
Total actuarial liability	55	43
Actuarial Excess/(Shortfall)	11	18

The sum of the recorded balance of the RCA Account and the tax credit (CRA refundable tax) is $66 million; it exceeds the actuarial liability of $55 million by 20% as at 31 March 2015 (42% as at 31 March 2012). The SRAA does not allow for an adjustment to be made to the RCA Account to track the actuarial liability when there is an actuarial excess.

2. RCA - Current Service Cost

The projected current service cost, borne jointly by the contributors and the government, of 0.05% for plan year 2016 is as calculated in the previous valuation.

The RCA current service cost is estimated to remain constant at 0.05% of pensionable payroll for the next three plan years, with the members contributing $130,000 every year and the government contributing $845,000, or 6.5 times the members' contribution, for a total amount of $975,000 per year.

G. Summary of Estimated Government Costs

It is expected that the government will amortize the actuarial shortfall of $225 million as at 31 March 2015 through a one-time special credit to the Superannuation Account of $234 million as at 31 March 2017. It is further expected that the government will amortize the actuarial deficit of $154 million as at 31 March 2015 through 15 equal special payments to the Pension Fund of $9 million starting on 31 March 2017. The estimated total government costs on a plan year basis are as follows:

Table 16 Estimated Government Cost
($ millions)

	Government Current Service Cost		Special Credits/ Payments			Total	Total
Plan Year	Pension Fund	RCA	Superannuation Account	Pension Fund	RCA	Prior Service Cost	Government Cost
2016	274	1	12 [1]	74 [1]	-	2	363
2017	259	1	234	9	-	2	505
2018	255	1	0	9	-	1	265

[1] As determined by the President of Treasury Board following the laying of the 2012 valuation report.

III. Actuarial Opinion

In our opinion, considering that this report was prepared pursuant to the *Public Pensions Reporting Act*,

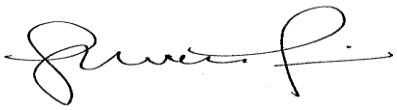
- the valuation input data on which the valuation is based are sufficient and reliable for the purposes of the valuation;
- the assumptions that have been used are, individually and in aggregate, appropriate for the purposes of the valuation;
- the methods employed are appropriate for the purposes of the valuation; and
- this report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada.

In particular, this report was prepared in accordance with the Standards of Practice (General Standards and Practice – Specific Standards for Pension Plans) published by the Canadian Institute of Actuaries.

To the best of our knowledge, after discussion with the Royal Canadian Mounted Police, there were no subsequent events between the valuation date and the date of this report that would have a material impact on the results of this valuation.

The payment of accrued pension benefits being the responsibility of the government, the likelihood of the plan being wound-up and its obligation not being fulfilled is practically nonexistent; also the Act does not define the benefits payable upon wind-up. Therefore, a hypothetical wind-up valuation has not been performed.

Jean-Claude Ménard, F.S.A., F.C.I.A.
Chief Actuary



Laurence Frappier, F.S.A., F.C.I.A.
Senior Actuary

Ottawa, Canada
24 June 2016

Appendix 1 – Summary of Pension Benefit Provisions

Pensions for members of the Royal Canadian Mounted Police ("the Force") were provided under the *Royal Canadian Mounted Police Act* until the *Royal Canadian Mounted Police Pension Continuation Act* and the *Royal Canadian Mounted Police Superannuation Act* (RCMPSA) were enacted in 1959. Benefits are also provided to members of the Force under the *Special Retirement Arrangements Act*. Benefits may be modified in accordance with the *Pension Benefits Division Act* if there is a breakdown of a spousal union.

The previous valuation report was based on the pension benefit provisions as they stood as at 31 March 2012. The *Royal Canadian Mounted Police Superannuation Regulations* were amended effective 7 June 2013 to resolve concerns expressed by the Standing Joint Committee for the Scrutiny of Regulations by using consistent terminology, ensuring equivalent meaning in the English and French versions, and correcting discrepancies between the Regulations and the enabling authority. The amendments also make a number of housekeeping changes such as modernization of language, changes to reflect the renumbering of statutory authorities, and the repeal of outdated provisions.

Summary of Pension Benefit Provisions
Summarized in this Appendix are the pension benefits provided under the RCMPSA registered provisions which are in compliance with the *Income Tax Act*. The portion of the benefits in excess of the *Income Tax Act* limits for registered pension plans is provided under the retirement compensation arrangements described in Appendix 2.

The legislation shall prevail if there is a discrepancy between it and this summary.

A. Membership

Membership in the plan is compulsory for all members of the Force regardless of length of service. Continued membership in the plan became optional for members of the Force who transferred to the Canadian Security Intelligence Service when it was established in 1984.

B. Contributions

1. Members

During the first 35 years of pensionable service, members contribute according to the rates shown in the following table.

Calendar Year	2014	2015	2016	2017	2018
Contribution rates on earnings **up to** the maximum covered by the Canada Pension Plan	7.50%	8.15%	9.05%	9.55%	9.53%
Contribution rates on any earnings **over** the maximum covered by the Canada Pension Plan	9.80%	10.40%	11.04%	11.68%	11.62%

Contribution rates beyond 2016 are assumed to be equal to the contribution rates of Group 1 contributors under the Public Service pension plan (PS pension plan); they are estimates only and subject to change. Actual contribution rates beyond 2016 will be determined by the Treasury Board and must not exceed the rates paid by Group 1 contributors under the PS pension plan. More information on the rates assumed under the PS pension plan can be found in the Actuarial Report on the Pension Plan for the Public Service of Canada as at 31 March 2014.

After 35 years of pensionable service, members contribute 1% of pensionable earnings.

2. Government

a) Current Service

The government determines its on-going monthly cost as that amount, which when combined with the required contributions by members in respect of current service, is sufficient to cover the cost, as estimated by the President of the Treasury Board, of all future benefits that have accrued in respect of pensionable service during that month and the Pension Fund administrative expenses incurred during that month.

b) Elected Prior Service

The government matches member contributions made under the Superannuation Account for prior service elections. Government credits to the Pension Fund in respect of elected prior service are as described for current service.

c) Actuarial Excess and Surplus

The *Public Sector Pension Investment Board Act* (S.C. 1999, c. 34), which received Royal Assent on 14 September 1999, gives the government the authority to:

- debit the excess of the balance of the Superannuation Account over the actuarial liability subject to limitations, and
- deal with any actuarial surplus, subject to limitations, in the Pension Fund as they occur, either by reducing employee and/or government contributions or by making withdrawals.

d) Actuarial Shortfall and Deficit

In accordance with the RCMPSA, if an actuarial shortfall is identified through a triennial statutory actuarial valuation, the actuarial shortfall can be amortized over a period of up to 15 years through annual credits of the amount that, in the opinion of the President of the Treasury Board will, at the end of the fifteenth fiscal year following the tabling of that report or at the end of the shorter period that the President of the Treasury Board may determine, together with the amount that the President of the Treasury Board estimates will be to the credit of the Superannuation Account at that time, meet the cost of the benefits payable in respect of pensionable service prior to April 2000.

Similarly, if an actuarial deficit is identified through a triennial statutory actuarial valuation, the actuarial deficit can be amortized over a period of up to 15 years through annual payments of the amount that in the opinion of the President of the Treasury Board will, at the end of the fifteenth fiscal year following the tabling of that report or at the end of the shorter period that the President of the Treasury Board may determine, together with the amount that the President of the Treasury Board estimates will be to the credit of the Pension Fund at that time, meet the cost of the benefits payable in respect of pensionable service since April 2000.

C. Summary Description of Benefits

The objective of the RCMP pension plan is to provide an employment earnings-related lifetime retirement pension to eligible members. Benefits to members in case of disability and to the spouse and children in case of death are also provided.

Subject to coordination with the pensions paid by the Canada Pension Plan (CPP), the initial rate of retirement pension is equal to 2% of the highest average annual pensionable earnings over any period of five consecutive years, multiplied by the number of years of pensionable service not exceeding 35. Once in pay, the pension is indexed with the Consumer Price Index. Such indexation also applies to deferred pensions during the deferral period. Entitlement to benefits depends on either service in the Force or pensionable service, as defined in Notes 3 and 4 of section D below.

Detailed notes on the following overview are provided in section D.

1. Regular Members

Type of Termination	**Service in the Force**	**Benefit**
Retirement because of age (Note 5)	Under 2 years	Greater of: • return of contributions (Note 6), or • cash termination allowance (Note 7)
	2 years or more	Immediate annuity (Note 8)
Compulsory retirement to promote economy or efficiency in the Force	Under 2 years	Return of contributions
	2 years to less than 20 years	Choice of: • deferred annuity (Note 9), or • reduced immediate annuity (Note 11)
	20 years or more	Immediate annuity
Compulsory retirement because of misconduct	Any period	At the discretion of the Treasury Board (Note 12)
Other voluntary withdrawal or retirement	Under 2 years	Return of contributions
	2 years to less than 20 years	Choice of: • deferred annuity, or • transfer value if under age 60 (Note 10)
	20 years to less than 25 years	Annual allowance (Note 13)
	25 years or more	Immediate annuity
Type of Termination	**Pensionable Service**	**Benefit**
Compulsory retirement because of disability	Under 2 years	Greater of: • return of contributions, or • cash termination allowance
	2 years or more	Immediate annuity
Death leaving no eligible survivor	Under 2 years	Return of contributions to nominated beneficiary, otherwise to estate
	2 years or more	Minimum death benefit (Note 16)
Death leaving eligible survivor(s) (Notes 14 and 15)	Under 2 years	Greater of: • return of contributions, or • one month of pay per year of pensionable service
	2 years or more	Annual allowance to eligible survivor(s) (Note 18)

2. Civilian Members

Type of Termination	**Pensionable Service (Unless Stated Otherwise)**	**Benefit**
Voluntary retirement at age 60 or over	Under 2 years	Return of contributions (Note 6)
	2 years or more	Immediate annuity (Note 8)
Compulsory retirement because of misconduct	Any period	At the discretion of the Treasury Board (Note 12)
Other voluntary withdrawal or retirement	Under 2 years of service in the Force	Return of contributions
	2 years of service in the Force to less than 35 years of service in the Force: • Age 55 and above with at least 30 years of pensionable service	Immediate annuity
	• Less than age 55 or less than 30 years of pensionable service	Choice of • deferred annuity (Note 9), or • transfer value if under age 50 (Note 10), or • annual allowance if aged at least 50 (Note 19)
	35 years of service in the Force or more	Immediate annuity
Compulsory retirement because of disability	Under 2 years	Greater of: • return of contributions, or • cash termination allowance (Note 7)
	2 years or more	Immediate annuity
Death leaving no eligible survivor	Under 2 years	Return of contributions to nominated beneficiary, otherwise to estate
	2 years or more	Minimum death benefit (Note 16)
Death leaving eligible survivor(s) (Notes 14 and 15)	Under 2 years	Greater of: • return of contributions, or • one month of pay per year of pensionable service
	2 years or more	Annual allowance to eligible survivor(s) (Note 18)

3. Pensioners

Type of Termination	**Benefit**
Disability	Immediate annuity
Death leaving no eligible survivor	Minimum death benefit (Note 16)
Death leaving eligible survivor(s)	Annual allowance to eligible survivor(s) (Note 18)

D. Explanatory Notes

1. Pensionable Earnings

Pensionable earnings mean the annual employment earnings (excluding overtime but including pensionable allowances such as bilingual bonuses) of a contributor.

Pensionable payroll means the aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

2. Indexation

a) Indexation Adjustments

All immediate and deferred annuities (pensions and allowances) are adjusted every January to the extent warranted by the increase, as at 30 September of the previous year, in the 12-month average Consumer Price Index relative to the corresponding figure one year earlier. If the indicated adjustment is negative, annuities are not decreased for that year; however, it is carried-forward and the next positive adjustment is diminished accordingly.

b) First Indexation Adjustment

Indexation adjustments accrue from the end of the month in which employment terminates. The first annual adjustment following termination of employment is prorated accordingly.

c) Commencement of Indexation Payments

The indexation portion of a retirement, disability or survivor pension normally starts being paid when the pension is put into pay. However, regarding a Regular Member retirement pension, indexation payments start only when the pensioner is either

- at least 55 years old, provided the sum of age and pensionable service is at least 85 years; or
- at least 60 years old.

3. Service in the Force

Service in the Force includes any period as a member of the Force and any period of prior service as a police officer that the member purchased under the elective service provisions or through a pension transfer agreement.

4. Pensionable Service

Pensionable service includes any period of service in the Force in respect of which a contributor either (1) had to make contributions that remain in the plan or (2) elected to contribute. It also includes any period of prior service with another employer in respect of which a contributor has elected to contribute in accordance with the provisions of the RCMPSA.

5. Retirement Because of Age

Retirement because of age means voluntarily ceasing to be a Regular Member on or after reaching age 60, for a reason other than disability or misconduct. Regular Members who joined the Force before July 1988 may elect to retain the prescribed retirement ages (56 for ranks up to corporal, 57 for sergeants, and 58 for staff sergeants and majors) in effect at that time.

6. Return of Contributions

Return of contributions means the payment of an amount equal to the accumulated current and prior service contributions paid or transferred by the contributor into the plan. Interest is credited quarterly on returned contributions in accordance with the investment return on the RCMP Pension Fund or in accordance with the interest credited on the Superannuation Account, depending on where contributions were credited.

7. Cash Termination Allowance

Cash termination allowance means an amount equal to one month's salary, as at the date of termination, multiplied by the number of years of pensionable service, minus the total reduction in previous contributions by virtue of its coordination with the CPP.

8. Immediate Annuity

Immediate annuity means an unreduced pension that becomes payable immediately upon a pensionable retirement or pensionable disability. The annual amount is equal to 2% of the highest average annual pensionable earnings of the contributor over any period of five[1] consecutive years, multiplied by the number of years of pensionable service not exceeding 35. For contributors with periods of part-time pensionable service, earnings used in the five-year average salary calculation are based on a full 40 hour work week and the pension benefit is prorated to take periods of part-time service into account.

When a pensioner attains age 65 or becomes entitled to a disability pension from the CPP or a provincial pension plan similar to the CPP, the annual pension amount is reduced by a percentage of the *indexed CPP annual pensionable earnings*[2] (or, if lesser, the indexed five-year[1] pensionable earnings average on which the immediate annuity is based), multiplied by the *years of CPP pensionable service*[3]. The applicable percentage is 0.625%.

Annuities are payable at the end of month until the month in which the pensioner dies or until the disabled pensioner recovers from disability (the last payment would then be pro-rated). Upon the death of the pensioner, either a survivor allowance (Note 18) or a residual death benefit (Note 17) may be payable.

9. Deferred Annuity

Deferred annuity means an annuity that normally becomes payable to a former contributor who reaches age 60. The annual payment is determined as for an immediate annuity (Note 8) but is also adjusted to reflect the indexation (Note 2) from the date of termination to the commencement of benefit payments.

The deferred annuity becomes an immediate annuity during any period of disability beginning before age 60. If the disability ceases before age 60, the immediate annuity reverts to the original deferred annuity unless the pensioner elects an annual allowance (Notes 13 and 19) that is the prescribed actuarial equivalent to the deferred annuity.

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1 If the number of years of pensionable service is less than five, then the averaging is over the entire period of pensionable service.

2 *Indexed CPP annual pensionable earnings* means the average of the YMPE, as defined in the CPP, over the five calendar years leading up to and including the one in which pensionable service terminated, increased by indexation proportionate to that accrued in respect of the immediate annuity.

3 *Years of CPP pensionable service* mean the number of years of RCMPSA pensionable service after 1965 or after attaining age 18, whichever is later, but not exceeding 35.

10. Transfer Value

Regular Members and Civilian Members who, at their date of termination of pensionable service, are under age 60 and 50, respectively, and who are eligible for a deferred annuity may elect to transfer the commuted value of their benefits, determined in accordance with the regulations, to

- a locked-in Registered Retirement Savings Plan of the prescribed kind; or
- another pension plan registered under the *Income Tax Act*; or
- a financial institution for the purchase of a locked-in immediate or deferred annuity of the prescribed kind.

11. Reduced Immediate Annuity

Reduced immediate annuity means an immediate annuity for which the annual amount of annuity determined as described in Note 8 is reduced until age 65 by 5% for each full year, not exceeding six, by which the period of service in the Force is less than 20 years. This type of annuity may be chosen by a Regular Member who has completed between two and 20 years of service in the Force upon being compulsorily retired

- on account of a reduction in the Force, or
- to promote economy or efficiency in the force (only at the discretion of the Treasury Board).

12. Retirement Because of Misconduct

Upon compulsory retirement because of misconduct, a contributor is entitled to

- a return of contributions, or
- a greater benefit as specified by the Treasury Board but not exceeding that available in the absence of misconduct.

13. Annual Allowance for Regular Members

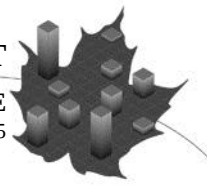
Annual allowance means, for a Regular Member, an immediate annuity reduced by 5% for each full year by which

- the period of service in the Force is less than 25 years, or
- the age at retirement is less than the applicable retirement age (as defined in item 5), whichever is the lesser.

14. Eligible Surviving Spouse

Eligible surviving spouse means the surviving spouse (includes a common-law or same-sex partner recognized under the plan) of a contributor or pensioner except if:

- the contributor or pensioner died within one year of commencement of the spousal union, unless the Minister is satisfied that the health of the contributor or pensioner at the time of such commencement justified an expectation of surviving for at least one year;
- the pensioner married at age 60 or over, unless after such marriage the pensioner either:
  - became a contributor again, or
  - made an optional survivor benefit election within 12 months following marriage



to accept a reduced pension so that the new spouse would be eligible for a survivor benefit. This reduction is reversed if and when the new spouse predeceases the pensioner or the spousal union is terminated for reason other than death; or

- the pensioner is a female who retired before 20 December 1975 and did not make an optional survivor benefit election within the one-year period ending 6 May 1995.

15. Eligible Surviving Children

Eligible surviving children include all children of the contributor or pensioner who are under age 18, and any child of the contributor or pensioner who is age 18 or over but under 25, in full-time attendance at a school or university, having been in such attendance substantially without interruption since he or she reached age 18 or the contributor or pensioner died, whichever occurred later.

16. Minimum Death Benefit

If a contributor or a pensioner dies leaving no eligible survivor, the lump sum normally paid is the amount by which the greater of:

- a return of contributions; and
- five times the annual amount of the immediate annuity to which the contributor would have been entitled, or the pensioner was entitled, at the time of death,

exceeds any pension payments already received.

Indexation adjustments are excluded from these calculations.

17. Residual Death Benefit

The same formula described in Note 16 is used to determine the residual death benefit, which is the lump sum payable upon the death of an eligible survivor but also subtracting all amounts (excluding indexation adjustments) already paid to the survivor.

18. Annual Allowance for Eligible Survivor(s)

Annual allowance means, for the eligible surviving spouse and children of a contributor or pensioner, an annuity that becomes payable immediately upon the death of that individual. The amount of the allowance is determined with reference to a *basic allowance* equal to 1% of the highest average annual pensionable earnings of the contributor over five consecutive years, multiplied by the number of years of pensionable service not exceeding 35.

The annual allowance for an eligible surviving spouse is equal to the basic allowance unless the eligible surviving spouse became eligible as a result of an optional survivor benefit election, in which case it is equal to the percentage of the basic allowance specified by the pensioner making the election. The annual allowance for an eligible surviving child is equal to 20% of the basic allowance, subject to a reduction if there are more than four eligible surviving children in the same family. The annuity otherwise payable to an eligible surviving child is doubled if the child is an orphan.

Survivor annual allowances are not coordinated with the CPP and are payable in equal monthly instalments at the end of month until the month in which the survivor dies or otherwise loses eligibility. If applicable, a residual benefit (Note 17) is payable to the estate upon the death of the last survivor.

19. Annual Allowance for Civilian Members

Annual allowance means, for a Civilian Member, an annuity payable immediately on retirement, upon attaining age 50 or upon exercising the option, whichever occurs later. The amount of the allowance is equal to the amount of the deferred annuity to which the Civilian Member would otherwise be entitled, reduced by 5% for each year between age 60 and the age when the allowance becomes payable. However, if the Civilian Member is at least 50 years old, and has at least 25 years of pensionable service, then the difference is reduced to the greater of

- 55 minus the age, and
- 30 minus the number of years of pensionable service.

The Treasury Board can waive all or part of the reduction for Civilian Members who are involuntarily retired at ages 55 and over with at least ten years of service in the Force.

If a former Civilian Member entitled to an annual allowance commencing at age 50 becomes disabled before then, the entitlement changes to an immediate annuity (Note 8). If disability ceases before age 60, then the entitlement changes to a deferred annuity (Note 9) unless the pensioner elects an annual allowance that is the prescribed actuarial equivalent to the deferred annuity.

20. Division of Pension with Former Spouse

In accordance with the *Pension Benefits Division Act*, upon the breakdown of a spousal union (including common-law), a lump sum can be debited by court order or by mutual consent from, if applicable, the accounts and the Fund to the credit of the former spouse of a contributor or pensioner. The maximum transferable amount is half the value, calculated as at the transfer date, of the retirement pension accrued by the contributor or pensioner during the period of cohabitation. If the member's benefits are not vested, the maximum transferable amount corresponds to half the member's contributions made during the period subject to division, accumulated with interest at the rate applicable on a refund of contributions. The benefits of the contributor or pensioner are then reduced accordingly.

Appendix 2 – Retirement Compensation Arrangement Benefit Provisions

Retirement compensation arrangements (RCAs) are prefunded arrangements not subject to the benefit limitations of registered pension plans and therefore are less tax-advantaged as the fund must transfer a 50% refundable tax to the Canada Revenue Agency (CRA) immediately. Under the RCMP RCA, a debit is made from the RCA Account such that in total roughly half the recorded balances in the Account are held as a tax credit (CRA refundable tax). This Appendix describes the RCMP pension benefits financed through retirement compensation arrangements rather than through the registered RCMPSA provisions that have a material impact on this valuation.

A. Annual Allowance for Eligible Survivors

If the annual allowance for eligible survivors described in Note 18 of section D of Appendix 1 exceeds the tax-related limits described hereafter for registered plans, then the excess in respect of service from 1 January 1992 onwards is debited from the RCA Account.

1. Tax-related limits on preretirement survivor benefits

The total of all preretirement survivor pensions payable in respect of a deceased member may not exceed the member's projected lifetime retirement benefit and the amount of spouse allowance may not exceed two-thirds of the projected lifetime retirement benefit.

The member's projected lifetime retirement benefit is the greater of:

a) the deceased member's accrued pension reduced by the CPP coordination offset; and

b) the lesser of:

i) the member's projected retirement benefit at age 65 based on current salary history, and

ii) 1.5 times the YMPE in effect during the year of the member's death.

2. Tax-related limits on postretirement survivor benefits

The amount of the spouse allowance provided is limited in any year to a maximum of two-thirds the retirement benefit that would have been payable to the member in that year.

B. Excess Pensionable Earnings

From 23 February 1995 onward, the highest average of pensionable earnings under the RCMPSA is subject to a prescribed yearly maximum. Because the RCMPSA is coordinated with the pensions paid by the Canada Pension Plan, the prescribed maximum is derived from both the maximum annual pension benefit ($2,890.00 for calendar year 2016) payable from a registered defined benefit pension plan for each year of pensionable service and the YMPE. The maximum is $161,700 for calendar year 2016. To the extent that a member's average earnings at retirement exceed the prescribed yearly maximum, the corresponding excess pension is debited from the RCA Account.

Appendix 3 – Assets, Accounts and Rates of Return

A. Assets and Accounts Balances

The government has a statutory obligation to fulfill the pension promise enacted by legislation to RCMP members. Since 1 April 2000, the government has earmarked invested assets (Pension Fund) to meet the cost of pension benefits.

With respect to the unfunded portion of the RCMP pension plan, accounts were established to track government's pension benefit obligations such as the Superannuation Account, for service prior to 1 April 2000, and the RCA Account for benefits in excess of those that can be provided under the *Income Tax Act* limits for registered pension plans.

1. RCMP Superannuation Account

RCMPSA member contributions, government costs, and benefits earned up to 31 March 2000 are tracked entirely through the RCMP Superannuation Account, which forms part of the Public Accounts of Canada.

The Superannuation Account was credited with all RCMPSA member contributions and government costs prior to 1 April 2000, as well as with prior service contributions and costs for elections made prior to 1 April 2000 and for periods before 1 April 2000 but credited after that date. It is charged with both the benefit payments made in respect of service earned under the Superannuation Account and the allocated portion of the plan administrative expenses.

The Superannuation Account is credited with interest earnings as though net cash flows were invested quarterly in 20-year Government of Canada bonds issued at prescribed interest rates and held to maturity. No formal debt instrument is issued to the Superannuation Account by the government in recognition of the amounts therein. Interest is credited every three months on the basis of the average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and RCMP pension plans.

Table 17 Reconciliation of Balances in Superannuation Account
($ millions)

Plan year	2013	2014	2015	2013-2015
Public Accounts opening balance	13,015.9	13,124.9	13,184.7	13,015.9
RECEIPTS AND OTHER CREDITS				
Interest earnings	719.2	688.9	657.5	2,065.6
Government contributions	0.7	1.0	0.4	2.1
Employee contributions	0.6	0.6	0.5	1.7
Actuarial liability adjustments	-	12.0	12.0	24.0
Surrenders	0.1	0.1	0.2	0.4
Subtotal	*720.6*	*702.6*	*670.6*	*2,093.8*
PAYMENTS AND OTHER CHARGES				
Annuities	582.9	608.2	629.3	1,820.4
Pension divisions	8.8	8.9	11.6	29.3
Transfer values	0.8	0.9	1.8	3.5
Return of contributions and cash allowances	0.1	0.5	0.6	1.2
Transfers sent	0.3	0.1	0.1	0.5
Administrative expenses	18.7	24.2	14.7	57.6
Subtotal	*611.6*	*642.8*	*658.1*	*1,912.5*
Public Accounts closing balance	13,124.9	13,184.7	13,197.2	13,197.2

Since the last valuation, the Superannuation Account balance has grown by $181 million (a 1.4% increase) to reach $13,197 million as at 31 March 2015.

2. RCMP Pension Fund

Since 1 April 2000 RCMPSA contributions (except for prior service elections made prior to 1 April 2000) have been credited to the RCMP Pension Fund. The Pension Fund is invested in the financial markets with a view to achieving maximum rates of return without undue risk.

The Pension Fund has been credited with all RCMPSA contributions since 1 April 2000, as well as with prior service contributions in respect of elections made since that date and leave without pay contributions for periods after that date. The Pension Fund is also credited with the net investment returns generated by the capital assets managed by PSPIB. It is debited with both the benefit payments made in respect of service earned and prior service elections made since 1 April 2000 and the allocated portion of the plan administrative expenses.

Table 18 Reconciliation of Balances in Pension Fund
($ millions)

Plan year	2013	2014	2015	2013-2015
Opening balance[1]	4,569.2	5,442.7	6,730.5	4,569.2
RECEIPTS AND OTHER CREDITS				
Gross investment earnings	509.0	909.0	1,022.0	2,440.0
Government contributions	278.3	288.3	277.6	844.2
Employee contributions	143.8	157.0	169.6	470.4
Transfers received	2.1	4.7	10.8	17.6
Transfer value election	-	0.4	1.0	1.4
Actuarial liability adjustments	57.0	74.0	74.0	205.0
Surrenders	-	-	0.1	0.1
Subtotal	*990.2*	*1,433.4*	*1,555.1*	*3,978.7*
PAYMENTS AND OTHER CHARGES				
Annuities	79.5	98.1	117.7	295.3
Transfer values	8.0	10.9	23.6	42.5
Pension divisions	6.0	7.7	12.8	26.5
Return of contributions and cash allowances	0.3	0.4	0.4	1.1
Transfers sent	1.0	1.1	0.9	3.0
Administrative expenses	8.9	12.4	8.2	29.5
PSPIB investment expenses	13.0	15.0	40.0	68.0
Subtotal	*116.7*	*145.6*	*203.6*	*465.9*
Closing balance	5,442.7	6,730.5	8,082.0	8,082.0

Since the last valuation, the Pension Fund balance has increased by $3,513 million (a 77% increase) to reach $8,082 million as at 31 March 2015.

[1] The opening balance for Plan year 2013 has been adjusted from 4,569.5 to 4,569.2 from the last valuation report.

3. RCA Account

The amount in the RCA account is composed of the recorded balance in the Retirement Compensation Arrangements Account, which forms part of the Public Accounts of Canada, and a tax credit (CRA refundable tax). Each calendar year, a debit is made from the RCA Account such that in total roughly half the recorded balances in the Account are held as a tax credit (CRA refundable tax).

No formal debt instrument is issued to the Account by the government in recognition of the amounts therein. Interest earnings are credited every three months on the basis of the average yield for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces and RCMP pension plans.

Table 19 Reconciliation of Balances in RCA Account
($ millions)

Plan year	2013	2014	2015	2013-2015
Public accounts opening balance	30.5	31.5	32.5	30.5
RECEIPTS AND OTHER CREDITS				
Interest earnings	1.7	1.7	1.7	5.1
Government costs	0.9	0.9	0.6	2.4
Employee contributions	0.2	0.2	0.1	0.5
Transfers received	0.1	-	-	0.1
Subtotal	*2.9*	*2.8*	*2.4*	*8.1*
PAYMENTS AND OTHER CHARGES				
Benefits paid	0.8	0.9	0.9	2.6
Debited transfer to CRA	1.1	0.9	0.8	2.8
Subtotal	*1.9*	*1.8*	*1.7*	*5.4*
Public accounts closing balance	31.5	32.5	33.2	33.2
Tax credit (CRA refundable tax)	31.2	32.1	32.9	32.9

Since the last valuation, the RCA Account balance has increased by 9% to reach $33.2 million as at 31 March 2015 and the tax credit (CRA refundable tax) has increased by 5% to reach $32.9 million as at 31 March 2015.

B. Interest Earnings/Rates of Return

The interest earnings in respect of the Superannuation Account were calculated using the foregoing entries. The Account yields are based on book values since the notional bonds are deemed to be held to maturity. The result was computed using the dollar-weighted approach and assumes that cash flows occur in the middle of the plan year (except for actuarial liability adjustments, if any, which occur on 31 March). The Pension Fund rates of return are from the Public Sector Pension Investment Board (PSPIB) 2015 Annual Report.

Plan Year	Superannuation Account	Pension Fund
2013	5.7%	10.7%
2014	5.4%	16.3%
2015	5.1%	14.5%

C. Sources of Asset and Accounts Data

The RCMP Superannuation Account, RCA Account and RCMP Pension Fund entries shown in Section A above were taken from the Public Accounts of Canada and the financial statements of the Public Sector Pension Investment Board.

Appendix 4 – Membership Data

A. Sources and Validation of Membership Data

The individual data in respect of contributors, pensioners, and eligible survivors were provided as at 31 March 2015. The data are extracted from master computer files maintained by the Superannuation Directorate of the Department of PSPC. The Compensation Systems Branch of that department is responsible for the extraction of the data.

For valuation purposes and for comparison, pension benefits paid in March 2015 and April 2015 were also provided for each pensioner and eligible survivor by the RCMP Pension Accounting Unit. Relevant valuation input data as at 31 March 2014 on contributors, pensioners and eligible survivors as provided by the former administrator Morneau Shepell were also used to verify the valuation data.

We performed certain tests of internal consistency, as well as tests of consistency with the data used in the previous valuation, with respect to membership reconciliation, basic information (date of birth, date of hire, date of termination, sex, etc.), pensionable service, salary levels and pensions to retirees and survivors. Based on the omissions and discrepancies identified by these and other tests, appropriate adjustments were made to the basic data after consulting with the data provider.

B. Summary of Membership Data

A summary of the valuation data as at 31 March 2015 and the reconciliation of contributors, pensioners, and survivors during the period from April 2012 to March 2015 inclusive are shown in this section. Average pensions shown in the following table include benefits debited from the RCA Account. Relevant detailed statistics on contributors, pensioners and survivors are shown in Appendix 12.

Table 20 Summary of Membership Data

	As at 31 March 2015	As at 31 March 2012
Contributors		
· Number	22,324	23,075
· Average Pensionable Earnings[1]	$89,200	$85,800
· Average Age	41.5	40.6
· Average Service	13.7	13.1
Retirement Pensioners		
· Number	14,160	12,957
· Average Pension	$45,400	$42,600
· Average Age	66.9	65.5
Disability Pensioners		
· Number	2,432	1,911
· Average Pension	$35,700	$33,100
· Average Age	59.0	58.4
Eligible Surviving Spouses		
· Number	2,281	1,951
· Average Pension	$19,700	$18,100
· Average Age	71.7	70.0
Eligible Surviving Children		
· Number	167	158
· Average Pension	$3,000	$3,200

[1] Economic salary increases for plan year 2015 have not been announced yet. The assumed salary increase of 2% for plan year 2015 used for valuation purposes is not included in this table.

Table 21 Reconciliation of Membership

	Contributors	Retirement Pensioners	Disability Pensioners	Surviving Spouses	Surviving Children
As at 31 March 2012	23,075	12,957	1,911	1,951	158
Data corrections	-	(74)	-	2	
New members	1,975	-	-	-	
Withdrawals	-	-	-	-	
Lump sums	(306)	-	-	-	
Deferred annuities	(128)	128	-	-	
Pensionable disabilities	(581)	-	581	-	
Pensionable retirements	(1,665)	1,665	-	-	
Emerging survivors	-	-	-	449	
Deaths	(46)	(516)	(60)	(121)	
As at 31 March 2015	22,324	14,160	2,432	2,281	167

Table 22 Reconciliation of Contributors

	Regular Members		Civilian Members	
	Male	Female	Male	Female
As at 31 March 2012	15,316	3,933	1,910	1,916
Data corrections	3	(1)	(1)	(1)
New members	994	359	235	387
Withdrawals				
Lump sums	(173)	(37)	(42)	(54)
Deferred annuities	(52)	(13)	(22)	(41)
Pensionable disabilities	(352)	(146)	(18)	(65)
Pensionable retirements	(1,267)	(148)	(136)	(114)
Deaths	(31)	(1)	(10)	(4)
As at 31 March 2015	14,438	3,946	1,916	2,024

Table 23 Reconciliation of Retirement Pensioners

	Former Regular Members		Former Civilian Members	
	Male	Female	Male	Female
As at 31 March 2012	11,313	378	771	495
Data corrections	(28)	(13)	(5)	(28)
New deferred pensioners	52	13	22	41
New pensioners	1,267	148	136	114
Deaths	(449)	(3)	(48)	(16)
As at 31 March 2015	12,155	523	876	606

Table 24 Reconciliation of Disability Pensioners

	Former Regular Members		Former Civilian Members	
	Male	Female	Male	Female
As at 31 March 2012	1,408	231	98	174
Data corrections	-	-	-	-
New pensioners	352	146	18	65
Deaths	(41)	(5)	(8)	(6)
As at 31 March 2015	1,719	372	108	233

Appendix 5 – RCMPSA Valuation Methodology

A. Pension Assets and Accounts

1. Superannuation Account (Service prior to 1 April 2000)

The balance of the Superannuation Account forms part of the Public Accounts of Canada. The underlying notional bond portfolio described in Appendix 3 is shown at the book value.

The only other Superannuation Account-related amount consists of the discounted value of future member contributions and government costs in respect of prior service elections. The discounted value of future member contributions was calculated using the projected Account yields; the government cost is assumed to be equal to these future contributions.

2. Pension Fund (Service since 1 April 2000)

For valuation purposes, an adjusted market value method is used to determine the actuarial value of assets in respect of the Pension Fund. The method is unchanged from the previous valuation.

Under the adjusted market value method, the difference between the observed investment returns during a given plan year and the expected investment returns for that year based on the previous report assumptions is spread over five years, subject to a 10% corridor. As a result, the actuarial value of assets is a five-year smoothed market value where the appreciation of investment gains or losses is recognized at the rate of 20% per year. The value produced by this method is related to the market value of the assets but is more stable than the market value.

The only other Pension Fund-related asset consists of the discounted value of future member and government contributions in respect of prior service elections. The discounted value of future member contributions was calculated using the assumed rates of return on the Pension Fund; the government is assumed to contribute in the same proportion as for the RCMPSA current service cost.

The actuarial value of the assets, determined as at 31 March 2015, under the adjusted market value method is $7,286 million and was determined as follows:

Table 25 Actuarial Value of Pension Fund Assets
As at 31 March 2015
($ millions)

Plan Year	2011	2012	2013	2014	2015	
Actual net investment return (A)	490	123	496	894	982	
Expected investment return (B)	207	235	243	293	366	
Investment gains (losses) (A-B)	283	(112)	253	601	616	
Gains (losses) recognized immediately	0	0	0	0	155	
Investment gains (losses) to be amortized	283	(112)	253	601	461	
Unrecognized percentage	0%	20%	40%	60%	80%	
Unrecognized investment gains (losses)	0	(22)	101	361	369	
Market value as at 31 March 2015						8,082
Plus Present value of prior service contributions						13
Less Total unrecognized investment gains						809
Actuarial value as at 31 March 2015						7,286

B. Actuarial Cost Method

As benefits earned in respect of current service will not be payable for many years, the purpose of an actuarial cost method is to assign costs over the working lifetime of the members.

As in the previous valuations, the *projected accrued benefit actuarial cost method* (also known as the projected unit credit method) was used to determine the current service cost and actuarial liability. Consistent with this cost method, pensionable earnings are projected up to retirement using the assumed annual increases in average pensionable earnings (including seniority and promotional increases). The yearly maximum salary cap and other benefit limits under the *Income Tax Act* described in Appendix 2 were taken into account to determine the benefits payable under the RCMPSA and those payable under the RCA.

1. Current Service Cost

Under the *projected accrued benefit actuarial cost method*, the current service cost, also called normal cost, computed in respect of a given year is the sum of the value, discounted in accordance with the actuarial assumptions for the Pension Fund, of all future payable benefits considered to accrue in respect of that years' service. The Pension Fund administrative expenses are included in the total current service cost.

Under this method, the current service cost for an individual member will increase each year as the member approaches retirement. However, all other things being equal, the current service cost for the total population, expressed as a percentage of total pensionable payroll, can be expected to remain stable as long as the average age and service of the total population remain constant.

For a given year, the government current service cost is the total current service cost reduced by the members' contributions during the year.

2. Actuarial Liability

The actuarial liability with respect to contributors corresponds to the value, discounted in accordance with the actuarial assumptions, of all future payable benefits accrued as at the valuation date in respect of all previous service. For pensioners and survivors, the actuarial liability corresponds to the value, discounted in accordance with the actuarial assumptions, of future payable benefits.

3. Actuarial Surplus(Deficit)

It is unlikely that the actual experience will conform to the assumptions that underlie the actuarial estimates. Thus a balancing item must be calculated under this cost method to estimate the necessary adjustments. Adjustments may also be necessary if the terms of the pension benefits enacted by legislation are modified or if assumptions need to be updated.

The actuarial excess/ (shortfall) or surplus/ (deficit) is the difference between the account balance or the total value of assets and the actuarial liability. A new actuarial shortfall/deficit may be amortized over a period not exceeding 15 years through special credits/payments and the disposition of any actuarial excess/surplus is defined in the RCMPSA.

4. Government Contributions

The recommended government contribution corresponds to the sum of:

a) the government current service cost;

b) the government contributions for prior service; and

c) as applicable, special credits/payments in respect of a shortfall/deficit or as the case may be, actuarial surplus debits.

C. Projected Yields

The projected yields (shown in Appendix 6) used to calculate future interest credits to the Superannuation Account are the projected annual yields on the combined book value of the Superannuation Accounts of the Public Service, Canadian Forces, and RCMP pension plans.

The projected Account yields were determined by an iterative process involving the following:

- the combined notional bond portfolio of the three Accounts as at the valuation date,
- the assumed future new money interest rates (also shown in Appendix 6),
- the expected future benefits payable in respect of all pension entitlements accrued up to 31 March 2000,
- the expected future contributions and costs for prior service elections, and
- the expected future administrative expenses,

taking into account that the quarterly interest credited to an Account is calculated as if the principal at the beginning of a quarter remains unchanged during the quarter.

The projected rates of return (shown in Appendix 6) assumed for computing the present value of the benefits accrued or accruing to be credited to the Pension Fund were developed on the basis that the Fund holds a diversified mix of assets.

D. Membership Data

For valuation purposes, individual data on each member were used.

The member data shown in Appendices 4 and 12 were provided as at 31 March 2015. This valuation is based on the member data as at the valuation date.

Appendix 6 – RCMPSA Economic Assumptions

The payment of accrued pension benefits is the responsibility of the government, therefore the likelihood of the plan being wound-up and its obligation not being fulfilled is practically nonexistent. Consequently, all of the assumptions used in this report are best-estimate assumptions, i.e., they reflect our best judgement of the future long-term experience of the plan and do not include a margin.

A. Inflation-Related Assumptions

1. Level of Inflation

Price increases, as measured by changes in the Consumer Price Index (CPI), tend to fluctuate from year to year. In 2011, the Bank of Canada and the Government renewed their commitment to keep inflation between 1% and 3% until the end of 2016. However, with the level of inflation currently much lower than the 2% target, it is assumed that the level of inflation will increase from 1.3% in 2016 to 1.7% in 2017, before reaching its ultimate rate of 2.0% in 2018. The ultimate rate of 2.0% is 0.2% lower than the assumed rate in the previous valuation.

2. Pension Indexing

The year's pension indexing factor is required in the valuation process by virtue of its role in maintaining the purchasing power of pensions. It was derived by applying the indexation formula described in Appendix 1, which relates to the assumed Consumer Price Index increases over successive 12-month periods ending on 30 September.

B. Employment Earnings Increases

1. Increase in the Year's Maximum Pensionable Earnings (YMPE)

The YMPE is required in the valuation process because the plan is coordinated with the Canada Pension Plan. The assumed increase in the YMPE for a given calendar year is derived, in accordance with the Canada Pension Plan, to correspond to the increase in the average weekly earnings (AWE), as calculated by Statistics Canada, over successive 12-month periods ending on 30 June. The AWE, and thus the YMPE, is deemed to include a component for seniority and promotional increases. The YMPE is equal to $54,900 for calendar year 2016. Future increases in the YMPE correspond to the assumed real[1] increase in the AWE plus assumed increases in the CPI.

The real-wage differential is developed taking into account historical trends, a possible labour shortage, and an assumed moderate economic growth for Canada. A real-wage differential of 0.3% is assumed for 2017, and is assumed to gradually increase to the ultimate assumption of 1.1% by 2022 (1.2% by 2019 in the previous valuation). The ultimate real-wage differential assumption combined with the ultimate price increase assumption results in an assumed annual increase in nominal wages of 3.1% in 2022 and thereafter. The ultimate rate of increase for the YMPE is 3.1%, resulting from a 1.1% increase in the real AWE and a 2.0% increase in the CPI.

[1] Note that all of the real rates presented in this report are actually differentials, i.e. the difference between the effective annual rate and the rate of increase in prices. This differs from the technical definition of a real rate of return, which, for example in the case of the ultimate Fund assumption would be 4.0% (derived from 1.061/1.020) rather than 4.1%.

2. Increase in Average Pensionable Earnings

Average pensionable earnings are applicable to plan members only, whereas the YMPE applies to the general working population in Canada. In addition, increases in average pensionable earnings are exclusive of seniority and promotional increases, which are considered under a separate demographic assumption. The annual increase in average pensionable earnings is assumed to be 0.2% lower than the corresponding increase in the YMPE, unchanged from the previous valuation. The ultimate increase in average pensionable earnings is 2.9%.

3. Increase in Maximum Pensionable Earnings (MPE)

Since the plan is coordinated with the Canada Pension Plan, the tax-related maximum pensionable earnings were derived from both the maximum annual pension accrual under a registered defined benefit plan and the YMPE. The maximum annual pension accrual is $2,890.00 for 2016 in accordance with Income Tax Regulations. Thereafter, the maximum annual pension accrual is assumed to increase in accordance with the assumed annual increase in the YMPE, which is the same as the assumed annual increase in the AWE.

Beginning with calendar year 2012, the coordination factor is 0.625%. The MPE is equal to $161,700 for calendar year 2016.

C. Investment-Related Assumptions

1. New Money Rate

The new money rate is the nominal yield on 10-year-plus Government of Canada bonds and is set for each year in the projection period. The real yield on 10-year-plus federal bonds is equal to the new money rate less the assumed rate of inflation.

Recognizing recent experience, the real yield on 10-year-plus federal bonds is assumed to be 0.9% in plan year 2016 before increasing gradually to its ultimate level of 2.8% first attained in plan year 2024. This increase is consistent with the average of private sector forecasts. The real yield on 10-year-plus bonds is based on historical yields. The ultimate real yield is unchanged from the previous valuation. The real new money rates over the first eight years of the projection are on average 0.8% lower than assumed for the corresponding years in the previous valuation.

2. Projected Yields on Superannuation Account

These yields are required for the computation of present values of benefits to determine the liability for service prior to 1 April 2000. The methodology used to determine the projected yields on the Superannuation Account is described in section C of Appendix 5. The methodology is unchanged from previous valuations. However, since the real projected yields are determined based on the real new money rates, they are projected to be lower than assumed in the previous valuation over the first 20 years of the projection.

3. Rate of Return on the Pension Fund

The expected annual nominal rates of return on the Pension Fund are required for the computation of present values of benefits to determine the liability for service since 1 April 2000 and the current service cost. The following sections describe how the rates of return on the Pension Fund are determined.

a) Investment Strategy

Since 1 April 2000, assets resulting from transferred amounts equal to the government and member contributions, net of benefit payments and administration expenses, are invested in capital markets through the Public Sector Pension Investment Board (PSPIB). PSPIB invests funds to maximize returns without undue risk of loss according to the investment policy set and approved by its Board of Directors that takes into account the needs of contributors and beneficiaries, as well as financial market constraints. For the purpose of this report, the investments have been grouped into three broad categories: equities, fixed income securities and real return assets. Equities consist of Canadian, foreign developed market and emerging market equities. Fixed income securities consist of bonds which are usually a mix of federal, provincial, corporate and real return bonds. Real return assets include such categories as real estate and infrastructure. For presentation purposes, PSPIB includes real return bonds (also referred to as world inflation-linked bonds) as part of real return assets. However, for the purpose of this report, real return bonds are allocated to fixed income securities.

As at 31 March 2015, PSPIB assets consisted of 59.2% equity, 20.3% fixed income securities (including world inflation-linked bonds) and 20.5% real return assets. PSPIB has developed a long-term target Policy Portfolio (approved by its Board of Directors on 1st April 2015 and subject to an annual review), which consists of 54% equity, 18% fixed income securities and 28% real return assets. The Policy Portfolio asset mix weights represent long-term targets. Therefore, the initial asset mix is based on the actual investments reported by PSPIB as at 31 March 2015.

PSPIB Policy Portfolio reflects long-term expectations. Considering the uncertainty related to those expectations, it is assumed that the asset mix of the Plan portfolio will converge slowly toward the Policy Portfolio, but without reaching the ultimate weights. For the purpose of this report, the ultimate asset mix is reached in plan year 2020 and consists of 55% equity, 20% fixed income securities and 25% real return assets. Net cash flows (contributions less expenditures, disregarding special payments) are expected to become negative during plan year 2031 and a portion of investment income will therefore be required to pay benefits. Changes to the assumed asset mix may be required in the future to reduce funding risks and to take into account the maturity of the plan.

The following table shows the assumed asset mix for each plan year throughout the projection period.

Table 26 Asset Mix
(in percentage)

Plan Year	Fixed Income Securities[1]	Cash	Canadian Equity	U.S. and Foreign Equity	Emerging Market Equity	Real Return Assets
2016	18	2	17	34	9	20
2017	18	2	17	33	9	21
2018	18	2	17	32	9	22
2019	18	2	17	31	9	23
2020	18	2	17	29	9	25
2021	18	2	17	29	9	25
2022	18	2	17	29	9	25
2023	18	2	17	29	9	25
2024+	18	2	17	29	9	25

b) Real Rates of Return by Asset Type

Real rates of return are required in order to discount benefits payable in the future for the determination of the actuarial liability and current service cost. They are assumed for each year of the projection period and for each of the main asset categories in which Pension Fund assets are invested. All real rates of return described in this section are shown before reduction for assumed investment expenses. Subsection c) describes how the returns are adjusted for investment expenses.

In addition, the assumed real rate of return for each asset class includes an allowance for rebalancing and diversification to take into account the beneficial effect of reduced volatility that comes from diversification within a portfolio. If the expected rates of return for each asset class were not increased to reflect their respective share of this allowance, then the expected long-term portfolio rate of return calculated as the weighted average rate of return of each asset class would be underestimated.

The real rates of return were developed by looking at historical returns (expressed in Canadian dollars) and adjusting the returns upward or downward to reflect expectations that differ from the past. Future currency variations will impact the real rates of return over the projection period, creating gains and (losses). However, as the projection period is long, these gains and (losses) are expected to offset each other over time. Hence, it is assumed that currency variations will not have an impact on the long-term real rates of return.

With the exception of fixed income securities and cash, real rates of return for all asset classes are generally assumed to be constant for the entire projection period. The current context of extremely low yields and the general expectations that yields will increase over the coming years are reflected in the expected fixed income securities' short-term real rates of return. A constant real rate of return is assumed

[1] For presentation purposes, PSPIB includes real return bonds as part of real return assets. However, for the purpose of this report, real return bonds are allocated to fixed income securities.

for more volatile asset classes, reflecting the difficulty to predict yearly market returns.

Fixed Income Securities

PSPIB currently has 20% of its portfolio invested in fixed income securities, including Canadian fixed income, world government bonds, world inflation-linked bonds and cash. It is assumed that the proportion invested in fixed income securities will remain at 20% of Pension Fund assets for the entire projection period.

It is assumed that, excluding cash, fixed income securities consist of 42% federal bonds, 15% provincial bonds, 15% corporate bonds and 28% inflation-linked bonds.

The assumed real yield on 10-year-plus federal bonds is 0.5% at the beginning of plan year 2016, and is expected to increase to an ultimate of 2.8% at the end of plan year 2024. This increase in real yield is consistent with the average private sector forecasts. The initial spreads over the 10-year-plus federal bond real yield are assumed to be 80 basis points for long-term provincial bonds and 150 basis points for corporate bonds. These spreads are higher than the historical average and reflect the current economic environment. The ultimate spreads for provincial and corporate bonds are assumed to be 55 basis points and 90 basis points, respectively, and are reached at the end of plan year 2024. Corporate bond spreads are net of the expected default rate. Real return bonds, on the other hand, usually have a lower real yield than 10-year-plus federal bonds, since the real return is guaranteed and will not vary with inflation. Thus, the spread on inflation-linked bonds is assumed to be -70 basis points initially and will reach its ultimate value of -40 basis points at the end of plan year 2018.

In the previous report, it was assumed that fixed income securities would initially consist of bonds of all duration (universe) and then transition to long-term bonds. However, since the current PSPIB policy portfolio and its long-term target Policy Portfolio is composed of universe bonds, it is assumed that fixed income securities are composed of universe bonds for the entire projection period. Since bonds with shorter duration are less affected by an increase in yield, this result in slightly higher fixed income rates of return over the first few years than it would have been assuming long-term bonds. However, the assumed real rate of return of the fixed income securities once bond yields have stabilized is lower than the corresponding assumed real rate of return of the last report (2.7% instead of 3.1% before investment expenses).

Due to their shorter duration, the yield on universe bonds is lower than the yield on long-term bonds. The spread between the 10-year-plus federal bonds and the universe of federal bonds is assumed to decrease from 85 basis points at the beginning of plan year 2016 to 50 basis points at the beginning of plan year 2024. Spreads between universe federal bonds and universe provincial, or universe corporate bonds are assumed to be similar to spreads between long-term bonds.

The expected real rates of return for individual bonds take into account the coupons and market value fluctuations due to the expected movement of their respective yield rates. As the economy continues to strengthen (following the 2008-2009 economic downturn), the 10-year-plus federal bond yield is assumed to increase between plan

years 2016 and 2024 and to stabilize at the end of plan year 2024. Therefore, bond returns are quite low for the first nine years of the projection. The assumed ultimate real rate of return for 10-year-plus federal bonds is 2.8% starting in plan year 2025. An ultimate fixed income real rate of return of 2.7% is assumed for 2025 and thereafter.

Equity

Currently, the assets of the pension fund are mostly invested in equity, specifically in developed world equity and emerging markets equity. In the derivation of the real rates of return for these equity investments, consideration was given to the long-term equity risk premiums for these equity classes. The rates of return also include dividends from the equities and market value fluctuations. No distinction is made between realized and unrealized capital gains.

Consistent with the assumption that risk taking must be rewarded, equity returns are developed by adding an equity risk premium to the long-term federal bond real rate of return. The historical equity risk premium over bonds for 21 countries, representing almost 90% of global stock market value, for the 115-year period starting in 1900 was 3.2% (3.5% for Canada)[1]. Historical equity risk premiums were higher than expected due to several non-repeatable factors (mainly diversification and globalization). As a result, the long-term expected equity risk premium is assumed to be lower than what was realized in the past 115 years. However, the equity risk premium is assumed to be higher for the first nine years of the projection, reflecting assumed low bonds return over the same period, before reaching its ultimate rate of 2.2% for Canadian and foreign developed markets. The equity risk premium for emerging market equities is expected to be 100 basis points higher than for Canadian and foreign developed market equities, reflecting the additional risk inherent with investments in emerging countries.

As described in the previous section, the 10-year-plus federal bond real rate of return is set at 2.8% for plan years 2025 and thereafter. The real rates of return are thus projected at 5.0% for developed market equities and 6.0% for emerging markets equities.

Real Return Assets

Real return assets such as real estate and infrastructure are considered to be a hybrid of corporate bonds and equity. If these assets are considered to behave 75% like corporate bonds and 25% like developed market equities, then the assumed return should be composed of 75% of the return on corporate bonds and 25% of the return on developed market equities. In the last report, these assets were assumed to behave 40% like fixed income securities and 60% like developed market equities. The methodology has been improved following discussion with PSPIB to better reflect the perceived debt/equity nature of those assets. Considering the inherent difficulties in modelling short-term returns for volatile assets, real return assets are projected at 3.9% throughout the projection period.

[1] Source: Elroy Dimson, Paul Marsh and Mike Staunton, Credit Suisse Global Investment Returns Yearbook 2015.

The following table summarizes the assumed real rates of return by asset type throughout the projection period, prior to reduction for investment expenses.

Table 27 Real Rate of Return by Asset Type
(in percentage)

Plan Year	Fixed Income Securities	Cash	Canadian Equity	U.S. and Foreign Equity	Emerging Market Equity	Real Return Assets
2016	(4.6)	(0.7)	5.0	5.0	6.0	3.9
2017	(3.9)	(0.5)	5.0	5.0	6.0	3.9
2018	(3.8)	(0.4)	5.0	5.0	6.0	3.9
2019	(1.4)	0.1	5.0	5.0	6.0	3.9
2020	(1.0)	0.4	5.0	5.0	6.0	3.9
2021	0.1	0.6	5.0	5.0	6.0	3.9
2022	0.4	0.8	5.0	5.0	6.0	3.9
2023	0.5	0.9	5.0	5.0	6.0	3.9
2024	2.1	1.0	5.0	5.0	6.0	3.9
2025+	2.7	1.0	5.0	5.0	6.0	3.9

c) Investment Expenses

Over the last three plan years, PSPIB's operating and asset management expenses have averaged 0.58% of average net assets. It is assumed that going forward PSPIB investment expenses will average 0.60% of average net assets. The majority of those investment expenses were incurred through active management decisions.

The active management objective is to generate returns in excess of those from the policy portfolio, after reduction for additional expenses. Thus, the additional returns from a successful active management program should equal at least the cost incurred to pursue active management. In eight of the past ten years, PSPIB's additional returns from active management exceeded related expenses. For the purpose of this valuation, it is assumed that additional returns due to active management will equal additional expenses related to active management. Those expenses are assumed to be the difference between total investment expenses of 0.6% and the assumed expenses of 0.2% that would be incurred for passive management of the portfolio considering that part of the portfolio is invested in real estate and infrastructure.

The next section shows the overall rate of return on the fund net of investment expenses.

d) Overall Rate of Return on assets of the Pension Fund

The best-estimate rate of return on total assets is derived from the weighted average assumed rate of return on all types of assets, using the assumed asset mix proportions as weights. The best-estimate rate of return is further increased to reflect additional returns due to active management and reduced to reflect all investment expenses. The ultimate real rate of return is developed as follows:

	Nominal	Real
Weighted average rate of return	6.3%	4.3%
Additional returns due to active management	0.4%	0.4%
Expected investment expenses		
Expenses due to passive management	(0.2%)	(0.2%)
Additional expenses due to active management	(0.4%)	(0.4%)
Total expected investment expenses	(0.6%)	(0.6%)
Net rate of return	6.1%	4.1%

The resulting nominal and real rates of return for each projection year are as follows:

Table 28 Rates of Return on Assets in Respect of the Pension Fund
(in percentage)

Plan Year	Nominal	Real
2016	4.1	2.8
2017	4.6	2.9
2018	5.0	3.0
2019	5.4	3.4
2020	5.4	3.4
2021	5.6	3.6
2022	5.7	3.7
2023	5.7	3.7
2024	6.0	4.0
2025+	6.1	4.1
2016-2020	4.9	3.1
2016-2025	5.4	3.5
2016-2035	5.7	3.8

It is assumed that the ultimate real rate of return on investments will be 4.1%, net of all investment expenses. This is unchanged from the previous valuation. The real rates of return over the first nine years of the projection are on average 0.5% lower than assumed in the previous valuation. The real rate of return on assets takes into account the assumed asset mix as well as the assumed real rate of return for all categories of assets. The nominal returns projected for the Pension Fund are simply the sum of the assumed level of inflation and the real return.

Using the rates of return on assets in respect of the pension fund shown in Table 28 to determine the actuarial liability of the pension fund is equivalent to valuing the actuarial liability at a flat nominal discount rate of 5.8% (3.8% real).

4. Transfer Value Real Interest Rate

Commuted values are calculated in accordance with the Standards of Practice published by the Canadian Institute of Actuaries. In particular, the real interest rates to be used for the computation of commuted values as at a particular date are as follows:

First 10 years: $r_7 + 0.90\%$

After 10 years: $r_L + 0.5 \times (r_L - r_7) + 0.90\%$

Where

$r_7 = r_L \times (i_7/i_L)$

r_L is the long-term real-return Government of Canada bond yield, annualized

i_L is the long-term Government of Canada benchmark bond yield, annualized and

i_7 is the 7-year Government of Canada benchmark bond yield, annualized

The obtained rates of interest are rounded to the next multiple of 0.10%.

For example, for plan year 2018, the assumed real rates of interest are 1.7% for the first 10 years and 2.2% thereafter. The rates are derived from the assumed CPI increase, the assumed 10-year-plus Government of Canada benchmark bond yield which corresponds to the new money rate in this valuation and the assumed spreads[1] between the new money rate and the long-term real-return Government of Canada bond yield, the long-term Government of Canada benchmark bond yield and the 7-year Government of Canada benchmark bond yield.

The following table shows the assumed transfer value real interest rates used in this report:

Table 29 Transfer Value
(As a percentage)

					Real Interest Rates	
Plan Year	r_L	i_L	i_7	r_7	First 10 Years	After 10 Years
2016	0.86	2.33	1.17	0.43	1.30	2.00
2017	0.92	2.81	1.73	0.57	1.50	2.00
2018	1.09	3.30	2.29	0.75	1.70	2.20
2019	1.56	3.78	2.86	1.18	2.10	2.70
2020	1.84	4.07	3.19	1.44	2.30	2.90
2021	2.03	4.27	3.42	1.62	2.50	3.10
2022	2.21	4.46	3.64	1.80	2.70	3.30
2023	2.40	4.65	3.86	2.00	2.90	3.50
2024+	2.59	4.85	4.08	2.18	3.10	3.70

[1] The spreads for the first year are based on the October 2015 actual spreads of -3, 13 and -102 basis points between 10-year-plus Government of Canada bond yield and the bonds underlying r_L, i_L and i_7 respectively. The ultimate spreads of -18, 5 and -70 basis points, starting in fiscal year 2024, are based on the average spreads over the last 10 years. An interpolation reflecting the variation in new money rates is applied for intermediate years.

5. Summary of Economic Assumptions

The economic assumptions used in this report are summarized in the following table.

Table 30 Economic Assumptions[1]
(As a percentage)

	Inflation		Employment Earning Increases				Interest	
Plan Year	CPI Increase[2]	Pension Indexing[3]	YMPE[3]	Average Pensionable Earnings[4,5]	Maximum Pensionable Earnings[3,6]	New Money Rate	Projected Yield on Account	Projected Return on Fund
2016	1.3	**1.3**	**2.5**	2.3	**2.5**	2.2	4.8	4.1
2017	1.7	1.4	2.0	1.8	2.0	2.7	4.5	4.6
2018	2.0	2.0	2.3	2.1	2.3	3.2	4.2	5.0
2019	2.0	2.0	2.5	2.3	2.5	3.7	4.1	5.4
2020	2.0	2.0	2.7	2.5	2.7	4.0	4.0	5.4
2021	2.0	2.0	2.9	2.7	2.9	4.2	3.8	5.6
2022	2.0	2.0	3.1	2.9	3.1	4.4	3.8	5.7
2023	2.0	2.0	3.1	2.9	3.1	4.6	3.7	5.7
2024	2.0	2.0	3.1	2.9	3.1	4.8	3.7	6.0
2025	2.0	2.0	3.1	2.9	3.1	4.8	3.6	6.1
2030	2.0	2.0	3.1	2.9	3.1	4.8	3.5	6.1
2035	2.0	2.0	3.1	2.9	3.1	4.8	4.0	6.1
2040	2.0	2.0	3.1	2.9	3.1	4.8	4.8	6.1
2045+	2.0	2.0	3.1	2.9	3.1	4.8	4.8	6.1

For the period ending December 2014, the following table was prepared based on the Canadian Institute of Actuaries Report on Canadian Economic Statistics 1924-2014.

Period of Years Ending 2014	15	25	50
Level of Inflation	1.9%	2.0%	4.1%
Real Increases in Average Earnings	0.6%	0.5%	0.9%
Real Yield on Long-Term Canada Bonds	2.2%	3.6%	3.2%
Real Return on Long-Term Canada Bonds	5.5%	6.8%	3.9%
Average Real Return on Diversified Portfolios	4.5%	6.2%	4.4%

1 Bold figures denote actual experience.
2 Assumed to be effective during Plan Year.
3 Assumed to be effective as at 1 January.
4 Assumed to occur as at 1 January. Exclusive of seniority and promotional increases.
5 The economic salary increase for plan year 2015 has not been announced yet, it was assumed to be 2%.
6 Calendar year 2016 Maximum Pensionable Earnings is $161,700.

Appendix 7 – RCMPSA Demographic and Other Assumptions

A. Demographic Assumptions

Given the size of the population subject to the RCMPSA and the somewhat unique characteristics of the pension benefit provisions, the plan's own experience, except where otherwise noted, was deemed to be the best model to determine the demographic assumptions. Assumptions from the previous valuation were updated to reflect past experience to the extent it was deemed credible.

The determination of some demographic assumptions also takes into account general or specific information provided by the RCMP.

1. Seniority and Promotional Salary Increases

Seniority means length of service and *promotion* means moving to a higher rank.

Minor adjustments were made to the seniority and promotional salary increase assumption for Regular Members based on the experience during the intervaluation period. The assumed seniority and promotional salary increases for Regular Members are on average 0.1% less than assumed in the previous valuation. The assumption fully recognizes the Service Pay Allowance of 1.5% granted at durations 4, 10, 15, 20, 25, 30 and 35, and the 5% Senior Constable Provisional Allowance granted after seven completed years of service.

The assumption for Civilian Members is unchanged from the previous valuation.

Table 31 Assumed Seniority and Promotional Salary Increases
(Percentage of annual earnings)

Regular Members		Civilian Members	
Completed Years of Service in the Force	Increase	Completed Years of Pensionable Service	Increase
0	23.0	0	5.4
1	8.0	1	4.8
2	7.0	2	4.0
3	1.9	3	3.4
4	0.3	4	3.2
5	0.3	5	2.5
6	5.1	6	2.4
7	0.6	7	2.3
8	0.6	8	2.1
9	2.1	9	2.1
10	0.6	10	1.6
15	0.8	15	1.4
20	0.8	20	1.1
25	0.7	25	0.9
30	0.5	30	0.8

2. New Contributors

The new contributor assumption was changed from the previous valuation. This assumption recognizes that the proportion of female Regular Members is increasing.

Table 32 Assumed Annual Increases in Number of Contributors
(Percentage)

Plan Year	Regular Members		Civilian Members	
	Male	Female	Male	Female
2016	(1.3)	0.0	(1.0)	(1.0)
2017	0.7	2.0	1.0	1.0
2018	0.7	2.0	1.0	1.0
2019	0.6	1.9	0.9	0.9
2020	0.6	1.9	0.9	0.9
2025	0.6	1.9	0.9	0.9
2030	0.8	0.8	0.8	0.8
2035+	0.6	0.6	0.6	0.6

For each subgroup, the age distribution of new contributors is based on the distribution of actual new contributors during the intervaluation period. As demographic characteristics at entry and qualifications are constantly evolving, short-term experience was deemed a better model to determine the demographics of new entrants.

The initial salary of new Civilian Members in a given age-sex cell in plan year 2016 is assumed to be the same as the corresponding experience in plan year 2015 increased by 2.0% (assumed salary increase for plan year 2015). The initial salary for Regular Members is $51,687 ($50,674, which is the salary at entry for 2014 plus an assumed salary increase of 2.0% for 2015). Initial salary is assumed to increase in future plan years in accordance with the assumption for average pensionable earnings increases.

3. Pensionable Retirement

As in the previous valuations, assumed rates of pensionable retirement for Regular Members were changed for this valuation. Past experience analysis had shown that Regular Members had been delaying retirement. For the first time, the average service in the force and average age for Regular Members who retired in the intervaluation period are the same as in the previous valuation, the average service in the force for Regular Members who retired in the intervaluation period is 32.0 years (with an average age of 55.3). As shown in the previous valuation, the average service in the force at retirement had increased by 2.3 years and the average age at retirement had increased by 3.8 years from 2002 to 2012. Pensionable retirement rates are on average 9% higher for Regular Members aged 50 to 54 with 29 to 33 years of service, they are on average 33% lower for those at very advanced age and service (older than 59 and those with at least 34 years of service) and they are on average 11% lower otherwise.

Table 33 Assumed Rates of Pensionable Retirement - Regular Members
(Per 1,000 individuals)

Age Last Birthday	Completed Years of Service in the Force						
	19	20-22	23	24-28	29-33	34	35+
40	10	10	-	-	-	-	-
45	10	10	40	40	-	-	-
50	20	20	50	50	80	-	-
55	40	50	100	110	130	400	400
60	200	200	400	400	400	500	500
64	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Minor changes were made to assumed rates of pensionable retirement for Civilian Members. They are on average 4% lower for members older than 59 and on average 8% higher for members with more than 33 years of service.

Table 34 Assumed Rates of Pensionable Retirement - Civilian Members
(Per 1,000 individuals)

Age Last Birthday	Completed Years of Pensionable Service							
	1-8	9-13	14-18	19-23	24-28	29-33	34	35
50	10	10	10	10	10	40	-	-
55	10	20	30	30	40	100	700	400
60	100	200	200	200	200	200	700	400
64	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

4. Disability Retirement

Disability retirement rates for Regular Members were increased significantly beginning with the 1999 valuation when the experience showed many more disabilities than expected. They were increased every valuation after 1999. In previous valuations, a unisex basis was used to determine the disability rates. Beginning with this valuation, disability retirement rates are based on sex. Assumed rates for male Regular Members are on average 10% lower up to age 49 and 15% higher for males older than 49. Assumed rates for female Regular Members are on average 40% higher.

Disability retirement rates for Civilian Members were also changed for this valuation. Beginning with this valuation, disability retirement rates are based on sex. They are the same as those from the most recent actuarial report (31 March 2014) on the pension plan for the Public Service of Canada. Assumed rates for male Civilian Members are on average 70% lower for males and 50% lower for females.

It is assumed that 10% of future Regular Members and 75% of Civilian Members new disability pensioners will receive a CPP/QPP disability pension. In the previous valuation, it was assumed that 25% of all new disability pensioners would receive a CPP/QPP disability pension. The assumption for Civilian Members is the same as those from the most recent actuarial report (31 March 2014) on the pension plan for the Public Service of Canada.

Table 35 Assumed Rates of Pensionable Disability
(Per 1,000 individuals)

Age Last Birthday	Regular Members		Civilian Members	
	Male	Female	Male	Female
30	1.0	3.5	0.12	0.24
40	4.0	6.0	0.94	2.00
50	25.0	40.0	2.77	5.35
59	100.0	100.0	0.00	0.00

5. Withdrawal

Withdrawal means ceasing to be employed for reasons other than death or retirement with an immediate annuity or an annual allowance. A contributor with at least two years of service upon termination can opt for a deferred annuity payable at age 60 or for the commuted value of the deferred annuity to age 60.

Withdrawal rates for both Regular Members and Civilian Members are unchanged from the previous valuation.

As in the previous valuation, 50% of all contributors who withdraw with at least five years of service are assumed to choose the deferred annuity option. The other contributors who withdraw are assumed to opt for the commuted value of the deferred annuity.

Table 36 Assumed Withdrawal Rates
(Per 1,000 individuals)

Completed Years of Service	Regular Members	Civilian Members
0	20	25
1	15	23
5	5	20
10	5	15
15	3	5
20+	0	0

6. Mortality

Mortality rates for healthy male Regular Members are as projected in the previous valuation. Mortality rates for healthy female Regular Members were changed for this valuation. They are those of the 2014 Canadian Pensioners Mortality Table (CPM2014), developed from the combined experience exhibited under public and private sector plans, published by the Canadian Institute of Actuaries, projected to plan year 2016 with mortality improvement scale CPM Improvement Scale B (CPM-B).

Mortality rates for healthy Civilian Members and surviving spouses are those from the most recent actuarial report on the pension plan for the Public Service of Canada projected to plan year 2016. They were changed in the new actuarial report as at 31 March 2014 on the pension plan for the Public Service. Mortality rates for male Civilian Members are on average 6% lower and mortality rates for female Civilian Members are on average 4% lower than those projected in the previous valuation. Mortality rates for widows are on average 6% higher and mortality rates for widowers are on average 4% higher than those projected in the previous valuation.

Table 37 Assumed Rates of Mortality for Healthy Members and Surviving Spouses
For 2016 Plan Year (per 1,000 individuals)

Age Last Birthday	Regular Members		Civilian Members		Surviving Spouses	
	Male	Female	Male	Female	Male	Female
30	0.5	0.3	0.3	0.2	1.1	0.4
40	0.8	0.6	0.6	0.4	2.4	0.9
50	1.8	1.3	1.6	1.4	3.7	2.0
60	4.3	3.6	4.9	3.9	8.8	5.1
70	13.1	9.1	14.5	10.6	19.3	13.4
80	47.1	28.6	48.3	32.9	57.1	39.5
90	138.9	108.2	152.6	116.8	160.3	121.2
100	277.1	326.8	367.2	301.4	352.2	310.6
110+	500.0	536.1	500.0	500.0	500.0	500.0

In the previous valuation, mortality rates for disabled members were based on sex only; they were those from the most recent actuarial report on the pension plan for the Public Service of Canada. Beginning with this valuation, they vary also by type of member. Mortality rates for disabled Regular Members are 50% of the rates for healthy Regular Member pensioners and 50% of the mortality rates for the disabled pensioners from the actuarial report on the pension plan for the Public Service of Canada as at 31 March 2014 projected to plan year 2016. For both males and females, mortality rates for disabled Regular Members are on average 33% lower than those projected in the previous valuation.

Mortality rates for disabled Civilian Members are those from the new actuarial report as at 31 March 2014 on the pension plan for the Public Service projected to plan year 2016. Mortality rates for male disabled Civilian Members are on average 6% lower and mortality rates for female disabled Civilian Members are on average 4% lower than those projected in the previous valuation.

Table 38 Assumed Rates of Mortality for Disabled Members
For 2016 Plan Year (per 1,000 individuals)

Age Last	Regular Members		Civilian Members	
Birthday	Male	Female	Male	Female
30	3.5	2.4	6.4	4.4
40	4.9	3.3	9.0	5.9
50	7.7	4.7	13.5	8.1
60	12.3	8.2	20.2	12.7
70	24.4	15.7	35.7	22.3
80	62.9	42.2	78.8	55.8
90	162.5	131.4	186.2	154.6
100	347.8	397.2	418.6	467.6
110+	500.0	500.0	500.0	500.0

As shown in the 26th Actuarial Report on the Canada Pension Plan, life expectancy in Canada has been increasing constantly over the years. This trend is also observed in the RCMP pension plan population, as supported by analysis of past mortality experience. Mortality rates are reduced in the future in accordance with the same longevity improvement assumption used in the 26th Actuarial Report on the Canada Pension Plan. For both males and females, the improvement factors are higher than those used in the previous valuation except at advanced ages. Factors shown in the 26th Actuarial Report on the Canada Pension Plan are based on calendar years. These factors have been interpolated to obtain plan year longevity improvement factors.

The ultimate longevity improvement factors for plan years 2031 and thereafter were established by analysing the trend by age and sex of the Canadian experience over the period 1921 to 2009. Improvement factors for plan year 2016 are based on those experienced on average over the 15-year period from 1994 to 2009. After plan year 2016, the factors are assumed to reduce gradually to their ultimate level by plan year 2031.

A sample of assumed longevity improvement factors is shown in the following table.

Table 39 Assumed Longevity Improvement Factors

Age Last Birthday	Initial and Ultimate Plan Year Mortality Reductions (%)			
	Male		Female	
	2017	2031+	2017	2031+
30	2.13	0.80	1.07	0.80
40	1.70	0.80	1.34	0.80
50	1.34	0.80	1.07	0.80
60	1.95	0.80	1.53	0.80
70	2.23	0.80	1.53	0.80
80	2.25	0.80	1.53	0.80
90	1.30	0.48	1.15	0.48
100	0.53	0.30	0.53	0.30
110+	0.20	0.23	0.20	0.23

The following tables show the calculated life expectancy for Regular and Civilian contributors and healthy pensioners based on the mortality assumptions described in this section.

Table 40 Life Expectancy of Regular Member Contributors and Healthy Pensioners
(Years)

Age Nearest	As at 31 March 2015		As at 31 March 2030	
	Male	Female	Male	Female
60	26.8	29.2	27.7	30.0
65	22.1	24.5	23.0	25.3
70	17.7	20.0	18.5	20.7
75	13.6	15.8	14.4	16.4
80	10.1	11.8	10.7	12.4
85	7.3	8.4	7.9	8.9
90	5.4	5.8	5.7	6.1

Table 41 Life Expectancy of Civilian Member Contributors and Healthy Pensioners

(Years)

Age Nearest	As at 31 March 2015		As at 31 March 2030	
	Male	Female	Male	Female
60	26.2	28.5	27.1	29.3
65	21.6	23.8	22.5	24.6
70	17.3	19.4	18.1	20.1
75	13.3	15.2	14.0	15.8
80	9.7	11.4	10.4	11.9
85	6.9	8.2	7.4	8.6
90	4.8	5.7	5.1	6.0

In the following table, life expectancies based on the mortality assumptions of the previous valuation are compared with those based on the mortality assumptions described in this section for both Regular Members (RM) and Civilian Members (CM).

Table 42 Life Expectancy at Age 60 as at 31 March 2015

(Years)

	Current Report	Previous Report[1]	Increase
RM - Healthy Males	26.8	26.7	0.1
RM - Healthy Females	29.2	30.0	(0.8)
RM - Disabled Males	23.2	19.7	3.5
RM - Disabled Females	26.1	23.0	3.1
CM - Healthy Males	26.2	25.7	0.5
CM - Healthy Females	28.5	28.0	0.5
CM - Disabled Males	20.3	19.7	0.6
CM - Disabled Females	23.5	23.0	0.5
Male Surviving Spouses	24.5	24.7	(0.2)
Female Surviving Spouses	27.2	28.0	(0.8)

7. Family Composition

Assumptions for the proportion of members leaving, upon death, a spouse eligible for a survivor pension are unchanged from the previous valuation. The age assumption for new survivors is also unchanged.

[1] As at 31 March 2012.

Table 43 Assumptions for Survivor Spouse Allowances[1]

Age Last Birthday at Death	Male		Female	
	Probability of an Eligible Spouse at Death of member	Spouse Age Difference	Probability of an Eligible Spouse at Death of member	Spouse Age Difference
30	0.70	(1)	0.50	2
40	0.85	(1)	0.55	2
50	0.85	(2)	0.55	3
60	0.85	(3)	0.50	3
70	0.80	(3)	0.40	2
80	0.65	(3)	0.30	2
90	0.40	(5)	0.10	0
100	0.15	(8)	0.00	(3)

All assumptions regarding eligible children are not changed from the previous valuation. As in the previous valuation, to determine the value of pensions payable to eligible children, the rates of pension termination were assumed to be zero prior to age 17 and 15% per annum thereafter until expiry of the benefit on the 25th birthday.

Table 44 Assumptions for Survivor Children Allowances[1]

Age Last Birthday at Death	Male		Female	
	Average Number of Children	Average Age of Children	Average Number of Children	Average Age of Children
30	0.9	4	0.8	3
40	1.3	12	1.2	11
50	0.8	19	0.6	19
60	0.1	21	0.1	23
70+	0.0	-	0.0	-

B. Other Assumptions

1. Pension Benefits Division / Optional Survivor Benefit / Leave Without Pay

The division of pension benefits has almost no effect on the valuation results because the liability is reduced, on average, by approximately the amount paid to the credit of the former spouse. Consequently, no future pension benefits divisions were assumed in estimating the current service cost and liability. However, past pension benefits divisions were fully reflected in the liability. Two other provisions, namely the optional survivor benefit and the suspension of membership while on leave without pay, were also treated like pension benefits divisions for the same reason.

2. Minimum Postretirement Death Benefit

This valuation does not take into account the minimum death benefit described in Note 16 of section D of Appendix 1, with respect to deaths occurring after retirement. The resulting understatement of the accrued liability and current service cost is not material since the majority of the relatively few pensioners who die in the early years of retirement leave an eligible survivor.

[1] Survivor pensions are not payable if the deceased member has less than two years of pensionable service.

3. Administrative Expenses

In the previous report, PSPIB operating expenses were implicitly recognized through a reduction in the real return on the Fund. In this report, the operating expenses of the PSPIB are still recognized implicitly.

Assumed administrative expenses were increased by 0.1% in this valuation, from 0.4% to 0.5% of pensionable payroll. As in the previous valuation, in plan year 2016 the Account is assumed to be charged with 62% of the total expenses reducing by 2% each year thereafter. Expenses expected to be debited to the Superannuation Account in the future have been capitalized and are shown as a liability on the balance sheet, whereas the expenses to the Pension Fund are shown on an annual basis as they occur.

4. Financing of Elected Prior Service

In accordance with the current prior service financing policy, the government credits to the Account in respect of prior service elections are assumed to be 100% of the resulting contributions made by the contributors; the corresponding figure for the Fund is determined in accordance with the allocation of current service cost where the government is assumed to contribute in the same proportions.

5. Outstanding Terminations

Payments owing to former contributors as at 31 March 2015 are ignored in this valuation. The consequent understatement of liability is negligible because there were very few such cases and the average amount owing was modest.

6. Disability Incidence Rates for Pensioners Under Age 60

Both deferred pensioners and pensioners receiving an annual allowance while under age 60 are assumed to have a 0% disability rate. The resulting understatement of liability and current service cost is negligible.

7. Recovery Rates for Disability Pensioners

No recoveries are assumed for disability pensioners. The resulting overstatement of liability and current service cost is negligible.

8. Sex of Surviving Spouses

Each eligible surviving spouse is assumed to be of the opposite sex of the member.

Appendix 8 – RCA Valuation Methodology and Assumptions

A. Account Available for Benefits

The balance of the RCA Accounts forms part of the Public Accounts of Canada. There is also a tax credit (CRA refundable tax) with respect to the RCA.

Interest is credited every three months in accordance with the actual average yield on a book value basis for the same period on the combined Superannuation Accounts of the Public Service, Canadian Forces – Regular Force and Royal Canadian Mounted Police pension plans. The actuarial asset value is equal to the book value.

B. Valuation of Liabilities

Described in this appendix are the liability valuation methodologies used and any differences in economic assumptions from those used in the RCMPSA valuation.

1. RCA Postretirement Survivor Benefits

The limit on the amount of spousal annual allowance that can be provided under the RCMPSA decreases at the same time the member's pension is reduced due to the CPP coordination offset, which usually occurs at age 65.

This benefit was valued conservatively by assuming the plan limit is always reduced by the CPP coordination offset. The liability overstatement is minor because the probability of the former contributor dying prior to age 65 is small. This overstatement tends to be offset by the understatement of accrued liability caused by terminally funding the preretirement survivor benefit. The projected accrued benefit cost method was used to estimate the liability and current service cost for this RCA benefit.

2. Excess Pensionable Earnings

The projected accrued benefit cost method (described in detail in Appendix 5B) was used to estimate the liability and current service cost for retirement benefits in excess of the Maximum Pensionable Earnings.

3. Administrative Expenses

To compute the liability and current service cost, no provision was made regarding the expenses incurred for the administration of the RCA since these expenses are not debited from the RCA Account.

C. Actuarial Assumptions

The valuation economic assumptions are those described in Appendix 6 and shown in Table 30, except that the interest discount rate used to determine the liability and current service cost in respect of the RCA is one-half of the yield projected on the combined Superannuation Accounts.

The demographic assumptions for the RCA valuation are the same as those used for the RCMPSA valuation as described in Appendix 7.

D. Valuation Data

Pension benefits in payment to be debited from the RCA were provided as at 31 March 2015. Details on the RCA valuation data for current pensioners are shown in Appendix 12.

Appendix 9 – RCMP Superannuation Account Projection

Prior to 1 April 2000, the RCMP Superannuation Account tracked all government pension benefit obligations related to the RCMPSA. The Account is now debited only with benefit payments made in respect of service earned before that date and administrative expenses; it is credited with prior service contributions and costs related to elections made prior to 1 April 2000 and interest.

The results of the following projection were computed using the account balances described in Appendix 3, the data described in Appendices 4 and 12, the methodology described in Appendix 5 and the assumptions described in Appendices 6 and 7.

The projection shows the expected cash flows and balances of the Superannuation Account if all assumptions are realized and the actuarial shortfall of $225 million as at 31 March 2015 is amortized through a one-time special credit of $234 million as at 31 March 2017. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent valuation reports.

Table 45 Superannuation Account and Actuarial Liability Projections
($ millions)

Plan Year	Beginning Account Balance	Beginning Liability	Special Credits at End of Plan Year	Net Payments[1]	Interest Earnings
2016	13,203	13,428	12	650	612
2017	13,177	13,401	234	667	572
2018	13,316	13,316	-	682	539
2019	13,173	13,173	-	696	520
2020	12,997	12,997	-	709	500
2021	12,788	12,788	-	720	467
2022	12,535	12,535	-	730	457
2023	12,262	12,262	-	739	434
2024	11,957	11,957	-	745	423
2025	11,635	11,635	-	750	399
2026	11,284	11,284	-	754	387
2027	10,917	10,917	-	755	374
2028	10,536	10,536	-	754	349
2029	10,131	10,131	-	752	336
2030	9,715	9,715	-	747	322
2031	9,290	9,290	-	741	307
2032	8,856	8,856	-	733	300
2033	8,423	8,423	-	724	302
2034	8,001	8,001	-	713	293
2035	7,581	7,581	-	701	286
2040	5,611	5,611	-	616	252
2050	2,370	2,370	-	358	106

[1] Benefit payments plus administrative expenses.

Appendix 10 – RCMP Pension Fund Projection

Starting 1 April 2000, the RCMPSA is financed through the RCMP Pension Fund. The Pension Fund is credited with employer and member contributions, investment earnings and with prior service contributions for elections since 1 April 2000. The Fund is debited with benefit payments made in respect of service earned since that date and administrative expenses.

The results of the following projection were computed using the data described in Appendices 4 and 12, the methodology described in Appendix 5 and the assumptions described in Appendices 6 and 7.

The projection shows the expected growth of the Pension Fund if all assumptions are realized and the minimum required special payments are made. According to the projection, cash flows are expected to be positive until plan year 2031. Emerging experience, differing from the corresponding assumptions, will result in gains or losses to be revealed in subsequent valuation reports.

Table 46 Pension Fund and Actuarial Liability Projections
($ millions)

Plan Year	Beginning Market Value of Assets	Present Value of Prior Service Contributions	Beginning Actuarial Value of Assets	Contributions[1]	Payments[2]	Investment Earnings	Special Payment at End of Plan Year	Beginning Actuarial Liabilities
2016	8,082	13	7,286	459	155	338	74	7,440
2017	8,798	11	8,241	462	179	411	9	8,057
2018	9,501	10	9,206	472	203	481	9	8,717
2019	10,260	9	10,177	487	229	561	9	9,428
2020	11,088	8	11,096	504	256	605	9	10,202
2021	11,950	7	11,957	520	285	675	9	11,007
2022	12,869	6	12,875	536	317	739	9	11,864
2023	13,836	5	13,841	554	352	795	9	12,765
2024	14,842	5	14,847	574	388	895	9	13,701
2025	15,932	4	15,936	596	428	978	9	14,714
2026	17,087	4	17,091	619	471	1,046	9	15,785
2027	18,290	3	18,293	643	518	1,118	9	16,899
2028	19,542	3	19,545	667	569	1,196	9	18,058
2029	20,845	3	20,848	693	624	1,272	9	19,261
2030	22,195	2	22,197	718	684	1,355	9	20,506
2031	23,593	2	23,595	743	750	1,439	9	21,792
2032	25,034	2	25,036	766	822	1,525	-	23,113
2033	26,503	1	26,504	789	900	1,613	-	24,465
2034	28,005	1	28,006	813	984	1,704	-	25,843
2035	29,538	1	29,539	838	1,070	1,795	-	27,244
2040	37,638	0	37,638	971	1,536	2,279	-	34,555
2050	57,105	0	57,105	1,389	2,497	3,450	-	51,530

[1] Total current service cost.
[2] Benefit payments and administrative expenses.

Appendix 11 – Uncertainty of Results

A. Introduction

The projected financial status of the Pension Fund depends on many demographic and economic factors, including new contributors, average earnings, inflation, level of interest rates and investment returns. The projected long-term financial status of the Pension Fund is based on best-estimate assumptions; the objective of this section is to present alternative scenarios. The alternatives presented illustrate the sensitivity of the long-term projected financial position of the Pension Fund to changes in the future economic outlook. In this appendix, any references, in sections B and C, to assets, liabilities, surplus/(deficit), annual special payments and service cost relate to the Pension Fund.

Section B examines the sensitivity of the Pension Fund to different asset allocations. Alternative investment portfolios are described, along with the volatility of each portfolio and the resulting impact on the Pension Fund's funding ratio and current service cost. The impact of financial market volatility on the financial status of the Pension Fund is explored in section C, where severe one-time financial shocks are applied to three investment portfolios with the purpose of quantifying the impact on the surplus/(deficit) over the short term. Lastly, the impacts of lower bond yields on the Superannuation Account and on the Pension Fund due to slower than expected economic growth are analyzed in section D.

B. Risk/Return Trade-off of Investment Policy

A major risk all pension plans face is funding risk – the risk that pension assets are insufficient to meet pension obligations. If funding deficiencies or surpluses continue for an extended period of time, risk is transferred from one generation to another and may ultimately take the form of an increase or a decrease in the contribution rate.

Historically, equities have shown greater volatility of returns than fixed income instruments (such as bonds). Similarly, long-term bonds have historically shown greater volatility than shorter fixed income instruments. For instance, in the twenty-five years ending in 2014, the volatility (standard deviation) of Canadian equity returns (indicated by the S&P/TSX Total Return Index) was 16.6% as given in the Canadian Institute of Actuaries' Report on Canadian Economic Statistics 1924 – 2014. This compares with the volatility of returns of long-term federal bonds (10+ years) of 9.6% and with the volatility of returns of medium-term federal bonds (5-10 years) of 6.9% over the same period. Higher volatility of a security's returns implies a greater risk since the range of possible outcomes of returns widens. Hence, equities are viewed as being more risky than bonds and long-term bonds are viewed as more risky than medium- or short-term bonds.

Investing in a greater proportion of equities requires assuming a higher level of risk and hence the possibility of realizing a wider range of returns. Conversely, investing in lower risk fixed income instruments will tend to produce lower returns.

The RCMP pension plan represents a long-term obligation to pay pension benefits. Thus, a long-term approach must be taken to fund these obligations. Long-term Government of Canada bonds are considered risk-free and their yields are considered low. The real yield on 10-year-plus federal bonds was around 0.5% in March 2015. This is significantly below the ultimate best-estimate real return on assets of 4.1% that is currently used to determine the liabilities and contribution rates.

The government created the PSPIB to invest amounts equal to contributions in excess of benefits and administrative expenses with respect to service since 1 April 2000 with the purpose of maximizing investment returns without undue risk of loss. The current service cost is less than it would have been if the investment policy had been restricted to long-term government bonds.

The current service cost is reduced by diversifying the portfolio and by investing in securities that offer a higher rate of return than risk-free[1] long-term federal bonds, but that also have a higher degree of risk or volatility. By investing in riskier assets, investors hope to realize the equity risk premium as their reward for taking on additional risk. An equity risk premium is the difference between the expected return on risky assets (e.g. equities) and the expected return on a risk-free asset, such as the Government of Canada long-term bond mentioned above.

Of course, these higher returns are expected but not guaranteed, creating the possibility that the market will not perform as expected and liabilities will grow at a faster rate than investments for an extended period of time. Even if investment returns materialize as expected, other assumptions may not, causing liabilities to grow at a faster rate than assets. For example, salaries or inflation may increase more than expected. The amount of risk assumed by the plan sponsor depends on many factors, including the current funding status and economic outlook, among other things. Thus, the investment policy must balance the desire for a high real rate of return with the sponsor's tolerance or capacity for taking risk.

The following table shows the impact that various asset mixes would have on the funding ratio and the long-term service cost, as well as their relative volatility.

Table 47 Impact of Various Investment Policies

	Asset Mix			Real Rate of Return		1-year	Funding Ratio	Annual Special	Long-term
Portfolio	Fixed Income	Equity	Real Return	First 5 Years	Ultimate	Standard Deviation	as at 31 March 2015	Payment ($ millions)	Service Cost
#1	100%[2]	0%	0%	(5.9%)	2.8%	8.8%	48%	490	31.1%
#2	100%[3]	0%	0%	(4.8%)	3.0%	7.9%	53%	425	29.6%
#3	60%	35%	5%	0.3%	3.5%	7.1%	77%	190	26.1%
#4	40%	45%	15%	1.7%	3.8%	9.1%	87%	99	24.3%
Best-Estimate	20%	55%	25%	3.1%	4.1%	11.5%	98%	9	22.7%
#5	0%	100%	0%	4.6%	4.6%	16.2%	114%	-	20.2%

The last three columns of the previous table present the funding ratio, annual special payments over the next 15 years, and the long-term current service cost if the investment policy were changed to reflect the asset mix of the alternative portfolio. These deterministic outcomes do not take the expected portfolio volatility into account.

1 Long-term federal bonds are considered risk-free since they have no risk of default. However, their market value is volatile and therefore long-term federal bonds do exhibit market and funding risk over the course of their life.

2 Nominal Long-Term Federal bonds only.

3 Diversified portfolio of long-term bonds (portfolios 3 to 5 and Best-Estimate use a diversified portfolio of bond with various maturities, that is, bond universe)

Portfolio #1 is invested in 10-year-plus federal bonds. This portfolio does not result in a feasible scenario due to its prohibitive cost. Other portfolios with lower volatility and higher expected returns are available.

Portfolio #2 is invested in a marketable bond portfolio consisting of long-term federal, provincial, corporate and real return bonds. This diversification into four bond asset categories that are not perfectly correlated increases the real rate of return and reduces the volatility compared to the first portfolio. This portfolio produces a higher real rate of return compared to portfolio #1, while maintaining a lower current service cost. This is also a low risk, low return portfolio. A portfolio with greater diversification in variable income assets is required in order to keep funding cost to a lower level.

The next three portfolios in Table 47 are diversified portfolios combining equity and real return assets, such as real estate and infrastructure, with fixed-income securities of various terms. Fixed-income securities in those portfolios have a shorter average maturity than portfolio #1 and portfolio #2, resulting in lower expected fixed-income return and volatility.

Portfolio #3 and portfolio #4 are more diversified than the first two portfolios and are invested 35% and 45%, respectively, in equity. This diversification, into three broad asset categories that are not perfectly correlated, combined with shorter fixed-income maturities increases the real rate of return earned on these portfolios and keeps their volatility comparable to the first two portfolios. These portfolios have lower expected current service cost than portfolio #1 and portfolio #2 due to their higher expected return. However, despite an increased real return, these portfolios are not sufficient to maintain the current funded ratio and an increase in the plan's current service cost would be required with both portfolios.

Portfolio #5 is considered riskier because it is less diversified and has no allocation to fixed income securities. This portfolio is heavily invested in equity, which has much more volatile returns than bonds. Although this portfolio (portfolio #5) leads to the highest expected return, the highest funding ratio and the lowest long-term service cost, its volatility is significantly higher which may lead to significant additional contribution requirements as illustrated in the next table.

Table 48 presents the expected median and 10 percent downside real returns over the next 3 years[1], the resulting funding ratio, and the ensuing expected contributions assuming the plan is fully funded as at 31 March 2015 under each portfolio. It further assumes that the ultimate real rate of return applies for the full projection period (no select period with lower real rate of return).

[1] The 10 percent downside real returns over the next 3 years represent the expected 10th percentile average return over that period. That is, there is a 10% probability that the average real returns over the next 3 years will be lower than the 10 percent downside real returns.

Table 48 Median and 10% Downside Returns, Funding Ratio and Contributions for Various Portfolios

		Expected Average Annual Real Returns[1] (2016-2018)		Funding Ratio (31 March 2018)		Contributions (2018-19) (% of pensionable payroll)		
Portfolio	1-year Standard Deviation	Downside 10th Pct	Median	Downside 10th Pct	Median	Current Service Cost (downside and median)	Special Payments (downside)	Total (downside)
#3	7.1%	(1.7%)	3.5%	94%	100%	25.7%	2.9%	28.6%
#4	9.1%	(3.0%)	3.8%	90%	100%	23.8%	4.5%	28.3%
Best-Estimate	11.5%	(4.6%)	4.1%	85%	100%	22.2%	6.5%	28.7%
#5	16.2%	(7.8%)	4.6%	76%	100%	19.7%	9.9%	29.6%

The previous table highlights the trade-off between risk and return as well as between higher current service cost with low downside risk and lower current service and high downside risk. A portfolio (portfolio #3) exhibiting low volatility of returns has a high current service cost, but a low downside risk. Alternatively, a risky portfolio (portfolio #5) would produce a much lower current service cost; however, the volatility of this portfolio is quite high, resulting in significant downside risk and total downside contributions similar to portfolio #3 and greater than the best-estimate portfolio. By investing in a diversified portfolio, a reasonable current service cost can still be achieved along with lower volatility and lower downside risk than portfolio #5, and therefore, a lower probability of significant losses and large unforeseen additional contributions.

The best-estimate portfolio is invested 20% in fixed-income securities, 55% in equity and 25% in real return assets in the long-term, which is close to PSPIB's current long-term asset-mix objective. Such a portfolio produces an ultimate annual real return of 4.1% net of all investment expenses (assumed to total 0.20% of assets) with a standard deviation of 11.5%.

[1] For illustration purposes, it is assumed that ultimate returns apply for the entire projection period. Annual returns are assumed to follow a normal distribution and are assumed to be independent between the years (no mean reversion).

C. Financial Market Tail Events

This section focuses on the volatility present in the best-estimate portfolio and the extreme outcomes that could result. During plan year 2009, the nominal return on Plan assets was (22.7%) due to the economic slowdown. Such an event could be characterized as low probability (also referred to as a "tail event"). However, when these events do occur, the impact on the funding ratio is significant. This section analyzes the impacts that tail-event returns would have on the plan's funding ratio. To illustrate this, portfolio returns other than the best-estimate are assumed to occur in plan year 2018. Two alternative portfolios were selected from section B to show the potential variation in tail returns of a less risky (portfolio #4: 45% equity, 15% real estate and infrastructure, 40% fixed income) and a more risky (portfolio #5: 100% equity) portfolio in relation to the best-estimate portfolio.

It is assumed that the returns of the three portfolios follow a normal distribution. The long-term mean and annual standard deviation for each portfolio is given in Table 47. Returns at two probability levels were selected to analyze: 1/10 and 1/50. The probabilities of earning these returns can be thought of as once every 10 and 50 years, respectively. Since the normal distribution has two tails, a left tail and a right tail, both were examined. The left tail event is the occurrence of a nominal return such that the probability of earning that return or less is equal to 1/10 (or 1/50). The right tail event is the occurrence of a nominal return such that the probability of earning that return or more is equal to 1/10 (or 1/50).

For each portfolio a nominal return is calculated at the two probability levels. The nominal returns are given in the following table.

Table 49 Tail Event Portfolio Returns

Probability of return[1]	Tail	Portfolio 4: 45% Equities/ 40% Fixed Income/ 15% Real Estate & Infrastructure	Best-Estimate Portfolio: 55% Equities/ 20% Fixed Income/ 25% Real Estate & Infrastructure	Portfolio 5: 100% Equities/
		Nominal Return	Nominal Return	Nominal Return
1/50	Left	(12.4%)	(16.9%)	(25.4%)
1/10	Left	(5.4%)	(8.0%)	(12.9%)
1/10	Right	17.9%	21.6%	28.7%
1/50	Right	24.9%	30.5%	41.2%

The following table shows the impact on the projected surplus/(deficit) as at 31 March 2018 (the expected date of the next actuarial review) if the nominal return for plan year 2018 happens to be equal to the returns presented in Table 49 for the best-estimate scenario. Following the various portfolio returns in plan year 2018, it is assumed that the return will revert back to its best-estimate value for plan year 2019.

[1] The probability of earning the positive returns in the table corresponds to the probability that the annual return is greater than or equal to the indicated return. Similarly, the probability of earning the negative returns in the table corresponds to the probability that the annual return is less than or equal to the indicated return.

Table 50 Sensitivity of the Projected Surplus/ (Deficit) as at 31 March 2018
($ millions)

Assumption(s) Varied	Market Value of Assets	Actuarial Value of Assets	Liability	Surplus/ (Deficit)	Annual Special Payments[1]
None (i.e. current basis)	10,269	10,177	9,428	749	-
Investment return					
- Left Tail event at 1/50th probability	8,159	8,974	9,428	(454)	48
- Left Tail event at 1/10th probability	9,017	9,919	9,428	491	-
- Right Tail event at 1/10th probability	11,868	10,681	9,428	1,253	-
- Right Tail event at 1/50th probability	12,724	11,452	9,428	2,024	-

D. Impact of Lower Bond Yields

This section explores the consequences of slower than expected economic growth through a reduction in expected bond yields and variable income securities over the full projection period. Current bond yields are much lower than their historical averages and, without stronger economic growth, might well remain low over the next few years. Over the last 15-and 50-year periods ending 31 December 2014, the average real yield of long-term Government of Canada bonds was 2.2% and 3.2%, respectively. This is much higher than the 0.5% real yield on long-term federal bonds as at March 2015. This section looks at the impact of keeping the current 0.5% real yield for another year and reducing all subsequent long-term federal bond yields by at least 0.3%.

The best-estimate scenario assumes that the long-term federal bond real (nominal) yield reaches its ultimate value of 2.8% (4.8%) at the beginning of plan year 2025. This scenario assumes that economic growth will remain weak for another year and moderate thereafter. Consequently, the long-term federal bond nominal yield would not increase above its current level before the second year of projection, and would reach its ultimate real (nominal) value of 2.5% (4.5%) at the beginning of plan year 2025. As a result, the new money rate would also be affected and would be about 0.3% lower over the full projection period. In addition, returns for equities and real estate and infrastructure would also be lower for the entire projection period. Thus, returns would be 0.3% per year lower on average over the next 10 years and thereafter under the best-estimate scenario.

The following table shows the impact that such a scenario would have on the expected short-term investment returns and new money rate, as well as the impact on accrued liabilities and annual special credits/payments required to fund the Superannuation Account shortfall and the Pension Fund deficit.

[1] Equal annual special payments required to amortize the deficit over the next 15 years starting 31 March 2020.

Table 51 Impact on the Superannuation Account and the Pension Fund of Lower Bond Yields
($ millions)

Superannuation Account	Best-Estimate	Low Bond Yields	Difference
2016-2020 Average New Money Rate	3.1%	2.8%	(0.3%)
2016-2025 Average New Money Rate	3.8%	3.5%	(0.3%)
Total Actuarial Liability	13,428	13,767	339
Actuarial Excess/(Shortfall)	(225)	(564)	(339)
Special Credits	20	52	32
Pension Fund	Best-Estimate	Low Bond Yields	Difference
2016-2020 Average Return Projected on Fund	4.9%	4.7%	(0.2%)
2016-2025 Average Return Projected on Fund	5.4%	5.1%	(0.3%)
Total Actuarial Liability	7,440	7,840	400
Actuarial Surplus/(Deficit)	(154)	(554)	(400)
Special Payments	9	50	41
Long-term service cost	22.7%	24.3%	1.6%

Prolonging low bond yields for an additional year and reducing all subsequent long-term federal bond yields by at least 0.3% results in higher actuarial liability and higher special credits/payments for both the Superannuation Account and the Pension Fund.

Appendix 12 – Detailed Membership Data

Table 52 Male Regular Member Contributors
Number and Average Annual Pensionable Earnings[1] as at 31 March 2015

Age Last Birthday	Completed Years of Service in the Force								All Years of Service
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35	
To 24	179 $62,176	1 $83,340	-	-	-	-	-	-	180 $62,294
25-29	635 $71,150	710 $84,200	-	-	-	-	-	-	1,345 $78,039
30-34	482 $73,787	1,675 $85,447	309 $90,519	-	-	-	-	-	2,466 $83,804
35-39	261 $76,052	1,231 $85,917	1,081 $91,706	77 $96,234	-	-	-	-	2,650 $87,607
40-44	130 $76,429	744 $85,719	1,023 $91,518	616 $98,001	94 $105,068	2 $114,840	-	-	2,609 $91,149
45-49	47 $77,437	314 $85,788	436 $91,781	464 $97,500	657 $104,471	376 $112,088	-	-	2,294 $98,787
50-54	19 $77,278	90 $84,848	99 $90,983	142 $96,645	361 $102,266	881 $109,822	256 $120,002	2 $149,732	1,850 $106,230
55-59	9 $96,961	20 $89,215	25 $90,149	25 $95,111	88 $98,270	249 $105,631	345 $114,596	114 $114,877	875 $108,423
60+	-	5 $81,007	1 $95,724	4 $86,679	13 $98,635	37 $100,862	37 $105,573	72 $110,086	169 $104,698
All Ages	1,762 $72,441	4,790 $85,447	2,974 $91,493	1,328 $97,490	1,213 $103,349	1,545 $109,489	638 $116,242	188 $113,413	14,438 $92,015

Average age: 41.5 years

Average service in the force: 13.8 years

Average pensionable service: 14.2 years

Annualized pensionable payroll[2]: $1,304.7 million

[1] As defined in Note 1 in Section D of Appendix 1. Economic salary increases for plan year 2015 have not been announced yet. The assumed salary increase of 2% for plan year 2015 used for valuation purposes is not included in this table.

[2] The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

Table 53 Female Regular Member Contributors
Number and Average Annual Pensionable Earnings[1] as at 31 March 2015

Age Last Birthday	Completed Years of Service in the Force								All Years of Service
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35	
To 24	81 $62,084	-	-	-	-	-	-	-	81 $62,084
25-29	219 $71,720	156 $83,842	-	-	-	-	-	-	375 $76,762
30-34	142 $73,563	472 $85,371	129 $89,874	-	-	-	-	-	743 $83,896
35-39	62 $73,415	324 $85,783	405 $90,150	69 $95,697	-	-	-	-	860 $87,743
40-44	45 $78,192	119 $86,210	254 $90,452	326 $95,751	58 $99,724	1 $92,376	-	-	803 $91,960
45-49	12 $74,883	57 $85,461	104 $90,089	154 $95,538	166 $101,203	115 $107,809	-	-	608 $97,121
50-54	3 $80,412	16 $82,604	31 $90,796	36 $94,834	57 $100,030	187 $111,632	30 $122,571	-	360 $105,682
55-59	-	1 $83,340	6 $90,322	12 $95,096	12 $100,035	32 $105,688	30 $103,733	7 $96,999	100 $101,398
60+	-	-	2 $90,642	2 $91,932	4 $105,678	5 $98,419	1 $98,808	2 $98,658	16 $98,505
All Ages	564 $71,616	1,145 $85,330	931 $90,211	599 $95,609	297 $100,702	340 $109,529	61 $112,917	9 $97,368	3,946 $89,778

Average age: 39.8 years

Average service in the force: 12.8 years

Average pensionable service: 13.1 years

Annualized pensionable payroll[2]: $353.1 million

[1] As defined in Note 1 in Section D of Appendix 1. Economic salary increases for plan year 2015 have not been announced yet. The assumed salary increase of 2% for plan year 2015 used for valuation purposes is not included in this table.

[2] The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

Table 54 Male Civilian Member Contributors
Number and Average Annual Pensionable Earnings[1] as at 31 March 2015

Age Last Birthday	Completed Years of Pensionable Service								All Years of Service
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35	
To 24	6 $65,388	-	-	-	-	-	-	-	6 $65,388
25-29	43 $69,231	31 $76,057	-	-	-	-	-	-	74 $72,090
30-34	81 $70,629	141 $78,846	59 $82,591	1 $82,176	-	-	-	-	282 $77,282
35-39	46 $72,088	159 $77,494	131 $84,871	32 $89,562	-	-	-	-	368 $80,494
40-44	38 $73,357	95 $81,218	116 $83,852	74 $89,168	13 $90,294	2 $60,636	-	-	338 $83,206
45-49	32 $77,309	61 $80,884	60 $86,604	64 $87,403	39 $92,481	25 $83,390	2 $90,186	-	283 $85,052
50-54	14 $74,736	53 $83,969	55 $90,514	32 $93,623	38 $94,600	58 $93,377	33 $95,074	2 $82,866	285 $90,473
55-59	7 $68,249	27 $82,371	31 $85,697	25 $85,152	16 $88,473	40 $91,649	41 $93,951	8 $79,436	195 $87,467
60+	4 $64,347	10 $77,923	18 $89,561	9 $80,329	4 $81,465	7 $101,475	13 $95,250	20 $86,850	85 $86,860
All Ages	271 $71,768	577 $79,549	470 $85,449	237 $88,557	110 $91,971	132 $90,895	89 $94,472	30 $84,607	1,916 $83,277

Average age: 44.2 years

Average pensionable service: 13.1 years

Annualized pensionable payroll[2]: $157.0 million

1 As defined in Note 1 in Section D of Appendix 1. Economic salary increases for plan year 2015 have not been announced yet. The assumed salary increase of 2% for plan year 2015 used for valuation purposes is not included in this table.

2 The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

Table 55 Female Civilian Member Contributors
Number and Average Annual Pensionable Earnings[1] as at 31 March 2015

Age Last Birthday	Completed Years of Pensionable Service								All Years of Service
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35	
To 24	11 $57,171	-	-	-	-	-	-	-	11 $57,171
25-29	109 $63,280	43 $70,727	-	-	-	-	-	-	152 $65,387
30-34	94 $63,851	192 $72,767	37 $76,858	1 $82,176	-	-	-	-	324 $70,676
35-39	72 $64,761	154 $73,556	157 $79,719	30 $79,577	-	-	-	-	413 $74,803
40-44	50 $63,990	101 $72,571	125 $76,103	72 $81,419	16 $76,656	3 $78,764	-	-	367 $74,570
45-49	32 $62,471	76 $73,391	72 $77,099	48 $84,817	47 $80,699	28 $79,373	-	-	303 $76,615
50-54	17 $69,520	36 $74,098	50 $70,505	40 $77,852	42 $82,223	52 $84,685	25 $82,486	5 $82,265	267 $77,974
55-59	6 $62,536	19 $69,291	30 $70,298	12 $74,605	24 $76,187	22 $79,927	18 $87,240	8 $98,668	139 $76,565
60+	3 $70,428	6 $69,530	11 $74,849	6 $86,442	7 $63,537	4 $82,278	5 $82,414	6 $78,380	48 $75,556
All Ages	394 $63,853	627 $72,805	482 $76,517	209 $81,009	136 $79,015	109 $82,109	48 $84,261	19 $87,944	2,024 $74,126

Average age: 42.3 years

Average pensionable service: 11.5 years

Annualized pensionable payroll[2]: $148.4 million

1 As defined in Note 1 in Section D of Appendix 1. Economic salary increases for plan year 2015 have not been announced yet. The assumed salary increase of 2% for plan year 2015 used for valuation purposes is not included in this table.

2 The aggregate pensionable earnings of all contributors with less than 35 years of pensionable service.

Table 56 Male Former Regular Member Retirement Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
40-44	1	16,380	1	26,196	-	-
45-49	98	21,144	98	25,008	9	796
50-54	468	30,044	466	21,653	2	1,459
55-59	1,723	39,642	1,623	19,152	36	5,889
60-64	2,974	44,124	2,286	13,027	41	5,661
65-69	2,956	39,529	1,485	5,966	62	3,917
70-74	1,702	40,067	155	2,347	20	2,167
75-79	1,178	41,066	-	-	4	491
80-84	752	39,317	-	-	-	-
85-89	169	37,725	-	-	-	-
90-94	16	33,694	-	-	-	-
95-99	2	39,270	-	-	-	-
100-104	1	20,004	-	-	-	-
All Ages	12,040	40,339	6,114	13,519	174	4,266

Average age[2] at 31 March 2015: 67.0 years
Average age[2] at retirement: 51.6 years

Table 57 Male Former Regular Member Disability Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
To 39	-	-	31	13,132	-	-
40-44	24	7,786	39	17,817	-	-
45-49	76	16,621	79	19,667	1	264
50-54	261	24,420	261	18,235	3	693
55-59	391	30,924	358	15,379	-	-
60-64	459	33,879	338	10,235	-	-
65-69	302	29,672	153	5,296	1	1,843
70-74	89	31,313	8	1,398	-	-
75-79	36	33,815	-	-	-	-
80-84	13	27,260	-	-	-	-
85-89	6	28,588	-	-	-	-
90-94	2	26,256	-	-	-	-
All Ages	1,659	29,541	1,267	13,577	5	837

Average age at 31 March 2015: 60.2 years
Average age at retirement: 49.6 years

[1] Equals initial amounts of all pensions in pay plus all accrued indexation up to and including 1 January 2015, reduced by any CPP coordination and PBDA offsets in effect as at 31 March 2015. All accrued indexation is in pay except that in respect of retirement pensioners who have not yet satisfied at least one of the relevant criteria for receiving indexation payments. There were also 109 male former Regular Members who are entitled to an average deferred pension of $12,546 payable at age 60, their average age is 41.6.

[2] Deferred annuitants are excluded for calculation of the average age.

Table 58 Female Former Regular Member Retirement Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
40-44	3	11,506	3	14,529	-	-
45-49	36	19,764	35	22,554	3	1,173
50-54	129	27,138	128	20,132	-	-
55-59	176	34,776	158	16,866	1	4,441
60-64	109	37,221	83	14,101	5	11,270
65-69	27	32,178	20	8,317	-	-
70-74	4	26,139	4	2,757	-	-
75-79	1	10,980	-	-	-	-
80-84	1	14,364	-	-	-	-
All Ages	486	31,735	431	17,222	9	7,146

Average age[2] at 31 March 2015: 57.2 years

Average age[2] at retirement: 50.3 years

Table 59 Female Former Regular Member Disability Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
To 39	4	2,427	27	13,551	-	-
40-44	16	6,342	24	17,974	-	-
45-49	68	16,310	71	17,885	3	112
50-54	96	21,694	94	17,937	-	-
55-59	87	25,867	65	16,094	-	-
60-64	42	28,768	31	15,211	-	-
65-69	13	22,183	7	6,708	-	-
70-74	4	20,046	1	5,496	-	-
75-79	-	-	-	-	-	-
80-84	1	7,980	-	-	-	-
All Ages	331	21,565	320	16,635	3	112

Average age at 31 March 2015: 52.6 years

Average age at retirement: 46.0 years

[1] Equals initial amounts of all pensions in pay plus all accrued indexation up to and including 1 January 2015, reduced by any CPP coordination and PBDA offsets in effect as at 31 March 2015. All accrued indexation is in pay except that in respect of retirement pensioners who have not yet satisfied at least one of the relevant criteria for receiving indexation payments. There were also 36 female former Regular Members who are entitled to an average deferred pension of $14,086 payable at age 60, their average age is 41.5.

[2] Deferred annuitants are excluded for calculation of the average age.

Table 60 Male Former Civilian Member Retirement Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
50-54	4	30,705	4	24,081	-	-
55-59	97	37,081	99	23,065	3	10,129
60-64	162	37,358	174	16,440	4	2,276
65-69	178	33,713	164	8,130	4	1,179
70-74	141	30,915	60	4,636	2	3,049
75-79	111	28,737	14	3,897	-	-
80-84	74	26,634	1	2,868	-	-
85-89	34	21,423	-	-	-	-
90-94	11	20,750	-	-	-	-
95-99	2	31,386	-	-	-	-
All Ages	814	32,324	516	13,390	13	3,869

Average age[2] at 31 March 2015: 69.9 years

Average age[2] at retirement: 58.1 years

Table 61 Male Former Civilian Member Disability Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
To 39	-	-	1	11,388	-	-
40-44	2	6,972	2	7,494	-	-
45-49	3	11,916	6	14,590	-	-
50-54	12	12,428	10	12,654	-	-
55-59	18	25,183	18	16,608	-	-
60-64	23	28,618	16	8,717	-	-
65-69	17	28,540	9	3,689	-	-
70-74	12	19,276	1	13,644	-	-
75-79	8	14,450	-	-	-	-
80-84	5	11,518	-	-	-	-
85-89	1	9,528	-	-	-	-
All Ages	101	21,877	63	11,519	-	-

Average age at 31 March 2015: 63.3 years

Average age[2] at retirement: 51.7 years

[1] Equals initial amounts of all pensions in pay plus all accrued indexation up to and including 1 January 2015, reduced by any CPP coordination and PBDA offsets in effect as at 31 March 2015. There were also 45 male former Civilian Members who are entitled to an average deferred pension of $14,614 payable at age 60, their average age is 43.2.

[2] Deferred annuitants are excluded for calculation of the average age.

Table 62 Female Former Civilian Member Retirement Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
50-54	6	14,250	9	14,259	-	-
55-59	71	27,381	75	17,189	-	-
60-64	170	30,485	173	13,955	2	10,049
65-69	108	23,626	104	7,441	1	3,933
70-74	57	19,086	36	6,109	-	-
75-79	40	24,536	10	4,229	1	1,208
80-84	33	21,975	1	4,056	-	-
85-89	8	20,736	-	-	-	-
90-94	11	19,225	-	-	-	-
95-99	1	16,596	-	-	-	-
All Ages	505	25,647	408	11,941	4	6,310

Average age[2] at 31 March 2015: 67.3 years

Average age[2] at retirement: 57.8 years

Table 63 Female Former Civilian Member Disability Pensioners
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
To 39	-	-	7	9,123	-	-
40-44	4	2,514	10	13,270	-	-
45-49	11	9,106	13	8,534	-	-
50-54	41	15,287	43	14,147	-	-
55-59	40	16,594	39	10,314	-	-
60-64	59	21,738	47	8,313	-	-
65-69	27	17,215	19	5,574	-	-
70-74	9	17,643	4	6,525	-	-
75-79	2	12,594	-	-	-	-
80-84	4	19,317	-	-	-	-
85-89	1	12,336	-	-	-	-
All Ages	198	17,281	182	10,114	-	-

Average age at 31 March 2015: 58.3 years

Average age at retirement: 49.0 years

[1] Equals initial amounts of all pensions in pay plus all accrued indexation up to and including 1 January 2015, reduced by any CPP coordination and PBDA offsets in effect as at 31 March 2015. There were also 85 female former Civilian Members who are entitled to an average deferred pension of $16,543 payable at age 60, their average age is 46.4.

[2] Deferred annuitants are excluded for calculation of the average age.

Table 64 Female Eligible Spouses
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
To 39	-	-	19	5,907	-	-
40-44	11	7,024	19	6,684	-	-
45-49	30	11,199	30	5,898	-	-
50-54	92	14,945	59	6,074	-	-
55-59	146	17,679	67	5,035	-	-
60-64	269	19,230	107	4,221	3	5,228
65-69	340	19,849	76	2,694	1	4,044
70-74	337	21,899	12	1,732	1	120
75-79	414	20,380	4	1,650	-	-
80-84	342	19,598	-	-	-	-
85-89	159	17,075	-	-	-	-
90-94	37	14,884	-	-	-	-
95-99	14	14,788	-	-	-	-
100-104	3	12,528	-	-	-	-
Spouses	2,194	19,311	393	4,569	5	3,970

Average age at 31 March 2015: 71.8 years

Average age at death of contributor: 59.6 years

Table 65 Male Eligible Spouses and Children
Number and Average Annual Pension[1] as at 31 March 2015

Age Last Birthday	Superannuation Account		Pension Fund		RCA	
	Number	Pension ($)	Number	Pension ($)	Number	Pension ($)
To 39	-	-	1	1,068	-	-
40-44	-	-	-	-	-	-
45-49	1	7,608	1	2,616	-	-
50-54	4	7,311	2	14,658	-	-
55-59	8	10,544	5	5,213	-	-
60-64	10	12,564	4	5,229	-	-
65-69	11	15,323	6	3,008	-	-
70-74	6	16,762	3	5,568	1	432
75-79	3	17,944	-	-	-	-
80-84	4	6,864	-	-	-	-
85-89	2	12,888	-	-	-	-
Spouses	49	12,715	22	5,215	1	432
Children	114	2,781	135	1,364	-	-

Average age of widowers at 31 March 2015: 66.9 years

Average age of widowers at death of contributor: 55.7 years

[1] Equals initial amounts of annual allowance plus all indexation up to and including 1 January 2015.

Appendix 13 – Mortality Table for the Calculation of Instalments

For members who elect to buy back prior service, the following mortality rates are to be used up to the next actuarial valuation to calculate the monthly instalments required. These mortality rates are combined mortality rates for Regular and Civilian Members and are projected to plan year 2020. They are deemed to be the mortality rates applicable for plan years 2016 to 2020 inclusively together with the assumed longevity improvement factors shown in this report with the first year of projection being plan year 2021.

Table 66 Assumed Rates of Mortality for the Calculation of Instalments
(per 1,000 individuals)

Age Last Birthday	Male	Female
30	0.4	0.3
40	0.7	0.5
50	1.7	1.3
60	4.1	3.5
70	12.2	9.1
80	43.5	28.4
90	133.9	106.5
100	282.0	311.9
110+	500.0	500.0

Appendix 14 – Acknowledgements

The Superannuation Directorate of the Department of PSPC provided the data on plan members.

The co-operation and able assistance received from the above-mentioned data provider deserve to be acknowledged.

The following individuals assisted in the preparation of this report:

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