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ACTUARIAL REPORT

on the Benefit Plan
Financed Through the

ROYAL CANADIAN MOUNTED POLICE (DEPENDANTS) PENSION FUND

as at 31 March 2016

Canada

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8 December 2016

The Honourable William F. Morneau, P.C., M.P.
Minister of Finance
House of Commons
Ottawa, Canada
K1A 0G5

Dear Minister:

Pursuant to section 56 of the *Royal Canadian Mounted Police Pension Continuation Act*, I am pleased to submit the report on the actuarial review as at 31 March 2016 of the benefit plan established under Part IV of the Act.

Yours sincerely,

Jean-Claude Ménard

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

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I. Executive Summary

A. Purpose of this Actuarial Report

This actuarial review of the benefit plan governed by Part IV of the *Royal Canadian Mounted Police Pension Continuation Act* (RCMPPCA) was made as at 31 March 2016 pursuant to section 56 of the Act. The previous review was made as at 31 March 2013.

In accordance with accepted actuarial practice and the RCMPPCA, the main purposes of this actuarial report are:

- to show an estimate of the balance sheet (i.e. recorded balance of the Fund, actuarial liabilities, and actuarial excess) as at the valuation date,
- to compare the actual and expected experience under the RCMPPCA during the intervaluation period and to reconcile the change in the financial position of the Plan since the last actuarial report, and
- to recommend measures to deal with the actuarial excess.

It is recommended that the RCMPPCA be amended such that this is the last actuarial review of the Plan. In the absence of legislative amendments, it is recommended that the next actuarial review be no later than 31 March 2019.

B. Future of the Plan

The plan membership has been declining steadily since 1948. The recorded balance of the Fund is estimated to decline steadily until the last dollar is paid to the last widow, which is projected to occur in the plan year 2046, based on the best-estimate mortality assumptions of this report.

A best-estimate mortality assumption is good in projecting as a whole the mortality experience of a sufficiently large group of individuals. As the group size diminishes, random fluctuations play a larger role in mortality experience. This is demonstrated in the experience gains and losses analysis section of this report which shows significant deviation between actual and expected mortality results. It is expected that these significant gains or losses will arise more frequently with each passing year as the number of members and widows continues to fall. In this context, keeping the same procedure of preparing actuarial valuations and reviewing the rate of benefit increases every three years may result in significant changes in the rate of benefit increases from one actuarial valuation to the next.

In order to avoid these fluctuations, this report recommends that the RCMPPCA be amended to provide a level rate of annual benefit increases for the remaining lifetime of the Plan, with the intent that any final actuarial excess or shortfall recorded once the last benefit is paid under the Plan be at the credit or at the charge of the Government. The level rate of annual benefit increases would be determined at the time of the amendment based on updated plan demographics and best-estimate assumptions.

C. Changes since the Last Valuation

During the intervaluation period there were no changes to the plan provisions, which are summarized in Appendix 1. However, the Governor in Council made benefit improvements in accordance with the excess distribution recommendations in the 2013 actuarial report on the benefit plan. The major improvements were effective pension increases of 1.2% as at 1 April 2014, 1 April 2015 and 1 April 2016. There were also increases in the lump sum death benefit payable on the death of a member and in the residual amount payable on the early death of a widow.

The Fund yield and mortality assumptions were revised for this valuation. These changes are discussed respectively in Appendix 4 and Appendix 5.

D. Main Findings and Recommendation

- As at 31 March 2016 (i.e. the end of the 2016 plan year[1]), the plan had an actuarial excess of $1.35 million ($1.34 million as at 31 March 2013), being the excess of the recorded balance of the Fund of $17.69 million over the actuarial liabilities of $16.34 million.
- It is recommended that the RCMPPCA be amended to provide a level rate of annual benefit increases for the remaining lifetime of the Plan. The level rate of annual benefit increases would be determined at the time of the amendments based on updated plan demographics and best-estimate assumptions. Any final actuarial excess or shortfall recorded once the last benefit is paid under the Plan would be at the credit or at the charge of the Government. In this case, this would be the last actuarial review of the Plan.
- In the absence of legislative changes, it is recommended that annual benefit increases of 1.9% be applied until the next actuarial review as at 31 March 2019. Benefit improvements for subsequent years will be determined in the actuarial review as at 31 March 2019 and will reflect actual mortality experience, which could be significantly different than expected. The recommended benefit improvements until the next actuarial review as at 31 March 2019 are detailed as follows:
  - i) a pension increase for current and prospective widows of 1.9% as at 1 April 2017, 1 April 2018 and 1 April 2019;
  - ii) an increase in the lump sum benefit payable upon the death of a member of 1.9% as at 1 April 2017, 1 April 2018 and 1 April 2019; and
  - iii) an increased residual amount payable on the death of a widow of a member who dies in the 2018, 2019 or 2020 plan years, obtained by increasing the member’s deemed contributions as at 1 April 2016 by 1.9% on 1 April 2017, 1 April 2018 and 1 April 2019. A table presenting the increases by year of death may be found in Table 6.

[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.

II. Financial Position of the Plan

A. Balance Sheet

The following balance sheet is based on the plan provisions described in Appendix 1, the cumulative dividends in effect as at 1 April 2016, and the data and actuarial assumptions described in following sections. Previous valuation results as at 31 March 2013 are shown for comparison.

Table 1 Balance Sheet
($ dollars)

	As at 31 March 2016	As at 31 March 2013
Recorded Fund Balance		
Fund balance	17,673,000	22,677,000
Actuarial value of instalments in pay by members	12,000	17,000
Total Recorded Fund Balance	**17,685,000**	**22,694,000**
Actuarial Liabilities		
Benefits accrued by members		
· widow pensions	1,932,000	3,177,000
· lump sums on death without a widow	2,829,000	3,305,000
Widow pensions in pay	11,242,000	14,546,000
Outstanding payments[1]	334,000	323,000
Total Actuarial Liabilities	**16,337,000**	**21,351,000**
Actuarial Excess	**1,348,000**	**1,343,000**

The actuarial excess of $1.35 million represents 8.3% of the actuarial liabilities of $16.34 million.

B. Reconciliation of Financial Position with Previous Report

This subsection describes the various factors reconciling the actuarial excess of this valuation with the corresponding excess of the previous valuation. Figures in brackets indicate negative amounts.

[1] Lump sum payments not yet made as at the valuation date for member or widow deaths that occurred before that date.

Table 2 Reconciliation of Financial Position
As at 31 March 2016 ($ dollars)

Actuarial excess as at 31 March 2013	**1,343,000**
Data corrections	233,000
Cost of 2014, 2015 and 2016 benefit increases	(560,000)
Updated actuarial excess as at 31 March 2013	**1,016,000**
Interest on excess	163,000
Expected actuarial excess as at 31 March 2016	**1,179,000**
Experience gains and (losses)	469,000
Change in actuarial assumptions	(300,000)
Actuarial excess as at 31 March 2016	**1,348,000**

1. **Data corrections**
   There were three more widows' deaths before 31 March 2013 that were not included in the previous valuation. This was corrected and the excess as at 31 March 2013 has increased by $233,000.

2. **Cost of 2014, 2015 and 2016 Benefits Increases**
   Benefit improvements in accordance with the excess distribution recommendations of the previous report were approved and the excess as at 31 March 2013 decreased by $560,000.

3. **Interest on Excess**
   The expected interest to 31 March 2016 on the updated excess as at 31 March 2013 amounts to $163,000.

4. **Experience Gains and Losses**
   Since the previous valuation, the actuarial excess increased by $469,000 due to actuarial gains and losses as described in the following table.

Table 3 Experience Gains and (Losses)
($ dollars)

Mortality of widows	8,000
Age of new widows	283,000
Mortality of members	302,000
Proportion married	(125,000)
Interest rates	23,000
Miscellaneous	(22,000)
Net experience gains	469,000

(a) Mortality of Widows
During the three years ended 31 March 2016, the 44 reported widow deaths amounted to 122% of the 35.9 deaths expected in accordance with the assumption in the previous valuation. The plan recorded an experience gain of $8,000.

(b) Age of New Widows

The 11 new widows during the three-year period were on average 4.2 years older than expected. The plan recorded an experience gain of $283,000.

(c) Mortality of Members

During the three years ended 31 March 2016, the 21 reported member deaths amounted to 94% of the 22.3 deaths expected in accordance with the assumption in the previous valuation. The plan recorded an experience gain of $302,000.

(d) Proportion Married

During the three years ended 31 March 2016, the 11 new widows were 112% of the 9.8 expected; the plan recorded an experience loss of $125,000.

(e) Interest Rates

In the previous valuation, the Fund was assumed to be credited with interest at an average annual rate of 5.10% during the three years ended 31 March 2016. The actual interest rates were just above the expected rates (average 5.14%), causing an experience gain of $23,000.

5. Change in Actuarial Assumptions

Actuarial assumptions were revised as described in Appendix 4 and Appendix 5. The actuarial excess decreased by $300,000, due to the following revisions.

Table 4 Change in Actuarial Assumptions
($ dollars)

Widow mortality	51,000
Interest rates	(354,000)
Member mortality	3,000
Net impact of revision	**(300,000)**

(a) Widow Mortality

Both components of the mortality basis for widows, namely the rates assumed for the 2017 plan year and the annual reduction factors applying to those rates in subsequent years, were revised for this valuation. As a result, the actuarial excess increased by $51,000.

(b) Interest Rates

The interest rates for this valuation are shown in Appendix 4 and were developed by the procedure described in Appendix 3-C, in particular, the long-term new money rate was revised downward from 5.0% to 4.6% causing the Fund yield to be on average 0.7% lower than in the previous valuation over the next 15 years. The adoption of the revised interest assumption caused the actuarial excess to decrease by $354,000.

(c) Member Mortality

Both components of the mortality basis for members, namely the rates assumed for the 2017 plan year and the annual reduction factors applying to those rates in subsequent years, were revised. As a result, the actuarial excess increased by $3,000.

C. Sensitivity Analysis of Actuarial Liabilities to Variations in Key Assumptions

The supplementary estimates shown below indicate the degree to which the actuarial liabilities as at 31 March 2016 of $16,003,000 (before taking into consideration the outstanding payments) shown in the balance sheet depend on some key assumptions. The actuarial liability changes can also serve to approximate the effect of other numerical variations in each key assumption, to the extent that such effects are linear.

1. Fund Yield

If the fund yield assumption would increase by 1% in each future year, the actuarial liabilities would decrease by $731,000 (i.e. by 4.5%).

If the interest rates assumption would decrease by 1% in each future year, the actuarial liabilities would increase by $800,000 (i.e. by 4.9%).

2. Mortality of Widows

If the mortality rates assumed for widows in each future year were reduced by 10%, the actuarial liabilities would increase by $746,000 (i.e. by 4.6%).

If the assumed improvements in longevity for widows after the 2017 plan year (see Appendix 5) were not realized, the actuarial liabilities would decrease by $236,000 (i.e. by 1.4%).

3. Mortality of Members

If the mortality rates assumed for members in each future year were increased by 10%, the actuarial liabilities would increase by $83,000 (i.e. by 0.5%).

If the assumed improvements in longevity for members after the 2017 plan year (see Appendix 5) were not realized, the actuarial liabilities would increase by $17,000 (i.e. by 0.1%).

4. Proportion of Married Members

If the proportion of members married at death were increased by 10%, then the actuarial liabilities would increase by $54,000 (i.e. by 0.3%).

5. Widow Age Difference

If the age of each future new widow were reduced by one year, then the actuarial liabilities would increase by $88,000 (i.e. by 0.5%).

D. Fund Balance

1. RCMP (Dependants) Pension Fund

Member contributions and benefits earned under Part IV of the RCMPPCA are tracked entirely through the RCMP (Dependants) Pension Fund, which forms part of the Public Accounts of Canada. The Fund is:

- credited with all contributions made by members;
- charged with the benefit payments made; and,
- credited with interest, as though net cash flows were invested with other public pension plans' cash flows in 20-year Government of Canada bonds issued at prescribed interest rates and held to maturity. Interest is credited every three months to the Fund on the basis of the actual average yield for the same period on

the combined Superannuation Accounts of the Public Service, Canadian Forces – Regular Forces and RCMP pension plans.

No formal debt instrument is issued to the Fund by the Government in recognition of the amounts therein.

2. Reconciliation

The following table shows the reconciliation of the Fund balance from the previous valuation date to the current valuation date. The Fund entries shown below were provided and certified by the RCMP Pension Accounting Unit. During the intervaluation period, the Fund balance decreased by $5,004,000 (i.e. 22%) to $17,673,000 as at 31 March 2016.

Table 5 Fund Balance
($ dollars)

	Plan year		
	2014	**2015**	**2016**
Opening Balance	22,676,882	20,758,261	19,370,510
Receipts and other credits			
Contributions	3,697	3,487	3,060
Interest	1,148,931	1,007,978	874,731
Total	1,152,628	1,011,465	877,791
Payments and other charges			
Annuities	2,428,187	2,186,046	2,105,948
Lump sum payments	643,062	213,170	803,868
Return of Contributions	-	-	-
Total	3,071,249	2,399,216	2,909,816
Net Assets Available for Benefits	**20,758,261**	**19,370,510**	**17,338,485**
Accounts Payable			334,446
Closing Balance	**20,758,261**	**19,370,510**	**17,672,931**

3. Interest Earnings

The interest earnings on the Fund in plan years 2014, 2015 and 2016 were 5.4%, 5.2% and 4.8% respectively. They were calculated based on the assumption that instalment payments, survivor pension benefits and lump sum benefits were made in the middle of the year.

E. Disposition of Actuarial Excess

In past actuarial reports where an actuarial excess was identified, a portion of this excess was applied to provide benefit improvements for the three years following the actuarial valuation while the remaining excess was retained for future potential benefit increases. For this valuation, it is recommended that the RCMPPCA be amended to provide a level rate of annual benefit improvements for the remaining lifetime of the Plan, with the intent that any final actuarial excess or shortfall recorded once the last benefit is paid under the Plan be at the credit or at the charge of the Government. The level rate of annual benefit increases would be determined at the time of the amendments based on updated plan demographics and best-estimate assumptions.

In the absence of legislative changes, it is recommended that benefit improvements of 1.9% be applied on 1 April 2017, 1 April 2018 and 1 April 2019 for pensions and residual amounts payable to current and prospective widows as well as for lump sums payable upon the death of a member. The next actuarial review should be conducted no later than 31 March 2019. If the experience of the plan develops according to the best-estimate assumptions established in this report, benefit increases determined in subsequent actuarial reviews will be 1.9% per year. However, actual mortality experience could be significantly different than expected, which could result in large fluctuations in the rate of benefit increases in the future. The following table presents the recommended benefit improvements until the next actuarial review.

Table 6 Recommended Benefit Improvements

Pension and residual amount increase for current and prospective widows

Effective Date	Dividend Increase	Cumulative Dividend	Effective Increase
1 April 2017	26%	1,298%	1.9%
1 April 2018	27%	1,325%	1.9%
1 April 2019	27%	1,352%	1.9%

Increase in lump sum payable upon death of a member

Effective Date	Dividend Increase	Cumulative Dividend	Effective Increase
1 April 2017	15%	720%	1.9%
1 April 2018	16%	736%	1.9%
1 April 2019	16%	752%	1.9%

III. Demographic and Financial Projections

A. Membership Projections

On the basis of the demographic assumptions described in Appendix 5, the member and widow populations were projected over the expected remaining lifetime of the plan.

Number of Members and Widows

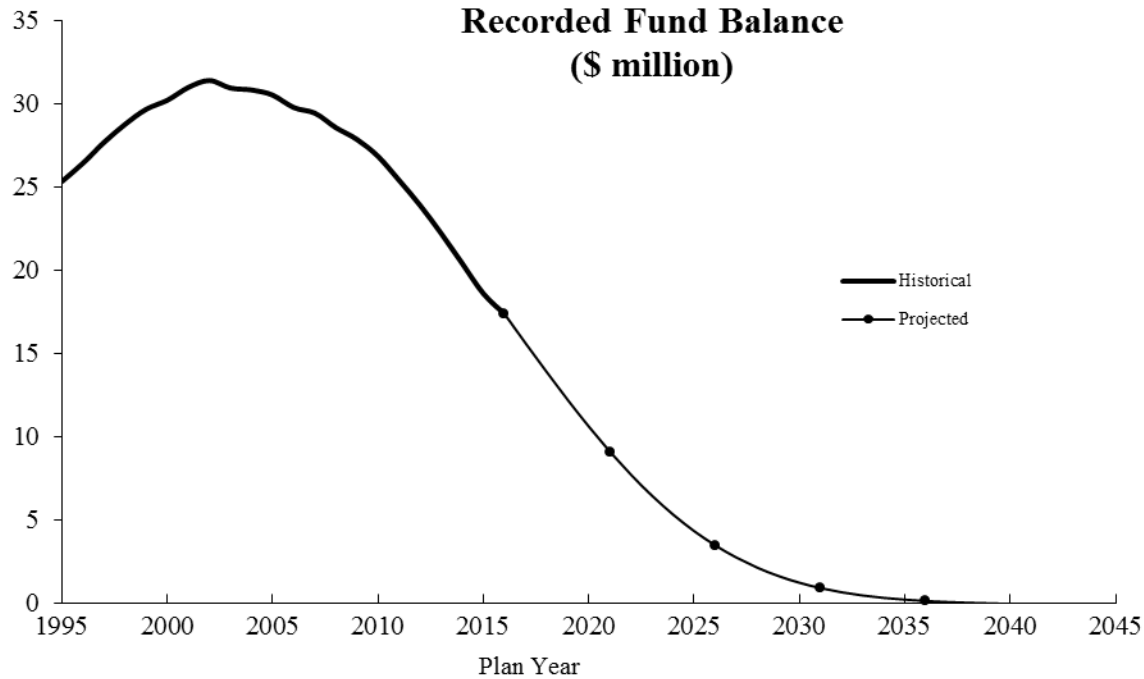
As at 31 March	Members	Widows
Historical		
2001	*193*	*176*
2004	*165*	*171*
2007	*125*	*149*
2010	*97*	*144*
2013	*65*	*132*
2016	*44*	*97*
Projected		
2019	26	75
2022	14	52
2025	6	32
2028	3	18
2031	1	9
2034	0	4
2046	-	-

Over the last decade, the number of members has fallen steadily so that only 44 remain at 1 April 2016 (65 at 1 April 2013); this trend is projected to continue until the death of the last member, which is expected in the plan year 2033. The number of widows reached 97 as at 1 April 2016 (132 as at 1 April 2013). A steady decline is expected thereafter, with the last widow expected to survive to the plan year 2046 (2044 in the 2013 valuation).

Emerging mortality experience will be subject to statistical fluctuations. Consequently the actual membership statistics will deviate, perhaps materially, due to the relatively small number of participants.

B. Projection of Recorded Fund Balance

Using the assumptions described in Appendix 4 and 5, the recorded balance of the Fund was projected. The total outstanding payments of $334,000 shown in the balance sheet were assumed to be made on 1 April 2016.



The recorded balance of the Fund reached its maximum of $31.4 million on 31 March 2002. If the experience of the Plan develops according to the assumptions and benefit improvements of 1.9% are granted annually, the recorded balance of the Fund assets is expected to decline steadily until it reaches $0 in plan year 2037. It is projected that the Plan would be in a shortfall position of approximately $0.2 million when the last expected payment is made under the Plan in plan year 2046. This projected shortfall would be at the charge of the Government.

The actual evolution of the recorded balance of the Fund will be influenced by several variables, most notably the statistical mortality fluctuations affecting the membership projections.

IV. Actuarial Opinion

In our opinion, for the purposes of the valuation:

- the data upon which the calculations were based are sufficient and reliable;
- the assumptions used are, in aggregate, appropriate;
- the valuation methodology employed is appropriate; and
- this report has been prepared, and our opinions given, in accordance with accepted actuarial practice.

In particular, this report was prepared in accordance with the Standards of Practice published by the Canadian Institute of Actuaries.

To the best of our knowledge there have been no subsequent events between the date of valuation and the date of this report.

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
8 December 2016

Appendix 1 - Summary of Plan Provisions

The provisions of the benefit plan governed by Part IV of the *Royal Canadian Mounted Police Pension Continuation Act* (RCMPPCA) are summarized in this appendix. However, the Act shall prevail if there is a discrepancy between it and this summary.

A. History of the Plan

The benefit plan associated with the Royal Canadian Mounted Police (Dependants) Pension Fund was established in 1934 when Part IV was added to the *Royal Canadian Mounted Police Act* (RCMP Act). Plan membership was optional for constables on active duty on 1 October 1934; however, it was mandatory for constables appointed to the Force thereafter.

In 1948, Part V (a new pension arrangement) was added to the RCMP Act. Plan members who elected to become contributors under Part V were required to either suspend or terminate their participation in the plan. Moreover, the plan was then closed to any new entrants except certain constables whose continuous service dated back to 1 October 1934 or earlier. Lastly, the plan was amended so that the government assumed responsibility for any shortfall in the Fund.

In 1959, the *Royal Canadian Mounted Police Superannuation Act* and the *Royal Canadian Mounted Police Pension Continuation Act* were enacted to provide for all RCMP pension arrangements. The plan was transferred to the RCMPPCA, where it remains.

In 1975, the age at which the eligibility of a son for survivor benefits expires was raised from 18 years to 21 years, which already applied to a daughter. In addition, survivor benefits were extended to age 25 for unmarried sons and daughters still in school, subject to certain conditions. Lastly, the 4% annual interest rate that had always been applied to the Fund balance was replaced by the rate applied to the three major Superannuation Accounts (Public Service, Canadian Forces – Regular Forces, and Royal Canadian Mounted Police), which is derived from the yield on a notional long-term bond portfolio (see Appendix 3). The resulting higher interest credits have flowed through to members and survivors in the form of more generous benefit increases from 1975 onward.

In 1989, marital status was eliminated as a criterion to determine the eligibility for survivor benefits of a son or daughter between ages 21 and 25. Also eliminated was the provision for reducing the pension of a widow more than 20 years younger than her husband at the date of his death.

In 1993, the plan was amended to allow the payment of pension to a widow cohabiting with a man to whom she is not married.

B. Membership

As mentioned above, plan membership was compulsory for constables appointed to the Force from 1934 to 1948. Thereafter, the plan was essentially closed to new entrants. The last plan member retired from active duty in 1987.

C. Contributions

1. Member Contributions

a) Current Service

To purchase current service benefits, a member on active duty contributed 5% of pay together with any supplementary amounts in accordance with the scale set out in the RCMPPCA.

b) Past Service

A member on active duty could elect to contribute, either in a lump sum or by equivalent[1] instalments, to purchase benefits in respect of any period of eligible past service, based on his rate of pay at the date of election. Similarly, on promotion to or within the ranks of non-commissioned officers, he could elect to partially or fully upgrade the accrued benefits.

2. Government Contributions

The RCMPPCA requires the Government of Canada to make contributions only to restablish the solvency of the Fund. Every valuation to date has revealed an actuarial excess and therefore no government contribution has ever been credited to the Fund.

D. Interest Earnings

Interest is credited every three months to the Fund on the basis of the yield in the preceding quarter on the notional bond portfolio underlying the combined Superannuation Accounts of the Public Service, Canadian Forces – Regular Forces, and Royal Canadian Mounted Police pension plans.

E. Basic Death Benefits

The amount of basic benefit is determined solely in accordance with the terms of the RCMPPCA, without reference to any cumulative dividend (see subsection F below) that may be payable. A lump sum or pension benefits, as applicable, are payable on the death of a member who has made the scheduled contributions and had left them in the Fund.

1. Widow Pensions

A widow is entitled to the pension purchased by the member’s contributions at the rates specified in Table II of the Schedule to the RCMPPCA. In many cases, the pension is approximately equal to 1.5% of the member’s final pay multiplied by his years of credited service. The pension is payable for life. If a widow dies before receiving payments at least equal to the member’s contributions, then a residual amount is payable.

2. Lump Sum Benefits

If a member is not survived by a widow, a lump sum payment is made to the dependants and relatives of the member who are, in the opinion of the Minister having control and

[1] Based on the mortality rates of the CM(5) Table with interest at 4% per annum.

management of the Force, best entitled to share the benefit. The lump sum amount is equal to the present value[1] of a hypothetical pension payable to a 75 year old widow.

3. **Benefit Limitation**
The basic pension payable to the widow of a member who married after age 60 is reduced to ensure that the present value[1] of her pension does not exceed the lump sum otherwise payable on his death.

F. Cumulative Dividends on Basic Death Benefits

If the Fund balance is substantially in excess of the amount required to make adequate provision for the prospective payments to be made out of it, the Governor in Council may by order increase all the plan benefits, or any of them, in such manner as may appear equitable and expedient.

Until 31 March 1991, the benefit increases took the form of cumulative dividend percentages applied equally to all basic death benefits except the residual amount payable on the early death of a widow. Effective 1 April 1991, separate cumulative dividend percentages for lump sum benefits and for pensions to widows were introduced. At the same time, cumulative dividends first became applicable to the residual amount payable on the early death of a widow. Dividend rates as at 31 March 2016 are 1,272% for pension and residual benefits, and 705% for lump sums payable on member deaths.

The cumulative dividends that may be declared are not subject to the limitations on the basic death benefits described in subsection E.3 above.

G. Withdrawal Benefits

A member can elect at any time to withdraw his contributions from the Fund, without interest; neither he nor any of his dependants has any entitlement under the plan thereafter.

H. Instalment Payments

A member can elect at any time to discontinue instalment payments being made in respect of a past service election. The present value[2] of the discontinued payments is thereupon converted into an equivalent[3] amount of basic death benefit and his accrued basic death benefit is reduced accordingly. In turn, this causes a reduction in the amount of the cumulative dividend.

If a member dies while making instalment payments, his entitlement under the plan remains unchanged because all required payments are deemed to have been made.

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[1] Based on the mortality rates of the a(f) Ultimate Table with interest at 4% per annum.
[2] Based on the mortality rates of the CM(5) Table with interest at 4% per annum.
[3] Based on the rates in Table II of the RCMPPCA.

Appendix 2 - Membership Data

A. Source

The individual data in respect of members and widows as at 31 March 2016 are shown in the summaries of data in this appendix. Data on widows were supplied by the Department of Public Service and Procurement Canada (PSPC), which is responsible for the administration of the plan. The data reflect deaths up to 31 March 2016 that were reported as of July 2016.

B. Validation

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, sex, etc.) and pensions to 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.

C. Data Summary

In this report, *member* means a former contributor whose contributions are still credited to the Fund and *widow* means a widow whose pension is charged against the Fund. All members are males and all surviving spouses are widows. There is no child annuity in course of payment as at 31 March 2016.

The membership data is summarized in the following tables.

Table 7 Members Data
As at 31 March 2016

Age Last Birthday	Number[2]	Spouse's Accrued Annual Pension[1] Average ($)	Total ($)
85-89	19	23,068	438,301
90-94	16	29,995	479,916
95-99	8	18,405	147,241
100+	1	45	45
All ages	44	24,216	1,065,503

Average age: 91.5 years

[1] Amounts reflect the basic pension together with the 1,272% cumulative dividend effective as at 1 April 2016.
[2] Of these members, 14 were making instalment payments for life in respect of past service elections. The aggregate annual amount was $2,939 (average was $210).

Table 8 Widows Data
As at 31 March 2016

Age Last Birthday	Number	Annual Pension Payments[1]	
		Average ($)	Total ($)
Less than 75	1	10,171	10,171
75-79	5	21,647	108,236
80-84	10	24,021	240,210
85-89	42	22,294	936,350
90-94	33	19,243	635,029
95-99	6	17,376	104,257
100+	0	-	-
All ages	97	20,972	2,034,252

Average age: 88.6 years

D. Reconciliation

The following table derived from the basic data reconciles the numbers of members and widows as at 31 March 2016 with the numbers shown in the previous report.

Table 9 Reconciliation of Membership

	Members	Widows
As at 31 March 2013	65	132
Data correction	-	(3)
New survivors	-	12
Deaths	(21)	(44)
As at 31 March 2016	44	97

[1] Amounts reflect the basic pension together with the 1,272% cumulative dividend effective as at 1 April 2016.

Appendix 3 - Methodology

A. Royal Canadian Mounted Police (Dependants) Pension Fund

The balance in the Royal Canadian Mounted Police (Dependants) Pension Fund forms part of the Public Accounts of Canada. The underlying notional bond portfolio described in Section II-D is shown at the book value.

The only other Fund-related amount consists of the value, discounted in accordance with the projected Fund yields described in Section D below and shown in Appendix 4, of all future instalment payments by members in respect of past service elections made by 31 March 1987, which is when the last plan member retired from active duty.

B. Actuarial Liabilities

1. Members

The actuarial liabilities in respect of the members as at the valuation date correspond to the value, discounted in accordance with the actuarial assumptions, of all future benefits accrued as at that date in respect of service as an active member of the Force. The last benefit improvements approved by the Governor in Council were assumed to be fixed at 1,272% for pensions and 705% for lump sums payable on member deaths.

2. Widows

The actuarial liabilities in respect of the widows as at the valuation date correspond to the value, discounted in accordance with the actuarial assumptions, of all future benefits as at that date to which those widows are entitled. The last benefit improvements approved by the Governor in Council were assumed to be fixed at 1,272%.

C. Projected Yields on the Fund

The government applies the same quarterly interest credits to the Fund as it does to the three major Superannuation Accounts (Public Service, Canadian Forces – Regular Forces, and Royal Canadian Mounted Police). The projected yields (shown in Appendix 4) assumed in computing the liabilities are the projected annual yields on the combined book value of the three major Superannuation Accounts.

The projected yields were determined by an iterative process involving the interest credits on the notional bond portfolio of the three accounts as at the valuation date, the assumed future new money interest rates (also shown in Appendix 4), and the assumed future combined cash flows for the three accounts. This approach is in accordance with legislation, common to the three foregoing pension plans, stipulating that the average yield on the combined accounts is to be used in allocating aggregate interest earnings to each of the three accounts.

D. Utilization of Actuarial Excess

To avoid large fluctuations in future benefit increases, it is recommended that the RCMPPCA be amended to provide a level rate of annual benefit increases for the remaining lifetime of the Plan. The level rate of annual benefit increases would be determined at the time of the amendment based on updated plan demographics and best-estimate assumptions. Any final actuarial excess or shortfall recorded once the last benefit is paid under the Plan would be at the credit or the charge of the Government.

In the absence of legislative changes it is recommended that annual benefit increases of 1.9% be applied until the next actuarial review as at 31 March 2019. This 1.9% represents the level annual effective benefit increase that can be provided if the future experience is in accordance with the economic and demographic assumptions made in this report.

Appendix 4 - Economic Assumptions

A. Interest Assumptions

The interest assumptions were changed for this valuation. Recognizing recent experience, the rate of return on long-term government of Canada Bonds (new money) is assumed to be 2.1% for plan year 2017. The rate then increases gradually and reaches its ultimate rate of 4.6% (based on historical returns) per annum in plan year 2025. This ultimate rate is 0.4% lower than in the previous valuation. The Fund yield assumptions, derived as described in Appendix 3-C, are lower than those used in the previous valuation both in the short-term and at the ultimate. They are as follows.

Table 10 Economic Assumptions

	Interest Rates (%)	
Plan Year	New Money	Fund Yield
2017	2.1	4.4
2018	2.4	4.2
2019	2.8	4.0
2020	3.2	3.8
2021	3.6	3.7
2022	4.0	3.6
2023	4.2	3.5
2024	4.4	3.4
2025	4.6	3.4
2026	4.6	3.3
2027	4.6	3.3
2028	4.6	3.2
2029	4.6	3.2
2030	4.6	3.2
2031	4.6	3.1
2032	4.6	3.2
2033	4.6	3.3
2040+	4.6	4.6

B. Administrative Expenses

As in the previous valuation, the expenses incurred for the administration of the plan are assumed to be nil. These expenses, which are not charged against the Fund, are borne entirely by the government and are commingled with all other government expenses.

Appendix 5 - Demographic Assumptions

Except where otherwise noted, all demographic assumptions were determined from the plan's own experience.

A. New Entrants

Because the Plan is closed to new entrants, the assumption that there would be no future new entrants was retained from the previous valuation.

B. Withdrawal Rates

As in the previous valuation, no members are assumed to withdraw from the plan.

C. Mortality

Assumed rates of mortality applicable to members were changed for this valuation. They correspond to the plan year 2017 mortality rates for male Regular Members from the actuarial report on the pension plan for the Royal Canadian Mounted Police as at 31 March 2015.

Assumed rates of mortality applicable to widows were also 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 2017 with mortality improvement scale CPM Improvement Scale B (CPM-B). They are on average slightly lower than those assumed for that plan year in the previous valuation, except at ages 90 to 100 where they are slightly higher.

Table 11 Plan Year 2017 Mortality Rates
(per 1,000 individuals)

Age Last	Plan Year 2017 Mortality Rates	
Birthday	Members	Widows
55	2.5	2.1
65	7.3	5.7
75	23.5	15.0
85	84.7	55.3
95	200.8	199.2
105	498.3	425.9
115	1,000.0	1,000.0

Mortality rates are reduced in the future in accordance with the same mortality improvement assumption as that made for the 26th Actuarial Report on the Canada Pension Plan for members. 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. Assumed future annual reductions are shown in the following table.

Table 12 Future Annual Mortality Rate Reductions[1]
(in percentage)

Age Last birthday	Members 2017	Members 2031+	Widows 2017	Widows 2031+
55	1.61	0.80	1.33	0.80
65	1.85	0.80	1.47	0.80
75	2.33	0.80	1.47	0.80
85	1.75	0.68	1.33	0.68
95	0.77	0.34	0.77	0.34
105	0.34	0.30	0.34	0.30
115	-	-	-	-

D. Prospective Widows and Eligible Children

Table 13 shows the proportion of members assumed to leave, upon death, a widow eligible for a pension from the Plan. Also shown is the assumed age difference between spouses. Both assumptions are unchanged from the previous valuation.

Table 13 Assumptions for Prospective Widows

Age Last Birthday of Member at Death	Proportion of Members Married	Age[2] Difference
80	0.77	(4)
85	0.66	(5)
90	0.49	(5)
95	0.31	(6)
100	0.16	(8)
105	0.07	(11)
110	0.03	(14)
115	0.01	(18)

Taking into account the advanced ages of the current members, the assumption that no member would be survived by a child or student eligible to receive an annuity was retained from the previous valuation.

[1] The mortality rate reduction applicable during any plan year within the 14-year select period is found by linear interpolation between the figures for plan years 2017 and 2031.

[2] Age of widow less age of participant, both calculated at death of participant.

Appendix 6 - Acknowledgements

The RCMP Pension Accounting Unit provided and certified the financial statements as at 31 March 2016 upon which the income statement and Fund balance were based.

The Department of PSPC, responsible for the administration of the plan, provided relevant valuation input data in respect of members and widows.

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