



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

27th

on the Benefit Plan Financed through the
The Royal Canadian
Mounted Police
(Dependants)
Pension Fund
as at 31 March 2019

Office of the Chief Actuary

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24 March 2021

The Honourable Chrystia Freeland, 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* (RCMPPCA), I am pleased to submit the report on the actuarial review as at 31 March 2019 of the benefit plan established under Part IV of the RCMPPCA.

Yours sincerely,

A handwritten signature in cursive script, reading "ABillig".

Assia Billig, FCIA, FSA, PhD
Chief Actuary

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1 Executive Summary

1.1 Purpose of this Actuarial Report

This actuarial review of the benefit plan (Plan) governed by Part IV of the Royal Canadian Mounted Police Pension Continuation Act (RCMPPCA) was made as at 31 March 2019 pursuant to section 56 of the RCMPPCA. The previous review was made as at 31 March 2016.

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 as at the valuation date,
- to compare the actual and expected experience under the Plan 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.

Although the RCMPPCA requires that an actuarial review be undertaken every five years, we recommend, as it has been the previous practice, that the next actuarial review be no later than three years from this review, namely 31 March 2022.

1.2 Future of the Plan

The Plan's membership has been declining steadily since 1948. The recorded balance of the RCMP (Dependants) Pension Fund (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 2049, based on the best-estimate mortality assumptions of this report.

A best-estimate mortality assumption is developed in the way that it projects a smooth long-term mortality experience of a sufficiently large group. However, 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 addition, as the number of survivors is decreasing, there is a possibility that a future potential surplus be distributed to a small number of remaining survivors in the future.

As a result, we recommend that a plan review be undertaken before the next scheduled actuarial review at 31 March 2022 to address these possible issues.

1.3 Changes since the Last Valuation

During the intervaluation period there were no changes to the plan provisions, which are summarized in Appendix A. However, the Governor in Council made benefit improvements in accordance with the excess distribution recommendations in the 2016 actuarial report on the

benefit plan. The major improvements were effective pension increases of 1.9% as at 1 April 2017, 1 April 2018 and 1 April 2019. 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 C and Appendix D.

1.4 Main Findings and Recommendation

- As at 31 March 2019 (i.e. the end of the 2019 plan year¹), the Plan had an actuarial excess of \$0.9 million (\$1.35 million as at 31 March 2016), being the excess of the recorded balance of the Fund of \$12.8 million over the actuarial liabilities of \$11.9 million.
- It is recommended that annual benefit increases of 2.0% be applied until the next actuarial review as at 31 March 2022. Benefit improvements for subsequent years will be determined in the actuarial review as at 31 March 2022 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 2022 are detailed as follows:
 - a pension increase for current and prospective widows of 2.0% as at 1 April 2020, 1 April 2021 and 1 April 2022;
 - an increase in the lump sum benefit payable upon the death of a member of 2.0% as at 1 April 2020, 1 April 2021 and 1 April 2022; and
 - an increase in residual amount payable on the death of a widow of a member who dies in the 2021, 2022 or 2023 plan years, obtained by increasing the member's deemed contributions as at 1 April 2019 by 2.0% on 1 April 2020, 1 April 2021 and 1 April 2022. Increases by year of death may be found in Table 6.
- It is recommended that a plan review be undertaken before the next scheduled actuarial valuation at 31 March 2022 to address the potential variability in future benefit improvements and the potential distribution of a future surplus to a small number of survivors.

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 Financial Position of the Plan

2.1 Balance Sheet

The following balance sheet is based on the plan provisions described in Appendix A, the cumulative dividends in effect as at 1 April 2019, and the data and actuarial assumptions described in following sections. Previous valuation results as at 31 March 2016 are shown for comparison.

Table 1 Balance Sheet (dollars)		
	As at 31 March 2019	As at 31 March 2016
Recorded Fund Balance		
Fund balance	12,778,000	17,673,000
Actuarial value of instalments in pay by members	<u>7,000</u>	<u>12,000</u>
Total Recorded Fund Balance	12,785,000	17,685,000
Actuarial Liabilities		
Benefits accrued by members		
· widow pensions	942,000	1,932,000
· lump sums on death without a widow	1,747,000	2,829,000
Widow pensions in pay	8,926,000	11,242,000
Outstanding payments ¹	<u>269,000</u>	<u>334,000</u>
Total Actuarial Liabilities	11,884,000	16,337,000
Actuarial Excess	901,000	1,348,000

The actuarial excess of \$0.9 million represents 7.6% of the actuarial liabilities of \$11.9 million.

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

2.2 Reconciliation of Financial Position with Previous Report

Table 2 presents the reconciliation of the changes in actuarial excess of the Plan. Figures in brackets indicate negative amounts. Explanations of the elements largely responsible for the changes follow the table.

Table 2 Reconciliation of Financial Position As at 31 March 2019 (dollars)	
Actuarial excess as at 31 March 2016	1,348,000
Cost of 2017, 2018 and 2019 benefit increases	(662,000)
Updated actuarial excess as at 31 March 2016	686,000
Interest on excess	90,000
Expected actuarial excess as at 31 March 2019	776,000
Experience gains and (losses)	277,000
Change in actuarial assumptions	(152,000)
Actuarial excess as at 31 March 2019	901,000

2.2.1 Cost of 2017, 2018 and 2019 Benefits Increases

Benefit improvements in accordance with the excess distribution recommendations of the previous report were approved and the excess as at 31 March 2016 decreased by \$662,000.

2.2.2 Interest on Excess

The expected interest to 31 March 2019 on the updated excess as at 31 March 2016 amounts to \$90,000.

2.2.3 Experience Gains and Losses

Since the previous valuation, the actuarial excess increased by \$277,000 due to actuarial gains and losses as described in the following table.

Table 3 Experience Gains and (Losses) (dollars)	
Mortality of widows	366,000
Age of new widows	121,000
Mortality of members	(127,000)
Proportion married	(107,000)
Interest rates	30,000
Miscellaneous	(6,000)
Net experience gains	277,000

(a) Mortality of Widows

During the three years ended 31 March 2019, the 30 reported widow deaths amounted to 137% of the 21.9 deaths expected in accordance with the assumption in the previous valuation. The Plan recorded an experience gain of \$366,000.

(b) Age of New Widows

The 11 new widows during the three-year period were on average 1.7 years older than expected. The Plan recorded an experience gain of \$121,000.

(c) Mortality of Members

During the three years ended 31 March 2019, the 21 reported member deaths amounted to 116% of the 18.1 deaths expected in accordance with the assumption in the previous valuation. The Plan recorded an experience loss of \$127,000.

(d) Proportion Married

During the three years ended 31 March 2019, the 11 new widows were 141% of the 7.8 expected; the Plan recorded an experience loss of \$107,000.

(e) Interest Rates

In the previous valuation, the Fund was assumed to be credited with interest at an average annual rate of 4.20% during the three years ended 31 March 2019. The actual interest rates were above the expected rates (average 4.26%), causing an experience gain of \$30,000.

2.2.4 Change in Actuarial Assumptions

Actuarial assumptions were revised as described in Appendix D and Appendix E. The actuarial excess decreased by \$152,000, due to the following revisions.

Table 4 Change in Actuarial Assumptions (dollars)	
Mortality of widows	(3,000)
Mortality of members	2,000
Interest rates	(151,000)
Net impact of revision	(152,000)

(a) Mortality of Widows

Both components of the mortality basis for widows, namely the rates assumed for the 2020 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 decreased by \$3,000.

(b) Interest Rates

The interest rates for this valuation are shown in Appendix D and were developed by the procedure described in Appendix C, in particular, the long-term new money rate decreased from 4.6% to 4.5%, and the Fund yield on average was 0.2% lower than in the previous valuation over the next 5 years and 0.5% lower over the next 15 years. The adoption of the revised interest assumption caused the actuarial excess to decrease by \$151,000.

(c) Mortality of Members

Both components of the mortality basis for members, namely the rates assumed for the 2020 plan year and the annual reduction factors applying to those rates in subsequent years, were revised. As a result, the actuarial excess increased by \$2,000.

2.3 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 2019 of \$11,615,000 (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.

2.3.1 Fund Yield

If the fund yield assumption would increase by 1% in each future year, the actuarial liabilities would decrease by \$481,000 (i.e. by 4.1%).

If the interest rates assumption would decrease by 1% in each future year, the actuarial liabilities would increase by \$523,000 (i.e. by 4.5%).

2.3.2 Mortality of Widows

If the mortality rates assumed for widows in each future year were reduced by 10%, the actuarial liabilities would increase by \$618,000 (i.e. by 5.3%).

If the assumed improvements in longevity for widows after the 2020 plan year (see Appendix E) were not realized, the actuarial liabilities would decrease by \$173,000 (i.e. by 1.5%).

2.3.3 Mortality of Members

If the mortality rates assumed for members in each future year were increased by 10%, the actuarial liabilities would increase by \$37,000 (i.e. by 0.3%).

If the assumed improvements in longevity for members after the 2020 plan year (see Appendix E) were not realized, the actuarial liabilities would increase by \$6,000 (i.e. by 0.1%).

2.3.4 Proportion of Married Members

If the proportion of members married at death were increased by 10%, then the actuarial liabilities would increase by \$25,000 (i.e. by 0.2%).

2.3.5 Widow Age Difference

If the age of each future new widow were reduced by one year, then the actuarial liabilities would increase by \$44,000 (i.e. by 0.4%).

2.4 Fund Balance

2.4.1 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.

2.4.2 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 \$4,895,000 (i.e. 28%) to \$12,778,000 as at 31 March 2019.

Table 5 Fund Balance (dollars)	Plan year		
	2017	2018	2019
Opening Balance	17,672,931	15,791,975	14,055,572
Receipts and other credits			
Contributions	2,856	2,049	1,771
Interest	<u>738,468</u>	<u>620,658</u>	<u>530,155</u>
Total	741,324	622,707	531,926
Payments and other charges			
Annuities	2,020,404	1,932,785	1,734,804
Lump sum payments	601,876	426,325	343,691
Return of Contributions	<u>-</u>	<u>-</u>	<u>-</u>
Total	2,622,280	2,359,110	2,078,495
Net Assets Available for Benefits	15,791,975	14,055,572	12,509,003
Accounts Payable ¹			268,672
Closing balance	15,791,975	14,055,572	12,777,676²

2.4.3 Interest Earnings

The interest earnings on the Fund in plan years 2017, 2018 and 2019 were 4.5%, 4.2% and 4.0% 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.

¹ Accounts payable are added back into the Fund balances as they are included in the lump sum payments above and are also held as a liability in the Balance Sheet in Table 1.

² Not adding up due to rounding.

2.5 Disposition of Actuarial Excess

As 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 benefit improvements¹ of 2.0% be applied on 1 April 2020, 1 April 2021 and 1 April 2022 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 annual level of improvements was determined such that the actuarial excess would be used over the expected remaining life of the Plan assuming the experience of the Plan would develop according to the best-estimate assumptions established in this report. However, actual economic and demographic experience could be significantly different than expected, which could result in large fluctuations in the rate of benefit increases in the future and therefore should be re-assessed in the next actuarial review.

It is recommended that a plan review be undertaken before the next scheduled actuarial review at 31 March 2022 to address the potential variability in future benefit improvements and the potential distribution of a future surplus to a small number of survivors.

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	Additional Dividend	Cumulative Dividend	Effective Increase
1 April 2020	29%	1,381%	2.0%
1 April 2021	30%	1,411%	2.0%
1 April 2022	30%	1,441%	2.0%
Increase in lump sum payable upon death of a member			
Effective Date	Additional Dividend	Cumulative Dividend	Effective Increase
1 April 2020	17%	769%	2.0%
1 April 2021	17%	786%	2.0%
1 April 2022	18%	804%	2.0%

¹ Experience gains/losses incurred during plan year 2020, which were available at the time of preparing this actuarial valuation report, were taken into account when estimating the benefit improvements.

3 Demographic and Financial Projections

3.1 Membership Projections

On the basis of the demographic assumptions described in Appendix E, 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
<i>Historical</i>		
2001	193	176
2004	165	171
2007	125	149
2010	97	144
2013	65	132
2016	44	97
2019	23	78
2020 ¹	12	73
<i>Projected</i>		
2022	7	56
2025	3	34
2028	1	18
2031	0	9
2034	0	4
2037	0	2
2041	0	1
2049	0	0

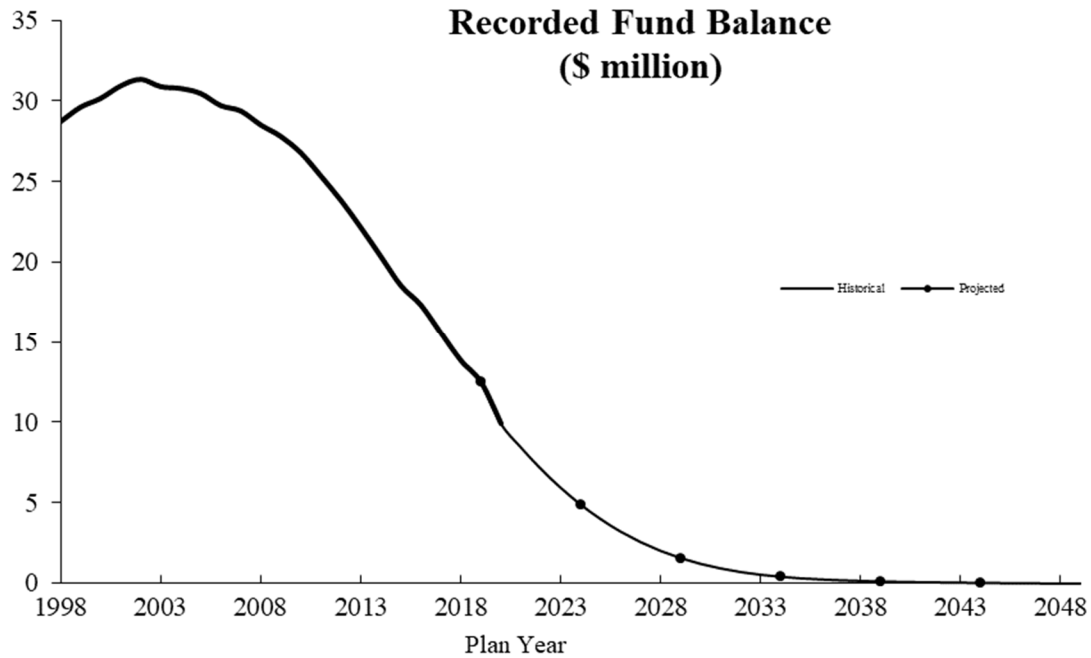
Over the last decade, the number of members has fallen steadily so that only 23 remain at 31 March 2019 and 12 at 31 March 2020 (44 at 31 March 2016); this trend is projected to continue until the death of the last member, which is expected in the plan year 2031. The number of widows was 78 as at 31 March 2019 and 73 as at 31 March 2020 (97 as at 31 March 2016). A steady decline is expected thereafter, with the last widow expected to survive to the plan year 2049 (2046 in the 2016 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.

¹ Members and widows counts as at 31 March 2020 was available at the time when this valuation report was prepared.

3.2 Projection of Recorded Fund Balance

Using the assumptions described in Appendix D and E, the recorded balance of the Fund was projected assuming annual benefits improvements of 2.0% for the remaining lifetime of the Plan. The total outstanding payments of \$269,000 shown in the balance sheet were assumed to be made on 1 April 2019.



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 2.0% are granted annually, the recorded balance of the Fund assets is expected to decline steadily until it reaches \$0 in plan year 2048. It is projected that the Plan would be in a shortfall position less than \$0.1 million when the last expected payment is made under the Plan in plan year 2049. 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.

4 Actuarial Opinion

In our opinion, considering that this report was prepared pursuant to the *Royal Canadian Mounted Police Pension Continuation Act*,

- the valuation data on which the valuation is based are sufficient and reliable for the purposes of the valuation;
- the assumptions used are individually reasonable and appropriate in the aggregate for the purposes of the valuation; and
- the methods employed are appropriate for the purposes of the valuation.

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.

We have reflected the impacts of the COVID-19 pandemic on the economic assumptions used in this report. It is important to note that the pandemic is a very fluid situation that will likely continue to evolve for some time. We have estimated the impacts based on the information known at the time the report was prepared. The final impacts of this health and economic crisis will likely generate some differences in the future.

To the best of our knowledge, after discussions with the Royal Canadian Mounted Police, there were no other events between the valuation date and the date of this report that would materially impact the results of the actuarial valuation report.



Assia Billig, FCIA, FSA
Chief Actuary



François Lemire, FCIA, FSA

Ottawa, Canada
24 March 2021

Appendix A — 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 RCMPPCA shall prevail if there is any discrepancy between the RCMPPCA and this summary.

A.1 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 C). 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.

A.2 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.

A.3 Contributions

A.3.1 Member Contributions

A.3.1.1 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.

A.3.1.2 Past Service

A member on active duty could elect to contribute, either in a lump sum or by equivalent¹ 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.

A.3.2 Government Contributions

The RCMPPCA requires the Government of Canada to make contributions only to re-establish 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.

A.4 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.

A.5 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 A.6 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.

A.5.1 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.

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

A.5.2 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 management of the Force, best entitled to share the benefit. The lump sum amount is equal to the present value¹ of a hypothetical pension payable to a 75 year old widow.

A.5.3 Benefit Limitation

The basic pension payable to the widow of a member who married after age 60 is reduced to ensure that the present value¹ of her pension does not exceed the lump sum otherwise payable on his death.

A.6 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 2019 are 1,352% for pension and residual benefits, and 752% 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 A.5.3 above.

A.7 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.

A.8 Instalment Payments

A member can elect at any time to discontinue instalment payments being made in respect of a past service election. The present value² of the discontinued payments is thereupon converted into an equivalent³ 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.

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 B — Membership Data

B.1 Source

The individual data in respect of members and widows as at 31 March 2019 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 payment of benefits.

B.2 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.

B.3 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 2019.

The membership data is summarized in the following tables.

Age Last Birthday	Number ²	Spouse's Accrued Annual Pension ¹	
		Average (\$)	Total (\$)
85-89	3	15,278	45,835
90-94	15	30,541	458,117
95+	5	17,429	87,144
All ages	23	25,700	591,096

Average age: 93.3 years

¹ Amounts reflect the basic pension together with the 1,352% cumulative dividend effective as at 1 April 2019.

² Of these members, 8 were making instalment payments for life in respect of past service elections. The aggregate annual amount of those instalments was \$1,774 (average was \$222).

Table 8 Widows Data As at 31 March 2019			
Age Last Birthday	Number	Annual Pension Payments ¹	
		Average (\$)	Total (\$)
Less than 79	2	21,310	42,620
80-84	6	21,688	130,129
85-89	26	25,364	659,470
90-94	29	22,602	655,465
95+	15	19,110	286,653
All ages	78	22,748	1,774,337

Average age: 90.6 years

B.4 Reconciliation

The following table derived from the basic data reconciles the numbers of members and widows as at 31 March 2019 with the numbers shown in the previous report.

Table 9 Reconciliation of Membership		
	Members	Widows
As at 31 March 2016	44	97
Data correction	-	-
New survivors	-	11
Deaths	(21)	(30)
As at 31 March 2019	23	78

¹ Amounts reflect the basic pension together with the 1,352% cumulative dividend effective as at 1 April 2019.

Appendix C — Methodology

C.1 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 2.4 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 C.3 below and shown in Appendix D, 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.

C.2 Actuarial Liabilities

C.2.1 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 1,352% for pensions and 752% for lump sums payable on member deaths.

C.2.2 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 1,352%.

C.3 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 D) 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 D), 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.

C.4 Utilization of Actuarial Excess

For this valuation, it is recommended that benefit improvements¹ of 2.0% be applied on 1 April 2020, 1 April 2021 and 1 April 2022 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 annual level of improvements was determined such that the actuarial excess would be used over the expected remaining life of the Plan assuming the experience of the Plan would develop according to the best-estimate assumptions established in this report.

¹ Experience gains/losses incurred during plan year 2020, which were available at the time of preparing this actuarial valuation report, were taken into account when estimating the benefit improvements.

Appendix D — Economic Assumptions

D.1 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 rate) is assumed to be 1.6% for plan year 2020. The rate decreases to 1.3% for plan year 2021 then increases gradually and reaches its ultimate rate of 4.5% per annum in plan year 2036. This ultimate rate is 0.1% lower than in the previous valuation and is reached in plan year 2036 (2025 in previous valuation). The Fund yield assumption, derived as described in Appendix C, are lower than those used in the previous valuation throughout the future period of benefit payments. They are as follows.

Table 10 Economic Assumptions

Plan Year	Interest Rates (%)	
	New Money	Fund Yield
2020	1.6	3.7
2021	1.3	3.5
2022	1.6	3.3
2023	1.7	3.2
2024	2.0	3.1
2025	2.4	3.0
2026	2.7	2.9
2027	2.9	2.8
2028	3.1	2.7
2029	3.3	2.6
2030	3.5	2.6
2031	3.7	2.5
2032	3.9	2.4
2033	4.1	2.5
2034	4.3	2.5
2035	4.4	2.5
2040	4.5	3.0
2045	4.5	3.9
2050	4.5	4.1
2053+	4.5	4.5

D.2 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 E — Demographic Assumptions

The demographic assumptions are presented below.

E.1 New Entrants

As in the previous valuation, because the Plan is closed to new entrants, it is assumed that there would be no future new entrants.

E.2 Withdrawal Rates

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

E.3 Mortality

Assumed rates of mortality applicable to members were changed for this valuation. They correspond to the plan year 2020 mortality rates for male Regular Members from the actuarial report on the pension plan for the Royal Canadian Mounted Police as at 31 March 2018.

Assumed rates of mortality applicable to widows correspond to the plan year 2020 mortality rates for female Regular Members from the actuarial report on the pension plan for the Royal Canadian Mounted Police as at 31 March 2018¹.

Age Last Birthday	Plan Year 2020 Mortality Rates	
	Members	Widows
55	2.0	2.1
65	6.8	5.4
75	20.2	14.3
85	80.0	53.0
95	196.1	197.0
105	498.6	423.7
115	1,000.0	1,000.0

Mortality rates are reduced in the future in accordance with the same longevity improvement assumption used in the actuarial report on the pension plan for the Royal Canadian Mounted Police as at 31 March 2018. These longevity improvement factors are the same as used in the 27th Actuarial Report on the Canada Pension Plan.

¹ Based on the 2014 Canadian Pensioners Mortality Table (CPM2014) published by the Canadian Institute of Actuaries, projected with longevity improvement factors from scale CPM Improvement Scale B (CPM-B) to plan year 2019 and longevity improvement factors used in the 27th Actuarial Report on the Canada Pension Plan to plan year 2020.

Assumed future annual reductions in mortality rates are shown in the following table.

Age Last birthday	Members		Widows	
	2021	2033+	2021	2033+
55	1.37	0.80	1.04	0.80
65	1.86	0.80	1.48	0.80
75	2.02	0.80	1.52	0.80
85	1.70	0.80	1.45	0.80
95	0.83	0.42	0.84	0.42
105	0.27	0.14	0.28	0.14
115	-	-	-	-

E.4 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.

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 longevity improvement factors applicable during any plan year within the 12-year select period is found by linear interpolation between the figures for plan years 2021 and 2033.

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

Appendix F — Acknowledgements

The RCMP Pension Accounting Unit provided and certified the financial statements as at 31 March 2019 upon which the income statement and Fund balance were based.

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

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