

Bermuda Contributory Pension Fund

Actuarial Review as at 1 August 2008

Prepared January 2010

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Executive Summary

This is the actuarial review for the Bermuda Contributory Pension Fund (the “Fund”) as at 1 August 2008. It presents the financial status of the Fund as at 1 August 2008 and provides projections of the Fund for the next 40 years to 2048.

Highlights of the Fund

- > Since the last review the Fund’s contributor base grew 5% mainly due to increased coverage as a percentage of the working age population.
- > Pension benefits kept pace ahead of inflation and contribution rates were increased by 1¾% per annum more than benefits, in line with expectations.
- > The pensioner support ratio has declined by 10% from 5.2 to 4.7 and exhibits a declining trend. However, this trend will be tempered by the fact that a significant proportion (25%) of the contributors are Non-Bermudians the majority of whom would only be entitled to one time gratuity payments at pension age instead of a stream of future pension payments.
- > Contribution income (\$111.9 million) and benefit expenditure (\$93.5 million) both increased by 24% over the three years.
- > The expenses of the Fund as a percentage of contributions declined 15% over the three years, from 8.4% to 7.1%. These expenses are inclusive of investment expenses of which pure administrative expenses are closer to 3.5% of contributions.
- > The total assets of the Fund grew 24% over the three years from \$1,004.4 million to \$1,297.5 million.
- > The Asset / Expenditure ratio is a static measure of the size of the Fund to annual expenditure or the number of years cover provided by the Fund based on the current annual expenditure. This ratio increased by 6% over the period from 12.1 years to 12.8 years.
- > The majority of the Fund’s assets were invested at the last review and this continues to be the case at the review date. 97% of the assets are invested, with the major investments being equities, bonds and alternative assets.
- > The Fund earned a nominal rate of return of 8% per annum and a real rate of 3.6% per annum over the three years. This is in line with the real rate of 3.5% per annum assumed in the previous review. The overall result was tempered by the loss in 2008 (-1.4%) as nominal returns in 2006 and 2007 were far in excess of expected at 9.7% and 16.4% respectively.

A summary of the performance indicators mentioned above is shown in Table 1 below.

Table 1 - Fund Performance Indicators	July 2005	July 2008
Number of beneficiaries in receipt of monthly benefits	8,733	9,509
Average monthly benefit	\$738.74	\$851.37
Number of contributors	35,339	37,213
Active Insured as a % of Working Age Population	87%	92%
Pensioner Support Ratio: Number of contributors / Number over age 65	5.2	4.7
Average number of weekly contributions per month	3.86	3.86
Weekly Benefit Rate for Contributory Old Age Pension (OAP) ¹	\$183.30	\$209.17
Weekly Contribution Rate ¹	\$25.34	\$30.40
Annual Contribution Income (\$ million)	\$90.60	\$111.90
Annual Benefit Expenditure (\$ million)	\$75.70	\$93.50
Annual Administration Expenses (\$ million)	\$7.60	\$7.90
Total Assets (Fund) \$ million	\$1,004.40	\$1,297.50
Average Nominal Rate of Return for last 3 yrs	11.6%	8.0%
Average Real Rate of Return for last 3 yrs	8.0%	3.6%
Annual Administration Expenses as a % of Contributions	8.4%	7.1%
Total Assets / (Benefits and Expenses)	12.1	12.8
Invested Assets / Total Assets	98%	97%

¹Rates effective from August

Main Findings

The significant difference between this review and the 2005 review was the treatment and impact of Non-Bermudian workers. We have taken into account that this group forms a significant portion of the working age population (about 25%) and as a result of the work term limits, the majority would only be entitled to lump sum gratuity payments from the Fund. We have also taken into account the impact on the assets of the Fund in the financial year subsequent to the review date as well as the decision by the Government to keep the contribution rate for the twelve months commencing August 2009 at the 2008 levels.

- > Using the methodology and assumptions outlined in the report, which are similar to the previous review, except for that pertaining to Non-Bermudians, the Fund is projected to be exhausted in 33 years by the year 2041.
- > The total outgo (includes Old Age Pension (OAP) benefits, other benefits, and administration costs) will exceed contribution income within 2 years. By the year 2049, contribution income would need to be about double the current level in real terms in order to match the increased level of benefit outgo. This will require contributions to be increased by about 2½% a year more than benefit increases over the next 40 years.

- > If contributions were to increase by 1¾% a year more than benefits, and the Fund were to earn a real rate of return of 3 ½% a year, then the Fund is likely to increase for about 17 years and thereafter, decline and be exhausted within 35 years in 2043.
- > If contributions were to increase by 1¼% a year more than benefits, then the Fund is likely to be exhausted within 30 years with a real rate of return of 3 ½% a year.
- > If contributions were to increase by 2½% a year more than benefits, then the Fund is projected to be sustainable throughout the projection period with a real rate of return of 3 ½% a year.
- > If contributions were to increase by 3% higher than benefits with future real returns of 2% a year, the Fund is projected to be sustainable throughout the projection period.
- > Total number of beneficiaries over age 65, taking into account the impact of Non-Bermudians, is expected to increase steadily, reaching a peak in about 27 years. Thereafter, a gradual decline in numbers is expected.
- > Total number of working age persons (age 20 to 64) is projected to increase slightly, peaking within the next two years, and then declining gradually thereafter, resulting in a declining pensioner support ratio.

Accrued Benefits

The present value of benefits accrued up to 31 July 2008 is estimated to be \$1.991 billion. This is based on the contributions made to that date and assumes no further increases to the benefit rate. If future increases to the benefit rate are included and assuming no further contributions, the present value of these benefits increases to \$3.198 billion at the same date. If expected future benefit accruals are included up to the respective retirement dates, the present value is estimated to be \$4.290 billion. All figures are stated in 2008 dollars.

The value of the Fund was \$1.297 billion as at 31 July 2008 which, when compared to the present value of the accrued benefits, assuming benefit rate increases, of \$3.198 billion, results in a funded ratio of 40.6%. The present value of future pension payments for the next 10 years for existing beneficiaries is \$677 million. The present value of gratuities expected to be paid over the next 10 years, assuming contribution rates increase at 1¾% a year in excess of benefit increases is estimated to be \$11 million.

Bermuda Contributory Pension Fund

Actuarial Review as at 1 August 2008

Introduction

In 2008 the Bermuda Department of Social Insurance (the Department) appointed Morneau Sobeco to conduct the 1 August 2008 actuarial review of the Contributory Pension Fund (the Fund). An actuarial review is required every third year by Section 35 of the Contributory Pensions Act 1970 (the Act). The last review was performed as of 1 August 2005 by the UK Government Actuary's Department (the GAD) and the results were presented in a report dated June 2007.

The Act came into effect on 24 December 1970 replacing a repealed act dated 5 August 1968. Since the last review, aside from amendments to change benefit and contribution amounts the Act was amended on 7 December 2006 and 30 July 2008. The 2006 amendment made officers and directors of a company liable for the recovery of sums due to the Fund while they held such offices in the company. In 2008, amendments were made to reflect the Department's current practices, to increase fines under the Act and to extend certain benefits payable under the Act.

Under the Act, two classes of benefits are payable:

- > *Contributory benefits*: old-age pension and gratuity, widow(er)'s allowance and gratuity, and disability pension;
- > *Non-contributory benefits*: old-age pension, and disability pension.

Entitlement to contributory benefits depends on the period for which contributions are paid and on the annual average number of contributions (subject to a minimum contributory period and a minimum annual average). Non-contributory pensions are payable to those ineligible for contributory benefits, subject to certain qualifying criteria. The normal pension age for payments is 65 for both men and women.

Flat-rate contributions are payable by employed persons over school-leaving age, which is now defined in the Act as age 18 or later (previously age 16). An equal contribution is payable by the employer. Self-employed persons pay flat-rate contributions equal to the joint amount payable by an employee and employer.

Appendix A summarises the main provisions relating to benefits and contributions and the significant 2008 amendments.

Since August 2006, the Government's policy intent for the Fund has been to increase benefit rates broadly in line with prices and contribution rates at 1¼% a year more than benefits (prices). Prior to this, contribution rates were increased by 1¼% a year more than benefits. Benefit and contribution rates are reviewed annually, taking into account the annual increase in prices, as measured by the Consumer Price Index (CPI) in the calendar year prior and the inflation outlook for the near term. Increases to benefits and contributions come into effect from August each year. Table B1 of Appendix B

summarises price inflation and benefit and contribution increases in the period since August 1998. Table B2 summarises the rates of benefits and contributions payable in the years commencing August 1998 to August 2008. This report takes account of the benefit and contribution rates that came into force with effect from August 2008.

Purpose of the Report

The report is prepared in compliance with Section 35(1) of the Act. The purpose is to indicate the financial condition and long-term sustainability of the Fund and to investigate the potential financial implications of future contribution and benefit increases for the Fund.

Scope of the Report

The main purpose of the review is to assess the implications for future contribution rates of maintaining benefits at their present levels in real terms. We understand that the Government intends to increase benefit rates in the future broadly in line with increases in the Consumer Price Index, with contribution rates increasing at 1¾% a year more than benefits. This therefore constitutes the central long-term policy assumption for this review, subject to the short-term assumptions discussed under the section ‘Subsequent events’.

The review includes projections of contribution income and expenditure (on benefits and administration), projections of the Fund balance (allowing for an assumed rate of investment return), and projections of the number of years’ outgo secured by the Fund. A projection period of 40 years has been used for the review.

The review is based on a long-term population projection, which includes another important indicator of the likely longer-term development of the Fund, namely the projected ratio of the number of people of working age to the number of pensioners. This ratio, known as the “Pensioner support ratio”, reflects the maturity of the Fund and the impact of demographic changes.

It is important to recognise that the financial projections for future years are based on reasonable assumptions but they should not be taken as forecasts of the outcome. The projections should be updated at successive actuarial reviews in the light of the latest information available. In order to indicate the sensitivity of the results to changes in the main assumptions, the review includes alternative projections. These consider the effects of:

- > increasing contribution rates at a lower rate of 1¼% per annum more than benefits and at higher rates of 2½% and 3% per annum more than benefits;
- > assuming a higher (5%) and lower (2%) real rate of investment return on the Fund’s assets.

Finally, the report includes an assessment of the value of accrued benefits as at the effective date of the review. This is included in Appendix J, together with an estimate of the corresponding funding level at the review date.

The effective date of the review is 1 August 2008. The financial projections are expressed in terms of the benefit and contribution rates applicable from August 2008.

Previous Review

The previous actuarial review was conducted as at 1 August 2005. The main financial projections were expressed in terms of the benefit and contribution rates in effect at August 2005. Benefits were assumed to increase in line with changes in the assumed Consumer Price Index (CPI) for future years.

The results of the 2005 review indicated that, if contributions were to increase at a rate 1¼% more than the increase in benefits then annual outgo would exceed contribution income in about 5 years (2010). The variant results also show that if contributions increase at 1¼% or 2½% more than benefits then outgo will still outpace income by 2010. In order to maintain a balance of income over outgo for a longer period, contributions would need to increase at an even higher rate in excess of benefits. For example, in order to match the increased level of benefit outgo in the year 2045-46, contribution rates would need to be just under 2½ times (in 2005-2006 terms) their levels in 2005-2006. This would require contribution rates to be increased at about 2¼% a year in excess of benefit increases over the 40-year period.

The 2005 review also included projections of the Fund balance. These indicated that, if benefits were to increase in line with prices in the future, and if the Fund were to earn a real investment return of 3½% a year, then, in real terms, the Fund would increase until about the year 2023 and would then decline and be exhausted soon after the end of the projection period. A similar picture emerges if contributions were to increase at 1¼% more than benefits, with the Fund being exhausted shortly before the end of the projection period. If, however, contributions were to increase annually by 2½% more than benefits, then, in real terms, the Fund would increase more rapidly (and to a higher level) for about the next 20 years leveling off for the next 15 years and then increases again towards the end of the projection period. Results were also presented for variant fund returns.

Subsequent Events

The Fund

The valuation date for the review is 1 August 2008. Since then, there were significant developments in the global financial markets, which affected the Fund, resulting in a significant decrease in the value of the Fund in the latter part of 2008. However, investment returns have been strong in 2009, partially offsetting the losses in 2008. The Department has informed us that as a result of the current financial turmoil, the Fund's weekly contribution rate would not be increased in August 2009. Benefits would be increased in line with prices, as is the present practice. We have therefore reflected the actual Fund return in the first year of the projections and have assumed that contributions will be frozen for the twelve months commencing 1 August 2009.

Non-Bermudian workforce

In our discussions with the Department, we were informed that Non-Bermudian workers make up a significant portion of the workforce and by extension the population. Data from the Department of Statistics Employment Survey data for 2008 showed that 25.8% (33% for males and 17.9% for females) of the employed workforce were Non-Bermudian. These figures exclude Non-Bermudians

married to Bermudians. We understand that since 2007, most work permits for Non-Bermudians have a maximum 6 years duration meaning that if persons were to contribute for the entire period, they would not meet the minimum requirement of 484 weekly contributions to be eligible for a pension from the Fund

After reviewing and discussing with the Department all other assumptions used in the previous review and the experience of the Fund, it was agreed that the same assumptions should be adopted for the current review with the additional provision for Non-Bermudian gratuity benefits.

Data

The Department provided Excel files containing data on benefits in payment during the period commencing 16 August and ending 15 September for the years 2006, 2007 and 2008, and data on contributions paid during the calendar months of July 2006, 2007 and 2008. The benefits data was grouped by benefit type, sex, year of birth, weekly benefit amount and the number of payees. The contribution data was grouped by contribution year, year of birth, number of persons contributing split by sex and total number of contributions made in the month, split by sex.

We were also provided with an Excel file from the Department of Statistics showing ‘Jobs by Age Group and Bermudian Status of Job Holder, 2008’.

The data was checked for reasonableness by comparing the expected contributions and benefits from the data provided with the contributions and benefits recorded in the accounts. There were a few data discrepancies, which, in our opinion would not have materially affected the results. Seriatim data would be preferable including the contribution history of the contributors. We understand from the Department that the data is being converted onto a new administration system and it is hoped that it will be possible to have seriatim data for the next review.

Beneficiaries and Benefits

Table C1 of Appendix C summarises the numbers and total amount of benefits paid for the period 16 August to 15 September 2008 and, for comparison, for the period 16 August to 15 September 2005. Table C2 of Appendix C summarises the average amount of benefits paid in 2008 and 2005.

The largest group of beneficiaries were those receiving contributory old-age pensions. There were 6,980 such beneficiaries in August 2008, compared to 6,367 in August 2005, an increase of 9.6% over the period. In addition, the average amount of benefits paid was about 15% higher, due to the increase in the full rate of weekly pension (excluding increments) from \$183.30 to \$209.17 and incremental increases for new pensioners.

The total number receiving non-contributory old-age pensions increased slightly over the period since the previous review. A spouse’s allowance was in payment to 1,120 widows and 81 widowers in August 2008, compared to 1,069 and 69 respectively in August 2005 (increases of 5% and 17% respectively). The numbers receiving contributory disability benefit increased from 100 to 114, and for non-contributory disability benefits, the numbers also increased, from 217 to 235.

Contributors and Contributions

Table C3 of Appendix C summarises the number of persons earning one or more contributions, and the average number of weekly contributions earned, during the months of July 2008 and June 2005. The number of persons earning one or more contributions increased by 5% over the 3-year period to July 2008, from 35,339 in June 2005 to 37,213 in July 2008. The average number of weekly contributions

in July 2008 (3.86) remained unchanged from 2005. We have assumed that persons over pension age who are still contributing are in receipt of pension benefits and have not taken credit for any future contributions that may be made. This is a conservative approach as there is no fixed age at which these contributions would cease as persons are required by law to contribute once they are employed. In 2008 contributions for this group amounted to over \$5 million.

The Fund

Table D2 of Appendix D shows the market value of the Fund investments as at 31 July 2008 in each of three main investment classes, as shown in the Accounts of the Fund. As at that date, the Fund was invested in equities (49%), bonds (20%), private equity and hedge funds (21%) and short-term deposits (7%). Net receivables, including a bad debt of \$1.5 m carried forward from 2004, made up the remaining 2% of the assets.

We were also provided with the 'Fourth Quarter Investment Performance Analysis' report on the invested assets of the Fund. The value of the invested assets, excluding receivables fell from \$1,252.9 million at 31 July 2008 to \$975.9 million over the five months ending 31 December 2008, a drop of 22% over the five months. Since then the Fund has performed strongly and the value of the invested assets has grown to \$1,163.9 million as at 30 September 2009, a growth of 16.6% since 31 December 2008.

As at 31 July 2008, the market value of the total Fund was \$1.297 billion, approximately 12¾ times the outgo in the year ending 31 July 2008. As at 31 July 2005, the Fund balance represented about 12 times the outgo in the year ending 31 July 2005.

Investment Returns

Over the three years ended 31 July 2008, the average rate of return earned on the Fund was 8.0% per annum. Allowing for price inflation over the same period, the average real rate of return earned on the Fund over the three years ended 31 July 2008 was 3.6% a year. This was due mainly to the continued high returns experienced by the Fund in 2006 and 2007, with returns of 9.7% and 16.4% respectively, which helped to mitigate the adverse experience in 2008.

Over the ten years ended 31 July 2008, the average rate of return earned on the Fund was 7.1% a year. Allowing for price inflation over the same period, the average real rate of return earned on the Fund over the ten years ended 31 July 2008 was about 3.8% a year.

Demographic Assumptions

This section describes the estimating methods and demographic assumptions adopted for the review. We have used the same methodology that was used in the previous review.

Population projections

We produced a long-term population projection for the 40-year period covered by the review (2008 to 2048). The baseline population for the long-term projection is taken from the 2000 census, which showed total numbers of males and females split into five-year age groups. Appendix E contains a description of the assumptions adopted for the projection and the results.

Table 2 summarises the results of the projection as well as the projected ratio of the number of working age to the number over pension age, commonly known as the “pensioner support ratio”.

Table 2 - Projected Population 2008 - 2048 (Males and Females)

Males and females						
As at 30 July	Births	Ages 1-19	Working age (20-64)	Pension age (over 65)	Total	Pensioner support ratio
2008	703	15,777	40,590	8,628	64,995	4.7
2018	642	14,277	39,790	12,437	66,504	3.2
2028	662	13,060	36,334	17,574	66,968	2.1
2038	624	13,066	32,308	20,363	65,737	1.6
2048	570	12,338	31,714	18,496	62,547	1.7

The numbers over pension age are expected to rise steadily over the next 30 years, at which point there are projected to be more than double the present number over pension age. Thereafter the numbers over pension age are projected to stabilise, and then gradually decline.

The numbers of working age are expected to rise slightly reaching a peak within the next two years, and to then decline, gradually at first but more quickly towards the end of the projection period. This fall in numbers of working age is due to the lower birth rate in recent years and the projected continuation of a lower birth rate.

The pensioner support ratio is a particularly useful indicator of future trends, and Table 2 shows a steady fall in the ratio. As at August 2008, there were almost 5 people of working age per pensioner but, over the next forty years or so, this ratio is projected to fall to just under 2.

The population projections produced using this methodology, are in line the Bermuda Department of Statistics population projections 2000 – 2030. The higher number of persons over age 65 compared to the census, is a result of the use of mortality rates which reflect future mortality improvement trends.

Projected contributors and beneficiaries

The results of the 40-year population projection are used to project the numbers of contributors (and the number of weekly contributions) and beneficiaries. Appendix F describes the methods and assumptions adopted for this purpose – the assumptions generally reflect the recent experience but with some modifications for the longer-term. The following paragraphs summarise the projected numbers of contributors (and the number of weekly contributions) and beneficiaries. It should be noted that the projections are subject to increasing uncertainty in later years.

Projected numbers of contributors and contributions

The projected numbers of weekly contributions are based on the projected numbers of contributors and the assumed average annual number of weekly contributions per contributor. The projected number of contributors is derived by applying age-specific factors to the projected population in 5-year age groups, with the factors representing the long-term assumed proportions of the population in each age group that will contribute to the Fund. It has been assumed that the proportion of contributors in each 5-year age group will be similar to that obtained from the data provided for the July 2006, 2007 and 2008. We have assumed that all contributors are under age 65 and therefore not taken credit for contributions from persons over age 65 as there is no fixed date for cessation of contributions.

Table 3 summarises the projected number of contributors to the Fund.

Table 3 - Projected numbers of contributors

Year ending 31 July	Males	Females	Total
2009	18,228	16,900	35,127
2014	17,868	16,650	34,518
2019	17,503	16,328	33,831
2024	16,985	15,674	32,659
2029	16,253	14,768	31,021
2034	15,532	13,877	29,409
2039	14,923	13,157	28,080
2044	14,721	12,912	27,633
2049	14,587	12,790	27,377

Over the 40-year period, the proportion of the working age population contributing to the Fund is projected to remain relatively unchanged at about 86%. Table 3 indicates that the projected total number of contributors decreases gradually over the projection period to about 80% of the 2009 figure.

The projected number of weekly contributions paid in a year is based on the projected number of contributors multiplied by the average number of weekly contributions paid by each contributor. Each contributor is assumed to contribute, on average, in about 50 weeks a year.

Average age of contributors

Table 4 summarises the projected average age of future contributors to the Fund at five-year intervals over the projection period.

Table 4 - Projected average age of future contributors

Year ending 31 July	Males	Females	Overall
2009	42.6	42.8	42.7
2014	43.2	43.4	43.3
2019	43.3	43.5	43.4
2024	42.8	43.1	43.0
2029	42.0	42.4	42.2
2034	41.5	42.0	41.7
2039	41.4	41.9	41.7
2044	41.9	42.3	42.1
2049	42.2	42.6	42.4

Benefits and beneficiaries

The projected amounts of benefits are based on the projected number of beneficiaries (contributory and non-contributory) and the average benefit payable. It has been assumed that, over the long term and after accounting for Non-Bermudians, about 95% of men and 85% of women reaching age 65 will qualify for a contributory old age pension, and that the remaining 5% of the male population and 5% of the female population over age 65 will receive a non-contributory old age pension. The remaining 10% of females over age 65 are assumed to receive a widow's pension.

Table 5 summarises the projected total numbers of beneficiaries in receipt of contributory and non-contributory old age pension.

Table 5 - Projected numbers of OAP beneficiaries (aged 65 or over)

Year ending 31 July	Males	Females	Total
2008	3,677	4,951	8,628
2013	4,336	5,801	10,136
2018	5,042	6,798	11,840
2023	5,765	8,003	13,768
2028	6,441	9,268	15,709
2033	6,720	10,114	16,834
2038	6,551	10,327	16,878
2043	5,906	9,853	15,759
2048	5,296	9,124	14,420

The projected numbers in Table 5 reflect the actual numbers of beneficiaries as at 31 July 2008 rather than the estimated (and projected) population.

Table 5 indicates that the total number of beneficiaries (contributory and non-contributory) over age 65 is expected to increase steadily, reaching a peak in about 30 years' time. Thereafter, a gradual decline in numbers is expected.

Financial Assumptions

As in the previous review, the results are shown at constant 2008 price levels. The projections allow for the assumed increases in benefits and contributions, and are then deflated by the assumed rate of price increases. (The review takes into account the actual benefit and contribution increases implemented with effect from August 2008.)

The main financial assumptions are the rates at which benefits and contributions will increase (relative to prices) from August 2009, the real rate of investment return (in excess of price increases) and administrative expenses. It is not necessary to make an explicit assumption in respect of future price increases because the assumed increases to both benefit and contribution rates are expressed relative to price increases.

Increases to benefit and contribution rates

It has been assumed that, over the long term, benefits will increase in line with prices. Contributions have been projected on four assumed rates of increase, as follows:

- (a) a rate of 1¾% a year more than benefits (i.e. price increases plus 1¾%);
- (b) a rate of 1¼% a year more than benefits (i.e. price increases plus 1¼%);
- (c) a rate of 2½% a year more than benefits (i.e. price increases plus 2½%); and
- (d) a rate of 3% a year more than benefits (i.e. price increases plus 3%).

The assumed long-term increases to benefit and contribution rates are the same as those adopted for the previous review.

Real rate of investment return

In order to project the Fund balance, it has been assumed that the average long-term real rate of investment return (in excess of price increases) will be 3½% a year after the first year. We consider that this represents a reasonable assumption for the real rate of return on a broadly balanced portfolio, invested with a long-term perspective, but it is not intended to be a target level of investment return. This rate is also supported by the experience of the plan over the last ten years. The assumed real rate of return of 3½% a year is the same as that in the previous review. This being the case in the long-term, we have however reflected the actual asset value to July 2009 in the first year of the projection.

Alternative projections of the Fund balance have been carried out using assumed real rates of return of 2% a year and 5% a year. This seems a reasonable range for the real rate of return in view of the returns achieved over the past decade or so.

Administration expenses

For the purposes of the review, we have assumed that administration expenses will increase at a rate of 1½% a year in excess of price increases. Administration expenses for the year ending 31 July 2008 amounted to \$7.9 million. The Department informed us that this amount included investment expenses, and that pure administrative expenses were between \$3 and \$4 million for the same period. Appendix F includes further explanation of the assumed level of administration expenses.

Main Results

The financial status of the Fund is broadly in line with the projected results when compared with the results revealed in the previous actuarial review. There are several contributing factors which when combined, have produced these results. These factors are as follows:

- > The Fund continued to perform above expectations in fiscal years ending 31 July 2006 and 2007 with returns of 9.7% and 16.4% respectively, which helped mitigate the impact on the Fund of the loss in fiscal year ending 31 July 2008. The net real return of the Fund over the 3 year period was 3.6% per annum, just above the expected real return of 3.5%.
- > The decision not to increase contributions for the 12 month period 1 August 2009 to 31 July 2010, has been partially offset by the adjustment in future benefits payable to Non-Bermudian members.
- > The use of the most recent generational mortality table, reflecting improved mortality trends, in the population projections, thus people are projected to live longer.

The Fund is projected to be exhausted in 33 years (2041) if no changes are made to the contribution and benefit structure, using the base assumption of investment returns being 3.5% per annum in excess of inflation. In the previous review the Fund was expected to be exhausted in 2045.

The results of the financial projections over the 40-year period to the year ended 31 July 2048 are presented below and are expressed in terms of the benefit and contribution rates effective from August 2008.

The results show projections of:

- (i) contribution income and outgo (benefits and expenses); and
- (ii) the progression of the Fund balance allowing for investment returns.

Projected income and outgo

Table 6 summarises at five-yearly intervals the projected contribution income, increasing in line with prices plus 1¾% a year starting effective August 2010 and the projected total outgo of the Fund, at 2008 prices. As a result of the contribution freeze in 2009, the 2009 contribution rate is equal to \$60.80 deflated by 3% (\$2008 dollars). Table G1 of Appendix G shows results for each year of the projection period.

Table 6 - Projected income and outgo (\$million) at constant 2008 prices

Year ending 31 July	Contribution income		Outgo		
	increasing in line with price increases plus 1¼%	OAP benefits	Other benefits	Admin costs	Total outgo
(1)	(2)	(3)	(4)	(5)	(6)
2009	106.8	94.7	3.1	8.1	105.9
2014	109.2	110.8	7.1	8.7	126.5
2019	116.8	137.7	9.6	9.4	156.7
2024	122.9	171.5	10.8	10.1	192.4
2029	127.3	205.2	10.3	10.9	226.4
2034	131.7	224.7	9.2	11.7	245.6
2039	137.1	228.3	8.3	12.6	249.2
2044	147.1	212.3	8.3	13.6	234.1
2049	159.0	192.8	8.4	14.6	215.8

Over the next 30 years, total outgo is projected to increase to about 2¼ times its current level, from about \$106 million in 2009 to \$249 million in 2039. Thereafter, total outgo is projected to fall to \$215 million by the end of the projection period (2048). Over the same period, contribution income increasing at 1¼% a year more than prices is projected to increase from about \$107 million to \$159 million.

Figure 1 illustrates the projected amounts of contribution income and total outgo, as shown in Table 6.

Figure 1 - Projected contribution income and total outgo
(\$ million at constant 2008 prices)

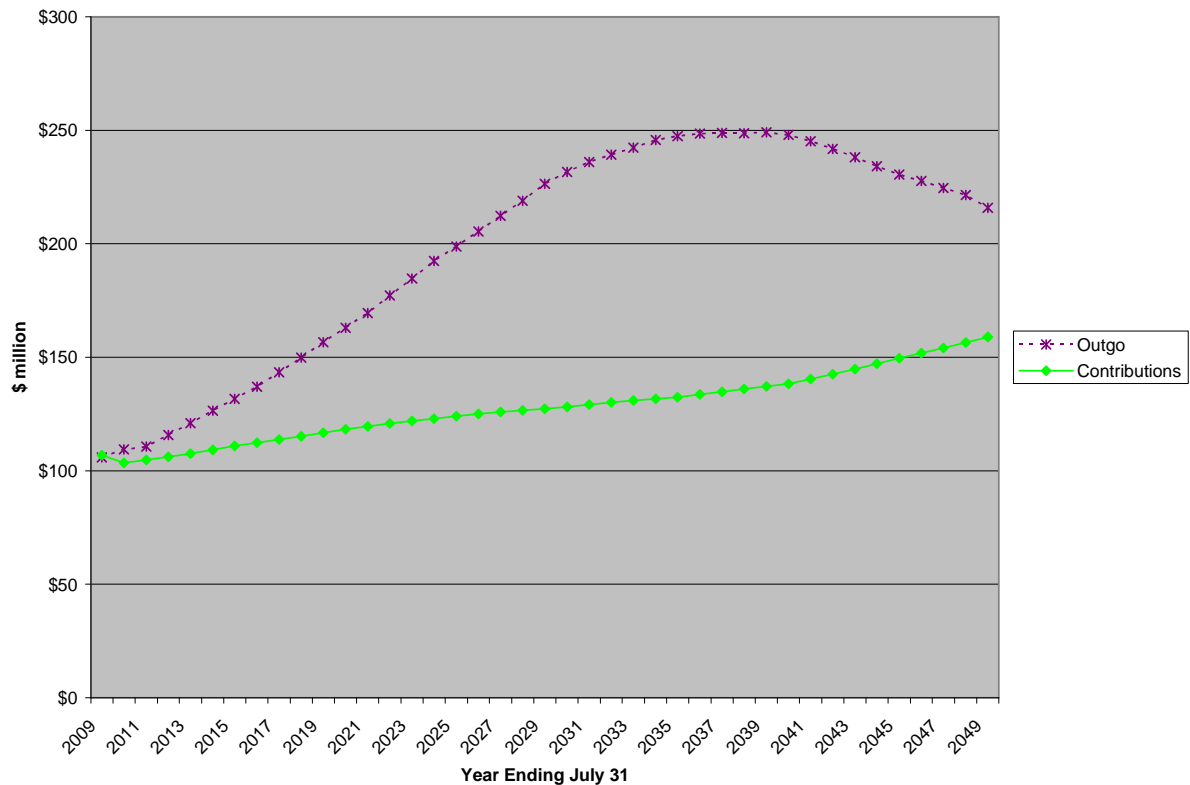


Figure 1 indicates that total outgo will exceed contribution income within 2 years. By the year 2049, contribution income would need to be about double the current level in real terms in order to match the increased level of benefit outgo. This would require contributions to be increased by about 2½% a year more than benefit increases over the next 40 years.

Projected Fund balance

Projections of the Fund balance are subject to further uncertainty since they depend not only on the projections of income and outgo, but also on future investment returns and changes in market values. However, this is an important aspect of the financing of the benefits and it is useful to consider the expected long-term pattern of growth under the assumptions adopted for the purpose of the projections.

Figure 2 illustrates the projected balance of the Fund in constant 2008 price terms, assuming a real rate of investment return of 3½% a year. The negative amounts are shown to indicate the potential shortfall in the projected Fund, although we anticipate that appropriate action would be taken to address this situation.

**Figure 2 - Projected fund balance, real rate of return of 3½% a year
(\$ million at constant 2008 prices)**

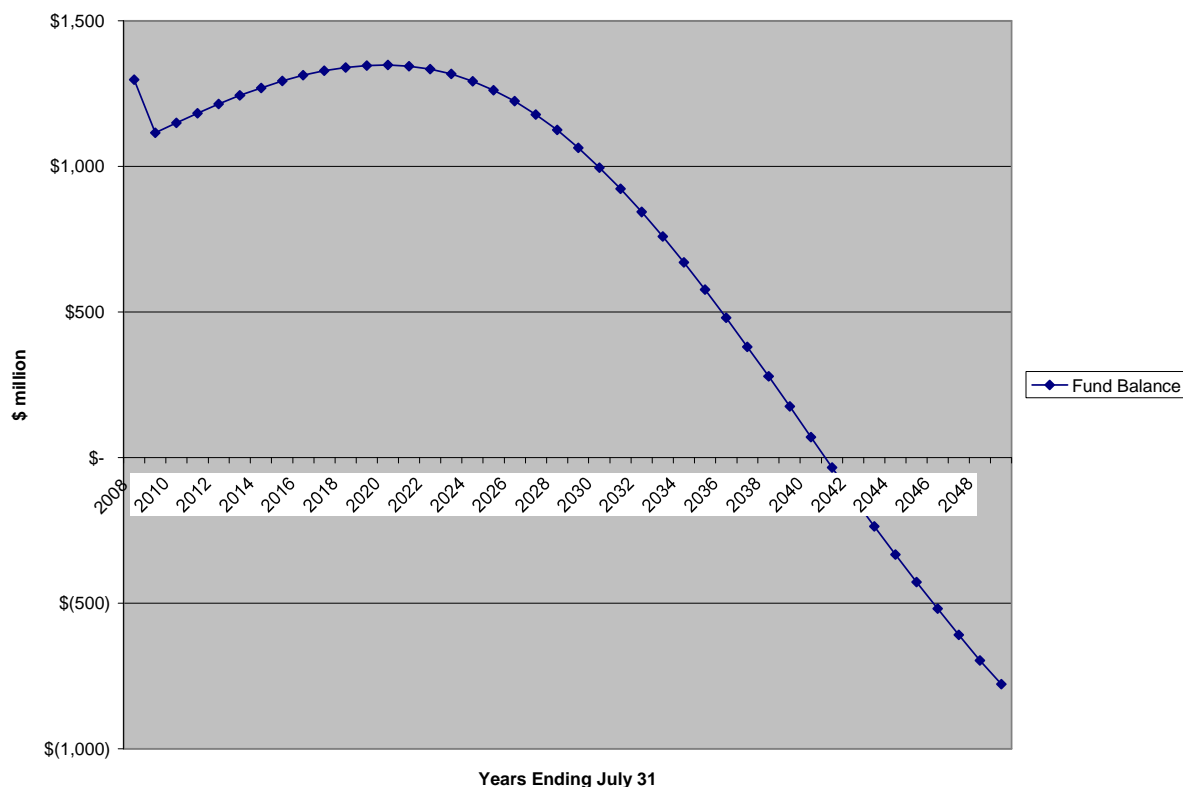


Figure 2 indicates that, if contributions increase at 1¾% a year more than prices, then the Fund may be expected to increase slightly in real terms for about 12 years. Thereafter, the Fund is projected to decline and be exhausted in 33 years (in about the year 2041).

Table H1 of Appendix H shows the Fund projections in detail under the main assumptions, including the multiple by which the projected Fund balance is estimated to cover annual outgo from the Fund (“ratio of Fund to outgo”). The ratio decreases gradually to begin with and then more rapidly over the projection period.

Comparison with previous review

The following considers the results of the current review, which are expressed in 2008-2009 dollars, relative to the results of the previous review (expressed in 2005-2006 dollars).

We have maintained the methodology and assumptions adopted for the previous review and added the adjustments for the treatment of Non-Bermudians and the freezing of the contribution rate for the twelve months commencing August 2009. With the transition to the new administration system, it is hoped that for the next review, seriatim data can be provided and experience studies performed on the data.

- > Total outgo is expected to exceed contribution income in 2010, the same as projected in the previous review.
- > The Fund is projected to be exhausted in the year 2041, 4 years earlier than projected in the previous review.
- > Contribution income would have to double in real terms to keep pace with total outgo from the Fund over the next 40 years and this would require an increase in contributions of about 2½% per annum more than benefits. This compares with an increase in contribution of 2¾ % per annum more than benefits revealed in the previous review. The main reason for this is the treatment of Non-Bermudians with regards to future benefit entitlement in this review, which has reduced the projected outgo from the Fund

Variant Results

The projections are based on assumptions of contribution increases and investment returns relative to prices. In this section, we look at the results of the projections under variants of these assumptions. The projections are based on the benefits and contributions in effect from August 2008 and are expressed in constant 2008 price terms.

The results show projections of:

- (i) contribution income and outgo (benefits and expenses); and
- (ii) the progression of the Fund balance allowing for investment returns

Variant rates of increases to contributions

The main projections assume that contributions will increase at 1¾% more than prices starting with rates effective August 2010. Table 7 summarises (at five yearly intervals) the projected income and outgo of the Fund under the following contribution increase assumptions. The results are in constant 2008 prices.

- (a) prices plus 1¾%
- (b) prices plus 1¼%
- (c) prices plus 2½%
- (d) prices plus 3%

Table 7 - Projected income and outgo (\$million) at constant 2008 prices

Year ending 31 July	Contribution income				Outgo			
	Increasing in line with price increases plus				OAP benefits	Other benefits	Admin costs	Total outgo
	1¾%	1¼%	2½%	3%				
(1)	(2a)	(2b)	(2c)	(2d)	(3)	(4)	(5)	(6)
2009	106.8	106.8	106.8	106.8	94.7	3.1	8.1	105.9
2014	109.2	107.1	112.5	114.7	110.8	7.1	8.7	126.5
2019	116.8	111.7	124.7	130.3	137.7	9.6	9.4	156.7
2024	122.9	114.8	136.2	145.8	171.5	10.8	10.1	192.4
2029	127.3	116.0	146.4	160.5	205.2	10.3	10.9	226.4
2034	131.7	117.0	157.0	176.4	224.7	9.2	11.7	245.6
2039	137.1	118.9	169.6	195.3	228.3	8.3	12.6	249.2
2044	147.1	124.5	188.8	222.8	212.3	8.3	13.6	234.1
2049	159.0	131.3	211.7	255.9	192.8	8.4	14.6	215.8

Over the next 40 years, the contribution income is projected to increase from about \$107 million to:

- (i) just over \$130 million under the variant assumption that contribution rates increase at 1¼% more than prices
- (ii) just over \$210 million under the variant assumption that contribution rates increase at 2½% more than prices
- (iii) just over \$255 million under the variant assumption that contribution rates increase at 3% more than prices

Figure 3 gives a graphical illustration of the variant results shown in Table 7, under the four alternative contribution increase assumptions. Contribution income and total outgo are expressed in constant 2008 price terms.

**Figure 3 - Projected contribution income and total outgo
Main and variant assumptions for contribution rate increases
(\$ million at constant 2008 prices)**

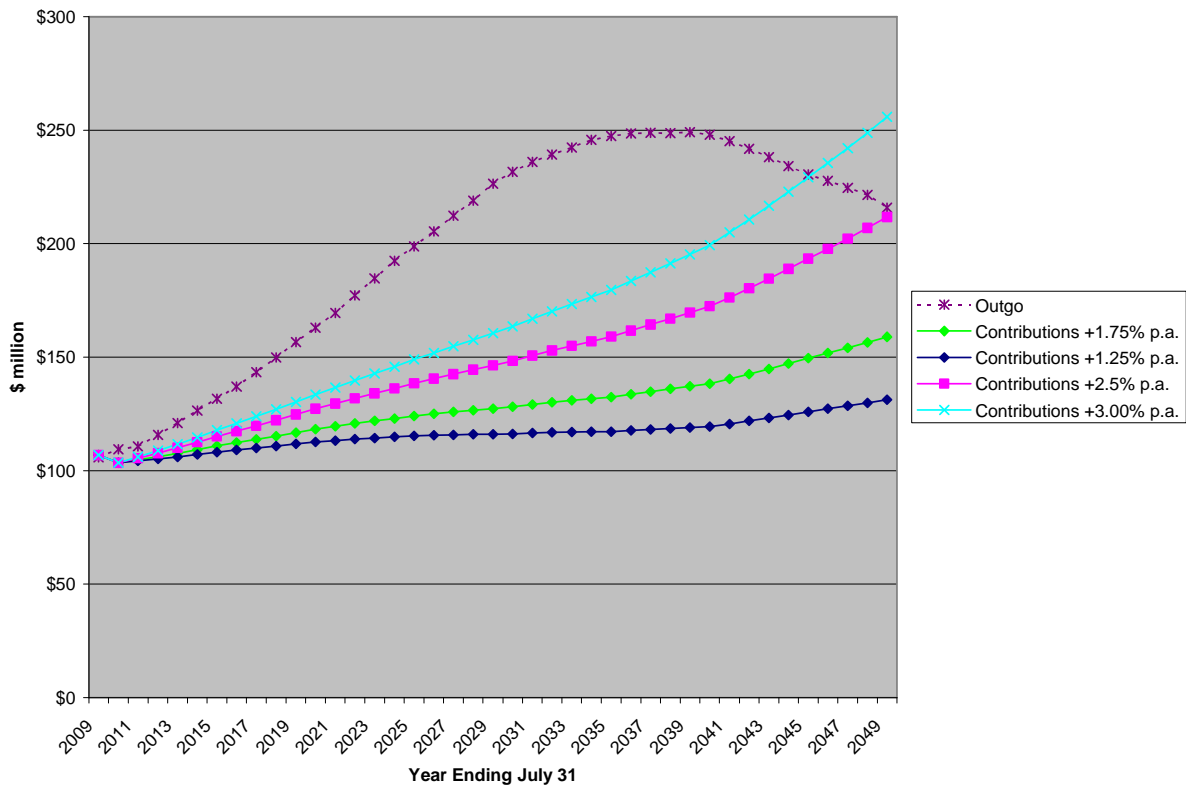


Figure 3 indicates that total outgo will exceed contribution income within 2 years under all four alternative rates of increase of contributions.

Projected Fund Balance

Projections of the Fund balance are subject to further uncertainty since they depend not only on the projections of income and outgo, but also on future investment returns and changes in market values. However, this is an important aspect of the financing of the benefits and it is useful to consider the long-term pattern of growth under the assumptions adopted for the purposes of the projections.

Negative projected Fund values are shown to indicate the potential shortfall in the projected Fund, although we anticipate that appropriate action would be taken to address this situation.

Figure 4 shows the effect of the four alternative contribution increases on the projected Fund.

Figure 4 - Projected Fund balance, main and variant assumptions for contribution rate increases
Real rate of return of 3½% a year
(\$ million at constant 2008 prices)

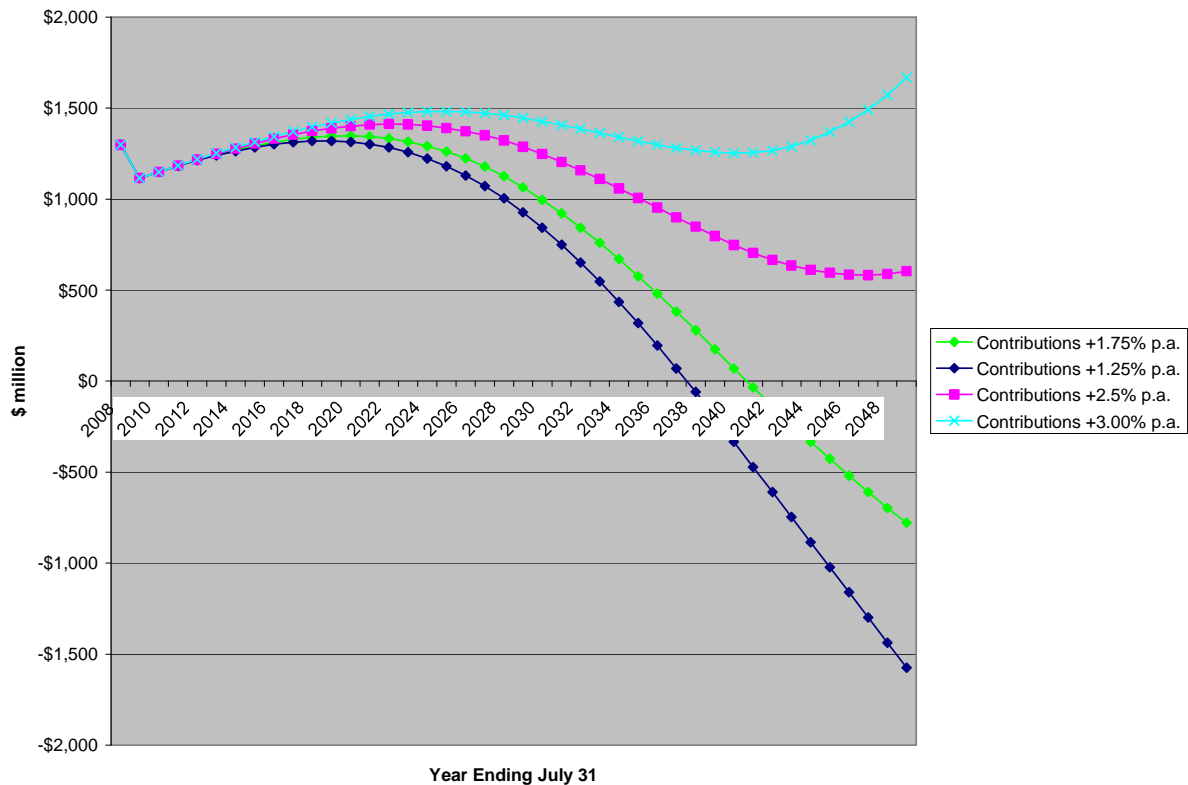


Figure 4 shows that the Fund is expected to increase slightly in real terms for a period ranging between 10 to 16 years, then decline rapidly and exhausted within a period ranging between 30 and 33 years under all the scenarios except where contributions are increased at 2½% and 3% p.a. With at least a 2½% per annum increase in contributions, the Fund exhibits a sustainable pattern after the 40 years.

Variant Fund returns

Figure 5 illustrates the projected Fund balance in constant 2008 price terms, assuming that contributions increase at 1¾% more than prices and assuming alternative real rates of investment return of 2%, 3½% and 5% a year.

**Figure 5 - Projected Fund balance, Real rates of return of 2%, 3½% and 5% a year
Contributions increase at 1¾% a year more than prices
(\$ million at constant 2008 prices)**

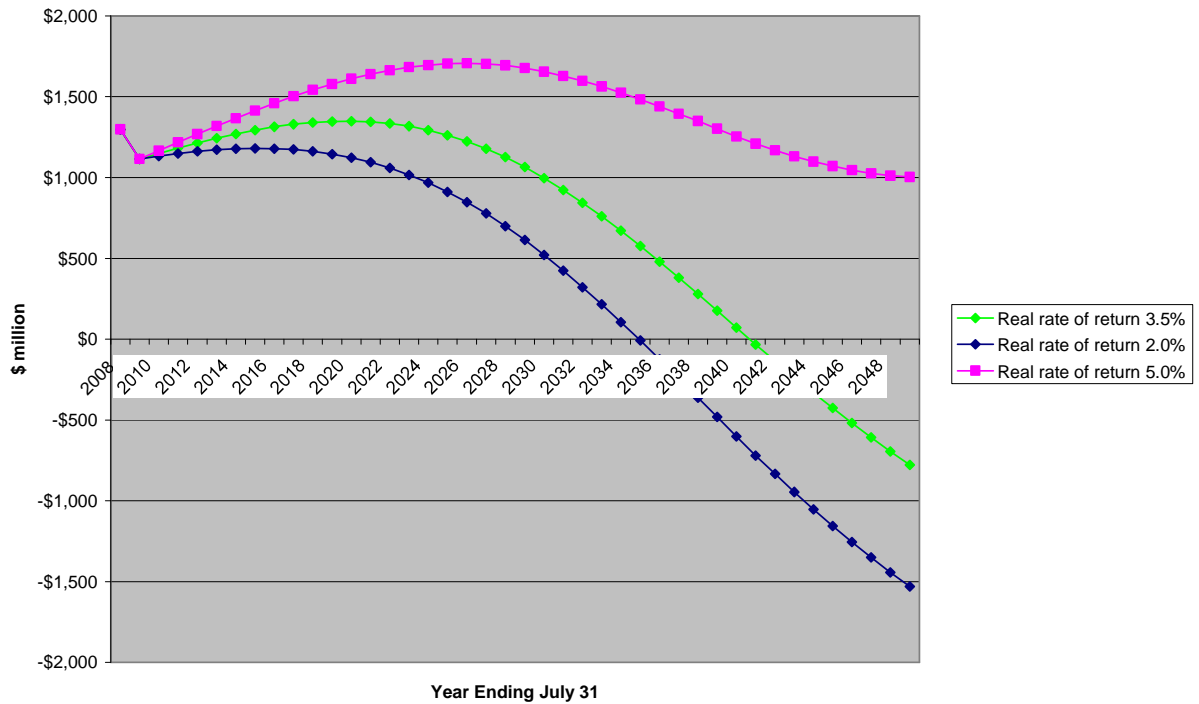


Figure 5 shows that under the main assumptions, the Fund balance will be exhausted within 27 years and remaining sustainable with a future real rate of return of 2% and 5%, respectively.

Figure 6 illustrates the projected Fund balance in constant 2008 price terms, assuming that contributions increase at 1¼% more than prices and assuming alternative real rates of investment return of 2%, 3½% and 5% a year.

**Figure 6 - Projected Fund balance, Real rates of return of 2%, 3½% and 5% a year
Contributions increase at 1¼% a year more than prices
(\$ million at constant 2008 prices)**

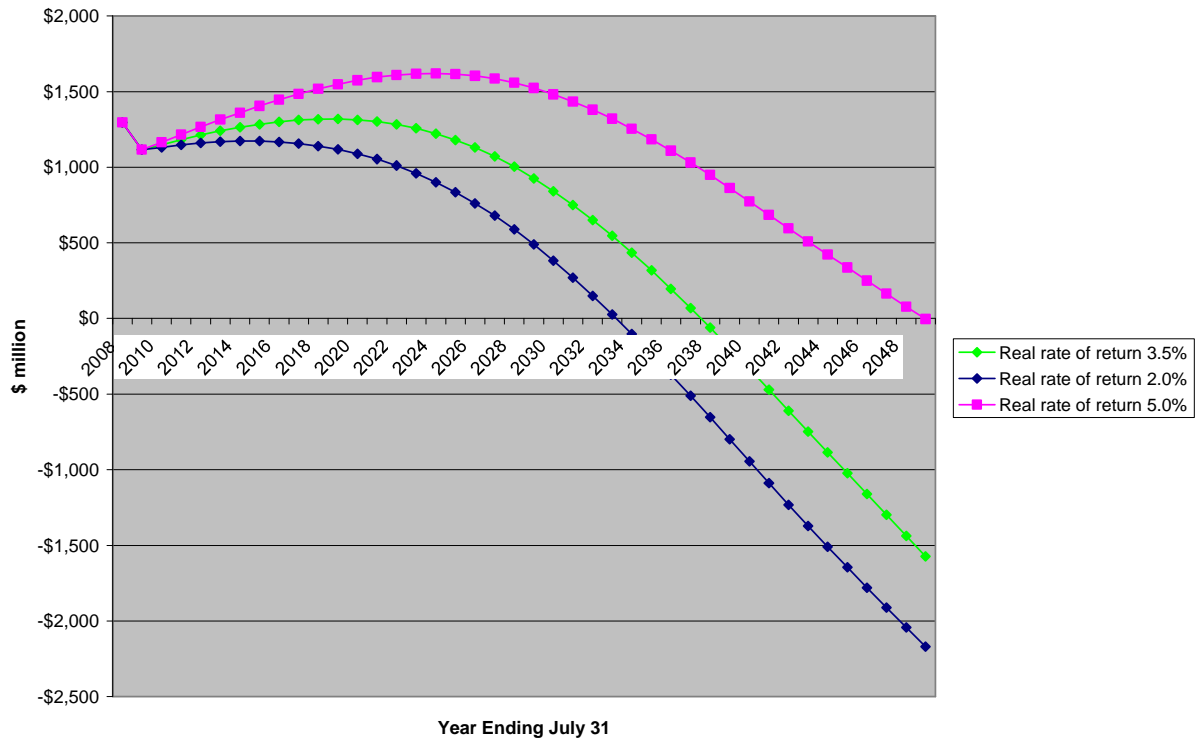


Figure 6 shows that if contributions increase at 1¼% a year more than prices, the Fund balance will be exhausted within 27 years with a future real rate of return of 2% and be exhausted just after the projection period with a future real rate of return of 5%.

Figure 7 illustrates the projected Fund balance in constant 2008 price terms, assuming that contributions increase at 2½% more than prices and assuming alternative real rates of investment return of 2%, 3½% and 5% a year.

**Figure 7 - Projected Fund balance, Real rates of return of 2%, 3½% and 5% a year
Contributions increase at 2½% a year more than prices
(\$ million at constant 2008 prices)**

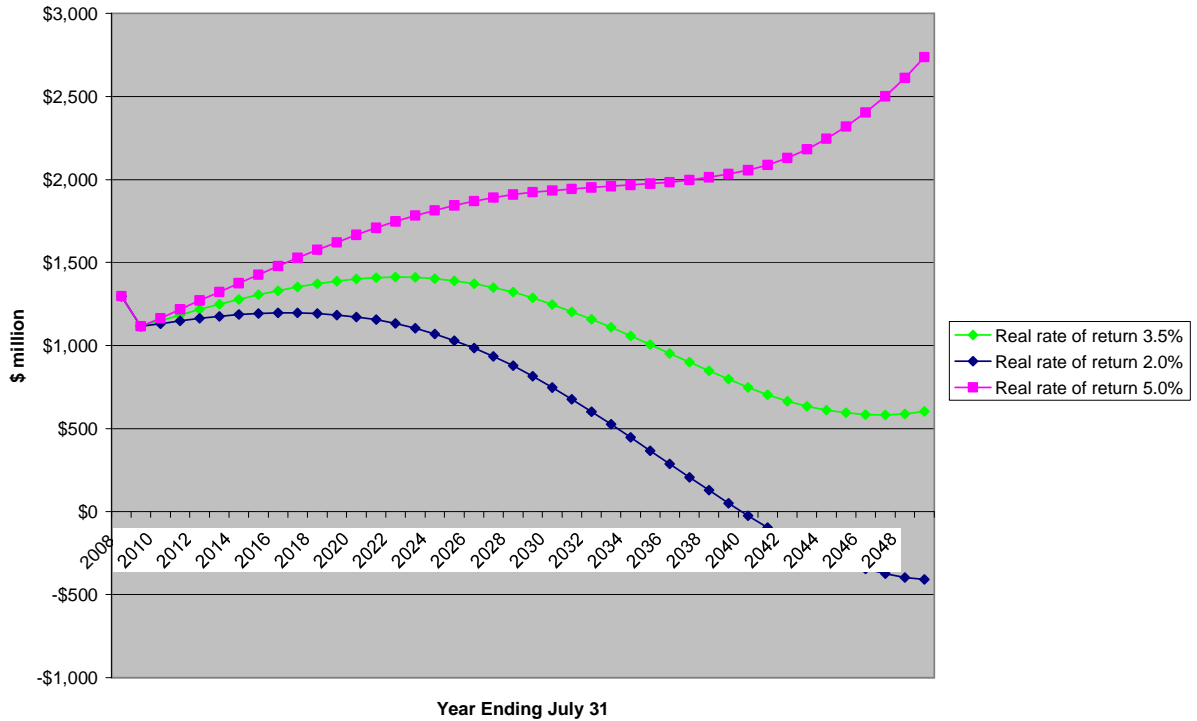


Figure 7 shows that if contributions increase at 2½% a year more than prices, then with a future real rate of return of 5%, the Fund balance is projected to increase steadily over the projection period. With a real rate of return of 3½% the Fund remains positive and sustainable at the end of the projection period. However, the Fund balance will be exhausted within 32 years with a future real rate of return of 2%.

Figure 8 illustrates the projected Fund balance in constant 2008 price terms, assuming that contributions increase at 3% more than prices and assuming alternative real rates of investment return of 2%, 3½% and 5% a year.

**Figure 8 - Projected Fund balance, Real rates of return of 2%, 3½% and 5% a year
Contributions increase at 3% a year more than prices
(\$ million at constant 2008 prices)**

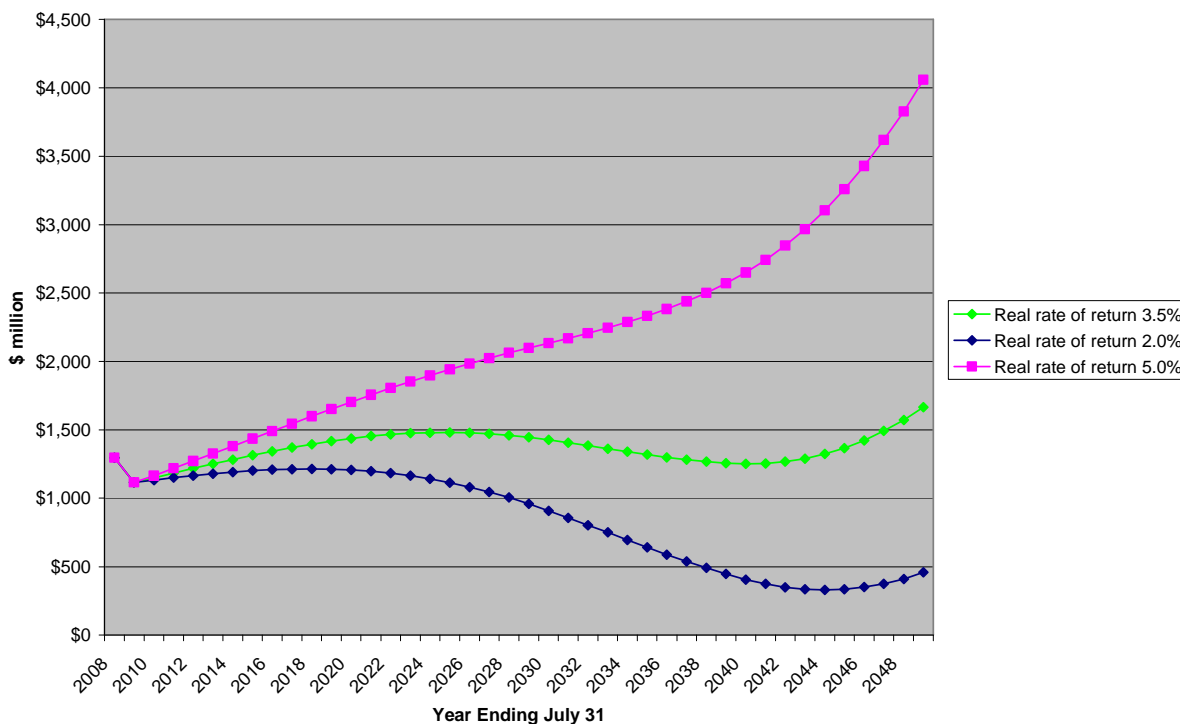


Figure 8 shows that if contributions increase at 3% a year more than prices, the Fund balance remains positive for the entire projection period for all three assumed real rate of returns.

Further comments

Tables H1 to H13 of Appendix H show the Fund projections in detail, including the multiple by which the projected Fund balance is estimated to cover annual outgo from the Fund (“Ratio of Fund to outgo”).

Tables H1, H5 and H6 show the detailed projections underlying Figure 5, Tables H2, H7 and H8 show the detailed projections underlying Figure 6, Tables H3, H9 and H10 relate to Figure 7 and Tables H4, H11 and H12 to Figure 8. As would be expected, these tables demonstrate that a lower real rate of return would cause the Fund to decline more rapidly, whereas a higher real rate of return either delays or reduces the decline of the Fund.

Table H1 indicates that, if contributions increase at 1¼% a year more than prices and the real return is 3½% a year, then the projected Fund balance, expressed as a multiple of outgo, decreases gradually from its current level until the Fund is exhausted shortly before 2041.

Table H2 indicates that, if contributions increase at 1¼% more than prices, and the real return is 3½% a year, then the projected Fund balance, expressed as a multiple of outgo, decreases more rapidly until the Fund is exhausted around 2038.

Table H3 indicates that if contributions increase at 2½% a year more than prices, and the real return is 3½% a year, then the projected Fund balance, expressed as a multiple of outgo, is projected to decrease steadily to about 2.6 by the year 2046, and increase thereafter to about 2.8 by the end of the projection period.

In Table H4 where contributions are increased at 3% a year more than prices, and the real rate of return is 3½% a year, the Fund balance, as a multiple of outgo, is projected to decrease steadily to the year 2040, and increase thereafter to the end of the projection period.

All other things being equal, lower contributions in the short term will give rise to a smaller fund and so, most likely, lead to higher contributions in the longer term.

Overall, the results of the Fund projections demonstrate that there is considerable uncertainty relating to the long-term progress of the Fund in respect of the financial assumptions. The demographic assumptions introduce further uncertainty. Since benefit outgo is projected to increase significantly relative to contribution income, there is an argument for smoothing the impact by raising contributions by more than is necessary in the short term, thus building up a sizeable fund. As a result, however, the future outlook would then be more sensitive to the real rates of return achieved in the Fund. This is evident by the results shown in Table H12 where contributions are increased by 3% a year more than prices and the Fund earns a real rate of return of 5% per annum. The Fund is projected to be more than 18 times the outgo and exhibits an increasing trend towards the end of the projection period.

Conclusions

The number of old age pension beneficiaries is projected to grow steadily over the next 30 years, after which time the number is expected to gradually decline. The working-age population is expected to remain broadly stable over the short term but decline more significantly in the longer term. Consequently, the cost of benefits is expected to increase substantially relative to the contribution base represented by the employed population, and so contributions will need to increase at a faster rate than benefits over the long term.

The rate at which contributions should increase relative to benefits will depend on the actual experience in the future, both in terms of demographic developments and investment performance of the Fund. Under the four contribution rate scenarios considered, expenditure is projected to exceed contribution income before July 2010.

If contributions were to increase by 1¾% a year more than benefits, and the Fund were to earn a real rate of return of 3½% a year, then the Fund is likely to increase for about 12 years and, thereafter, decline and be exhausted 21 years later in 2041. If the real rate of return were only 2% a year, then the Fund would be exhausted within 27 years, but if the real rate of return were 5% a year, then the Fund remains positive and relatively stable over the projection period.

Lower increases in contribution rates relative to benefits will slow down the build up of the Fund in the short term, all other things being equal. For example, if contributions were to increase by 1¼% a year more than benefits, then the Fund is likely to be exhausted within 30 years with a real rate of return of 3½% a year. Thus, over the longer term, this is likely to necessitate higher increases in contribution rates relative to benefits.

Higher increases in contribution rates relative to benefits will keep the Fund sustainable over the projection period, all other things being equal. For example, if contributions were to increase by 2½% a year more than benefits, then the Fund is sustainable except with a real rate of return of 2% a year, where the Fund is likely to be exhausted within 32 years.

With a combination of contribution increases 3% higher than benefits and future real returns of 3½% per annum, the Fund is projected to be sustainable throughout the projection period. Thus, if contributions are increased in the short term and future real returns are relatively high, over the longer term, smaller increases to contributions relative to benefits may be possible.

Due to the inherent uncertainty in both the future demographic experience and investment returns on the Fund, the progress and funding level of the Contributory Pension Fund should be kept under regular review.

Actuarial Opinion

This opinion is given with respect to the Bermuda Contributory Pension Fund (the “Fund”).

We performed a review of the Fund as at 1 August 2008. Our review reflects the provisions of the Fund in effect on 1 August 2008, and in addition, takes into account the amendments and increase in contribution and benefit rates effective August 2008. The significant decline in asset values since the review date, the decision not to increase contribution rates for one year effective August 2009, as well as the proportion of Non-Bermudians that make up the population, were also taken into account.

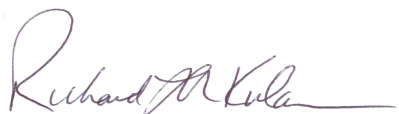
The financial status of the Fund as at 1 August 2008 was determined based on the pension fund information and actuarial assumptions appropriate as at that date.

We hereby certify that, in our opinion, as at 1 August 2008:

- > The data on which the actuarial review is based is sufficient and reliable for the purposes of the review.
- > The assumptions used are, in aggregate, appropriate for the purposes of the review.
- > The methods employed in the review are appropriate for the purposes of the review.

This report has been prepared, and our opinions given, in accordance with accepted actuarial practice of the Canadian Institute of Actuaries. The assumptions that form each actuarial basis used in the report were reasonable at the time this actuarial review report was prepared.

The opinions are given exclusively from a financial viewpoint. This report does not constitute a legal opinion on the rights or duties of the Government of Bermuda, or the members over the Fund. Actuarial reviews are performed based on assumptions and methods that are in accordance with accepted actuarial practice. Emerging experience differing from these assumptions may result in gains or losses, which may affect future results. These will be revealed in future actuarial reviews. The next actuarial review should be performed not later than as at 1 August 2011.



Richard M. Kular, F.S.A., F.C.I.A.
Principal

January 26, 2010

Date



Marcia Tam-Marks, F.S.A.
Senior Consultant

January 26, 2010

Date

MORNEAU SOBECO
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Toronto, Ontario M3C 1W3

Appendix A - Main Provisions of Scheme from August 2008

Benefits

A **contributory old-age pension** is payable to any person over age 65, provided that:

- (i) at least 484 contributions have been paid or credited in respect of the person (the minimum was previously 250 contributions and was changed with effect from 4 August 1986 under the Contributory Pensions (Amendment of Contributions and Benefits) Order 1986); and
- (ii) an average of not less than 25 paid or credited contributions a year has been achieved between attaining age 21 (or 5 August 1968 if later or age 18 if contributions started after the date on which the Age of Majority Act 2001 came into effect) and commencement of pension.

The full rate of pension, payable if the yearly average contributions paid or credited is 50 or more, is \$209.17 a week plus increments of \$1.23 for every 26 contributions paid or credited in excess of 484. The increments are at half this rate for contributions after age 65. If the contribution average is between 25 and 50, lower rates of pension are payable. Although the lower limit for increments was raised from 250 to 484 in 1986, it has remained the same since then. Since 1986, the increment rate has been increased only in line with prices.

A **non-contributory old-age pension** is payable to any person aged over 65, who possesses Bermudian status and has been ordinarily resident in Bermuda for a period of not less than 10 years during the 20 years immediately preceding the application for non-contributory pension. These pensions are payable only to persons who are not entitled to a contributory old-age pension. The rate of pension is \$95.99 a week, increased to \$98.78 a week for persons whose income from all sources does not exceed \$4,000 a year excluding any pension granted under the scheme. During 1988 to 1990, the higher rate of non-contributory old age pension was increased by less than the lower rate, with the result that the difference between the two rates of benefit was reduced. It is now \$2.79 a week.

A **contributory old-age gratuity** is payable to any person reaching age 65 whose contribution record is insufficient to entitle them to an old-age pension. The gratuity is equal to the total of all contributions paid by the person and their employer.

A **contributory widow's allowance** is payable to any widow whose husband has satisfied the contribution requirements for a contributory old age pension at the date of death. If a person becomes a widow under 50 years of age the benefit is for 26 weeks or continues if she has children under school leaving age (the benefit continues until the last child is over school leaving age) or is incapable of self-support, in which case the benefit could continue to age 65. If a person becomes a widow after age 50, the benefit continues to age 65 at which time the person can choose between the widow's allowance and their own pension and will normally choose whichever is higher. In each case, a choice is made at age 65.

The rate of allowance is \$209.17 a week (subject to reduction if the husband's contribution average was less than 50) with an additional \$20.87 a week for each child under school-leaving age.

Where a widow is eligible for a contributory old-age pension, she may elect to receive it in lieu of the widow's allowance. In satisfying the contribution conditions and in arriving at the amount of the contributory pension, her husband's record of contributions may be substituted for her own in respect of any completed contribution year during the period while they were married.

A **contributory widow's gratuity** is payable to a widow whose husband's contribution record is insufficient to entitle her to a widow's allowance, so long as no claim had been made by her husband for an old-age gratuity. The gratuity is equal to the total of all contributions paid by or in respect of her husband.

A **contributory widower's allowance or contributory widower's gratuity** has been payable to widowers whose wives died on or after 16 April 1985, under the same terms and conditions as the corresponding widows' benefits.

A **contributory disability pension** of \$139.43 a week is payable to persons who are incapacitated for a continuous period of 52 weeks or more, subject to certain contribution conditions. In 1988 and 1989, contributory disability pensions were increased only in line with prices. In 1990, however, contributory disability pensions were increased substantially, so as to equal two-thirds of the full rate of contributory old-age pension, excluding increments. This relationship has been maintained.

A **non-contributory disability pension** of \$95.99 a week is payable if a person does not qualify for a contributory disability pension, has lived in Bermuda for 10 years, and is permanently incapacitated. Since 1985, non-contributory disability pension has been at the same rate as the lower rate of non-contributory old-age pension.

Contributions

Contributions are payable in respect of employed and self-employed persons. The employer pays \$30.40 per week for each employee, and the employee pays an equal amount if he is under the age of 65. Self-employed persons pay a contribution equal to the joint contribution of employee and employer. Contributions are credited in the case of an unemployed widow(er) under pension age entitled to widow(er)'s allowance. They may also be credited in respect of a person incapacitated from work, if he has paid not less than 150 contributions and was employed immediately prior to his incapacity.

Increases to benefits and contributions

Benefit and contribution rates are reviewed annually by reference to the increase in the CPI over the previous calendar year.

Amendments subsequent to the review date

The definition of "estate representative" was added and the definition of "school-leaving age" was expanded to age 18 or latest age 26 if still in school. Full-time students are exempted from having to pay social insurance while they are employed on Saturday's and during school vacations.

An employer is required to pay a contribution on behalf of an employee no later than the last working day of the following month.

The three-year marriage requirement for widow's allowance was removed and the term of payment extends to when the youngest child reaches school leaving age.

Gratuities can also be paid to a contributor's child and widow and to an estate representative. Where there is no child, widow or estate representative, the contributions remain in the Pension Fund.

The 52- week waiting period for contributory disability benefits is removed.

Fines have been increased.

Appendix B - Benefit and Contribution Rates, 1998 to 2008

Increases to benefits and contributions

Table B1 summarises the annual increases to benefit and contribution rates since August 1998, together with the increase in the CPI over the previous calendar year.

Table B1 - Annual increases in CPI, benefits and contributions

Year	CPI *	Benefits †	Increase in
			Contributions †
1998	2.1%	3.0%	3.0%
1999	2.0%	-	-
2000	2.4%	3.0%	4.25%
2001	2.7%	-	-
2002	2.9%	3.0%	4.25%
2003	2.3%	3.0%	-
2004	3.2%	9.0%	4.25%
2005	3.5%	3.5%	4.75%
2006	3.1%	4.0%	5.75%
2007	3.1%	4.5%	6.25%
2008	3.8%	5.0%	6.75%
Average (3 years)	3.3%	4.5%	6.25%
Average (10 years)	2.9%	3.8%	3.9%

* CPI in previous calendar year.

† Increase in August of calendar year.

Benefit and contribution rates, 2005 to 2008

Table B2 summarises the main rates of benefits and contributions in force for the years commencing August 1998 to August 2008.

Table B2 - Benefit and contribution rates, 2005-2008

Benefits	From 16/8/05	From 16/8/06	From 16/8/07	From 16/8/08
Contributory Old-Age Pension				
Full pension p.w.	\$183.30	\$190.63	\$199.21	\$209.17
Limit for increments	484	484	484	484
Increment p.w.	\$1.08	\$1.12	\$1.17	\$1.23
Non-Contributory Old-Age Pension				
Income limit p.a.	\$4,000	\$4,000	\$4,000	\$4,000
Pension, for those below limit, p.w.	\$86.57	\$90.03	\$94.08	\$98.78
Pension, for those above limit, p.w.	\$84.12	\$87.48	\$91.42	\$95.99
Contributory Widow's or Widower's Allowance				
Personal rate p.w.	\$183.30	\$190.63	\$199.21	\$209.17
Addition per child p.w.	\$18.29	\$19.02	\$19.88	\$20.87
Contributory Disability pension p.w.	\$122.18	\$127.07	\$132.79	\$139.43
Non-Contributory Disability Pension p.w.	\$84.12	\$87.48	\$91.42	\$95.99
Rate of increase in benefits	3.5%	4.0%	4.5%	5.0%
Contributions				
Contributions p.w.	\$25.34	\$26.80	\$28.48	\$30.40
Total Contributions p.w.	\$50.68	\$53.60	\$56.96	\$60.80
Rate of increase in contributions	4.75%	5.75%	6.25%	6.75%

Table B2 (continued) - Benefit and contribution rates, 1998-2004

Benefits	From 16/8/99 (unchanged)	From 16/8/00	From 16/8/01 (unchanged)	From 16/8/02	From 16/8/03	From 16/8/04
Contributory Old-Age Pension						
Full pension p.w.	\$148.70	\$153.16	\$153.16	\$157.75	\$162.48	\$177.10
Limit for increments	484	484	484	484	484	484
Increment p.w.	87 cents	89 cents	89 cents	92 cents	95 cents	104 cents
Non-Contributory Old-Age Pension						
Income limit p.a.	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
Pension, for those below limit, p.w.	\$70.21	\$72.32	\$72.32	\$74.49	\$76.73	\$83.64
Pension, for those above limit, p.w.	\$68.24	\$70.29	\$70.29	\$72.40	\$74.57	\$81.28
Contributory Widow's or Widower's Allowance						
Personal rate p.w.	\$148.70	\$153.16	\$153.16	\$157.75	\$162.48	\$177.10
Addition per child p.w.	\$14.84	\$15.28	\$15.28	\$15.74	\$16.21	\$17.67
Contributory Disability pension p.w.	\$99.11	\$102.08	\$102.08	\$105.14	\$108.30	\$118.05
Non-Contributory Disability Pension p.w.	\$68.24	\$70.29	\$70.29	\$72.40	\$74.57	\$81.28
Rate of increase in benefits	nil	3.0%	nil	3.0%	3.0%	9.0%
Contributions						
Contributions p.w.	\$21.34	\$22.25	\$22.25	\$23.20	\$23.20	\$24.19
Total Contributions p.w.	\$42.68	\$44.50	\$44.50	\$46.40	\$46.40	\$48.38
Rate of increase in contributions	nil	4.25%	nil	4.25%	nil	4.25%

Appendix C - Membership Data

Table C1 - Numbers and amounts of monthly benefits in payment

Benefit	16/8/05 – 15/9/05		16/8/08 – 15/9/08	
	Number in payment	Amount (\$000 pm)	Number in payment	Amount (\$000 pm)
Contributory old-age pension	6,367	5,189	6,980	6,562
Non-contributory old-age pension:				
higher rate	647	243	643	273
lower rate	304	110	336	138
Contributory widow's allowance	1,069 ^[1]	773	1,120 ^[2]	910
Contributory widower's allowance	69	45	81	60
Contributory disability pension	100	41	114	54
Non-contributory disability pension	217	80	235	98
Total	8,773	6,481	9,509	8,095

[1]: of whom 213 were under age 65.

[2]: of whom 202 were under age 65.

Table C2 - Average amounts of monthly benefits in payment

Benefit	Average benefit (\$ pm)	
	2005	2008
Contributory old-age pension	814.98	940.12
Non-contributory old-age pension:		
higher rate	375.58	424.85
lower rate	361.84	411.41
Contributory widow's allowance	723.11	812.85
Contributory widower's allowance	652.17	738.54
Contributory disability pension	410.00	473.29
Non-contributory disability pension	368.66	417.42
Total	738.74	851.37

Table C3 - Contributions data

	June 2005	July 2008
Number of contributors	35,339	37,213
Average weekly contributions in month	3.86	3.86

Appendix D - Financial Data

Table D1 - Income and Expenditure - 2005 to 2008 (\$ million)¹

	Year ending 31 July				1 August 2005 to 31 July 2008
	2005 ²	2006	2007	2008	
Fund at beginning of year	872.4	1,004.4	1,111.2	1,305.5	1,004.4
Income					
Contributions	90.6	97.0	105.7	111.9	314.6
Interest and dividends	19.7	24.9	29.3	32.9	87.2
Realised gains (losses)	64.2	84.5	82.5	63.4	230.3
Unrealised gains (losses)	40.8	(11.1)	71.3	(114.9)	(54.7)
Foreign exchange gains (losses)	-	-	-	-	
Total income	215.4	195.3	288.7	93.4	577.4
Expenditure					
Pensions	75.7	80.3	85.5	93.5	259.3
Administration	7.6	8.2	8.9	7.9	25.0
Total expenditure	83.3	88.5	94.4	101.4	284.4
Excess of income over expenditure	132.1	106.8	194.3	(8.1)	293.0
Fund at end of year	1004.4	1,111.2	1,305.5	1,297.5	1,297.5

¹Figures may not sum to totals due to rounding

²2005 figures restated based on accounts provided for the current review

Table D2 - Fund assets at market value, 31 July 2008

Asset	\$ million ¹	%
Investments: Equities	634.0	49
Bonds	258.1	20
Private Equity	25.2	2
Hedge Funds	252.1	19
Cash and deposits	83.4	7
	1,252.9	97
Net receivables	44.3 ²	3
Net assets	1,297.2³	100

¹Numbers may not sum to totals due to rounding

²Including \$1.5m carried forward from 2004

³The totals in the draft accounts did not reconcile completely, however, the difference was not material

Table D3 - Estimated annual investment returns of Fund

Year ending 31 July	Nominal % p.a. (1)	Inflation % p.a. (2)	Real % p.a. (3)
1999	15.0	2.6	12.1
2000	12.7	2.2	10.3
2001	-1.3	3.0	-4.1
2002	-12.2	2.3	-14.2
2003	9.1	3.2	5.7
2004	12.3	3.7	8.2
2005	14.3	2.8	11.2
2006	9.7	3.6	5.9
2007	16.4	4.3	11.6
2008	-1.4	4.7	-5.8
2009 (assumed)	-14.0	3.0	-16.5
Average (3 years)¹	8.0	4.2	3.6
Average (10 years)¹	7.1	3.2	3.8

¹Averaging period ends 31 July 2008

The inflation rates have been restated to reflect the increases from July of year y to year y+1.

Appendix E - Population Projection

Introduction

This Appendix describes the assumptions used to prepare the 40-year population projection for Bermuda required for actuarial review of the CPF as at 31 July 2008.

The population projection was based on the 2000 census and the mortality, fertility and migration assumptions used to derive these projections and the total numbers of males and females at the 2000 census.

Base year

The base year for the projections is the 2000 census year. The census data giving the male and female population split into five-year age groups was used to create a population split by individual age. Table E1 summarizes the estimated population in 2008.

Table E1 - Estimated population as at 30 June 2008

Age last birthday	2008 ¹		
	Males	Females	Total
0-19	7,943	7,834	15,777
20-64	19,766	20,824	40,590
> 65	3,677	4,951	8,628
All ages	31,386	33,609	64,995

¹ 2000 census adjusted

Mortality

We have based mortality for the year 2008 on the mortality assumptions used to derive the most recent (2006) United Kingdom population projection. To produce expectations of life at birth which are consistent with those implied by the Statistics Department's projections, no age rating has been applied to male or female mortality rates.

We have assumed that the rate of future mortality improvement in Bermuda will be the same as that assumed in the UK 2006-based projections for females, but one half of the UK rate for males. This is to achieve broad consistency between the Statistics Department's view of current and expected future life expectancy in Bermuda and those used in the population projection derived for the purposes of the review.

Table E2 summarises the projected life expectancy for males and females under the mortality assumptions adopted for the projection.

Table E2 - Expectation of Life

Year to 30 June	Expectation of life at birth		Expectation of life at age 65	
	Males	Females	Males	Females
2008	77.7	81.8	14.1	17.3
2018	79.0	84.0	15.2	19.3
2028	79.7	85.8	15.8	20.9
2038	80.1	86.6	16.1	21.7
2048	80.5	87.6	16.4	22.5

Fertility

We have assumed a long-term total period fertility rate (TPFR) of 1.7. This is based on the fertility rates assumed in the Statistics Department's own projection.

However, the numbers of actual births in recent years suggests that an even higher fertility assumption may be required in the short term. We have incorporated an additional fertility allowance by increasing the number of births 10% in 2005 reducing to nil over the next 10 years.

We have assumed a male/female sex ratio of 1.05:1 for future births.

Migration

The projection does not include any allowance for future migration, either inward or outward. (The migration assumptions used by the Department of Statistics in Bermuda suggest a net overall outward migration of just 50 persons a year, which represents an insignificant proportion of the total population.). The same allowance was made for the previous projection.

Results

Tables E3, E4 and E5 summarise, at five-yearly intervals, the projected numbers below working age (under 20), of working age (between 20 and 64), and over age 65, for males, females and males and females combined respectively. Table E5 also shows the projected numbers of births and the ratio of the number of working age to the number over pension age, commonly known as the "pensioner support ratio". Figure E1 illustrates the results with population split into the three main age groups (below working age, of working age, and above pension age).

Table E3 - Projected population 2008 - 2048 (Males)

Males				
Year to 31 July	Ages 0-19	Working age (20-64)	Pension age (over 65)	Total
2008	7,943	19,766	3,677	31,386
2013	7,656	19,746	4,490	31,892
2018	7,281	19,433	5,460	32,174
2023	6,885	18,891	6,544	32,321
2028	6,684	17,893	7,709	32,287
2033	6,670	16,801	8,542	32,012
2038	6,686	16,061	8,759	31,506
2043	6,544	15,918	8,284	30,745
2048	6,314	15,913	7,620	29,847

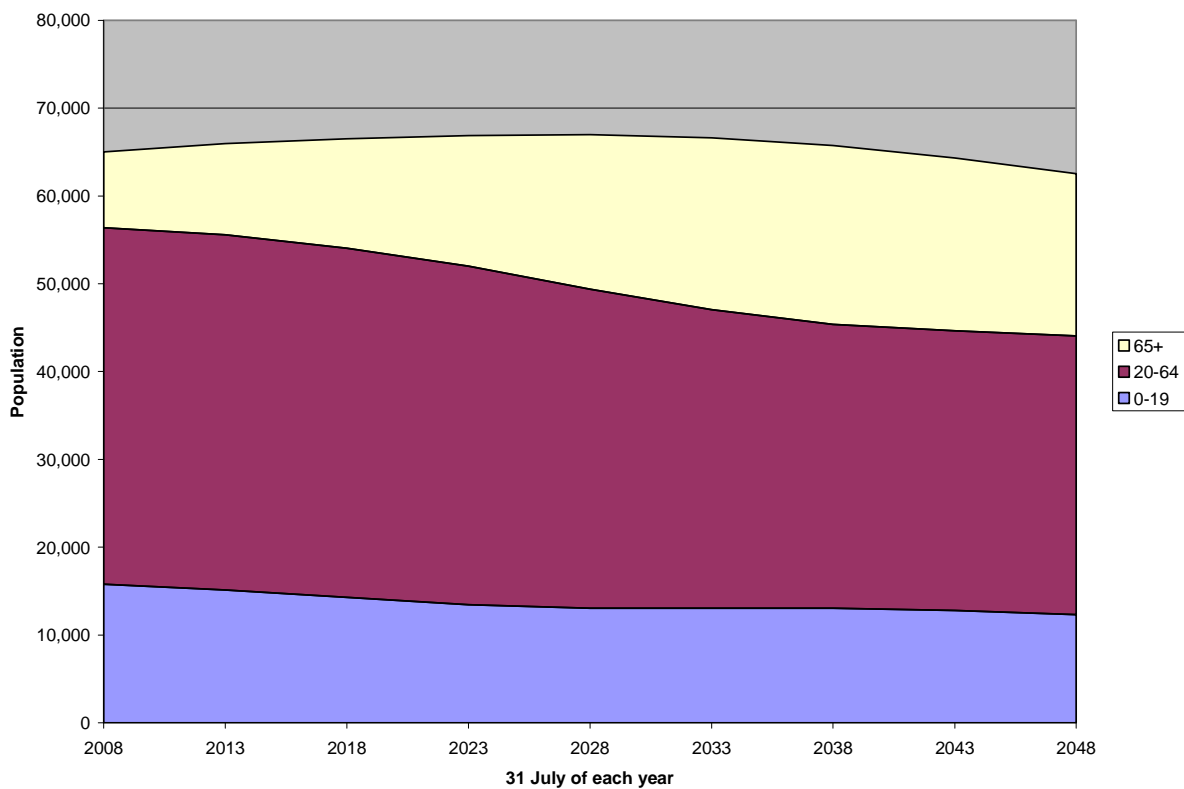
Table E4 - Projected population 2008 - 2048 (Females)

Females				
Year to 31 July	Ages 0-19	Working age (20-64)	Pension age (over 65)	Total
2008	7,834	20,824	4,951	33,609
2013	7,465	20,711	5,867	34,043
2018	6,995	20,357	6,978	34,330
2023	6,567	19,647	8,347	34,561
2028	6,376	18,441	9,865	34,681
2033	6,362	17,192	11,029	34,583
2038	6,379	16,247	11,605	34,230
2043	6,243	15,905	11,429	33,578
2048	6,024	15,801	10,876	32,701

Table E5 - Projected population 2008 - 2048 (Males and Females)

Males and Females						
Year to 31 July	Births	Ages 1-20	Working age (20-64)	Pension age (over 65)	Total	Pensioner support ratio
2008	703	15,777	40,590	8,628	64,995	4.7
2013	639	15,121	40,457	10,357	65,935	3.9
2018	642	14,277	39,790	12,437	66,504	3.2
2023	663	13,452	38,538	14,890	66,881	2.6
2028	662	13,060	36,334	17,574	66,968	2.1
2033	670	13,032	33,993	19,571	66,595	1.7
2038	624	13,066	32,308	20,363	65,737	1.6
2043	586	12,787	31,823	19,713	64,323	1.6
2048	570	12,338	31,714	18,496	62,547	1.7

Figure E1 - Projected population 2008 -2048 (Males and Females)



Appendix F - Estimating Methods

Introduction

This Appendix describes the methods and assumptions used to project future amounts of benefits and contributions. The assumptions generally reflect the recent experience but with some modifications for the longer-term. The projected fund balance for the year ending 31 July 2009 has been adjusted to reflect actual experience up to 31 August 2009. It should be noted that the projections are subject to increasing uncertainty in later years.

Benefits in respect of current beneficiaries

The projected future amount of benefits payable to current beneficiaries is based on the numbers receiving benefits in the period 16 August to 15 September 2008. In projecting future amounts of benefits payable to current beneficiaries, allowance was made for future mortality and future increases to benefits.

Allowance was also made for the effect of a gradual replacement of female non-contributory old-age pensions by widow's allowance at higher ages, on the assumption that 70% of women assumed to be awarded non-contributory old-age pensions on reaching age 65 are married, therefore becoming entitled to widow's allowance on the death of their husband.

Benefits in respect of future beneficiaries

Future benefit awards are derived from the projected difference between the Bermuda population and the remaining beneficiaries, and the average benefit rates at the time of the award. Thereafter new awards are projected allowing for future mortality and future increases to benefits.

For men, it is assumed that, of those qualifying for old-age pension in the longer term, 95% will be entitled to a contributory pension and 5% will be entitled to a non-contributory pension. For women, it is assumed that, of those qualifying for old-age pension in the longer-term, 85% will be entitled to a contributory pension, 5% will be entitled to a non-contributory pension and 10% will be entitled to a widow's allowance.

Based on the data supplied by the Department of Statistics on **Jobs by Age Group and Bermudian Status of Job Holder, 2008**, we assumed that a percentage of those who would have been entitled to a contributory pension above are Non-Bermudians and would only be entitled to a gratuity at age 65. The percentage within a particular age group is applied uniformly within that age group. The percentages are shown below in Table F2.

Allowance was also made for the effect of a gradual replacement of non-contributory old-age pensions by widow's allowance at higher ages, on the assumption that 70% of women assumed to be awarded non-contributory old-age pensions on reaching age 65 are married and so become entitled to widow's allowance on the death of their husband.

Allowance is also included for the average pension of those qualified for contributory pension to increase in line with the maximum number of contributions that could have been paid between 5 August 1968 and attaining age 65 up to a maximum of 40 years of contributions.

Future payments of disability (both contributory and non-contributory) allowance, widow(er)'s allowance for widow(er)s aged below 65, and future gratuity payments were also modelled. These, however, represent a very small proportion of total outgo.

Overall, about 96% of the expenditure on benefits is in respect of persons aged over 65. Also about 94% of expenditure is in respect of contributory benefits.

Contributions

The projected amount of contributions is derived from the projected number of future contributors, the projected number of weekly contribution earned and the weekly contribution rate.

The data provided for this review included the numbers of contributors and contributions paid or credited in the months of July 2006, 2007, and 2008, according to year of birth and sex. These were combined with estimates of the corresponding population to give the age and sex-specific estimates of the proportions of the population contributing to the Fund and the average number of weekly contributions paid per year.

The future number of contributors is derived by applying the age and sex-specific factors (based on the recent experience) to the projected population, with the factors representing the long-term assumed proportions of the population in each age/sex group that will contribute to the Fund.

The projected number of weekly contributions paid in a year is based on the projected number of contributors multiplied by the average number of weekly contributions paid by each contributor. Each contributor is assumed to contribute, on average, for about 50 weeks a year.

Administration expenses

Administration expenses charged to the Fund for the year ending 31 July 2008 totalled \$7.9 million. This may be compared with charges of \$8.2 million and \$8.9 million for the years ending 31 July 2006 and 2007 respectively. Administration expenses would be expected to be broadly related to both the number of beneficiaries and the level of earnings. Over the long term it would be reasonable to assume some reduction relative to current expense levels, due to efficiency savings.

For the purposes of the review, we have assumed that administration expenses will increase at a real rate of 1½% a year (i.e. in excess of price increases).

Table F1 - Summary of baseline projection assumptions

Average Contributory Pension	\$ 940.12
Average Contributory Pension (new retirees)	\$ 938.38
Average Contributory Bonus (new retirees)	\$ 31.98
Maximum number of contributory bonuses (max 40 yrs)	9.717
Average High Non-Contributory Pension	\$ 428.05
Average Low Non-Contributory Pension	\$ 415.96
Average Widow/er's Pension	\$ 812.85
Average Contributory Disability Pension	\$ 473.29
Average Non-Contributory Disability Pension	\$ 415.96
Percentage females married	70.00%
Contribution annual increase over CPI	1.75%
Average number of contributions made	50
Average contributions for non-contributory members	24
Administration expense increase	1.50%
Fund rate of return (real)	3.50%
Contribution rate in 2009	\$ 60.80
Full years of contribution for widow's pension	3
Years of contribution freeze	1

- Projection Basis	Bermuda 2000 census based on 2000-2030 projection report
- Mortality Assumption	UK GAD interim life table 2005-2007 for males and females
- Mortality Improvement	From UK GAD 2006 population projection, 50% the applicable improvement for males, 100% for females
- Fertility Rate	1.7% (unchanged from last review)
- Fertility Improvement	Temporary increase of fertility rate by 10% in 2005, scaling down to 0% in 10 years (2014)
- Fertility Assumption	UK GAD 2006 population projection, pro-rated based on total fertility rate
- Newborn sex ratio	1.05:1 male to female ratio (unchanged from last review)
- Benefit rates	Updated to Amendment in force Aug 4, 2008
- Rate of benefit increase	To match inflation (CPI)

Existing Beneficiaries

- Marriage ratio of retirees	None assumed
- Spouse age difference	Males 3 years older
- Upgrade to survivor's pension	Female only, 70% of the existing (female) retirees receiving non-contributory pension
- Amount of survivor's pension	Equal to average of existing widow's pension in pay

- Expiry of widow/er's pension None assumed (all widow/er's pensions assumed to be in pay until death)
- Recovery of disabled None assumed

Projected Beneficiaries

- Utilization at age 65 (those eligible for OAP) Males: 95% contributory, 5% non-contributory; Females: 85% contributory, 5% non-contributory, 10% widow's (unchanged)
- Non-Bermudian proportion Based on current results of the Employment Survey conducted by the Bermuda Department of Statistics in 2008
- Disability utilization Recent historic experience percentages pro-rated on projected population
- Gratuity amount Based on contribution assumptions
- Contributory pension amount 1) Based on existing average pension in pay
2) Age-based scaling of additional pension from average currently in pay to projected pension based on contribution assumptions
- Contribution rate 50 weeks per year (unchanged from last review)
- Rate of contribution increase In line with recent historic increases
- Contributing proportion Static percentage of population based on 2006-2008 contribution data
- Non-Bermudians 75% of Non Bermudians assumed to earn a gratuity benefit; 25% assumed to earn a pension benefit

Table F2 – Percentage of Non-Bermudian Workers by Age Group and Sex, 2008

Age Group	Male	Female	Total
Total	33%	18%	26%
Under 20	2%	1%	2%
20 - 24	14%	9%	12%
25 - 29	46%	36%	41%
30 - 34	53%	35%	44%
35 - 39	45%	26%	37%
40 - 44	40%	18%	30%
45 - 49	30%	13%	22%
50 - 54	23%	9%	16%
55 - 59	18%	7%	13%
60 - 64	12%	5%	9%
65 & Over	8%	3%	5%

Appendix G - Detailed Results

Table G1 - Projected income and outgo
\$ million at constant 2008-09 prices

Year ending 31 July	Contribution income, increasing in line with prices plus ¹				Outgo			
	1¾%	1¼%	2½%	3%	OAP benefits	Other benefits	Admin costs	Total outgo
(1)	(2a)	(2b)	(2c)	(2d)	(3)	(4)	(5)	(6)
2009	106.8	106.8	106.8	106.8	94.7	3.1	8.1	105.9
2010	103.5	103.5	103.5	103.5	97.1	4.1	8.2	109.4
2011	104.8	104.3	105.5	106.0	97.4	4.9	8.3	110.6
2012	106.1	105.1	107.7	108.8	101.6	5.7	8.4	115.7
2013	107.6	106.0	110.0	111.6	106.0	6.4	8.6	120.9
2014	109.2	107.1	112.5	114.7	110.8	7.1	8.7	126.5
2015	110.8	108.2	115.0	117.8	115.1	7.7	8.8	131.6
2016	112.3	109.0	117.3	120.8	119.8	8.2	8.9	137.0
2017	113.8	109.9	119.8	123.9	125.5	8.7	9.1	143.4
2018	115.2	110.8	122.2	127.0	131.4	9.2	9.2	149.8
2019	116.8	111.7	124.7	130.3	137.7	9.6	9.4	156.7
2020	118.3	112.6	127.2	133.6	143.4	10.1	9.5	162.9
2021	119.5	113.3	129.5	136.6	149.5	10.3	9.6	169.5
2022	120.7	113.8	131.8	139.7	156.9	10.5	9.8	177.2
2023	121.8	114.3	134.0	142.7	164.0	10.6	9.9	184.6
2024	122.9	114.8	136.2	145.8	171.5	10.8	10.1	192.4
2025	124.1	115.3	138.5	148.9	177.7	10.8	10.2	198.8
2026	125.0	115.6	140.5	151.9	184.2	10.8	10.4	205.4
2027	125.8	115.8	142.5	154.8	191.1	10.7	10.5	212.3
2028	126.6	115.9	144.5	157.7	197.8	10.5	10.7	219.0
2029	127.3	116.0	146.4	160.5	205.2	10.3	10.9	226.4
2030	128.1	116.1	148.3	163.4	210.6	10.0	11.0	231.7
2031	129.2	116.5	150.7	166.8	214.9	9.9	11.2	236.0
2032	130.1	116.8	152.9	170.1	218.2	9.7	11.4	239.3
2033	130.9	117.0	155.0	173.3	221.2	9.5	11.5	242.2
2034	131.7	117.0	157.0	176.4	224.7	9.2	11.7	245.6
2035	132.4	117.1	159.0	179.6	226.6	9.0	11.9	247.4

Year ending 31 July	Contribution income, increasing in line with prices plus ¹				Outgo			
	1¾%	1¼%	2½%	3%	OAP benefits	Other benefits	Admin costs	Total outgo
(1)	(2a)	(2b)	(2c)	(2d)	(3)	(4)	(5)	(6)
2036	133.6	117.6	161.7	183.4	227.6	8.8	12.1	248.5
2037	134.8	118.1	164.3	187.3	227.8	8.7	12.2	248.7
2038	135.9	118.5	167.0	191.3	227.7	8.5	12.4	248.6
2039	137.1	118.9	169.6	195.3	228.3	8.3	12.6	249.2
2040	138.3	119.4	172.4	199.4	227.1	8.1	12.8	247.9
2041	140.4	120.6	176.3	204.9	224.1	8.1	13.0	245.2
2042	142.6	121.9	180.3	210.6	220.4	8.1	13.2	241.7
2043	144.8	123.2	184.5	216.6	216.5	8.2	13.4	238.1
2044	147.1	124.5	188.8	222.8	212.3	8.3	13.6	234.1
2045	149.5	126.0	193.3	229.2	208.3	8.4	13.8	230.4
2046	151.8	127.2	197.7	235.5	205.3	8.4	14.0	227.6
2047	154.1	128.5	202.2	242.0	202.0	8.4	14.2	224.6
2048	156.5	129.9	206.9	248.8	198.6	8.4	14.4	221.4
2049	159.0	131.3	211.7	255.9	192.8	8.4	14.6	215.8

¹No credit has been taken for future contributions from members who are over age 65

Appendix H - Projections of Fund Balance

**Table H1 - Contributions increase at prices plus 1¼%, Real rate of return of 3½% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	109.2	126.5	1,269.3	10.0
2019	116.8	156.7	1,346.0	8.6
2024	122.9	192.4	1,291.9	6.7
2029	127.3	226.4	1,064.1	4.7
2034	131.7	245.6	670.1	2.7
2039	137.1	249.2	175.1	0.7
2044	147.1	234.1	(333.1)	(1.4)
2049	159.0	215.8	(778.6)	(3.6)

**Table H2 - Contributions increase at prices plus 1¼%, Real rate of return of 3½% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	107.1	126.5	1,263.8	10.0
2019	111.7	156.7	1,318.8	8.4
2024	114.8	192.4	1,222.3	6.4
2029	116.0	226.4	926.9	4.1
2034	117.0	245.6	435.0	1.8
2039	118.9	249.2	(195.0)	(0.8)
2044	124.5	234.1	(885.3)	(3.8)
2049	131.3	215.8	(1,573.7)	(7.3)

**Table H3 - Contributions increase at prices plus 2½%, Real rate of return of 3½% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	112.5	126.5	1,277.7	10.1
2019	124.7	156.7	1,388.5	8.9
2024	136.2	192.4	1,402.6	7.3
2029	146.4	226.4	1,286.4	5.7
2034	157.0	245.6	1,058.0	4.3
2039	169.6	249.2	796.5	3.2
2044	188.8	234.1	610.6	2.6
2049	211.7	215.8	604.2	2.8

**Table H4 - Contributions increase at prices plus 3%, Real rate of return of 3½% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	114.7	126.5	1,283.4	10.1
2019	130.3	156.7	1,417.7	9.0
2024	145.8	192.4	1,480.2	7.7
2029	160.5	226.4	1,445.2	6.4
2034	176.4	245.6	1,340.4	5.5
2039	195.3	249.2	1,257.2	5.0
2044	222.8	234.1	1,323.0	5.7
2049	255.9	215.8	1,667.4	7.7

**Table H5 - Contributions increase at prices plus 1¼%, Real rate of return of 2% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	109.2	126.5	1,177.6	9.3
2019	116.8	156.7	1,143.8	7.3
2024	122.9	192.4	966.4	5.0
2029	127.3	226.4	613.1	2.7
2034	131.7	245.6	104.7	0.4
2039	137.1	249.2	(482.4)	(1.9)
2044	147.1	234.1	(1,052.9)	(4.5)
2049	159.0	215.8	(1,530.5)	(7.1)

**Table H6 - Contributions increase at prices plus 1¼%, Real rate of return of 5% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	109.2	126.5	1,366.5	10.8
2019	116.8	156.7	1,577.1	10.1
2024	122.9	192.4	1,695.5	8.8
2029	127.3	226.4	1,676.7	7.4
2034	131.7	245.6	1,524.2	6.2
2039	137.1	249.2	1,300.7	5.2
2044	147.1	234.1	1,097.6	4.7
2049	159.0	215.8	1,002.3	4.6

**Table H7 - Contributions increase at prices plus 1¼%, Real rate of return of 2% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	107.1	126.5	1,172.2	9.3
2019	111.7	156.7	1,117.9	7.1
2024	114.8	192.4	901.8	4.7
2029	116.0	226.4	489.1	2.2
2034	117.0	245.6	(101.9)	(0.4)
2039	118.9	249.2	(798.0)	(3.2)
2044	124.5	234.1	(1,510.1)	(6.5)
2049	131.3	215.8	(2,169.6)	(10.1)

**Table H8 - Contributions increase at prices plus 1¼%, Real rate of return of 5% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	107.1	126.5	1,360.9	10.8
2019	111.7	156.7	1,548.6	9.9
2024	114.8	192.4	1,620.5	8.4
2029	116.0	226.4	1,524.5	6.7
2034	117.0	245.6	1,255.1	5.1
2039	118.9	249.2	863.1	3.5
2044	124.5	234.1	422.2	1.8
2049	131.3	215.8	(4.1)	(0.0)

**Table H9 - Contributions increase at prices plus 2½%, Real rate of return of 2% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	112.5	126.5	1,185.9	9.4
2019	124.7	156.7	1,184.4	7.6
2024	136.2	192.4	1,069.4	5.6
2029	146.4	226.4	814.4	3.6
2034	157.0	245.6	446.5	1.8
2039	169.6	249.2	50.1	0.2
2044	188.8	234.1	(266.7)	(1.1)
2049	211.7	215.8	(409.8)	(1.9)

**Table H10 - Contributions increase at prices plus 2½%, Real rate of return of 5% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	112.5	126.5	1,375.1	10.9
2019	124.7	156.7	1,621.7	10.3
2024	136.2	192.4	1,814.7	9.4
2029	146.4	226.4	1,923.0	8.5
2034	157.0	245.6	1,966.8	8.0
2039	169.6	249.2	2,032.3	8.2
2044	188.8	234.1	2,244.4	9.6
2049	211.7	215.8	2,737.5	12.7

**Table H11 - Contributions increase at prices plus 3%, Real rate of return of 2% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	114.7	126.5	1,191.4	9.4
2019	130.3	156.7	1,212.3	7.7
2024	145.8	192.4	1,141.7	5.9
2029	160.5	226.4	958.6	4.2
2034	176.4	245.6	696.0	2.8
2039	195.3	249.2	446.6	1.8
2044	222.8	234.1	330.5	1.4
2049	255.9	215.8	459.0	2.1

**Table H12 - Contributions increase at prices plus 3%, Real rate of return of 5% a year
Constant 2008-09 prices**

Year ending 31 July	Contribution income, \$ million	Total outgo \$ million	Estimated Fund balance \$ million	Ratio of Fund to outgo = (4)/(3)
(1)	(2)	(3)	(4)	(5)
2009	106.8	105.9	1,115.4	10.5
2014	114.7	126.5	1,380.9	10.9
2019	130.3	156.7	1,652.3	10.5
2024	145.8	192.4	1,898.2	9.9
2029	160.5	226.4	2,098.6	9.3
2034	176.4	245.6	2,288.1	9.3
2039	195.3	249.2	2,572.2	10.3
2044	222.8	234.1	3,104.6	13.3
2049	255.9	215.8	4,060.5	18.8

Appendix J - Accrued Benefits

The Department has asked us to provide an assessment of accrued benefits as was done in the previous review. The assessment is in respect of existing beneficiaries and contributors as of 31 July 2008. In particular, an assessment of the following is provided:

- > The Accrued Benefit Obligation (the ABO). This is the value of the pension and other benefits accrued in respect of contributions paid to date into the Fund excluding allowance for future increases to benefits.
- > The Projected Benefit Obligation (the PBO). This is the same as the ABO except that allowance is made for future increases to benefits.
- > The Present Value of Future Benefits (the PVFB). This is the value of the total benefits payable to existing members and beneficiaries in the future in respect of past and future expected contributions. Allowance is made for future benefit increases.
- > The present value of retired liabilities over the next 10 years for existing beneficiaries.
- > The present value of expected gratuity payments over the next 10 years.

It should be noted that the assessments mentioned above in this appendix do not include any provision for future administrative expenses. We have also assumed that the maximum contributory period is limited to 40 years which is consistent with the Department's assumption.

Assumptions

The ABO has been estimated by discounting expected future payments, excluding administration expenses, at 6% a year nominal, which is broadly equivalent to assuming future price increases of about 3% a year and a real rate of return (in excess of prices) of 3% a year. The PBO and PVFB have been estimated by assuming that benefits increase in line with future prices discounting future benefit payments in respect of both past and future service at a real rate of return of 3% a year.

All other applicable demographic and financial assumptions mentioned in appendix table F1 were used in estimating these amounts.

Table J1 - The ABO, PBO and PVFB as at 31 July 2008
(\$million at constant 2008-09 prices)

Yr Ending 31 July	2008			2009			2010		
	ABO	PBO	PVFB	ABO	PBO	PVFB	ABO	PBO	PVFB
Accrued Rights									
Existing Pensioners	828	1,041	1,041	901	1,133	1,133	907	1,139	1,139
Existing Contributors	1,163	2,157	2,157	1,476	2,700	2,700	1,562	2,840	2,840
Total Accrued Rights	1,991	3,198	3,198	2,377	3,834	3,834	2,469	3,979	3,979
Future Service Rights									
Existing Contributors	-	-	1,092	-	-	1,263	-	-	1,294
Total service rights	1,991	3,198	4,290	2,377	3,834	5,096	2,469	3,979	5,272
Assets per accounts	1,297		1,115		1,148				
Funded Ratio	41%		29%		29%				
Smoothed Asset Value	1,319		1,364		1,341				
Funded Ratio	41%		36%		34%				

The ABO, which assumes no further increases to benefits, is estimated to be \$1,991 million as at 31 July 2008.

As at 31 July 2008, the estimated accrued liability assuming future increases to benefits and valued at a real return of 3% per annum, is \$3,198 million. This compares to the Fund market value of \$1,297 million resulting in an unfunded liability in respect of accrued benefits estimated to be \$1,901 million. The Fund covers about 41% of the accrued benefits (excluding future administration expenses). This level of coverage is above that indicated in the previous review (33%) and is due mainly to the treatment of Non-Bermudian contributors and contributors over age 65. However, with the significant decline in the value of the Fund subsequent to the review date, this level is projected to reduce to about 30% as shown above. Under the smoothed asset value approach the decline in the ratio is more gradual. The 2008 figures are based on the actual demographic and benefit data provided for the review whereas for future years they are based on the projected population and benefits.

The PVFB for the total expected period of participation in the Fund is estimated to be \$4,290 million as at 31 July 2008. Compared to the previous assessment, there is a reduction in the value in respect of future service. This is due to the fact that we put a cap of 40 years on the contribution period, which, based on our assumption of contributory service from age 21 to age 65, all persons would attain by age 61. Under this assumption and in the absence of individual data, persons over age 60 at the review date would have all their benefits fall under accrued rights, hence the shift of the liability from future service rights to accrued service rights. The treatment of Non-Bermudians and over age 65 contributors, have also contributed to the difference in the values.

Present value of retired liabilities and gratuities

As at 31 July 2008, the present value of retired liabilities for existing beneficiaries over the next 10 years is estimated to be \$677 million.

The present value of gratuities expected to be paid over the next 10 years, assuming that contribution rates increase at 1¾% a year in excess of benefit increases is estimated to be \$11 million. This is significantly higher than the \$1.7 million indicated in the previous review because of the inclusion of gratuity payments to Non-Bermudian beneficiaries and is consistent with the current annual gratuity payments from the Fund.

Appendix K - Smoothed or Market-Related Asset Values

Asset Valuation Method

Due to the significant decline in the market value of the assets we have derived a smoothed market-related value of assets which recognises the impact of the deviations from expected returns over a defined period. In this scenario we used a five year averaging of the Excess Real Return over the Expected Real Return. All figures are quoted in 2008 dollars.

The Market-Related Value of Assets is calculated as:

$$MRVA_{7.31.2008} = MVA_{7.31.2008} - 80\% * ERA_{2008} - 60\% * ERA_{2007} - 40\% * ERA_{2006} - 20\% * ERA_{2005}$$

where

MRV_{7.31.2008} is the Market-Related Value of Assets as at 31 July, 2008;

MV_{7.31.2008} is the Actual Market Value of Assets as at 31 July, 2008;

EMVA_{7.31.2008} is the Expected Market Value of Assets as at 31 July, 2008. The Expected Market Value of Assets is defined as the Market Value of Assets (at the beginning of the year) plus contributions during the year less benefit payments during the year, accumulated with the expected real return on fund assets.

ERA_t is the Excess Return on Assets in year t. The Excess Return is defined to be the Actual Market Value of Assets less the Expected Market Value of Assets.

It is calculated as: $ERA_t = MVA_{7.31,t} - EMVA_{7.31,t}$

The expected real return on fund assets for any given year is equal to the real investment return assumption used in the review on or proceeding that year. As such, the expected real rate of return on fund assets is 3.50% per annum.

**Table K1 – Derivation of Smoothed / Market-Related Asset Values
Constant 2008 - 2009 prices**

For the Year ending July 31,								
BD\$ millions	2005	2006	2007	2008	2009	2010	2011	2012
Fund at Beginning of Year	872	1,004	1,111	1,306	1,297	1,115	1,148	1,182
Income								
Contributions	91	97	106	112	107	103	105	106
Expenses								
Benefit Payments	76	80	85	93	98	101	103	108
Administrative Costs	8	8	9	8	8	8	8	8
Total Expenses	83	89	94	101	107	109	111	116
Nominal rate of investment return	6.3%	7.2%	7.9%	8.3%	6.6%			
Annual inflation (based on CPI)	2.8%	3.6%	4.3%	4.7%	3.0%			
Real rate of return	3.5%	3.5%	3.5%	3.5%	3.5%			
Expected Interest Income	56	73	88	109	86	39	40	41
Net Annual Income Flow	63	81	100	120	86	33	34	31
Expected Fund at End of Year	935	1,086	1,211	1,425	1,383	1,148	1,182	1,214
Actual Fund at End of Year	1,004	1,111	1,306	1,297	1,115	1,148	1,182	1,214
Investment Gain/(Loss)	69	25	95	(128)	(268)	-	-	-
Impact as:								
3rd Year Previous	(14)	(5)	(19)	26	54	-	-	-
2nd Year Previous	(28)	(10)	(38)	51	107	-	-	-
1st Year Previous	(42)	(15)	(57)	77	161	-	-	-
Current Year	(55)	(20)	(76)	102	214	-	-	-
Smoothing Impact				22	248	193	133	54
Smoothed/Market-Related Value				1,319	1,364	1,341	1,315	1,267

The impact of the above would be most significant on the funded level of the accrued benefits.

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