
STATES OF JERSEY



JERSEY TEACHERS' SUPERANNUATION FUND – ACTUARIAL VALUATION REPORT AS AT 31ST DECEMBER 2010

**Presented to the States on 4th June 2013
by the Chief Minister**

STATES GREFFE

Jersey Teachers' Superannuation Fund

Actuarial review as at 31 December 2010

Report by the actuary

Date: 10 January 2013

Author: Ken Kneller FFA

To the Management Board of the Jersey Teachers' Superannuation Fund

In accordance with regulations 3(12) and 3(13) of the Teachers Superannuation (Jersey) Law 1979 and regulation 16 of the Teachers' Superannuation (Administration) (Jersey) Order 2007, I have carried out an actuarial review (or valuation) of the Fund as at 31 December 2010. The previous valuation was carried out as at 31 December 2006 and the report was signed by Eddy Battersby (the Fund's Actuary at the time) on 12 November 2008.

I now submit my report on the actuarial review, which should assist the Management Board of the Jersey Teachers' Superannuation Fund to set the employer contribution rate.

Appendix N sets out the limitations of this report.



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10 January 2013

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Report

Introduction

- 1 The two main purposes of the review are
 - > to recommend an appropriate employers' contribution rate, and
 - > to assess the level of assets and liabilities in the Fund.
- 2 Membership of the scheme is open to teachers in schools and other educational establishments in Jersey.
- 3 Since 31 March 2007, pension increases should be funded in advance within the scheme. Before that time increases were paid for as they arose. The change caused an immediate funding shortfall (the so-called 'pension increase debt') to arise in 2007. The Management Board has proposed that the States of Jersey should pay additional contributions to pay off the pension increase debt. The details of the timing of these contributions are being discussed with the States. The Management Board has instructed me to finalise this report on the basis that a satisfactory agreement on these contributions will be achieved in due course. If agreement is not ultimately reached, then the conclusions of this report would be invalid and would have to be revised.

Summary

- 4 I recommend that the employer contribution rate should be 12.8% of pensionable salaries in respect of future service. This figure is 3.3% lower than the corresponding figure of 16.1% derived at the 2006 review, which is largely because of the changes to the way the pension increase debt will be paid for. The States of Jersey's expected additional contributions to meet the debt will be payable in addition to the 12.8% employer contribution rate. I understand that Accepted Schools are likely to have to pay a supplementary employer contribution as a condition of their participation in the scheme.
- 5 The timing of the change of employer contribution rate should be agreed between the Management Board and the States of Jersey. The new contribution rate is higher than the existing contribution rate, once allowance is made for the different treatment of the pension increase debt, so delay leads to a gradual worsening of the scheme's financial position.
- 6 The average employee contribution rate is 5.8% as at the time of this review.
- 7 Taking into account the States of Jersey's expected future payments to cover the pension increase debt there is no surplus or deficit in the Fund on 31 December 2010. The deficit at the previous review as at 31 December 2006 was £87.4 million.

Scheme membership

- 8 At the review date, there were 1,091 contributors to the Scheme with a total salary roll in payment of £51 million and 765 pensions in payment with total annual pensions amounting to £11.5 million. There are a further 406 ex-contributors who have not yet started to receive their pension, whose deferred pensions total £2.4 million. For further details of the membership see Appendix D.

Treatment of the pension increase debt

- 9 It has been proposed by the Management Board to the States of Jersey that:
- > the States of Jersey will establish a contribution schedule for payments to the scheme with a value of £91.6 million as at the valuation date,
 - > Accepted Schools will pay a supplementary contribution rate for the time being, as a condition of their participation in the Scheme,
 - > the States of Jersey may make additional contributions from time to time, to reduce the pension increase debt faster than envisioned in the contribution schedule, and
 - > the States of Jersey's contribution schedule will be reviewed annually, to allow for the Accepted Schools' contributions and any ad-hoc States' contributions. It is intended that the review will lead to adjustments (that is, reductions) to the term of the States' contributions, not to the amount paid each year.
- 10 The Management Board has instructed me to complete this valuation report on the basis that the States of Jersey will agree to this structure. These proposals would mean that, taking into account future pension increase debt contributions as an asset of the Fund, there is no surplus or deficit at this review.

Contributions

- 11 The cost of accruing benefits is set out in table 1 below. Given that there is no surplus or deficit, I recommend that the employers' base contribution should be 12.8% of pensionable pay, consistent with the costs in table 1. The contributions to cover the pension increase debt are payable in addition, once they have been finalised. The result derived in 2006 is shown for comparison. This included an employer's contribution rate of 10.5%, plus 5.6% in respect of the pension increase debt. This gave a total rate of 16.1%, though I note that in practice employers have been contributing at a rate of 16.4%.

Table 1 – contribution rates

	2010 result	2006 result
	% of pay	% of pay
Standard contribution rate (SCR)	16.9	17.2
Employee standard contribution rate	(5.0)	(5.0)
Expenses	0.9	0.7
Surplus or deficit (over 15 years)	0	(2.4)
Employers' contribution rate	12.8	10.5
Contributions towards the 'pension debt'	tbc*	5.6
Total employer's contribution	tbc*	16.1

* The States of Jersey's payments towards the pension debt have not been agreed at the time of signing this report, and so the total employer's contribution rate is not yet know.

Scheme finances

- 12 I have compared the assets of the Fund with the liabilities of the Fund on the basis that the Fund will continue to operate and accept new members for the foreseeable future.
- 13 The assets include:
 - > the invested assets, and
 - > the present value of future contributions in respect of current members, and
 - > the present value of expected future pension increase debt payments from the States of Jersey.
- 14 The liabilities include:
 - > accrued liabilities for all members including pension increases accrued before and after April 2007, and
 - > liabilities expected to be accrued to current active members including pension increases.
- 15 The proposed treatment of the pension increase debt would mean that future contributions from the States of Jersey would be precisely sufficient to eliminate any deficit on the assumptions of the current review. Therefore there is no surplus or deficit at this review. The valuation balance sheet is shown in table 2 on the following page.

Table 2 - valuation results

	2010 result	2006 result
	£ m	£ m
Liabilities		
Pensioners	168.9	120.6
Deferred members	42.4	51.0
Active members (past service)	183.5	157.4
Active members (future service)	111.3	119.5
Total liabilities	506.1	448.5
Assets		
Investments	320.1	256.5
Future standard contributions paid to the Fund	94.5	104.6
Total assets	414.5	361.1
Surplus (deficit)	(91.6)	(87.4)
Funding level	82%	81%
Future expected additional contributions from the States of Jersey	91.6	-
Surplus (deficit)	-	(87.4)
Funding level	100%	81%

Method and approach

- 16 Assets are taken at market value and market consistent assumptions have been used to value the liabilities. This valuation uses the actuarial method known as the 'Entry Age Method'. For more details see Appendix F.

Assumptions

- 17 The results of an actuarial valuation depend on assumptions made about future investment returns and the future demographic experience of the membership. The key assumptions are summarised in table 3:

Table 3 - key valuation assumptions

Assumption	2010 review	2006 review
Overall rate of return, net of prices	3.5% p.a.	3.5% p.a.
Rate of return, net of earnings	2.0% p.a.	2.0% p.a.
Life expectancy:		
Male 65 year old in 2010	88	88
Female 65 year old in 2010	90½	91
Male 65 year old in 2030	90	88½
Female 65 year old in 2030	92½	91½

- 18 More details of these and the other assumptions can be found in Appendices G (financial assumptions) and H (demographic assumptions).

Sensitivity of results

- 19 The results of this review are sensitive to the choice of assumption made. Changing the key valuation assumptions has an impact on the calculated contribution rate and surplus/deficit as shown below.

Table 4 - sensitivity of valuation results to assumptions

	Standard contribution rate ¹	Surplus (deficit) ²	Total contribution rate ³
	% of pay	£m	% of pay
Valuation assumptions	11.9	-	12.8
Real discount rate +0.5%	9.9	29.5	6.1
General salary inflation +0.5%	13.2	(7.6)	15.2
Age offset +1 year	11.7	8.2	11.4

Notes:

¹ Employers' standard contribution rate

² For total service, reflecting the current plan for future pension increase debt payments

³ Employers' total contribution rate, includes expense allowance and spreading of surplus/deficit over 15 years (for the purposes of illustration)

- 20 For further details of the all of these results, see Appendix I.

Solvency

- 21 Solvency is a measure of what level of the schemes current liabilities would be covered by its assets were the scheme to wind up on the assessment date, here 31 December 2010, and the liabilities insured with an insurance company. In practice it would be very difficult to insure the current benefits of the scheme with an insurer, particularly pension increases in line with the Jersey Cost of Living Index (Jersey CLI).
- 22 If the Fund were to wind up the Management Board may be able to recover some or all of the pension increase debt from the States of Jersey immediately. I have therefore presented the solvency position with and without the States paying the pension increase debt immediately in full.

Table 5: solvency position (nearest 5%)

	PI Debt paid	PI Debt not paid	2006 review
Solvency level	60%	45%	60%

- 23 The solvency level, assuming the PI Debt is not paid immediately has worsened since the 2006 valuation. This is largely due to the change in the terms offered by insurance companies, which is reflected in my assumptions. For more detail see Appendix J.

Developments since the last valuation

- 24 The last actuarial valuation was carried out by Eddy Battersby (the Fund's Actuary at the time) as at 31 December 2006. His report was signed on 12 November 2008.
- 25 The changes to benefits that came into effect on 1 April 2007 were taken into account in the last valuation. For more detail see Appendix K.

Investment issues

- 26 Investment markets have been volatile over the period from 31 December 2006 to 31 December 2010 (and continue to be so). Overall yields on corporate and UK Government bonds (both fixed interest and index-linked) are slightly lower at this review compared to 2006. Equity markets have also fallen over the period.
- 27 The Fund continues to invest around 80% in equities. This is expected to give higher returns over the long run than investing in bonds. Investing in bonds would better match the liabilities of the Fund and so reduce the variability of the funding position from review to review and reduce the risk of unexpected underfunding in the future. However, this would be at the expense of lower expected investment returns.

Additional information

- 28 This report should be read in full with its Appendices, which contain details of the data, method, assumptions and results of the valuation.

Compliance

- 29 For the avoidance of doubt, the JTSF is not subject to UK pensions legislation. Therefore, there is no requirement on me from the Institute and Faculty of Actuaries to comply with the Financial Reporting Council's (FRC) Technical Actuarial Standards in carrying out this review. However I have complied with GAD's own standards and guidance, including GAD's Statement of Understanding¹ for public sector pensions work, which interprets the FRC standards in a public sector context and contains additional best practice guidelines. See Appendix A for more details.

¹ www.gad.gov.uk/Documents/GAD/SoUv2.0.pdf

Appendix A Regulations and actuarial standards relating to this review

Regulations

A.1 This report is issued in accordance with regulations 3(12) and 3(13) of the Teachers Superannuation (Jersey) Law 1979 and regulation 16 of the Teachers' Superannuation (Administration) (Jersey) Order 2007.

GAD standards and guidance

A.2 The JTSF is not subject to UK pensions legislation. There is technically no requirement on me to comply with UK specific guidance issued by the Financial Reporting Council (FRC).

A.3 However I have complied with GAD's own standards and guidance which interpret FRC standards in a public sector context and contain additional best practice guidelines as described in the following paragraphs.

A.4 The Government Actuary's Department (GAD) strives to work to a high quality at all times. In order to do this we adopt the following.

- > Our Aims and Values which are our client relationship standard.
- > The Actuaries' Code which sets overriding principles for all members of the Actuarial Profession.
- > GAD Principles for Actuarial Quality which provides a set of overarching principles that are applied to all work carried out by actuarial staff in a professional capacity within GAD.
- > The Civil Service Code which sets out the standards of behaviour expected of civil servants.
- > The requirements of the UK Actuarial Profession relating to conflicts of interest.
- > GAD internal guidance which is available on request.
- > The GAD Statement of Understanding which includes material designed to ensure that the applicable provisions of the Technical Actuarial Standards (TASs) produced by the Financial Reporting Council (FRC) will be met in relation to all pensions work within GAD. For the avoidance of doubt these TASs are:
 - o TAS-R: Reporting
 - o TAS-M: Models
 - o TAS-D: Data
 - o TAS -P: Pensions

A.5 In addition all work will comply with any other relevant standards including those issued by the Institute and Faculty of Actuaries.

Appendix B Summary of existing members' provisions

B.1 This Appendix summarises the main provisions applying to existing members (as at 31 March 2007) with effect from 1 April 2007. Different provisions apply to new members joining after 1 April 2007 (see Appendix C).

Membership

B.2 All pensioner, deferred and active members as at 31 March 2007 are 'existing members' of the Scheme.

Contributions

B.3 Active members contribute at the rate of 6% of salary. Within certain limits, members may opt to pay additional contributions for the purchase of added years of service.

Retirement age

B.4 Pensions are normally payable from age 60 although members may continue to work after this age.

Benefits on retirement at or after age 60

B.5 Subject to a qualifying period of two years, the pension is $1/80^{\text{th}}$ of pensionable salary per year of service. Pensionable salary is the highest salary paid in any period of 365 consecutive days within the last three years of service. This pension is payable monthly for the rest of the member's life.

B.6 A lump sum of three times the annual pension is also payable on retirement.

Benefits on retirement due to ill-health

B.7 On retirement due to ill-health with more than two years' service, an immediate pension and lump sum are payable, calculated on the same basis as benefits on retirement at or after age 60, but based on enhanced service (5-10 years' actual service – service doubled; 10-13 $\frac{1}{2}$ years' actual service – service increased to 20 years; over 13 $\frac{1}{2}$ years' actual service – service increased by 6 $\frac{2}{3}$ years).

B.8 For members with less than two years' service, a grant is payable of $1/12^{\text{th}}$ of average salary for each year of service.

Benefits on death in service

B.9 When a married member dies in service, a spouse's pension is payable at the rate of one half the pension that would have been received if the member had retired due to ill-health at the date of death. Spouse's pensions are only payable to male spouses in respect of service after 6 April 1988. An increased spouse's pension is payable for the first three months after a teacher's death.

B.10 Children's pensions are payable to dependent children until they leave full-time education. An increased pension is payable to children in the absence of a spouse.

B.11 A lump sum is also payable equal to two times annual salary.

Benefits on withdrawal

- B.12 A member who leaves service with less than two years' service may take a refund of contributions paid, accumulated with compound interest at 3%.
- B.13 A member who leaves with two or more years' service is entitled to a preserved pension and lump sum payable at age 60.
- B.14 On future re-entry to the Scheme, earlier service may be aggregated with the new period of service for the purpose of calculating benefits at retirement, provided that the member has not taken a refund of contributions or a transfer value.

Benefits on death after retirement

- B.15 When a married member dies after retirement, a spouse's pension is payable at the rate of one half of the member's pension. Spouse's pensions are only payable to male spouses in respect of service after 6 April 1988. An increased spouse's pension is payable for the first three months after a member's death.
- B.16 Children's pensions are payable to dependent children until they leave full-time education. An increased pension is payable to children in the absence of a spouse.
- B.17 On the death of a pensioner with less than 10 years' service, a lump sum is payable equal to five times the annual pension in payment at the date of death, less the pension and lump sum already received before death. On death of a pensioner with 10 or more years' service, a lump sum is payable equal to average salary less the pension and lump sum already received before death.

Pension increases

- B.18 Pensions in payment and preserved benefits are increased each January in line with the Jersey Cost of Living Index over the 12 months to the previous December.

Impact of future valuations

- B.19 Section 18 of the regulations² provides that if a future actuarial valuation reveals a surplus or deficit in the pension fund, then the members' benefits may be adjusted to bring the fund back into balance, unless the Management Board and the Minister arrange otherwise.

² Teachers' Superannuation (Administration) (Jersey) Order 2007

Appendix C Summary of new members' provisions

C.1 This Appendix summarises the main provisions applying to new members joining after 1 April 2007. Different provisions apply to existing members as at 31 March 2007 (see Appendix B).

Membership

C.2 All full-time and part-time teachers in state schools, accepted independent schools and further education colleges who first joined service on or after 1 April 2007 are eligible for membership of the Scheme.

Contributions

C.3 Members contribute at the rate of 5% of salary. Within certain limits, members may opt to pay additional contributions for the purchase of added years of service.

Retirement age

C.4 Pensions are normally payable from age 65 although members may continue to work after this age. Members may opt to take an actuarially reduced pension from age 60 with the pension reduced by 2.4% for each year retired early.

Benefits on retirement at or after age 65

C.5 Subject to a qualifying period of two years, the pension is 1/80th of pensionable salary per year of service. Pensionable salary is the highest salary paid in any period of 365 consecutive days within the last three years of service. This pension is payable monthly for the rest of the member's life.

C.6 Up to 25% of the pension may be commuted for a lump sum at retirement, at a rate of £13.50 of lump sum for each £1 pa pension.

Benefits on retirement due to ill-health

C.7 On retirement due to ill-health with more than two years' service, an immediate pension and lump sum are payable, calculated on the same basis as benefits on retirement at or after age 65, but based on enhanced service (5-10 year's actual service – service doubled; 10-13 $\frac{1}{3}$ years' actual service – service increased to 20 years; over 13 $\frac{1}{3}$ years' actual service – service increased by 6 $\frac{2}{3}$ years).

Benefits on death in service

C.8 When a married member dies in service, a spouse's pension is payable at the rate of one half the pension that would have been received if the member had continued in service until normal retirement age. An increased spouse's pension is payable for the first three months after a member's death.

C.9 Children's pensions are payable to dependent children until the age of 17 or until they leave full-time education. An increased pension is payable to children in the absence of a spouse.

- C.10 For members with at least 5 years' service, a lump sum is payable equal to two times annual salary. For members with less than 5 years' service, a lump sum is payable equal to $\frac{2}{5}$ ^{ths} of annual salary for each year and part year of service.

Benefits on withdrawal

- C.11 A member who leaves with less than two years' service may take a refund of contributions paid, accumulated with compound interest at 3%.
- C.12 A member who leaves with two or more years' service is entitled to a preserved pension and lump sum payable at age 65.
- C.13 On future re-entry to the Scheme, earlier service may be aggregated with the new period of service for the purpose of calculating benefits at retirement, provided that the member has not taken a refund of contributions or a transfer value.

Benefits on death after retirement

- C.14 When a married member dies after retirement, a spouse's pension is payable at the rate of one half of the member's pension payable (before any deduction in respect of any commutation for a lump sum). An increased spouse's pension is payable for the first three months after a member's death.
- C.15 Children's pensions are payable to dependent children until the age of 17 or until they leave full-time education. An increased pension is payable to children in the absence of a spouse.

Pension increases

- C.16 Pensions in payment and preserved benefits are increased each January in line with the Jersey Cost of Living Index over the 12 months to the previous December.

Impact of future valuations

- C.17 Section 18 of the regulations³ provides that if a future actuarial valuation reveals a surplus or deficit in the pension fund, then the members' benefits may be adjusted to bring the fund back into balance, unless the Management Board and the Minister arrange otherwise.

³ Teachers' Superannuation (Administration) (Jersey) Order 2007

Appendix D Membership data

- D.1 The following tables provide a summary of the data used for this actuarial review. The results and conclusions of the review depend on the accuracy and quality of this data.
- D.2 We have relied on the accuracy of the information provided by the Dedicated Pensions Unit (DPU), the Fund's administrators. They provided data on the individual membership as at 31 December 2010 and membership movements for the period since 31 December 2006. After some clarification with DPU, we are satisfied that the data is internally consistent and broadly consistent with that provided for the 2006 review, such that any further work on the data is unlikely to make a material difference to the results of the valuation.

Jersey Teachers' Superannuation Fund: actuarial review as at 31 December 2010

Active members
Table D.1: active members as at 31 December 2010

Category	Number	Average age (weighted by salary) (years)	Average age (weighted by Pension) (years)	Average service (years)	Total full time equivalent salaries £ million	Average full time equivalent salary £	Estimated total salary roll £ million
As at 31 December 2010							
Existing Section Men	305	46.5	51.0	17.7	16.4	54,000	
Existing Section Women	605	45.5	49.0	14.5	29.8	49,000	
Existing Section Total	910	46.0	50.0	15.6	46.3	51,000	44
New Section Men	63	39.0	43.0	2.7	2.7	43,000	
New Section Women	118	33.0	37.5	3.0	4.8	40,000	
New Section Total	181	35.5	39.5	2.9	7.5	41,000	7
All Men	368	45.5	50.5	15.2	19.2	52,000	
All Women	723	43.5	49.0	12.6	34.6	48,000	
Total	1,091	44.5	49.5	13.5	53.8	49,000	51
As at 31 December 2006							
All Men	381		50	16.7	17.8	47,000	
All Women	736		48.5	13.3	31.7	43,000	
Total	1,117		49	14.5	49.5	44,000	45

Jersey Teachers' Superannuation Fund: actuarial review as at 31 December 2010

Table D.2: Changes in active membership, 2006 to 2010

	Existing Section			New Section			Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Numbers at 31 December 2006	381	736	1,117	-	-	-	381	736	1117
Plus entrants							-	-	-
New entrants	5	18	23	71	133	204	76	151	227
Transfers in	1	3	4	6	10	16	7	13	20
Total entrants	6	21	27	77	143	220	83	164	247
Less							-	-	-
Deaths in service	-	3	3	-	-	-	-	3	3
Age retirements	26	41	67	-	-	-	26	41	67
Ill-Health retirements	5	4	9	-	-	-	5	4	9
Early retirements	-	-	-	-	-	-	-	-	-
Deferred exit	36	105	138	9	13	21	42	117	159
Refunds/Transfers out	7	20	27	5	12	17	12	32	44
Reason not recorded	4	1	5	-	1	1	4	2	6
Total exits	78	174	249	14	26	39	89	199	288
Untraced	(4)	22	15	-	1	-	(7)	22	15
Numbers at December 2010	305	605	910	63	118	181	368	723	1091

Deferred Members

Table D.3: Deferred members

Category	Number	Deferred pensions, £000s	Average age (weighted by Pension) (years)	Average deferred pension
		Incl. pension increases		
As at 31 December 2010				
Existing Section Men	118	955	53.0	£8,100
Existing Section Women	266	1,443	51.0	£5,400
Existing Section Total	384	2,398	52.0	£6,200
New Section Men	9	8	36.5	£900
New Section Women	13	7	32.5	£500
New Section Total	22	15	34.5	£700
All Men	127	963	53.0	£7,600
All Women	279	1,449	51.0	£5,200
Total	406	2,413	52.0	£5,900
As at 31 December 2006				
All Men	134	819		£6,100
All Women	320	1,428		£4,500
Total	454	2,247		£4,900

Jersey Teachers' Superannuation Fund: actuarial review as at 31 December 2010

Pensioner Members
Table D.4: Pensions in payment

Category	Number	Pensions as at 31 December 2010			Pensions as at 31 December 2006			
		Annual Pensions 000's	Average Pension £s	Average age (pension weighted)	Number	Annual Pensions 000's	Average Pension £s	Average age (pension weighted)
Normal Health								
Men	222	4,090	18,400	71.0	193	3,116	16,100	70.5
Women	342	4,661	13,600	70.0	257	3,035	11,800	70.0
Ill Health								
Men	60	1,219	20,300	66.0	59	1,039	17,600	63.0
Women	67	1,105	16,500	67.5	68	976	14,400	65.0
Spouses	67	384	5,700	70.5	49	241	4,900	71.5
Children	7	22	3,200	12.5	5	14	2,800	19.5
Total	765	11,481	15,000	69.0	631	8,421	13,300	68.5

Jersey Teachers' Superannuation Fund: actuarial review as at 31 December 2010

Table D.5: Pensioner member movements between 31 December 2010 and 31 December 2006

	Men	Women	Total
Numbers at 31 December 2006	259	372	631
Plus entrants			
Age	51	106	157
Ill-Health retirements	5	4	9
Children only	3	1	4
Widow(er)	11	19	30
Total entrants	70	130	200
Less			
Death	32	35	67
Others	1	-	1
Total exits	33	35	68
Untraced	2	-	2
Numbers at 31 December 2010	298	467	765

Table D.6: Changes in pensions (including pension increases), 2006 to 2010

Pension	31 December 2006	31 December 2010
Total pensions in payment	£8.4 million	£11.5 million
Average pensions in payment	£13,300	£15,000

Appendix E The Fund's Account 31 December 2006 to 31 December 2010

- E.1 We have been provided with audited annual Fund accounts for the years 2006 to 2010. Over the four year period ended 31 December 2010, the Fund earned a rate of return of about 6¼% a year on market values, or a real rate of return of about 3¼% a year (in excess of (CLI) price increases).

Table E.1: consolidated revenue account to 31 December 2010

	£ million
Fund as at 31 December 2006	256.5
Income	
Contributions	43.2
TVs-in	1.6
Investment income	14.4
Investment gains/losses	55.4
Total income	114.6
Outgo	
Benefits	47.4
Administration	1.8
Other	1.9
Total outgo	51.1
Fund as at 31 December 2010	320.1

- E.2 Contribution income was lower than benefits paid out by around £4 million. Including investment income (but not including investment capital gains and losses) the total income over the period exceeded the benefits paid out net of expenses by around £6½ million.

E.3 Table E.2 summarises the revenue accounts for each of the five years ending 31 December 2006 to 31 December 2010.

Table E.2: Fund revenue accounts, years ended 31 December 2006 to 2010

Year ended 31 December	2006	2007	2008	2009	2010
Fund at start of period	236.5	256.5	276.7	222.0	273.4
Income					
Contributions	7.1	9.8	10.9	11.1	11.4
TVs-in	0.5	1.2	-	0.2	0.2
Investment income	2.8	3.5	3.9	3.3	3.7
Investment gains/losses	18.7	16.1	(56.6)	49.7	46.2
Total income	29.1	30.6	(41.8)	64.3	61.5
Outgo					
Benefits *	7.9 *	9.8	12	12.2	13.4
Administration	0.1	0.4	0.5	0.4	0.5
Other	1.1	0.2	0.3	0.3	1.1
Total outgo	9.1	10.4	12.8	12.9	15
Fund at end of period	256.5	276.7	222.0	273.4	320.1

* excluding the cost of pension increases

E.4 Table E.3 summarises the proportion of the Funds assets held in different asset classes at 31 December 2006 and 31 December 2010.

Table E.3: Distribution of assets as at 31 December 2010 (and 2006)

Investment class	31 December 2006		31 December 2010	
	£ million	%	£ million	%
UK Equities	123.4	48	168.5	52.4
Overseas equities	86.0	34	99.3	30.8
Fixed-interest gilts	37.5	15	34.3	10.7
Other fixed-interest	-	-	-	-
Property funds	8.5	3	15	4.7
Cash	-	-	2	.6
Net current assets	1.1	0	2.6	.8
Total	256.5	100	321.7	100

Appendix F Valuation and funding methodology

Valuation methodology

- F.1 In this review I have used a market-based approach. This is the same approach as was used in 2006.
- F.2 Under a market-based approach, the assets are taken at market value and the (past service) liabilities are discounted at interest rates derived from current market conditions. The market based discount rates and will vary over time and therefore the level of liabilities would be expected to change at each review even if all other things were equal.
- F.3 The standard contribution rate (payable in respect of accruing benefits) can be assessed using the same market-based rates as the past service liabilities, or using rates that are considered to be appropriate for new investment in respect of future contributions.
- F.4 The three main choices for deriving the market-based discount rate are:
- (i) the current yield on gilts;
 - (ii) the current yield on corporate bonds; and
 - (iii) the current yield on gilts plus an equity risk premium (fixed or variable).
- F.5 If a Fund's assets are invested predominantly in bonds (government or corporate), then it would be reasonable to adopt a bond-based market value approach. However, where a Fund's investment strategy includes a significant equity content (as the Fund does), a bond-based market value approach is likely to lead to a higher level of volatility in the results from one actuarial review to the next.
- F.6 The inclusion of an "equity risk premium" explicitly recognises the equity content within a Fund's investment strategy so that the valuation of the liabilities reflects the expected higher returns from return-seeking assets. However, whereas gilt yields are readily available, there is not an objective market rate of (total) return on equities which can be compared to the market yield on gilts.
- F.7 The equity risk premium could be set as a fixed margin above gilt yields, reflecting the long term average outperformance of return-seeking assets, irrespective of the relationship between gilt and equity markets on a given day (for example, it might be assumed that equities will yield a higher return than gilts by a margin of, say, 2% a year). This approach was adopted at the 2006 review. Alternatively, the equity risk premium could be chosen to reflect the differences between equity and gilt markets at the relevant date.
- F.8 Discussion about the equity risk premium assumption in the valuation and how this was set can be found in Appendix G.

Funding methodology – Entry age method

- F.9 In this review I have used a funding method known as the 'Entry Age Method' (EAM). The 2006 review was carried out using the same funding method.

- F.10 Under the EAM, the standard contribution rate, expressed as a percentage of salary, is determined so as to be sufficient to meet the cost of all future benefits for a typical new entrant (at the assumed normal entry age) provided that the actuarial assumptions are borne out in practice. The new entrant standard contribution rate should remain reasonably stable provided that the distribution of new entrants by age and sex does not change significantly.
- F.11 The valuation then compares the value of the liabilities (in respect of both the past and future service of existing members) with the combined value of the existing assets and the future contributions (in respect of existing members) at the standard contribution rate. This determines whether the Fund is in surplus or deficit.
- F.12 The recommended employers' contribution rate is then determined by adjusting the employers' share of the standard contribution rate (that is, excluding the members' contribution rate) to allow for administrative expenses expected to be charged to the Fund, and to take account of any surplus or deficit.
- F.13 At the 2006 review it was decided to use derive the standard contribution rate by reference to the cost of new members' benefits. This was to ensure that the standard contribution rate would remain stable as the relative mix of new members and existing members changes in the future.
- F.14 However the employers contribution rate takes account of the total service liabilities (that is, past and future service) of both new members and existing members as it includes the spreading of surplus or deficit over the future working lifetime of the active members.

Funding methodology – other possible approaches

- F.15 In addition to the Entry Age Method, there are two main alternative funding approaches that could be adopted for the current review: the Attained Age Method and the Projected Unit Method.
- F.16 Under the Attained Age Method (AAM), the standard contribution rate would be determined for all current active members so as to be sufficient to meet all (projected) future benefits. Any deficit in respect of past service liabilities (taking into account the assets held) would be met by a contribution spread over the chosen period.
- F.17 Under the Projected Unit Method (PUM), the standard contribution rate would be determined by reference to the cost of benefits accruing to all members over the period to the next actuarial review (the "control period"). In effect, this would be a weighted average of the separate PUM rates for existing members and new members. If the overall average age of active members remained constant then the PUM SCR would fall over time as the proportion of new members in the scheme increased. (New member benefits cost less to provide). Any deficit in respect of past service liabilities (taking into account the assets held) would be met by a contribution spread over the chosen period.
- F.18 The total contribution rates payable by employers under the existing and alternative approaches would differ since they each meet the cost of accruing benefits and past service liabilities at a different rate (the "pace of funding"). In particular the alternative approaches would lead to a higher standard contribution rate.

Appendix G Financial assumptions

- G.1 The assumptions (both demographic and financial) adopted for this review taken as a whole are intended to give a "best estimate" of the Fund's liabilities. In other words the assumptions do not include any margin for prudence. This means that there is, in my opinion, an equal chance of either a surplus or a deficit emerging at future reviews. In technical terms the results of this review provide a neutral estimate of the financial position of the Fund.
- G.2 I discussed the financial assumptions for this review with the Management Board at their meeting on 28 June 2011, based on my paper of 9 June 2011. The Management Board accepted the recommendations in my paper which are summarised in the remainder of this section.
- G.3 Table G.1 summarises the principal financial assumptions adopted for the current review, together with those adopted at the 2006 review.

Table G.1: Principal financial assumptions (market-based)

Assumption	2010 review	2006 review
Real rate of return, net of prices		
Risk free assets (20%)	0.25% p.a.	1.3% p.a.
Return-seeking assets (80%)	4.25% p.a.	4.05% p.a.
Overall rate of return, net of prices	3.5% p.a.	3.5% p.a.
Gross rate of return	-	6.5% p.a.
Rate of return, net of earnings	2.0% p.a.	2.0% p.a.
Price increases	-	2.9% p.a.
Real earnings growth	1.5% p.a.	1.5% p.a.

- G.4 Before we consider expected real returns in more detail we need to be clear on the measures of inflation which are involved.

Jersey CLI and UK RPI

- G.5 For most investors in sterling denominated assets, the UK Retail Prices Index (RPI) is a more relevant measure of inflation than the Jersey CLI. Moreover the payments on index-linked gilts are calculated using RPI. Therefore the discussion of expected real returns below considers returns relative to the UK Retail Prices Index (RPI) rather than to Jersey CLI, which is the relevant measure for a JTSF review. This means that, in order to set assumptions for this review, we must make an assumption about the difference between RPI and Jersey CLI over the long term.

- G.6 For the past five years or so, the Jersey CLI has increased at more or less the same rate as the UK RPI, other than over the most recent few months. Looking back further (ten years and more) Jersey CLI increased at a notably faster rate than UK RPI. We understand that the States of Jersey's economic advisors recommend that it would be reasonable to assume for our purposes that the Jersey CLI will exceed UK RPI by 0.25% a year for the long term.⁴
- G.7 We therefore propose to assume that the Jersey CLI will be closely correlated to UK RPI over the longer term, but at a level 0.25% a year higher on average.

Investment returns – the 'equity risk premium'

- G.8 As at 31 December 2010, and based on terms of over 5 years and over 15 years, the real yield on longer-dated UK index-linked gilts was around 0.5% a year, net of UK RPI. However, there is not a published forward looking market rate of return on equities comparable to the returns available on gilts. We have therefore considered:
- > academic research,
 - > the practice of other pension schemes, and
 - > the views of the Fund's investment advisors.
- G.9 Many academic researchers have considered the additional return (over that available on risk-free assets) which might be expected from investing in equities (that is, the 'equity risk premium'). Unfortunately, no firm conclusions have emerged. Typically, academic researchers have concluded that in the long term the equity risk premium might be between 2% and 4% a year. Of course, short-term conditions might mean that expectations on a particular date could lie outside this range.
- G.10 The UK Pensions Regulator publishes some summary data on the practice of funded UK pension schemes. While this doesn't directly cover schemes' assumptions for the equity risk premium, it is consistent with equity risk premia between 2% and 3%. It should be noted that these assumptions would be intended to be on the prudent side of best estimate (as a consequence of other aspects of the UK pension regulations).
- G.11 The Fund's investment advisors have confirmed that their expectations for the ten years from 1 January 2011 are that index-linked gilts will show a real return of about 0% a year and that equities (both UK and global) will show a real return of about 5% a year (over UK RPI). That is, the equity risk premium over the next ten years will be about 5%.
- G.12 In addition, their best estimate of the total real return over ten years based on the Fund's strategic asset allocation is 6.6% (over UK RPI). This includes an allowance for expected manager outperformance.
- G.13 While the Fund's investment advisors estimates of the Fund's likely returns are higher than might otherwise be expected, it is important to recognise that their estimates refer to the next ten years specifically, and not to the longer term.

⁴ As confirmed by Mick Pinel in an email to Eddy Battersby dated 3 March 2011.

Real discount rate for 2010 review

- G.14 Taking all this into account, I believe it is reasonable to assume a long-term equity risk premium of around 4% a year, net of investment expenses. This might be considered a long-term best estimate, being more prudent than the Fund's investment advisors' best estimate of 5% a year over the next ten years, and more optimistic than the 2%-3% a year typically adopted recently by funded UK pension schemes as a prudent long-term assumption. It is at the high end of the long-term range suggested by academic research.
- G.15 The trustees should appreciate that there is a high level of uncertainty around this assumption, and that future experience could differ materially. It would be possible to justify a higher or lower equity risk premium assumption for this review of the JTSF.
- G.16 An equity risk premium of about 4.0% a year combined with real yields of about 0.5% a year on index-linked gilts would lead to an expected real return of about 4.5% on the Fund's allocation to return-seeking assets. Assuming that the assets will be invested in line with the Fund's current strategic asset allocation (80% in return-seeking assets) would lead to an expected return of about 3.75% a year, net of UK RPI.
- G.17 If we assume that Jersey CLI will exceed UK RPI by 0.25% on average, then this would give a real return assumption of 3.5% a year (net of CLI) on market values at the review date. This real rate of 3.5% would be net of investment expenses.
- G.18 We propose to use the same assumptions to determine the standard contribution rate in respect of future service accrual. This is reasonable since the Scheme is broadly cash-flow neutral – that is, income from contributions and investments is broadly equal to benefit outgo – and seems likely to remain so for some time. Thus, uncertainties about the returns which might be obtained from the investment of new money in the future are not a material consideration.

Gross rate of return

- G.19 At the previous actuarial review in 2006 it was necessary to value members' base pensions and pension increases separately. Because pension increases are now paid from the Fund this is not necessary at this review and so has not been considered further at this stage.

Real earnings growth

- G.20 Over the past four years, general earnings increases (excluding career and/or promotional increases) awarded to JTSF members have been close to, or even less than, increases in the Jersey CLI, and so real earnings growth (net of inflation) has been nil or even negative. However, for the purpose of the actuarial review, an assumption is required about general earnings increases over the long-term. Consistent with past economic experience, we would expect earnings to increase at a faster rate than prices over the long-term.
- G.21 We propose to assume that long-term real earnings growth will be about 1.5% a year (in excess of price increases). This is the same assumption as was adopted for the 2006 review.

Appendix H Demographic assumptions

- H.1 GAD has analysed the demographic experience of the Fund over the last four to nine years in order to inform the decision on suitable valuation assumptions. The full details of this analysis can be found in my note of 2 September 2011, which was presented to the Management Board at their meeting of 13 September 2011. I also produced a separate paper on the active member's promotional salary increase assumption in a note on 31 October 2011.
- H.2 After discussion the Management Board agreed that the demographic assumptions adopted should be the same as those of the 2006 review except for:
- > pensioner mortality, which should be updated to use the latest relevant published tables from the Actuarial Profession (the so called 'S1' Tables),
 - > active member's salary increases,
 - > active member's rates of withdrawal from the scheme, and
 - > active member's rates of ill health retirement.
- H.3 The above assumptions were updated to better reflect the experience of the Fund. The updated demographic assumptions were described in full in my summary of proposed assumptions of 11 November 2011, which the Management Board accepted at their meeting of 23 November 2011. These assumptions are described further in the remainder of this appendix.

Assumptions for current and future pensioners

- H.4 Table H.1 shows the assumptions for mortality in retirement for current and future pensioners. Table H.2 shows the assumed difference in age between member and a surviving spouse (if any) on the member's death at a given age. Table H.3 shows the assumed proportions of members who leave a surviving spouse on the member's death at a given age. Table H.4 shows the assumed proportion of widow(er)s who remarry at a given age.

Table H 1: Mortality assumptions

Standard mortality tables		S1NMA/S1NFA for men and women respectively. S1DFA for widows.	
Mortality improvements		ONS 2008 central projections (actual improvements between 2002 and 2008)	
Age Ratings	Normal health pensioner	Widow(er)	Ill health pensioner
Men	0	0	+4
Women	0	0	+4

Table H 2: Age difference at death (member age less spouse age)

Men		Women	
below 27	1	below 27	-1
27 to 39	2	27 to 39	-2
40 to 59	3	40 to 61	-3
60 to 69	4	62 to 67	-2
70 to 79	5	68 to 73	-1
above 79	6	74 to 78	0
		79 to 82	1
		83 to 86	2
		87 to 91	3
		92 to 96	4
		above 96	5

Table H 3: Proportion of members married (on death) per 1,000 members

Men				Women			
Age	Rate	Age	Rate	Age	Rate	Age	Rate
Under 23	29	66	849	Under 23	36	66	622
23	44	67	850	23	51	67	617
24	73	68	848	24	80	68	610
25	101	69	844	25	109	69	600
26	129	70	840	26	138	70	590
27	158	71	836	27	166	71	580
28	187	72	832	28	193	72	571
29	217	73	826	29	219	73	556
30	247	74	818	30	246	74	535
31	277	75	810	31	272	75	514
32	306	76	802	32	299	76	493
33	335	77	794	33	325	77	473
34	365	78	785	34	350	78	449
35	395	79	775	35	375	79	420
36	425	80	765	36	400	80	391
37	454	81	754	37	425	81	361
38	482	82	744	38	446	82	331
39	509	83	726	39	464	83	302
40	536	84	702	40	482	84	274
41	563	85	678	41	500	85	246
42	589	86	654	42	519	86	218
43	612	87	629	43	539	87	191
44	632	88	598	44	561	88	167
45	653	89	562	45	583	89	145
46	673	90	525	46	605	90	124
47	694	91	489	47	627	91	103
48	710	92	452	48	645	92	82
49	722	93	414	49	660	93	66
50	734	94	375	50	675	94	54
51	746	95	336	51	690	95	42
52	758	96	297	52	705	96	30
53	770	97	258	53	713	97	18
54	781	98	226	54	714	98	11
55	792	99	200	55	714	99	8
56	803	100	174	56	715	100	5
57	813	101	150	57	715	101	3
58	821	102	126	58	708	102	1
59	826	103	102	59	693	103	0
60	831	104	75	60	678	104	0
61	836	105	50	61	663	105	0
62	841	106	30	62	647	106	0
63	844	107	15	63	637	107	0
64	846	108	5	64	632	108	0
65	847	Over 108	0	65	627	Over 108	0

Table H 4: Rate of remarriage per 1,000 widow(er)s

Men		Women	
Age	Rate	Age	Rate
Below 20	45	Below 20	0
21	93	21	0
22	98	22	50
23	103	23	100
24	108	24	100
25	113	25	100
26	118	26	100
27	123	27	100
28	125	28	99
29	125	29	97
30	125	30	95
31	125	31	93
32	125	32	91
33	122	33	87
34	116	34	81
35	110	35	75
36	104	36	69
37	98	37	63
38	93	38	58
39	88	39	54
40	83	40	50
41	79	41	46
42	75	42	42
43	71	43	39
44	68	44	37
45	65	45	34
46	62	46	32
47	61	47	29
48	60	48	27
49	59	49	25
50	58	50	23
51	57	51	21
52	56	52	19
53	55	53	17
54	54	54	16
55	53	55	14
56	52	56	13
57	51	57	11
58	49	58	9
59	47	59	8
60	43	60	7
61	39	61	6
62	35	62	5
63	31	63	4
64	27	64	3
65	23	65	3
66	18	66	2
67	13	67	2
68	8	68	1
69	4	69	1
70	1	70	0
Over 70	0	Over 70	0

Assumptions for deferred members

H.5 I propose to adopt the same assumptions as for pensioners, except as shown below. This is consistent with my paper on demographic assumptions dated 2 September 2011.

Early and late retirement

H.6 I propose to assume that early and late retirements are cost neutral for deferred members (this is equivalent to assuming that New section deferred members retire at 65, there is no provision for early retirement for Existing section members).

Commutation

	Existing section	New Section
Assumed proportion of pension commuted for cash at retirement	0%	16.67%

Re-entry to active service

H.7 Allowance for future re-entry is made by applying a loading of 0.5% to the revaluation in deferment assumption. This is broadly equivalent to assuming that one third of deferred members will re-enter active service.

Assumptions for active members

- H.8 Active members have been valued using the same assumptions as pensioners and deferred members above, except as shown below. This is consistent with my paper on demographic assumptions dated 2 September 2011, except as follows:
- > I have increased withdrawal rates at older ages (over 50) in line with the Fund's past experience,
 - > I have reduced ill-health retirement rates by 20% for men and 40% for women in line with the Fund's past experience,
 - > I have adjusted the promotional salary scale as described in my note of 31 October 2011.
 - > New section members are assumed to retire from active service at age 63 on average. Allowance is made for the fixed early retirement factor of 2.4% per year.
- H.9 This was in accordance with the Management Board's request that the assumptions should be set on a 'best estimate' basis.
- H.10 Table H.5 shows the assumed annual rates of death of active members before retirement age.
- H.11 Table H.6 shows the assumed rates at which active members voluntarily leave the Fund split by whether they have less than one year's service, one to year's service or more than two years' service.
- H.12 Table H.7 shows the assumed annual rates of retirement from the Fund on the grounds of ill health.
- H.13 Table H.8 shows the assumed scale of average career progression promotional pay increases active members can expect.

Table H.5: Death in service

Men		Women	
Age	Rate per 100,000 lives	Age	Rate per 100,000 lives
Under 24	15	Under 24	15
24	18	24	15
25	20	25	15
26	20	26	19
27	20	27	23
28	20	28	23
29	20	29	23
30	20	30	23
31	23	31	23
32	25	32	26
33	25	33	30
34	28	34	30
35	30	35	34
36	33	36	38
37	35	37	38
38	38	38	41
39	43	39	45
40	48	40	49
41	53	41	53
42	58	42	56
43	63	43	60
44	70	44	64
45	80	45	68
46	90	46	71
47	100	47	79
48	110	48	86
49	123	49	94
50	138	50	101
51	153	51	113
52	168	52	128
53	183	53	143
54	198	54	158
55	215	55	173
56	235	56	188
57	255	57	206
58	275	58	229
59	298	59	251
60	323	60	274
61	348	61	296
62	375	62	323
63	405	63	356
64	435	64	394
65	468	65	435

Table H 6: Withdrawal rates (per 1,000 members)

Men				Women			
Age	Less than 1 years' service	One to two years' service	More than two years' service	Age	Less than 1 year's service	One to two years' service	More than two years' service
Under 22	80	66	53	Under 22	80	84	88
23	82	66	53	23	84	84	88
24	86	67	53	24	92	85	87
25	90	69	52	25	100	88	87
26	94	71	52	26	108	90	84
27	98	72	50	27	116	92	80
28	98	72	48	28	116	94	76
29	94	71	46	29	108	92	72
30	90	68	44	30	100	86	68
31	86	65	42	31	92	81	65
32	82	62	40	32	84	76	63
33	80	59	38	33	78	71	61
34	80	57	36	34	74	67	58
35	80	57	34	35	70	63	56
36	80	56	32	36	66	59	53
37	80	55	31	37	62	54	47
38	80	55	30	38	61	50	42
39	80	54	29	39	63	47	37
40	80	54	28	40	65	46	32
41	80	54	28	41	67	46	29
42	80	53	27	42	69	47	28
43	81	53	26	43	72	47	26
44	83	53	25	44	76	48	25
45	85	53	24	45	80	49	23
46	87	54	23	46	84	51	23
47	89	54	22	47	88	53	23
48	91	54	21	48	94	55	23
49	93	54	19	49	102	58	23
50	98	56	18	50	114	64	23
51	116	66	19	51	130	73	25
52	140	79	21	52	147	82	26
53	164	89	22	53	163	92	28
54	191	100	23	54	177	101	29
55	217	112	24	55	202	113	32
56	252	130	25	56	271	146	37
57	303	155	26	57	410	215	42
58	337	219	27	58	500	343	47
59	350	275	28	59	500	500	53
60 plus	0	0	0	60 plus	0	0	0

Table H 7: Ill health early retirements per 100,000 lives

Men		Women	
Age	Rate	Age	Rate
21	0	21	3
22	0	22	3
23	0	23	5
24	4	24	6
25	4	25	8
26	4	26	9
27	6	27	12
28	9	28	17
29	13	29	21
30	16	30	24
31	20	31	29
32	26	32	34
33	32	33	39
34	41	34	44
35	50	35	50
36	58	36	55
37	69	37	61
38	85	38	66
39	102	39	74
40	120	40	83
41	138	41	93
42	158	42	107
43	193	43	128
44	246	44	160
45	310	45	195
46	372	46	235
47	435	47	278
48	538	48	330
49	702	49	398
50	866	50	476
51	996	51	559
52	1130	52	645
53	1270	53	735
54	1400	54	833
55	1487	55	935
56	1553	56	1037
57	1603	57	1115
58	1629	58	1202
59	1648	59	1320
60	1958	60	1440
61	2330	61	1560
62	2440	62	1680
63	2520	63	1800
64	2600	64	1920
65	0	65	0

Table H 8: Promotional Salary Scale

Men		Women	
Age	Rate	Age	Rate
18	80.51	18	81.27
19	83.27	19	83.88
20	86.05	20	86.52
21	88.84	21	89.18
22	91.63	22	91.87
23	94.43	23	94.56
24	97.22	24	97.28
25	100.00	25	100.00
26	102.77	26	102.73
27	105.51	27	105.46
28	108.23	28	108.20
29	110.92	29	110.92
30	113.57	30	113.64
31	116.18	31	116.35
32	118.74	32	119.05
33	121.24	33	121.72
34	123.53	34	124.05
35	125.61	35	126.03
36	127.45	36	127.62
37	129.21	37	129.18
38	130.87	38	130.72
39	132.42	39	132.23
40	133.88	40	133.72
41	135.22	41	135.17
42	136.45	42	136.58
43	137.56	43	137.97
44	138.56	44	139.32
45	139.43	45	140.63
46	140.18	46	141.70
47	140.80	47	142.78
48	141.42	48	143.87
49	142.05	49	144.97
50	142.68	50	146.08
51	143.31	51	146.68
52	143.95	52	147.20
53	144.59	53	147.64
54	145.23	54	147.98
55	145.55	55	148.16
Above 55	145.87	Above 55	148.16

Appendix I Results

- I.1 This section gives the results of my actuarial review of the Fund's ongoing funding position (that is, assuming that the Fund continues to operate for the foreseeable future). It also contains an illustration of how sensitive the results are to the key assumptions.

Valuation results

- I.2 As for the 2006 review, I have calculated the employer contribution rate as the difference between the Standard Contribution Rate (SCR) for the assumed distribution of new entrants (who will all be New section members) less the New section members' contribution rate of 5%, plus expenses and the spreading of any surplus or deficit. These rates are summarised in Table I.1.

Table I.1 - Contribution rates

	2010 result	2006 result
	% of pay	% of pay
Standard contribution rate (SCR)	16.9	17.2
Employee standard contribution rate	(5.0)	(5.0)
Expenses	0.9	0.7
Surplus or deficit (over 15 years)	0	(2.4)
Employers' contribution rate	12.8	10.5
Contributions towards the 'pension debt'	tbc*	5.6
Total employer's contribution	tbc*	16.1

* The States of Jersey's payments towards the pension debt have not been agreed at the time of signing this report, and so the total employer's contribution rate is not yet know.

- I.3 The employer contribution rate (excluding contributions towards the pension debt) has risen compared to the 2006 review. This is largely because no surplus has been recognised in the derivation of the 2010 rate.
- I.4 These contribution rates include an allowance for pension increases accrued before and after April 2007.
- I.5 I have also compared the assets of the Fund, including the present value of future contributions in respect of current members, with the liabilities, including liabilities not yet accrued to current active and re-entering current deferred members. These calculations all include in full the liability for pension increases, including increases on pensions accrued before 1 April 2007 (the PI Debt). This calculation assumes that the Fund will continue to operate and accept new members for the foreseeable future.

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- I.6 The results of this valuation are summarised in Table I.2 below. This includes future standard contributions as an asset and all expected future service of current active and deferred members as a liability. For the future contribution asset I have taken the members contribution rate to be 5.8% based on the current average member contribution rate across both existing and new members.
- I.7 Table I.3 below shows the same results but without the accrual and contributions in respect of future service. This provides an alternative perspective on the current funding position, for information only.

Table I.2: Balance sheets - total service

Total service	2010 result	2006 result
	£ m	£ m
Liabilities		
Pensioners	168.9	120.6
Deferred members	42.4	51.0
Active members (past service)	183.5	157.4
Active members (future service)	111.3	119.5
Total liabilities	506.1	448.5
Assets		
Investments	320.1	256.5
Future standard contributions	94.5	104.6
Total assets	414.5	361.1
Surplus (deficit)	(91.6)	(87.4)
Funding level	82%	81%
Future PI Debt contributions (expected from the States of Jersey)	91.6	-
Surplus (deficit)	-	(87.4)
Funding level	100%	81%

Table I.3: Balance sheets – past service only

Total service	2010 result	2006 result
	£ m	£ m
Liabilities		
Pensioners	168.9	120.6
Deferred members	42.4	39.1
Active members (past service)	183.5	157.4
Total liabilities	394.8	317.1
Total assets	320.1	256.5
Surplus (deficit)	(74.7)	(60.6)
Funding level	81%	81%
Expected future PI Debt contributions	91.6	-
Surplus (deficit)	16.9	(60.6)
Funding level	104%	81%

- I.8 After taking into account the pension increase debt payments which are expected to be paid by the States of Jersey there is no surplus or deficit in the Fund. If the experience of the scheme is exactly in line with the assumptions made and all the recommended contributions are paid on schedule then there would be no surplus or deficit at the next actuarial review. However the Management Board should be aware of the uncertainties involved. In reality, due to random variation, the experience of the Fund is unlikely to be completely in line with assumptions and unanticipated events can occur.
- I.9 The delay in implementing the new, higher employer's contribution rate will lead to a gradual worsening of the scheme's financial position.
- I.10 The benefit cashflows of the Fund are linked either to Jersey CLI (for pensioners, deferred pensioners and active members benefits for the period after withdrawing or retiring from the Fund) or (for current active members for the period before leaving the Fund) linked to individual salary increases. On average these increases will be in line with Teachers overall inflationary pay awards, if the relative salary distribution of members remains constant.

Sensitivity of results

- I.11 In reality the future experience of the Fund is unknown, and so the future financial position is uncertain. The results of an actuarial calculation are sensitive to the choice of assumptions made. The Management Board should be aware of the potential impact of changing the key valuation assumptions.
- I.12 Three of the most important valuation assumptions are
- > The discount rate (net of price inflation)
 - > The level of general salary inflation (net of price inflation)
 - > The mortality of pensioners
- I.13 To enable the Management Board to understand the relative sensitivity of the results to these assumptions I have produced results on the following three variant sets of assumptions:
- (i) Assuming that the discount rate (ie the prudent long term expected return on the Fund's assets) is 0.5% higher;
 - (ii) Assuming that the general level of salaries increases (net of price increases and excluding progression and promotional increases) is 0.5% higher;
 - (iii) Assuming that pensioners will on average have the chance of dying of a person one year older than the assumption used in the valuation. As the chances of dying increase with age this will increase the assumed mortality rates of pensioners and so decrease the liabilities.

Table I 4: Sensitivity to alternative assumptions

	Standard contribution rate ¹	Surplus (deficit) ²	Total contribution rate ³
	% of pay	£m	% of pay
Valuation assumptions	11.9	-	12.8
Real discount rate +0.5%	9.9	29.5	6.1
General salary inflation +0.5%	13.2	(7.6)	15.2
Age offset +1 year	11.7	8.2	11.4

Notes:

¹ Employers' standard contribution rate

² For total service, including the current plan for future PI Debt payments

³ Employers' total contribution rate, includes expense allowance and spreading of surplus/deficit over 15 years

- I.14 If the change in assumption was in the opposite direction (e.g. assuming a discount rate 0.5% lower) the difference in the results compared to the valuation results would be of a similar amount but with the opposite sign. Each row shows the effect of varying a single assumption in isolation. Changing two or more assumptions would have a broadly cumulative effect.

Appendix J Solvency

- J.1 The calculations above assume that the Fund will continue to be open to new members and new accruals for the foreseeable future. The Management Board should also be aware of the solvency level of the Fund. This values the liabilities assuming that the Fund discontinues (i.e. there is no future accrual of benefits and no link to future salary increases). It also assumes that the Fund will either be bought out with an insurance company or run as a closed fund with no employer contributions. In that scenario the Fund (or the insurance company, if bought out) would have to adopt a very cautious investment strategy. This would reduce the return on the Fund's assets.
- J.2 For the purposes of this report I have used assumptions consistent with those used by the Jersey Public Employees Contributory Retirement Scheme (PECRS) in their assessment of solvency for their 2010 review. The assumptions I have used are summarised in Table J.1. As it would not be straightforward to buy-out benefits linked to CLI I have assumed that benefits are linked to UK RPI. I have used the UK Pension Protection Fund assumptions to estimate of the expenses of winding up the Fund.

Table J.1: Solvency assumptions

	2010 review	2006 review
Discount rate non-pensioners (net of UK RPI)	-0.1%	0.75%
Discount rate current pensions (net of UK RPI)	0.4%	0.75%
Mortality (compared to ongoing)	No change	Age rating + 1
Expenses	PPF basis	£0.75m

- J.3 Using these assumptions I assess that the (past service) liabilities of the JTSF on a solvency basis are around £700m. Compared to the invested assets of £320m this gives a solvency level of around 45%. This is average proportion of members current accrued benefits that could be provided on winding the Fund. If the 'pension increase debt' amount were paid in full immediately that would increase the assets held to around £410m and the solvency level to 60%. These figures are summarised in Table J.2.

Table J.2: Solvency position (nearest 5%)

	PI Debt paid	PI Debt not paid	2006 review
Solvency level	60%	45%	60%

- J.4 Without the PI Debt asset the solvency level is estimated to be around 45%. This has fallen from the estimate of 60% at the 2006 review. This change is very largely due to the change in financial assumptions. I estimate that (if assumptions are borne out in practice) then this solvency level will be very similar or slightly higher at the next review.
- J.5 Please note that this estimate of solvency is not a guarantee of the cost of winding up the Fund. Insurer's buy-out terms vary with market conditions and supply and demand factors and so the only way to be sure what a buy-out would cost is to obtain a quote. The cost of buying-out may also be affected by whether the buy-out market has capacity to absorb a scheme of the size of the JTSF.

Appendix K Developments since the 2006 Review

Actuarial review as at 31 December 2006.

- K.1 The review as at 31 December 2006 was carried out using a market-based valuation approach using the Entry Age Method to determine the standard contribution rate and the employers' recommended contribution rate. The main financial assumption was a future long-term rate of return of 3½% a year in excess of prices.
- K.2 From 1 April 2007 the cost of pension increases (including those on benefits accrued from 1 April 2007) have been paid from the Fund. This caused an immediate funding shortfall (the so called 'pension increase debt' or 'PI Debt') of around £100 million as at 31 December 2006. Excluding the effect of the PI Debt the Fund had a (total service) surplus of £14.1 million. Spreading this surplus over 15 years and the PI Debt over 82 years the recommended employers rate was 16.1% of salaries.
- K.3 The provisions of the Scheme were amended with effect from 1 April 2007 and the employers' contribution rate increased from 9.95% to 16.4% of salaries. Therefore, as this was slightly higher than the recommended rate, employers have continued to contribute 16.4% of pay.

Benefit provisions with effect from 1 April 2007

- K.4 The provisions applying to **existing members** (as at 31 March 2007) were changed in following ways:
- > the qualifying period for benefits was reduced from 5 years to 2 years, with effect from 1 April 2007;
 - > with effect from 27 April 2005, widowers' benefits have been provided in respect of service after 6 April 1988 for all members (actives, pensioners and deferred members); and
 - > the death-in-service lump sum was increased to 2 times salary with effect from 1 April 2007.
- K.5 The provisions applying to **new members** joining the Scheme after 1 April 2007 differ from those applying to existing members in a number of key respects:
- > Normal Pension Age is 65 (not 60) but early retirement is available from age 60, with a reduction factor of 2.4% per year retired early;
 - > pension accrues at 1/80 of salary (but without an automatic 3/80 lump sum) and lump sum is available by commutation at the rate of 13½:1; and
 - > new members contribute at 5% (not 6%) of salary.
- K.6 All of these changes were taken into account in the 31 December 2006 valuation.

General salary increases and pension increases since 2006

- K.7 Over the inter-valuation period pensioners in payment and deferred pensions have been increased in line with the Jersey Cost of Living Index (CLI). Since 1 January 2009, pensions in payment and deferred pensions have been increased each January in line with the annual increase in the CLI to the end of the preceding December quarter. Up to and including 1 April 2007, pension increases were awarded on each 1 April in line with the annual increase in the CLI over the 12 months to the preceding September. Transitional arrangements applied to pension increases awarded in 2008. The increases awarded are shown in Table K.1 below.
- K.8 Member's salary increases each year (excluding progression and promotional increases) are set by the Department of Education, Sport and Culture. Up until 2007 they were applied on 1 June but since 2010 increases have applied on 1 January.
- K.9 Pension increases and general salary awards (excluding progression and promotional increases) are summarised in Table K.1:

Table K.1: General salary and pension increases

General salary increases		Pension increases	
Date of award	Rate	Date of award	Rate
		1 April 2006	2.00%
1 June 2007	4.40%	1 April 2007	3.60%
1 June 2008	3.20%	1 January 2008	4.50%*
		1 January 2009	3.30%
1 January 2010	2.00%	1 January 2010	1.70%
1 January 2011	2.00%	1 January 2011	2.30%
		1 January 2012	5.00%

* This is the annual rate which applied for only 9 months. Therefore the actual award was 75% of this, i.e. 3.38%.

Development of the funding position since the 2006 review

- K.10 The funding position has changed only slightly since the last review. The funding level has marginally worsened (when taking account of the future contributions to pay off the PI Debt).
- K.11 The largest effect is the change to the repayment plan for the PI debt. The value of the future PI debt contributions is now reflected in the balance sheet, as they are now expected to be met by the States of Jersey.
- K.12 The other notable effect is that salaries have not risen as quickly as expected and therefore liabilities are lower than expected, giving rise to a surplus. This has been partly offset by pension increases on current and deferred pensions (based on the Jersey Cost of Living Index) being higher than expected. (Interest on the deficit is a purely technical item.)
- K.13 I have also revised the demographic assumptions used in the review based on the actual experience of the Fund and wider trends. Taken together these have reduced the liabilities of the Fund compared to the previous review.

K.14 Table K.2 below shows the approximate impact of each of these effects on the deficit in the Fund.

Table K.2: Development of the funding position since the 2006 review

	£ m	Comments
Surplus in 2006	(87.4)	This includes the value of the PI Debt on the payment schedule agreed at the last review. Payment of the whole debt was not guaranteed by the States.
Interest on deficit	(25.0)	
Investment performance	(3.2)	Actual performance in nominal terms compared to expected.
Employer contributions	(4.6)	Employer contributions were less than the standard contribution rate.
Special contributions	12.2	Effect of contributions paid to reduce the PI Debt. Note that the States now guarantee the whole PI Debt.
Salary increases	21.6	Salary increases were less than expected.
Pension increases	(5.3)	Inflation was very slightly higher than expected.
Model changes	(4.8)	Includes timing of pension and salary increases, changes to treatment of future service following re-entry, and use of individual rather than grouped data.
Demographic experience and miscellaneous effects	(1.5)	Demographic experience has been slightly favourable and there are other minor effects.
Surplus in 2010	(98.1)	On 2006 assumptions
Change of mortality rates	3.1	
Change of salary scale	3.0	
Other changes	0.4	Withdrawal and ill-health decrements
Surplus in 2010	(91.6)	On proposed 2010 assumptions
PI Debt contributions	91.6	Present value of future PI Debt contributions expected from the States
Surplus in 2010	-	

Notes:

¹ Numbers may not sum to totals shown due to rounding.

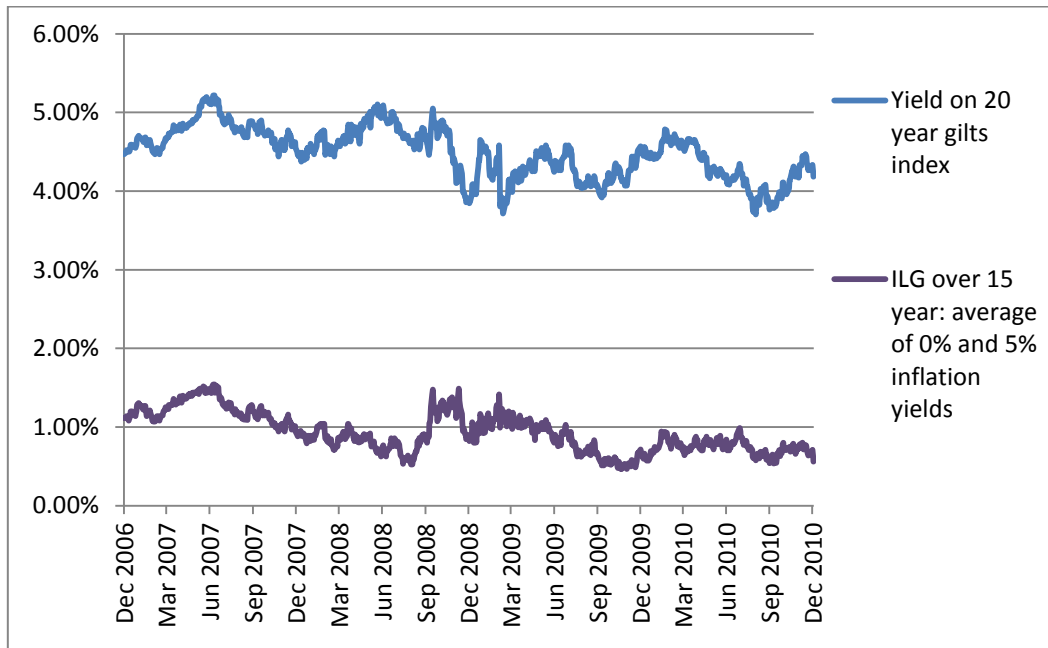
Appendix L Investment issues

- L.1 About half of the past service liabilities are salary-linked (in respect of active members) with the remainder predominantly price-linked (pensions in payment and deferred members). The Scheme remains open to new entrants and the accrual of salary-linked benefits continues, and so the liability profile extends a long period into the future.
- L.2 The Board's current investment strategy is to invest over 80% of the Fund in return-seeking assets (mainly equities) with the remainder mainly in bonds and cash, with the aim of achieving higher long-term returns from the equity investment. It is often argued that, over the long-term, equity investment is likely to lead to higher returns than investment in bonds, and so equity investments can be regarded as appropriate for pension funds with a long liability profile.
- L.3 However, equity markets are volatile (as demonstrated since January 2008) and so there are risks. Over the long-term, the Fund would remain exposed to the risk that future investment returns will be insufficient to meet the funding objective. Over the short-term, there is particular risk if assets have to be realised in order to pay benefits.
- L.4 If sufficient assets were available, it would be possible to reduce this potential volatility by means of a portfolio consisting of suitable bonds, chosen so that the projected income was similar in profile and term to the projected benefit (and other) outgo. Although the potential gains of equity investment would be lost, the assets and liabilities would then be more closely matched (thus reducing the risk that falls in asset values will not be matched by similar falls in the values of the liabilities, thereby reducing the funding and/or solvency levels).
- L.5 In fact, over recent years, the combined total of contribution income and investment income (excluding unrealised gains and losses) has been (just) sufficient to meet outgo on benefits and expenses, and it seems likely that this will remain the case over the coming period, after allowing for higher future contributions to the Fund and the payment of pension increases from the Fund.
- L.6 Thus, assuming that the Scheme remains open to new entrants, it should not be necessary to realise assets to meet expenditure for the foreseeable future, and so the Board may take a longer-term perspective with regard to the Fund's investment strategy despite the short-term volatility which characterises equity investment.
- L.7 However, if the number of active members were to reduce, then it would be necessary to review the investment strategy and to consider the period over which the Fund's cash flow would be likely to remain positive. While there would be no material effect over the very short-term, it would be necessary to consider the appropriate actions promptly so that they could be implemented in good time. In that event, the matching of assets and liabilities would become increasingly relevant.

Investment markets

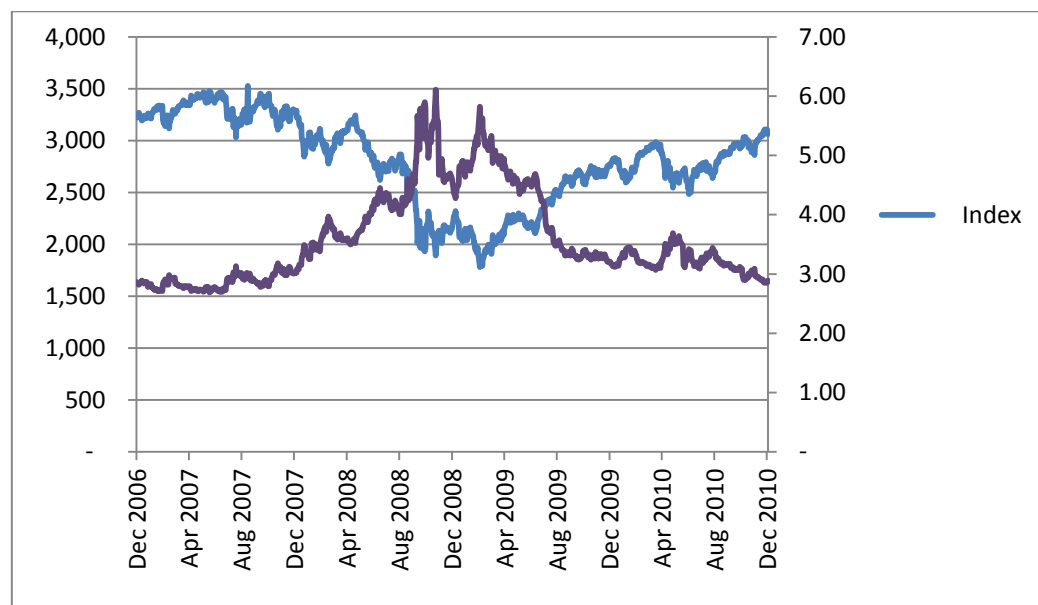
L.8 Due to the global financial crisis investment markets have been volatile over the inter-valuation period. Because of monetary policy and investor demand for secure assets, gilt yields (for both conventional and index-linked gilts) have fallen over the period.

Graph L.1: Gilt yields over the inter-valuation period



L.9 Equity markets have been volatile over the inter-valuation period. The FTSE All-Share recovered towards the end of the period much but not all of the value it lost between 2007 and 2009.

Graph L.2: FTSE All-Share index and dividend yield over the period.



Appendix M Risks and uncertainties

M.1 There are a number of financial risks that the Fund is exposed to, which the Management Board should keep under review. Some of the more significant of these are summarised in Table M.1 below.

Table M.1 - Material financial risks to the scheme

Risk	Discussion
Sponsor risk	The risk that the States will not be willing or able to continue its financial support for the scheme.
Investment underperformance	If the Fund's invested assets return less than assumed in the valuation there will be a shortfall that would need to be met from higher contributions from employers or benefit reductions for members
Mismatching risk	As discussed in Appendix I, if the Fund was invested in matching assets that would reduce the volatility of the surplus/deficit emerging at each review. However this would come at the cost of lower expected returns (so employers would have to pay contributions or benefits would have to be reduced). Note that perfectly matching assets are unlikely to be available.
Longevity risk	Pensions are paid for life. If the members and their dependants live longer on average than expected the cost of benefits will be higher than expected.
Option risk	Members have a number of options in the Fund such as transferring benefits or buying added years. If the terms of these turn out to have been generous to the member than expected there will be an extra cost to the Fund.
Earnings increases	If the increases in Teachers' earnings on average are higher than assumed in the valuation then their pension benefits will be higher than assumed. This will increase the cost to the scheme.

M.2 The Management Board should also be aware that in any actuarial calculation assumptions are made about future experience, which may or may not be borne out in practice. This means that the results of such a review are inherently uncertain.

Appendix N Limitations

- N.1 This report is intended solely for the use of the Management Board of the Jersey Teachers' Pension Fund for the purposes of
- > providing a general understanding of the level of the liabilities in the Fund, relative to the assets held, and
 - > deciding on an appropriate employer's contribution rate.
- N.2 The information and advice in this report should not be relied upon, or assumed to be appropriate, for any other purpose or person. GAD does not accept any liability to third parties, whether or not GAD has agreed to the disclosure of its advice to the third party.
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- N.5 GAD relies on the accuracy of data and information provided by the Dedicated Pensions Unit (DPU) on behalf of the Fund. GAD does not accept responsibility for advice based on wrong or incomplete data or information provided by DPU.