

VALUATION REPORT FOR REALISTIC VALUATION ON THE ROYAL LONDON MUTUAL INSURANCE SOCIETY

Introduction

- 1. (1) This investigation relates to 31 December 2005.
- 1. (2) The previous investigation related to 31 December 2004.
- 1. (3) The date of the last interim valuation, which was not published, was 30 June 2005.

Assets

- 2. (1) A table of the economic assumptions used to determine the value of future profits for non profit insurance contracts, applying to all with-profits funds, is set out below:

	31/12/2005	31/12/2004
Non participating (pre tax) return	4.10%	4.55%
Non participating (post tax) return	3.30%	3.65%
Unit linked (pre tax) return	4.10%	6.55%
Unit Linked (post tax) return	3.90%	6.10%
Risk Discount Rate (pre tax)	4.10%	7.30%
Expense Inflation	3.75%	3.75%

Under the terms of a waiver granted by FSA on 31 December 2004, the value of future profits in respect of certain with-profits business may be brought into account in line L22 of Form 19 for both the RA OB and RL IB & OB subfunds, provided that these values are calculated on a market consistent approach and use stochastic investment scenarios and liability cashflows consistent with those used for the calculation of the future policy related liabilities (FPRL) in the originating with-profits fund.

These future profits relate to shareholder transfers on acquired UAG with-profits business and charges deducted from asset shares on those lines of acquired with-profits SL business detailed in the SL Scheme. A description of the market consistent calibration is given in more detail in Paragraph 6 below.

The value of the liability in respect of unit linked GARs held in the SL fund has been assessed on a market consistent approach, using the same investment scenarios as for the FPRL calculations and best estimate non economic assumptions. The difference between the regulatory and realistic values of this liability has been included within the value of future profits on non profit business.

- 2. (2) The economic assumptions used to determine the value of future profits for non profit insurance contracts under PRU 7.4.33R(2) are the same as those given in the table in 2.(1) above.
- 2. (3) Not applicable.
- 2. (4) Not applicable.
- 2. (5) Not applicable.

With-Profits Benefits Reserve (WPBR)

3. (1) (a) (b) (c) The table below summarises the classes of with-profits insurance contracts that are used throughout the remainder of this abstract where this level of detail is required:

Class	Business Covered	Comment
1	IB (CWP)	Industrial Branch business, including endowment and whole of life business.
2	OB RP Life (CWP)	Ordinary Branch Life Regular Premium Conventional with-profits business, including both endowment and whole life business
3	OB SP Life (CWP)	Ordinary Branch Life Single Premium Conventional with-profits business, including both endowment and whole life business.
4	OB SP Life (UWP)	Ordinary Branch Life Single Premium Accumulating (Unitised) with-profits business.
5	OB RP Pension (CWP)	Ordinary Branch Regular Premium Conventional with-profits Pensions business, including both contracts that fund for an annuity and that fund for cash.
6	OB SP Pension (CWP)	Ordinary Branch Single Premium Conventional With-profits Pensions business, including both contracts that fund for an annuity and that fund for cash.
7	OB RP Pension (UWP)	Ordinary Branch Regular Premium Accumulating (Unitised) with-profits Pensions business.
8	OB SP Pension (UWP)	Ordinary Branch Single Premium Accumulating (Unitised) With-profits Pensions business
9	DA Business	Regular and Single Premium Deposit Administration business (SL Fund only).
10	Miscellaneous	Covers ISA business written in the RL IB & OB subfund and other lines of business which are not required to be disclosed separately under paragraph 3(3) of this abstract.

Tables are presented separately for each with-profits fund, where requested. When calculating the with-profits benefit reserve (WPBR), the retrospective method is the predominant calculation approach, as indicated in the tables below.

The prospective method is used in the following circumstances:

- where historic data is not in a suitable format, the only material class being RA OB subfund Class 5 business issued since 1992 which has become paid up; and
- whole of life business, contained in Classes 1, 2 and 3, at advanced ages to prevent tontine effects that can occur using retrospective methods.

There are two approaches used to determine the WPBR under the Retrospective method:

Retrospective A:

Asset shares are calculated using proprietary model office software by accumulating the premiums paid at the rate of return earned on the assets backing the policies after allowing for charges. These charges include the expenses incurred (for example, set up costs, commission payments, administrative fees and investment management costs), the cost of risk benefits, the cost of guarantees, the cost of smoothing, the cost of tax and (in respect of acquired UAG business only) a transfer to the estate within the RL IB & OB subfund.

Retrospective B:

For certain lines of SL Fund business direct computation of Retrospective method A is not possible. For these lines, the results of Retrospective method A, as described above, for comparable classes of business are used to determine the WPBR and FPRL by reference to the relationship between statutory liability and realistic liability for each class.

The prospective method can be described as follows:

The WPBR is set equal to the discounted value of future claim outgo (death, maturity and surrender) plus renewal expenses less associated tax relief, (in respect of acquired UAG business only) a transfer to the estate within the RL IB & OB subfund less future premiums.

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The basis for performing this calculation is described in more detail under paragraph 5 below.

The tables below provide information by with-profits fund on the WPBR and FPRL for each class of business identified above (in £m).

▪ **SL Fund**

Class	Retro. A		Retro. B		Prospective		Total
	WPBR	FPRL	WPBR	FPRL	WPBR	FPRL	
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	893.5	63.4	10.7	0.8	0.0	0.0	968.4
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	570.8	113.4	134.0	26.6	0.0	0.0	844.9
6	1,042.2	261.3	244.7	61.4	0.0	0.0	1,609.6
7	110.1	2.7	28.5	0.7	0.0	0.0	142.0
8	34.4	2.9	8.9	0.7	0.0	0.0	46.9
9	632.3	(59.0)	0.0	0.0	0.0	0.0	573.3
10	0.0	33.7	0.0	0.0	0.0	0.0	33.7
Total	3,283.3	418.3	426.9	90.2	0.0	0.0	4,218.7

▪ **Refuge Assurance OB Subfund**

Class	Retro. A		Retro. B		Prospective		Total
	WPBR	FPRL	WPBR	FPRL	WPBR	FPRL	
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	404.2	114.3	0.0	0.0	1.9	0.0	520.4
3	19.1	1.9	0.0	0.0	0.0	0.0	21.0
4	187.5	6.0	0.0	0.0	0.0	0.0	193.5
5	225.3	277.8	0.0	0.0	58.7	0.0	561.8
6	55.7	49.1	0.0	0.0	0.0	0.0	104.8
7	29.1	(9.9)	0.0	0.0	0.0	0.0	19.2
8	121.9	3.2	0.0	0.0	0.0	0.0	125.1
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	38.1	4.9	0.0	0.0	0.0	0.0	43.0
Total	1,080.9	447.3	0.0	0.0	60.6	0.0	1,588.8

▪ **Royal London IB & OB Subfund**

Class	Retro. A		Retro. B		Prospective		Total
	WPBR	FPRL	WPBR	FPRL	WPBR	FPRL	
1	514.3	53.7	0.0	0.0	40.7	0.0	608.7
2	837.8	139.2	0.0	0.0	6.0	0.0	983.0
3	107.2	23.3	0.0	0.0	0.0	0.0	130.5
4	99.2	0.4	0.0	0.0	0.0	0.0	99.6
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	691.7	61.0	0.0	0.0	0.0	0.0	752.7
8	1,416.1	63.7	0.0	0.0	0.0	0.0	1,479.8
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	122.7	119.0	0.0	0.0	0.0	0.0	241.7
Total	3,789.0	460.3	0.0	0.0	46.7	0.0	4,296.0

▪ **Refuge Assurance IB Subfund**

Class	Retro. A		Retro. B		Prospective		Total
	WPBR	FPRL	WPBR	FPRL	WPBR	FPRL	
1	293.7	105.8	0.0	0.0	76.5	0.0	476.0
Total	293.7	105.8	0.0	0.0	76.5	0.0	476.0

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▪ **United Friendly IB Subfund**

Class	Retro. A		Retro. B		Prospective		Total
	WPBR	FPRL	WPBR	FPRL	WPBR	FPRL	
1	760.4	285.5	0.0	0.0	54.2	0.0	1,100.1
Total	760.4	285.5	0.0	0.0	54.2	0.0	1,100.1

▪ **United Friendly OB Subfund**

Class	Retro. A		Retro. B		Prospective		Total
	WPBR	FPRL	WPBR	FPRL	WPBR	FPRL	
2	282.0	26.6	0.0	0.0	4.6	0.0	313.2
5	116.7	39.7	0.0	0.0	0.0	0.0	156.4
6	987.7	90.2	0.0	0.0	0.0	0.0	1,077.9
10	0.0	2.0	0.0	0.0	0.0	0.0	2.0
Total	1,386.4	158.5	0.0	0.0	4.6	0.0	1,549.5

Notes:

- Any other long-term liabilities in Line L47 have been allocated in aggregate to Class 10. These are described in more detail in paragraph 8 below.
- Under the prospective method, all policy liabilities are captured within the WPBR.

3. (2) Not applicable.

3. (3) Not applicable.

3. (4) Not applicable.

With-Profits Benefits Reserve (WPBR) – Retrospective Method

4. (1) (a)&(b) All WPBRs calculated using a retrospective method have been calculated on an individual basis, with the exception of the Royal London IB business, where data extract routines from policy mainframes perform limited grouping. Further details are given in 4.(1)(c) below. These relevant proportions are shown in the table below:

With-profits fund	Retrospective A		Retrospective B	
	Individual	Grouped	Individual	Grouped
SL	100%	0%	100%	0%
RA OB	100%	0%	-	-
RLM IB & OB	85.5%	14.5%	-	-
RA IB	100%	0%	-	-
UFI IB	100%	0%	-	-
UFI OB	100%	0%	-	-
Total	95%	5%	100%	0%

4. (1) (c) (i) For RL IB business, with-profits contracts are grouped firstly by benefit design, then entry year and month, then policy term (or premium paying term for whole of life contracts), and finally age at entry.

4. (1) (c) (ii) The table below gives data on the number of model points relative to the number of individual contracts for RL IB business:

Subfund	Number of Individual Contracts	Number of Model Points
RL Main	558,129	280,196

4. (1) (c) (iii) Given the very small number of policies per model point (around 2 policies on average), no significant attributes of the business have been lost by grouping.

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4. (2) (a) Under the terms of the SL Scheme, the WPBR is credited with a “demutualisation enhancement” to distribute the estate over the lifetime of the policies. The rate credited to each policy’s WPBR was reduced to 0.75%pa in February 2006, effective both retrospectively and prospectively. The rate will continue to be reviewed regularly. The effect of reducing the enhancement from 1.22% to 0.75% was a reduction in the aggregate WPBR of £140m.

4. (2) (b) Not applicable.

4. (3) (a) Acquisition and maintenance expenses are charged to each with-profits fund, based on an agreement with Royal London Management Services Limited (RLMSL) which is agreed annually in advance. The with-profits funds pay fees to RLMSL in line with the agreement, which for acquired business imposes limits by which the fees may increase, and RLMSL incur all expenses.

Expense investigations were performed during 2005, with the results of this investigation being taken into account when setting service fees for 2005.

Investment expenses are charged to each with-profits fund, based on an Investment Management Agreement with Royal London Asset Management (RLAM), a wholly owned subsidiary of the Society. This agreement is subject to periodic review.

4. (3) (b) Acquisition and maintenance expense investigations are performed at least annually to confirm the adequacy of the maintenance fees charged by RLMSL, based on budgeted expenditure for the following year. Maintenance expenses charged to acquired UAG and SL with-profits business are set by reference to a formulaic approach documented in the respective schemes.

4. (3) (c) The table below analyses expenses reported in Form 43 lines L41 to L45 inclusive for 2005 (in £m):

With-profits fund	Acquisition charged to WPBR	Maintenance charged to WPBR	Other not charged to WPBR	Total
SL	0.0	3.6	13.8	17.4
RA OB	0.7	7.6	73.7	82.0
RL IB & OB	1.4	21.0	133.6	156.0
RA IB	0.0	9.1	5.8	14.9
UF IB	0.0	17.1	0.5	17.6
UF OB	0.0	6.9	0.3	7.2
Total	2.1	65.3	227.7	295.1

4. (3) (c) (i) The only acquisition expenses charged directly to the WPBR relate to new Intermediary business overseas bonds.

4. (3) (c) (ii) Maintenance expenses charged to the WPBR cover fees payable to RLMSL associated with administering the long term business plus investment expenses payable to RLAM. This covers all with-profits business with the exception of those classes described further in 4.(3)(c)(iv) below.

4. (3) (c) (iii) For all with-profits business where fees payable to RLMSL are charged to the WPBR, acquisition and maintenance fees are on an contract by contract basis for individual business or a per scheme basis for Group pensions business. The RLMSL agreement specifies for each product annual expense allowances in the form of amounts per policy, percentages of annual or single premium (as appropriate) and/or amounts per claim. Additionally investment expenses are charged as a percentage of the WPBR, where the percentage varies by category of asset as described in the UAG and SL Schemes. Full details of these expense allowances are given in paragraph 4.(6) of the Regulatory Peak Valuation Report.

4. (3) (c) (iv) Expenses charged to the with-profits funds, other than to the WPBR relate to the following items:

- non participating business written in the with-profits fund, covering both in force business and new pensions and protection business written in the RL IB & OB and RA OB subfunds. The SL Scheme allows certain new business to be written within the SL Closed fund;
- under the SL Scheme, fees payable to RLMSL for certain lines of acquired with-profits business, whose WPBR are held within the SL fund, are debited from the RL IB & OB and RAOB subfunds. The SL Scheme details to which subfund the business is allocated and consequently which subfund pays fees to RLMSL in line with the agreement. The realistic value of these future payments are held within other long-term liabilities as described in paragraph 8 below. In turn these subfunds are credited with those charges debited from these policies’ WPBR as described in 4.(5) below;

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- all new Intermediary with-profits business written following the Scottish Life acquisition is written directly in one of the RL IB & OB and RA OB subfunds. With the exception of the overseas bond where expenses are charged directly to the WPBR, the relevant subfund pays the commission and acquisition and maintenance fees to RLMSL. As for the acquired SL business described in the previous bullet point, the WPBR for these classes of business are debited with charges as described in paragraph 4.(5) below;
- balancing payments, which may be negative, are payable by the RL IB & OB and RA OB subfunds at the end of the year to ensure that the expenses incurred by RLMSL do not exceed the income in the form of fees payable by the Society. For 2005, shortfalls in respect of Intermediary business were apportioned between the RL IB & OB and RA OB subfunds and the rebate in respect of RL and acquired UAG business was allocated to the RL IB & OB subfund; and
- additional investment expenses may be charged directly to the with-profits fund for items such as property costs and legal fees. These items are not charged to the WPBR.

4. (4) For with-profits business written in the SL Fund, charges are currently deducted from each policy’s WPBR towards the costs of financial options, with the current rate being 0.49%pa for all business issued prior to 1998 and 0.16%pa thereafter.

Additionally under the terms of the SL Scheme, the WPBR is credited with a “demutualisation enhancement” to distribute the estate over the lifetime of the policies. In preparing Form 19 for the SL fund, the net effect of these two elements has been shown within Line L34 “Planned enhancements to the WPBR”, since the demutualisation enhancement exceeds the GAR charge.

With the exception of two minor classes of with-profits bond contracts (with an aggregate WPBR of less than £50m), no other charges were deducted from asset shares to cover the costs of guarantees or the use of capital.

4. (5) Charges are deducted from the WPBR for non insurance risk on the following types of with-profits contracts to cover expenses (both acquisition and maintenance including commission) and to provide a profit loading:

With-profits fund	Contracts affected
RL IB&OB	Business written post 30/6/2001 under the Scottish Life marketing brand
RA OB	Business written post 30/6/2001 under the Scottish Life marketing brand and former RA OB and RLM unitised with-profits pension business
SL	all acquired unitised with profits contracts, the Old Talisman range of conventional with-profits policies and all Deposit Administration (DA) business.

The table below gives an estimate of the charges deducted from the WPBR for these lines of business for the 2004 (in £m):

With-profits fund	Total Charges (Non Insurance Risk)
RL IB&OB	4.3
RA OB	3.3
SL	29.0

4. (6) The table below shows the estimated ratio of claims paid to the sum of WPBR adjusted for miscellaneous surpluses and/or deficits, averaged over the calendar years 2003, 2004 and 2005:

With-profits fund	Claims Ratio
SL	104%
RL IB & OB	141%
RA OB	118%
RA IB	122%
UF IB	119%
UF OB	102%

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4. (7) A summary of the investment returns credited to the WPBR for 2005 is given in the table below:

With-profits fund	Return %
RL IB&OB, RA OB, RA IB, UF IB and UF OB	17.4
SL – Other than DA Business	14.5
SL – DA Business	12.1

There is one pool of assets backing the RL IB & OB, RA OB, RA IB, UF IB and UFOB subfunds. All WPBR held in these subfunds are assumed to have the same weightings by asset class.

There are different assets mixes backing the WPBR for Deposit Administration (DA) and Other than DA business within the SL fund. The Other than DA business has benefited from a higher allocation of equity and property assets which have outperformed fixed interest assets and cash over 2005.

In accordance with the PPFM the assumed asset allocation backing each individual with profits policy in the SL Closed fund depends on the relationship between the WPBR and the attaching guaranteed benefits. Within this framework the total asset return stated in the table above is allocated to policies.

With-profits benefit reserve – Prospective Method

5. (1) (a) The discount rate is given in the table below:

With-profits fund	Gross	Net
RL IB&OB, RA OB, RA IB, UFIB and UFOB	4.10%	3.70%
SL	4.10%	3.40%

The pre-tax discount rate return is set equal to the annualised return on the 15 year gilt at the valuation date. The tax rate used is derived from those assumed for each individual asset class applied to the asset mix described in paragraph 6.(5) below.

5. (1) (b) The investment return is set equal to the discount rate described above and consequently no risk adjustments are required.

5. (1) (c) The rate of expense inflation is determined as projected RPI plus 1.00%, with RPI calculated as difference between the gross redemption yield on the 15 year gilt and the real yield on Index Linked gilts. At the calculation date, this rate was 3.75%pa.

5. (1) (d) A summary of key projected bonus assumptions are given in the table below:

RL IB&OB Subfund

Product Type	Annual Bonus	Final Bonus
RL IB Whole Life	0.5%pa simple	Current scale introduced for claims on 1 January 2006 retained.

RA OB Subfund

Product Type	Annual Bonus	Final Bonus
RP Pension Lapsed	0.5%pa compound	Current scale introduced for claims on 1 January 2006 retained.

RA IB Subfund

Product Type	Annual Bonus	Final Bonus
RA IB Whole Life	0.5%pa compound	Current scale introduced for claims on 1 January 2006 multiplied by a scalar that reduces uniformly from 100% to 90% over five years.

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UF IB Subfund

Product Type	Annual Bonus	Final Bonus
UF IB Whole Life	Current scale as described in Para 10(1) of the Regulatory Peak abstract, reducing by a maximum of 0.5%pa to a long term assumption of 0.5% pa,	Current scale introduced for claims on 1 January 2006 retained

5. (1) (e)

Expenses are projected in line with the RLMSL agreement described in paragraph 4 above, assumed to inflate at the rate described in 5.(1) (c). Key assumptions are:

RL IB&OB Subfund

Product Type	Expense Assumption
RL IB Whole Life	£5.94 per policy plus 0.08% of reserve

RA OB Subfund

Product Type	Expense Assumption
RP Pen Lapsed	£17.16 per policy plus 0.08% of reserve

RA IB Subfund

Product Type	Expense Assumption
Whole Life	£7.68 per policy plus 0.08% of reserve

UF IB Subfund

Product Type	Expense Assumption
Whole Life	£7.68 per policy plus 0.08% of reserve

5. (1) (f)

A summary of key persistency assumptions are given in the table below (showing annual lapse rates :

RL IB&OB Subfund

Product Type	Duration 5	Duration 10	Duration 15+
IB Whole Life	5.0%	2.0%	2.0%

RA OB Subfund

Product Type	Duration 5	Duration 10	Duration 15+
RP Pen Lapsed	2.5%	2.5%	2.5%

RA IB Subfund

Product Type	Duration 5	Duration 10	Duration 15+
Whole Life	n/a	2.5%	2.5%

UF IB Subfund

Product Type	Duration 5	Duration 10	Duration 15+
Whole Life	n/a	<ul style="list-style-type: none"> ▪ 3.0% (whole life) ▪ 6.0% (whole life with cash bonuses) 	<ul style="list-style-type: none"> ▪ 2.0% (whole life) ▪ 4.0% (whole life with cash bonuses)

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5. (2) Not applicable

Costs of Guarantees, options and smoothing

6. (1) Not applicable

6. (2) (a) With the exception of one immaterial financial options liability described below under paragraph 6.(2)(c), all business whose WPBR has been calculated using a retrospective method has valued its costs of guarantees, smoothing and options using a market consistent stochastic method.

6. (2) (b) (i) (ii) All costs have been calculated using grouped model points.

6. (2) (b) (iii) The market consistent stochastic model contains a number of products which calculate the market consistent costs of guarantees, smoothing and options. Each product models with-profits contracts with similar policy benefit characteristics.

The table below summarises the products and gives the number of policies and model points:

With-profits fund	Bonus	Class	Issued	Contracts	Model Points
RA OB	C	2	Pre 2001	83,742	734
	C	3	Pre 2001	3,182	43
	C	5	Pre 2001	33,562	855
	C	5	Pre 2001	30,542	540
	C	6	Pre 2001	6,432	240
	A	4	Pre 2001	15,835	101
	A	4	Post 2000	20,681	182
	A	7	Post 6/2001	5,347	36
	A	8	Post 6/2001	3,320	76
	A	10	Pre 2001	13,492	198
RL IB and OB Business	C	2	Pre 2001	122,399	423
	C	1	Pre 2001	677,291	408
	C	3	Pre 2001	15,835	101
	A	7	Pre 2001	103,459	877
	A	8	Pre 2001	135,310	445
	A	10	Post 1998	38,523	93
	A	4	Post 2000	569	112
	A	7	Post 6/2001	10,695	71
	A	8	Post 6/2001	6,641	151
Former UFI IB Business	C	1	Pre 1998	1,177,337	615
Former UF OB	C	2	Pre 1998	79,232	468
	C	5	Pre 1998	47,814	103
	C	6	Pre 1998	144,057	576
Former RA IB Business	C	1	Pre 2000	265,931	346
SL Fund	C	2	Pre 7/2001	75,703	247
	A	5	Pre 7/2001	42,431	644
	A	6	Pre 7/2001	33,140	898
	A	7	Pre 7/2001	14,678	140
	A	8	Pre 7/2001	721	61
	D	9	Pre 7/2001	62,527	652
	D	9	Pre 7/2001	1,703	272
Total				3,272,131	10,708

Bonus Method
A Accumulating (unitised) with-profits
C Conventional with-profits
D Deposit administration

Class follows those described in paragraph 3.(1)(a) above.

6. (2) (b) (contd.) (iii) Grouping of Contracts

The basis used to group policies for the purpose of calculating the cost of guarantees, smoothing and option is described below for RL and acquired UAG business:

Stage 1:

A review was undertaken of all the with-profits business written by the Society. The in force business was categorised by with-profits fund into:

- Product type - life savings, whole of life contracts and pensions business;
- Bonus declaration method – conventional with-profits, accumulating with-profits or deposit administration;
- Premium paying mode – regular or single;
- Pension benefit structure – funding for an annuity or funding for cash at retirement;

These contract groupings were reviewed for benefit characteristics and options that would require separate quantification under a market consistent valuation method. For example, pension contracts may or may not have been written with a guaranteed annuity option or savings contracts may have been written with a guaranteed minimum bonus rate prior to a certain date.

Stage 2:

Grouping criteria within each product are chosen to ensure that the most important features of the projection of the in force business are not lost. The key grouping criteria are:

- Guaranteed annuity rate attaching and gender of policyholder
- Different bonus series within stochastic product
- Year of maturity
- Policy term
- Age at entry

For those products with a low cost of guarantees expressed as a percentage of WPBR, an additional grouping criteria was included to separate policies with guarantees projected to exceed and fall below WPBR on maturity.

Stage 3:

Using monthly intervals for grouping would produce too many model points and lead to serious degradation in run time for little change in accuracy of projection. Expanding this grouping interval is the principal tool for reducing the number of model points and improving run times.

The paragraphs below describe the approach taken for key product categories.

(a) Endowments:

- Maturity year needs to capture the projected run off profile of the business. Typically grouping will be by individual years of maturity for the first 10 years of the projections, though this will depend upon the projected development of claim outgo and particularly projected guarantee and smoothing costs. Thereafter grouping will be triennial, with quinquennial when claim outgo falls to a de minimis level, typically in more than 20 years time.
- Policy term is grouped in 5 year bands, centred around the quinquennial terms (ie term 15 covers terms 13 – 17 inclusive), to which the majority of the business has been sold.

(b) Pensions:

- Policies with and without GARs are grouped separately. For policies with GARs, retirement age is retained in the grouping to ensure that the correct GAR is captured.
- Maturity year needs to capture the projected run off profile of the business. Typically claim outgo builds up over the next decade and peaks in 20 to 30 years time. The average duration of the business varies by product line and originating Company. Given the longer term nature of this business, grouping will be in annual at peak periods of claim outgo otherwise triennial is used.
- Policy term is typically grouped in 3 year bands.

For SL branded business, the grouping principles described above for RL and Ex UAG business were followed. However, the model points were grouped analytically, with the term/duration granularity varying by the amount of WPBR for the policies under investigation. For example, where there were significant volumes of business the model points were taken at more frequent intervals. This in turn results in the computation time being allocated in proportion to the WPBR.

Validation of Grouping

For each stochastic model product, cashflows are projected initially by running all individual contracts through the stochastic model on a single deterministic run using economic assumptions described in paragraph 5.(1) above and best estimate non-economic assumptions. Results are compared against those produced by the deterministic models used to calculate the WPBR using an equivalent projection basis. This ensures that the coding of the stochastic model products correctly reflects the product features.

These runs are repeated using the grouped model points and the comparison is made between these projected cashflows and the stochastic model run performed using individual model points.

The key validation check is that the difference in the cost of guarantees between the two runs is considered acceptable. The maximum tolerance allowed for each with-profits fund was generally a difference of 2.5%, i.e. less than £2.0m for the largest guarantee cost of any stochastic model product, out of total guarantee costs of approximately £390m on this deterministic projection basis. Individual products within a with-profits fund may in isolation exceed this tolerance provided the fund level tolerance is not breached. Grouping would be further refined for a product if the difference exceeded 5% and the amount of guarantees was considered material.

Other validations performed to ensure that significant attributes of the contracts have not been lost in the grouping are a comparison of :

- projected revenue account cashflows, such as premiums claims and expenses;
- projected costs of guaranteed benefits, assets shares and claim outgo in excess of guarantees; and
- the present value of the cost of guarantees over the run off period.

6. (2) (c)

For certain contract types where the WPBR falls below a de minimis level, the costs of guarantee, smoothing and options are not calculated directly. Instead, the stochastic results of the closest available stochastic product are “scaled up” based on the ratio of the unmodelled WPBR to modelled WPBR.

This covers certain small lines of SP UWP bonds and the unmodelled business calculated using Retrospective method B described above.

RL OB Pensions policies issued prior to October 1986 incorporate a guaranteed rate of minimum pension. The cost of this financial option has been valued at £14m.

6. (3)

The method of calculating the cost of Guaranteed Minimum Pension benefits on Crest Secure policies has been changed since the last valuation. The previous calculation method using the “scaling up” approach described above has been replaced by a market consistent stochastic method. This projects the available funds to retirement and compares the value with the cost of providing the guaranteed pension on the interest rate projected to be in force at that time.

Reconsideration of office practice and previously received legal advice has led to a change in modelling approach for GARs on early retirement for business within the SL Closed fund only. Previously, it had been assumed that no GAR would be payable on early retirement prior to the contractual maturity date. For the December 2005 submission (and private June 2005 submission), this assumption has been amended so that GARs apply at all retirement dates, whether early or contractual. This has been achieved within the stochastic model by zeroising the rates of early retirement and assuming that all policies mature at the contractual maturity date.

For unitted business sold under the Retail distribution arm, the cost of smoothing has been amended to reflect the move to determining payouts set by reference to unsmoothed asset shares.

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6. (4) (a) (i) A description is given below for each of the costs of guarantees, smoothing and options separately:

Guarantees:

Guarantee Offered	Class
CWP Business - maturity values being subject to the minimum of sum assured plus guaranteed benefits. Death benefits in excess of asset share are charged to the WPBR of remaining policies. Surrender values, unless guaranteed contractually, are treated as being fully discretionary and no guarantee cost is calculated.	1, 2, 3, 5 and 6
DA Business – maturity value being face value of units.	9
UWP Life Bonds - guarantees relate to contractual instances when Market Value Adjusters (MVA's) cannot be imposed. This includes regular withdrawals under a contractual maximum of the original premium paid and policy anniversaries when surrenders are MVA free. MVA free surrender dates were removed from contracts issued after 31/12/2000.	4
UWP Individual Pensions - MVA free dates apply on the retirement date chosen at outset and for windows prior to this date which are product dependent	7 and 8
UWP and DA Group Pensions – exits prior to retirement are free of MVAs where the exit does not form part of a mass-discontinuance of a pension scheme	7, 8 and 9

A description of the extent to which guarantees are in or out of the money is given below:

The majority of life endowment business maturing over the next few years has guarantees that are in the money either because no final bonuses are currently being paid or the guaranteed benefits exceed the WPBR. The extent to which the guarantee is in the money depends on the term of the contract and the originating company. For example on a deterministic projection basis, for material classes of business, the cost of guarantees ranges from 0% to 20% of WPBR.

Longer dated policies, ie both life policies and pensions policies maturing in more than five years time, exhibit greater variability in the extent to which the guarantee is in the money. The key determinant here is the originating company, with outstanding term also being relevant. For example on a deterministic projection basis, for material classes of business, the cost of guarantees ranges from 0% to 55% of WPBR. The higher end relating to RA OB subfund and former UFI OB regular premium pensions business, with other classes of business having significantly lower percentages.

Options

These relate primarily to Guaranteed Annuity Rates (GARs) offered on pensions contracts. Details of material GARs are given in the table below:

Guarantee Offered	Business Class
Deferred annuity contracts where there is a minimum annuity guaranteed at retirement subject to a guaranteed conversion factor to produce a “cash equivalent” value to which current annuity rates are applied to produce the annuity payable, if greater than the minimum.	5 (RA OB pre 1993)
Fund for cash contracts where there is a minimum conversion rate per unit of maturity value into an annuity for comparison with current market conversion rates	5 (RA OB Post 1992 and SL only), 6 (RA OB and SL only)
DA Business - certain policies in this class attract Guaranteed Minimum Pensions as a result of contracting out of SERPS/S2P and these have been modelled explicitly using a market consistent approach.	9

The table below includes the guaranteed minimum annuity rate basis for the key assumptions of interest rates and mortality:

With-profits fund	Interest Rate	Mortality Basis
RA OB (pre 9/92)	7.00%	a(55) M/F Select
RA OB (post 8/92)	5.00%	IM/F80(C=2020) Ultimate
RA OB (post 8/92)	5.00%	IM/F80(C=2020) Ultimate
SL	4.50%	PA90M/F-2 Ultimate
SL	4.50%	PA90M/F-2 Ultimate

Given current levels of interest rates and projected mortality experience compared to that that priced within the original mortality guarantees, all GAR options are currently “in the money” ranging on a deterministic projection basis from 35% to 75% of the WPBR.

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The Guaranteed Minimum Pension benefit for Crest Secure business is strongly in the money for most of the policies concerned. The cost of this option is 87% of the WPBR of those policies.

Smoothing

This comprises two elements, covering:

- A “glidepath” cost being the cost of moving to target payout ratios consistent with the PPFMs; and
- Natural variability in the investment returns earned on the assets supporting the business.

6. (4) (a) (ii) The asset model is proprietary software developed by a third party provider (Barrie and Hibbert). Calibrations are provided by the third party to which the individual characteristics of the subfund are applied. The key elements of the nature and input calibration parameters within the asset model (Economic Scenario Generator “ESG”) are:

- the interest rate model used is an annual time-step version of the LIBOR Market model (LMM). The model is calibrated to annual forward rates based on the UK government yield curve plus a fixed margin of 10bps. The volatility structure of these forward rates are calibrated to 20 year at the money swaption volatilities. The table below gives calibration inputs at quinquennial durations:

Duration	Yield Curve + 10bps (spot yields)	Implied Volatilities
5	4.3%	13.0%
10	4.2%	12.5%
15	4.2%	12.5%
20	4.1%	12.4%
25	4.1%	12.4%

- an extension of a log-normal equity model which allows calibration to observed market FTSE 100 options varying by strike price and duration where available, which currently do not exceed ten years. The table below provides data on the implied volatilities input into the model:

Duration	Strike				
	80%	90%	100%	110%	120%
1	18.9%	15.8%	12.9%	10.8%	9.8%
2	19.0%	16.5%	14.1%	12.3%	11.1%
3	19.5%	17.2%	15.2%	13.5%	12.4%
5	20.5%	18.6%	16.9%	15.5%	14.5%
10	22.5%	21.1%	19.8%	18.8%	17.9%

- a lognormal property volatility model using a fixed estimated implied volatility of 15%, being a best estimate as the property option prices required for market consistent calibration do not exist; and
- a corporate bond model which is calibrated using a long term expected “credit transition” matrix and observed spread volatility to the year end market prices of a sample of 513 investment grade UK stocks.

Because net cashflow is negative each year in the future, the term of the fixed interest assets has been assumed to reduce in line with the run off of the business, ie the bond portfolio is assumed to be held to maturity.

The table below provides details of the key input correlations included within the proprietary asset model, based on observed results from the first simulation year for the scenarios used to value the FPRLs. These correlations reflect the outcome of the calibration approach used by the Society, based on inputting the provider’s best estimates. These are based on their analysis of past data and judgment of future trends. The third party have supplied supporting documentation describing the rationale for their use in market consistent calculations. In performing these calculations, the Society has maintained these assumptions without adjustment:

Asset Class	Equity	Property	Bonds (Gilts)	Bonds (corporates AA to BBB)	Cash Rate
Equity	100%	24%	12%	22% - 42%	(24)%
Property	24%	100%	7%		
Bonds (Gilts)	12%	7%	100%	84% - 94%	
Corporates (AA to BBB)	22%-42%		84%-94%	100%	
Cash Rate	(24)%				100%

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Shaded boxes relate to correlation assumptions for asset pairings that are not readily available (but are the least material).

6. (4) (a) (iii) The required tables are given below, based on the ESG output for the 5000 simulations run through the stochastic model.

Notes to Table (from Paragraph 6(4) of the Interim Prudential Sourcebook for Insurers for ease of reference)

- Row 1 should be completed showing the value of cash payments of £1,000,000 due n years after the valuation date.
- Rows 2 to 15 inclusive should be completed for the appropriate asset classes showing the value of a put option on a portfolio worth £1,000,000 on the valuation date exercisable n years after the valuation date with strike price of $K * £1,000,000 * (1+r*p)^n$.
- All references to 15 year bonds mean rolling bonds traded to maintain the 15 year duration at all future dates. The corporate bonds should be assumed to be rolling AA rated zero coupon bonds.
- Row 16 should be completed showing the value of sterling receiver swaptions with a strike of 5% exercisable n years after the valuation date with swap durations on exercise of L years. The values should be expressed as a percentage of nominal.
- In carrying out the calculations required to complete the table above firms must assume, where appropriate, that the options for which a value is to be included in the table are options which, where appropriate, are based on underlying asset portfolios which are continuously rebalanced to the stated proportions. Swaptions in relation to which a value must be included in the table must be based on swaptions with monthly payments. Firms must include in the table the value that their liability model would produce for such options and values will thus reflect the actual time-intervals underlying their valuation models. The property put options should be assumed to relate to a well diversified portfolio of United Kingdom commercial property.
- A zero trend growth in property prices should be assumed where this is relevant.
- In each case the options should be valued with reinvestment of any dividend income into the FTSE All Share index and reinvestment of any rental or other property income into United Kingdom property.
- Tax should be ignored in all calculations.
- All options should be assumed to be European-style.
- A firm may consider that its model does not need to be calibrated to produce a reasonable value for a particular entry in the table because that entry is insignificant to the valuation of its assets and liabilities. In such circumstances the firm may leave an entry in the table blank, but must give an explanation as a note to the table.

		K	0.75			
n	Duration (n)		5	15	25	35
r	Annualised compound equivalent of the risk free rate assumed for the period (r)		4.29%	4.20%	4.08%	3.98%
1	Risk-Free Zero Coupon Bond		£810,494	£539,683	£368,089	£255,110
2	FTSE All Share Index (p=1)		£58,741	£203,574	£310,656	£395,581
3	FTSE All Share Index (p=0.8)		£51,144	£162,955	£231,375	£277,069
4	Property (p=1)		£30,927	£101,583	£169,808	£232,003
5	Property (p=0.8)		£24,191	£68,169	£105,119	£134,133
6	15yr Risk-Free ZCBs (p=1)		£3,488	£9,516	£9,908	£17,011
7	15yr Risk-Free ZCBs (p=0.8)		£2,236	£4,535	£3,259	£2,998
8	15yr Corporate Bonds (p=1)		£5,046	£17,372	£26,592	£44,553
9	15yr Corporate Bonds (p=0.8)		£3,297	£8,720	£9,659	£12,321
10	Portfolio of 65% FTSE All Share and 35% property (p=1)		£31,477	£130,932	£218,350	£296,358
11	Portfolio of 65% FTSE All Share and 35% property (p=0.8)		£25,552	£96,989	£149,948	£191,005
12	Portfolio of 65% equity and 35% 15yr risk free ZCBs (p=1)		£25,724	£116,547	£195,262	£266,524
13	Portfolio of 65% equity and 35% 15yr risk free ZCBs (p=0.8)		£20,585	£85,134	£132,352	£169,188
14	Portfolio 40% equity, 15% property, 22.5% 15 yr risk free ZCBs & 22.5% 15yr corporates (p=1)		£9,483	£59,885	£114,256	£172,358
15	Portfolio 40% equity, 15% property, 22.5% 15 yr risk free ZCBs & 22.5% 15yr corporates (p=0.8)		£6,552	£37,355	£64,999	£91,928
16	Sterling Receiver Swaptions		10.37%	9.63%	7.77%	5.85%
			Swap Duration = 15 years			

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6. (4) (a) (iii)
(contd.)

		K	1			
n	Duration (n)		5	15	25	35
r	Annualised compound equivalent of the risk free rate assumed for the period (r)		4.29%	4.20%	4.08%	3.98%
1	Risk-Free Zero Coupon Bond	£810,494	£539,683	£368,089	£255,110	
2	FTSE All Share Index (p=1)	£151,585	£341,907	£474,298	£577,201	
3	FTSE All Share Index (p=0.8)	£132,333	£275,142	£355,383	£405,461	
4	Property (p=1)	£132,450	£234,004	£320,606	£396,366	
5	Property (p=0.8)	£110,443	£167,629	£209,290	£240,587	
6	15yr Risk-Free ZCBs (p=1)	£56,313	£63,256	£75,277	£119,690	
7	15yr Risk-Free ZCBs (p=0.8)	£39,644	£27,597	£17,625	£19,777	
8	15yr Corporate Bonds (p=1)	£65,120	£88,975	£111,257	£154,247	
9	15yr Corporate Bonds (p=0.8)	£47,449	£45,675	£41,951	£48,571	
10	Portfolio of 65% FTSE All Share and 35% property (p=1)	£118,765	£258,759	£368,642	£464,245	
11	Portfolio of 65% FTSE All Share and 35% property (p=0.8)	£99,202	£195,031	£258,340	£305,302	
12	Portfolio of 65% equity and 35% 15yr risk free ZCBs (p=1)	£103,850	£234,967	£335,795	£425,276	
13	Portfolio of 65% equity and 35% 15yr risk free ZCBs (p=0.8)	£86,009	£175,820	£232,148	£274,909	
14	Portfolio 40% equity,15% property,22.5% 15 yr risk free ZCBs & 22.5% 15yr corporates (p=1)	£77,362	£164,094	£240,619	£316,846	
15	Portfolio 40% equity,15% property,22.5% 15 yr risk free ZCBs & 22.5% 15yr corporates (p=0.8)	£59,263	£109,299	£146,008	£179,637	
16	Sterling Receiver Swaptions	12.98%	11.88%	9.51%	7.12%	Swap Duration = 20 years

		K	1.5			
n	Duration (n)		5	15	25	35
r	Annualised compound equivalent of the risk free rate assumed for the period (r)		4.29%	4.20%	4.08%	3.98%
1	Risk-Free Zero Coupon Bond	£810,494	£539,683	£368,089	£255,110	
2	FTSE All Share Index (p=1)	£521,101	£696,153	£849,603	£974,166	
3	FTSE All Share Index (p=0.8)	£466,345	£565,209	£641,943	£689,567	
4	Property (p=1)	£521,868	£608,170	£694,840	£783,107	
5	Property (p=0.8)	£466,923	£467,938	£484,417	£502,948	
6	15yr Risk-Free ZCBs (p=1)	£499,916	£499,923	£505,113	£532,150	
7	15yr Risk-Free ZCBs (p=0.8)	£439,196	£328,801	£250,043	£223,656	
8	15yr Corporate Bonds (p=1)	£503,429	£508,619	£520,243	£556,064	
9	15yr Corporate Bonds (p=0.8)	£442,709	£339,259	£274,009	£253,855	
10	Portfolio of 65% FTSE All Share and 35% property (p=1)	£510,361	£618,272	£737,334	£847,359	
11	Portfolio of 65% FTSE All Share and 35% property (p=0.8)	£453,107	£483,082	£530,862	£570,394	
12	Portfolio of 65% equity and 35% 15yr risk free ZCBs (p=1)	£504,233	£586,528	£692,835	£796,421	
13	Portfolio of 65% equity and 35% 15yr risk free ZCBs (p=0.8)	£445,382	£451,254	£491,190	£527,367	
14	Portfolio 40% equity,15% property,22.5% 15 yr risk free ZCBs & 22.5% 15yr corporates (p=1)	£502,144	£534,828	£603,483	£684,686	
15	Portfolio 40% equity,15% property,22.5% 15 yr risk free ZCBs & 22.5% 15yr corporates (p=0.8)	£441,803	£388,996	£394,043	£415,004	
16	Sterling Receiver Swaptions	15.25%	13.76%	10.94%	8.15%	Swap Duration = 25 years

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6. (4) (a) (iv) The initial UK equity and property yields are 3.6% and 4.3% respectively.
6. (4) (a) (v) The Society holds a basket of overseas equities and bonds, of which only those denominated in Euros qualify (at 3.5% of realistic assets) as a significant territory under PRU 7.4.63R. Given the diversification benefit of different small territorial equity holdings both between territories and with UK holdings, achieved by the ESG having a correlation assumption materially less than one, all equities are modelled as being wholly UK. Overseas bonds are modelled as UK equities.
6. (4) (a) (vi) The calibration of the model has been set at the company level with one set of simulations being used to model all classes of business. Given the paucity of the data available on observed option data for equities beyond 10 years and properties, the ESG calibration has been developed using available information and where data is unavailable the longest available data has been assumed to apply thereafter, i.e. with no assumed mean reversion.

So for example, all UK observed equity option volatility assumptions at durations in excess of ten years are set equal to the calculated term ten value. At the valuation date, implied volatility at durations above term 10 continue to increase from those shown in the table in 6.(4)(a)(ii) above. The table below shows the implied volatility calculated by valuing a put option, using the ESG simulations for determining the FPRLs, for the durations and strikes given:

Duration	Strike		
	80%	100%	120%
15	23.9%	22.9%	22.1%
20	25.2%	24.4%	23.8%
25	26.0%	25.4%	24.9%
30	26.7%	26.2%	25.8%

For life business, the majority of the guarantee costs will arise within the next ten years, particularly when considered in terms of present value. Conversely, the cost of guarantees for pensions business will exceed ten years where implied volatilities for equities are based on the longest available market data.

The table below gives an estimate of the average outstanding duration of the guarantees, including financial options, for each with-profits fund, split life and pensions:

With-profits fund	Average Duration (years)		Available Equity Option ?	
	Life	Pension	Life	Pension
SL	4	17	YES	NO
RA OB	4	14	YES	NO
RL IB & OB	7	21	YES	NO
Former RA IB	6	n/a	YES	n/a
Former UF IB	11	n/a	NO	n/a
Former UF OB	14	19	NO	NO

The validation tests below include comparing a 95% confidence interval for simulation produced option implied volatilities against observed market-traded instrument data. Observed market data volatilities for at the money swaptions and for equity volatilities with strikes in the range of 90% to 110% lay within the confidence intervals. At the 95% confidence level, for higher strike equity options the simulations slightly overstated equity option implied volatility and for lower strikes the simulations slightly understated equity option implied volatility.

6. (4) (a) (vii) The following validation tests are performed on the simulation output:
- for each asset class, £1 is accumulated for every annual projection period within the run off period and the net present value taken by discounting at the accumulated cash return over the equivalent period. The calculations are performed for each simulation. The average value is taken across all simulations and from the data, a 95% confidence interval is taken. The results are plotted to ensure that the expected value of £1 lies within the 95% confidence interval.
 - A yield curve is calculated from an average of the observed simulated cash returns, again with a 95% confidence interval being taken. This is compared to an observed yield curve taken from the Bank of England web site increased by 10bps at all durations. This ensures that the model is based on a correctly calibrated yield curve.
 - The simulation produced option implied volatilities were reviewed to ensure that the market observed implied volatilities for equities and swaptions lie within a 95% confident interval
 - The results were repeated for four independent sets of simulations, with the chosen set determined by reference to the best fit over the run off period of the projected fund accumulated returns.

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6. (4) (a) (viii) The number of simulations used for the valuation was 5000. A variance reduction technique, known as antithetic variables, was used to reduce the standard error for the chosen simulations.

The table below provides results of standard error calculations for each subfund, expressed as a percentage of the total market consistent liability calculated by the model (guarantees, smoothing and options), using the 5000 simulations adopted for the valuation:

With-profits fund	Standard Error (%)	Market Consistent Costs of Guarantees, smoothing and Options (£m)
RA OB	0.35%	453.5
RL IB&OB	0.90%	379.0
RA IB	0.50%	36.0
UF IB	0.85%	56.9
UF OB	0.65%	154.5
SL	0.35%	475.8
Total	0.50%	1,555.7

The 95% confidence interval associated with these standard errors is approximately plus or minus two times the standard errors quoted above. The magnitude of these standard errors and their associated 95% confidence interval were considered to be sufficiently low so as to confirm convergence in the model results.

6. (4) (b) Not applicable

6. (4) (c) Not applicable

6. (5) (a) The following key assumptions have been incorporated when projecting forward the assets and liabilities in the Base scenario:

- The proportions of assets invested for the benefit of with-profit business in equities and property are:

	2006	2007-2010	2011 and after
RL IB&OB, RA OB, RA IB, UF IB and UF OB	62.5%	constant	62.5%
SL Closed Other than DA	33.0%	reducing by 2.5% pa to	20.5%
SL Closed DA	15.0%	reducing by 1% pa to	10.0%

- Annual bonuses are reduced progressively from the most recently declared rates, according to line of business, to:

Line of Business	Assumptions
CWP business sold before 1 July 2001:	0.25% pa
UWP Life business sold before 1 July 2001	1.00% pa to 4.00% pa (dynamically linked to investment returns)
UWP Pensions business sold before 1 July 2001:	0.25% pa to 1.50% pa (dynamically linked to investment returns)
DA Pensions business sold before 1 July 2001:	1.00% pa to 3.00% pa (dynamically linked to investment returns)
UWP Business sold after 1 July 2001:	1.00% pa to 4.00% pa (dynamically linked to investment returns)

- For business in the RA OB subfund the target payout ratios at maturity exceed 100%

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6. (5) (b)

The table below gives indicative equity backing ratios (which for the avoidance of doubt excludes properties) in five and ten years' time, which as described above is independent of investment return:

With-profits fund	Products	EBR (excl. Property)
RA OB	All	47.5%
RL IB&OB	All	47.5%
RA IB	All	47.5%
UF IB	All	47.5%
UF OB	All	47.5%
SL	Other than DA	18.0%
SL	DA	9.0%

The table below gives indicative annual bonus rates in five and ten years' time for accumulating with-profits business:

Class	Base	Base + 72bps	Base – 72Bps
4	2.50%	2.50%	2.00%
7 (pre 7/2001)	1.00%	1.00%	0.25%
7 (post 6/2001)	1.00%	1.50%	1.00%
7 (SLP)	1.00%	1.00%	1.00%
8 (pre 7/2001)	1.00%	1.00%	0.25%
8 (post 6/2001)	1.00%	1.50%	1.00%
8 (SLP)	1.00%	1.00%	1.00%
9	2.50%	3.00%	2.00%

There are no significant equity derivative contracts to take into consideration.

6. (6)

The tables below give persistency assumptions for the key classes of business

Exit Rates (%pa) for major lines of RL IB&OB pre acquisition business

Year	RL OB Life (RP) (Surrender & Pup)	RL IB (Surrender & Pup)	RL OB Pen (RP) (Surrender)	RL OB Pen (RP) (Pup)
6	9.3	7.0	1.25	6.0
7	7.1	5.0	1.25	6.0
8	5.9	3.5	1.50	5.5
9	4.3	3.0	1.50	5.0
10+	2.6	1.5	1.00	2.5

For IB and OB Life business, conversions to a paid up non profit contract for reduced benefit (“Pups”) are not modeled explicitly. An increased surrender rate is input into the model. All business has been in force at least five years.

Exit Rates (%pa) for major lines of acquired UAG business

(a) Surrenders

Year	RA IB	RA OB Life (RP)	RA OB Pens (RP)	UF OB Life	UF IB (Endts)
6	2.5	4.30	1.75	5.0	7.0
7	2.5	4.10	1.75	4.9	5.0
8	2.5	3.30	1.50	3.7	5.0
9	2.5	2.80	1.50	3.0	4.0
10-11	2.5	2.50	1.50	2.8	4.0
12-16	2.5	2.50	1.25	2.8	4.0
17+	2.5	2.50	1.00	2.8	4.0

(b) Pup Rates

Year	RA IB	RA OB Life (RP)	RA OB Pens (RP)
6	2.5	2.20	5.0
7	2.5	2.50	3.0
8	2.5	1.90	3.0
9	2.5	1.30	3.0
10+	2.5	1.30	3.0

All acquired UAG business has been in force at least five years.

Exit Rates (%pa) for major lines of SL Business

(a) SL Pensions business

Year	Pension RP (Surrender)	Pension SP (Surrender)	Early Retirement additions by age		Year	Pension RP (Pup)
1	0.5	0.5	60	0.0	1	4.8
2	1.1	1.0	61	0.0	2	9.5
3	1.6	1.5	62	0.0	3	9.5
4	2.1	2.0	63	0.0	4	9.5
5	2.1	2.0	64	0.0	5	8.6
6	2.1	2.0	65	0.0	6	7.6
7	2.1	2.0	66-69	0.0	7	6.7
8	2.1	2.0	70	0.0	8	5.7
9	1.8	1.75	71-74	0.0	9	5.3
10+	1.8	1.75	75	0.0	10+	5.3

(b) SL Life business

Year	Life RP (Surrender)	Year	Life RP (Surrender)	Year	Life RP (Pup)
1	5.0	11	5.4	1	0.0
2	5.0	12	5.0	2	0.0
3	7.5	13	4.7	3	0.0
4	6.0	14	4.3	4	0.0
5	5.0	15	4.0	5	0.0
6	4.5	16	3.6	6	0.0
7	4.0	17	3.2	7	0.0
8	3.5	18	2.9	8	0.0
9	3.25	19	2.5	9	0.0
10	5.8	20+	2.2	10+	0.0

The pension rates above apply to personal pensions which form the majority of the SL pensions business. Separate rates apply to EPP and S32 contracts. In order to retain the cost of GARs on retirement at any age the early retirement decrement is set to zero. The benefits given on conversion to paid-up for life business are broadly equivalent to actuarial value of those policies remaining in-force. Office experience of conversions to paid-up status for this business is less than 3.5% of the total portfolio after 20 years. Therefore, no Pup assumption is made.

No decrements are assumed prior to vesting for the Crest Secure Guaranteed Minimum Pension benefits as a benefit of similar or slightly lower value would be available on earlier exit or death.

The centrally assumed take up rates for GARs is 80% at the valuation date, based on an examination of recent experience, increasing uniformly to 85% in 15 years time. Further details are given in paragraph 6.(7) below.

The assumed future rates of annuitant mortality experience as described in the tables below:

RA OB Subfund

Class	Proportion	Age Rating	Table
Males	102.5%	0	PMA92 MC
Females	102.5%	0	PFA92 MC

SL Fund

Class	Proportion	Age Rating	Table
Individual - Males	97.5%	0	PMA92 MC
Individual - Females	97.5%	0	PFA92 MC
Group - Males	102.5%	0	PMA92 MC
Group - Females	102.5%	0	PFA92 MC

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6. (7)

The following policyholder actions are assumed:

- GAR take up rates are scenario and calendar year specific. If observed bond yields lie within $\pm 1\%$ of long bond yield, then the take up rate is as described in paragraph 6.(6) above. As yields fall below this range, the take up rate increases and vice versa, with the minimum take up rate always being 80% and the maximum set at 100%.
- The stochastic model does not incorporate any dynamic links between policyholder lapse rates and investment performance. However for single premium bonds with an MVA free point, exit rates are assumed to be half those assumed for bonds with no such guarantee in the period leading up to that point and four times greater at the MVA free point itself. In the calendar year with the MVA free point, all exits are assumed to occur at the date the MVA free guarantee is given.
- UWP pensions contracts include a best estimate of early retirements. For SL branded business, no early retirements are assumed where policy literature indicates that MVA's will not be applied. This is 5 years for Group Personal Pensions business and 1 year for all other SL branded UWP business.

Financing Costs

7.

Not applicable

Other long-term insurance liabilities

8.

There are no values included in Lines 46 of Form 19.

The table below describes the liabilities included within Lines 47 of Form 19:

With-profits fund	MER	PPR	SL Expense Provision	Other	Total
RA OB	0.0	5.5	3.9	1.3	10.7
RL IB & OB	0.0	83.8	20.5	4.8	109.1
UFI OB	0.0	0.0	0.0	2.0	2.0
SL Closed	10.0	0.5	0.0	23.2	33.7
Total	10.0	89.8	24.4	31.3	155.5

The nature of the most material liabilities is as follows:

- Mortgage Endowment Reviews (MER) – this represents a provision for potential redress of mortgage endowment contracts.
- Personal Pension Review (PPR) – this represents a provision for the costs associated with redressing policyholders who were mis-sold pension policies. The most significant proportion of this provision relates to policyholders who were redressed by way of a guarantee to meet occupational scheme benefits. This guarantee has been calculated using the same market consistent asset scenarios that determine the costs of guarantees, smoothing and options.
- SL expense provision – this is the realistic value of expenses payable to RLMSL in excess of loadings receivable from acquired SL UWP business allocated to the RL IB & OB subfund and RA OB subfunds under the SL Scheme. This is consistent with the description given in the second bullet under paragraph 4.(3)(c)(iv) above.
- The entry under Other SL Closed represents three items, 1.9m to make good previous GAR policy underpayments, 11.3m in respect of future charges payable to the RA OB subfund on Crest Secure business and a 10.0m provision in the light of uncertainty regarding the reliability of policy data.

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Realistic current liabilities

9. The table below provides a summary of the realistic current liabilities by with-profits fund (in £m):

With-profits fund	Subordinated Debt	Claims outstanding	Creditors – insurance operations	Provisions - Tax	Other Creditors, accruals and deferred income	Total
SL	125.0	12.3	27.9	-	49.3	214.5
RA OB	142.8	10.3	3.1	0.2	9.7	166.1
RL IB & OB	265.1	29.5	95.0	35.7	74.5	499.8
RA IB	0.0	0.0	6.5	12.5	3.3	22.3
UF IB	0.0	0.0	2.4	28.2	4.2	34.8
UF OB	0.0	1.6	6.9	9.7	5.8	24.0
Total	532.9	53.7	141.8	86.3	146.8	961.5

This exceeds the quoted regulatory current liabilities (Form 14 Line 49) value of £949.2m by £12.3m. This difference reflects the write up of the subordinated debt in the RL IB & OB and RA OB funds to market value.

Risk capital margin

10. (a) The risk capital margin amounted in aggregate to £229.5m. The amounts calculated separately for each with-profits fund are as follows:

RL IB & OB	£216.0 m
RA OB	£13.5 m
RA IB	£0.0m
UF IB	£0.0m
UF OB	£0.0m
SL	£0.0m

The RCM is zero for the SL, RAIB and UF IB subfunds because in both the base scenario and stress tests, planned enhancements to WPBRs are varied to maintain a zero working capital. The approach adopted for the UFOB subfund is described further under paragraph 12 below.

In performing the RCM:

10. (a) (i) The most onerous assumptions for the market risk test for all equities and properties are shown in the table below.

Asset Class	Change	Direction
Equities	20.0%	FALL
Properties	12.5%	FALL

10. (a) (ii) The most onerous assumption for the market risk test for all fixed interest assets is shown in the table below.

Asset Class	Change	Direction	Long Gilt Yield
Fixed Interest	72bps	FALL	4.12%

10. (a) (iii) The impact of the credit risk scenario and the percentage change in asset value under the credit risk event is given in the table below:

Asset Category	RL IB & OB, RA OB, RA IB, UF IB and UF OB Subfunds		SL Fund	
	Spread	Value	Spread	Value
Bonds	+70bps	-5.6%	+71bps	-5.9%
Debts	n/a	n/a	n/a	n/a
Reinsurance	n/a	n/a	n/a	n/a
Other Reins	n/a	n/a	n/a	n/a
Other	-	-	-	-

The category of bonds covers all assets reported under Form 48 Lines L13 and L23, non approved securities under Form 48 Lines 14 and L24 and approved securities reported under Form 48 Lines L12 and L22 that are subject to the credit risk test.

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No credit risk test is considered necessary for swaption assets held in respect of financial options, given the level of collateral supporting these assets and their lack of sensitivity to credit spread risk.

10. (a) (iv) The most onerous assumption for the persistency risk test is an IMPROVEMENT by 32.5% for all lines of business. The impact on the realistic value of liabilities of this projected improvement in persistency is as follows:

With-profits fund	% Change in Realistic Value of Liabilities for persistency test
RL IB&OB	1.3%
RA OB	8.9%
RA IB	0.0%
UF IB	0.0%
UF OB	0.0%
SL	0.0%

10. (a) (v) Not applicable

10. (b) (i) Additional management actions assumed in excess of those described in 6.(5) (a) above are:

- The proportion of assets invested in equities and property are assumed to reduce by 10 percentage points from the values shown for the Base scenarios above with effect from 31 December 2006 (i.e. 12 months after the date of the assumed stress event).
- Annual bonuses at 31 December 2006 are assumed to reduce beyond that assumed in the base scenario according to line of business to:

Life of Business	Assumptions
CWP business sold before 1 July 2001:	0.00% pa
UWP Life business sold before 1 July 2001	0.25% pa to 1.00% pa (dynamically linked to investment returns)
UWP Pensions business sold before 1 July 2001:	0.00% pa to 0.25% pa (dynamically linked to investment returns)
DA Pensions business sold before 1 July 2001:	0.25% pa to 1.50% pa (dynamically linked to investment returns)
UWP Business sold after 1 July 2001:	0.25% pa to 1.00% pa (dynamically linked to investment returns)

- For business in the RA OB Subfund the target payout ratio at maturity is reduced to 100% of asset share.

Material changes to other assumptions include:

- Lapses at MVA free points on UWP Life bonds are assumed to increase by 50%, implying that more policyholders exercise their option at this date.

10. (b) (ii) The table below indicates the impact of excluding management actions from the RCM calculation

With-profits fund	RCM (with management actions)	RCM (without management actions)	Benefit of management actions on RCM
RL IB&OB	216.0	317.1	101.1
RA OB	13.5	132.1	118.5
RA IB	0.0	0.0	0.0
UF IB	0.0	0.0	0.0
UF OB	0.0	0.0	0.0
SL	0.0	63.1	63.1

This benefit of management actions can be broken down into approximately £30m for reducing the EBR by more than that implied by the stress test and £80m for reduced target payout ratios in the RA OB subfund only. The remaining £170m is for revisions to future assumed annual bonus declarations, of which broadly £60m relates to the SL Closed fund.

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10. (b) (iii) Management actions reduce the equity backing ratios shown in table in 6 (5) (b) by 10% for all lines of business, except SL DA which in the base scenario is less than 10% and consequently falls to zero.

For annual bonus rates, management actions reduce bonus rates for conventional business down to 0% from 0.25% 12 months after the valuation date. For unitised business, bonus rates are calculated using the same algorithm, though subject to lower maximum and minimum boundaries, as described in paragraph 10 (b) (i) above. With one exception, management actions reduce the annual bonuses shown in 6(5)(b) down to the maximum boundary for each line of business.

10. (b) (iv) PRU 7.4.88 does not apply, since either charges for guarantees or options or smoothing are not taken or in the case of the SL Closed fund are more than offset by demutualisation enhancements.

10. (c) (i) For each with-profits fund, the assets backing the risk capital margin are held within that subfund. In calculating the RCM, relevant assets have been identified comprising:
- fixed interest securities (approved and other);
 - index linked securities (approved securities and others);
 - other assets (income and non income producing) which include swaptions and derivatives (equity puts) assets; and
 - present value of future profits on non-profit insurance contracts written in that with-profits fund as reported in L22 of Form 19.

Note that swaption assets are held to specifically back the cost of financial options within the RA OB subfund and SL fund.

10. (c) (ii) Not applicable.

Tax

- 11 In calculating the WPBR, tax for life business is charged against asset shares using rates prevailing for each historic calendar year for the differing components of return (income, capital gains etc). Tax relief for expenses is charged in line with relevant rates subject to spreading on acquisition. Current tax rates are incorporated into the stochastic model for projecting the WPBR. The model calculates tax chargeable to asset shares on a standalone basis.

Tax is not modelled explicitly within the calculation of the life business costs of smoothing and guarantees costs. Instead, the discount rate used to calculate these elements of the Life business FPRL is netted down for tax using an implied rate determined from net and gross fund returns calculated by the stochastic model for each time period and within each simulation separately.

The regulatory deferred tax provision shown in Paragraph 9 above is retained unadjusted within the realistic current liabilities. There are no additional admissible assets within the Realistic Balance Sheet. As a Mutual, RLM does not pay additional tax on "shareholder" (or interfund) transfers.

Derivatives

12. The funds hold receiver swaptions to back the liability in respect of GARs on non linked policies. Details are given below for the relevant funds:

- The SL Fund holds three tranches of swaptions with a total nominal value at 31 December 2005 of approximately £1.5bn which provide a hedge against interest rate movements on non linked liabilities with GARs attaching. Periodic reviews will be undertaken to ensure that the swaptions remain an appropriate match to the actual development of the liability exposure. In the event of material divergences, it is likely that re-balancing transactions will be recommended. There is no intention to unwind these swaptions other than in respect of any re-balancing or re-structuring.
- The RA OB subfund holds a tranche of swaptions with a total nominal value at 31 December 2005 of approximately £0.4bn which provide a hedge against interest rate movements on non linked liabilities with GARs attaching. Similar review procedures as described for the swaptions held within the SL Closed Fund above will be followed.

The SL Fund also holds tranches of equity-linked receiver swaps; conventional receiver swaps and payer swaptions with a total nominal value at 31 December 2005 of approximately £0.6bn which provide a hedge against interest rate movements on linked liabilities with GARs attaching, the split being 47% equity-linked and 53% conventional.

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At 31 December 2005 the RL Other Long Term Funds held equity futures contracts giving exposure to the FTSE 100 Index with a notional value of £142m and to the S&P 500 Index with a notional value of £20m. These contracts were effected for the purposes of efficient portfolio management.

RL IB & OB and UF OB subfunds – Quasi-derivative

Under the terms of the UAG Scheme, the UF OB, UF IB and RA IB subfunds have a call on the RL IB & OB estate in adverse scenarios where their additional account becomes zero. At the valuation date, the additional accounts for the UF OB, RA IB and UF IB subfunds were positive, since net with-profits assets exceeded WPBR. For the UF OB subfund only, the realistic value of liabilities exceeded the realistic value of assets (before any capital support).

Under the UAG Scheme, no transfer of assets is required into the UF OB subfund, since the additional account is positive. However capital support is required by the UFOB subfund, to be provided by the RL IB & OB estate. This availability of capital support to the UF OB (and as required for the RA IB and UF IB subfunds) is effectively a “put option” asset held by that subfund, provided under the terms of the UAG Scheme and underwritten by the RL IB & OB subfund.

The value of the put option is that required on a market consistent basis to increase realistic assets to the value of realistic value of liabilities. It has been presented as a quasi-derivative asset in the UFOB subfund in Line L23, with an equal and opposite value within the RL IB & OB subfund.

In the RCM scenario, credit is taken for the increased value of the derivative in UF OB, with a corresponding deduction in the RL IB & OB subfund.

Analysis of Working Capital

13.

Category	Total	RL IB&OB	RA OB	RA IB	UF IB	UF OB	SL
Opening Working Capital (Form 19 L68)	1,062	688	374				
Add back Planned Enhancements for closed with-profits funds	400			34	240		125
Capital support for closed funds (Quasi-derivative)	0	53				(53)	
Adjusted Opening Working Capital	1,462	741	374	34	240	(53)	125
Opening Model adjustments and changes to valuation method	(145)	(0)	(28)	1	(23)	(2)	(92)
Investment Return (net of tax)	547	263	95	27	65	40	57
(Enhancements)/Charges to WPBR, net of associated change in FPRL	59	(7)	0	0	(47)	0	113
Changes in assumptions (economic and demographic)	(159)	12	(30)	3	3	(47)	(99)
New Business written in the year	14	11	3				
Other factors	23	32	4	4	(9)	9	(18)
Sub Total: Movement in adjusted Working Capital over 2005	339	311	43	36	(12)	0	(39)
Adjusted Closing Working Capital	1,801	1,052	417	70	229	(53)	86
Deduct Planned Enhancements for closed with-profits funds	(385)			(70)	(229)		(86)
Capital support for closed funds (Quasi-derivative)	0	(53)				53	
Closing Working Capital (Form 19 L68)	1,416	999	417				

For the UFIB, RA IB and SL Closed subfunds and in line with GN45, working capital is zeroised by adjusting the planned enhancements in Line 34 of Form 19. The analysis above therefore shows the movement in planned enhancements over 2005 for the subfunds. For the UFOB subfund, working capital is adjusted by reversing out the capital support required.

Opening model adjustments reflect refinements to the stochastic model and data grouping over the year for the RA OB and UF IB subfunds. Changes to valuation method apply predominantly to the SL Closed fund and are described in paragraph 6.(3) above.

There were no significant costs of expenses, guarantees or smoothing in 2005 not already provided for within the 31 December 2004 valuation of the FPRLs. Other factors include the balancing payments with RLMSL as described in paragraph 4.(3)(c)(iv) above, commission payments received on non life third party arrangements and a residual unexplained balance.

Optional disclosure

14.

Not applicable.