NEW ZEALAND SOCIETY OF ACTUARIES

PROFESSIONAL STANDARD NO. 5.01

SOLVENCY RESERVING FOR LIFE INSURANCE BUSINESS

MANDATORY STATUS

1 Introduction

1.1 Application

This Standard applies to every Actuary providing advice on the Solvency Reserve for an entity governed by NZ IFRS 4 Appendix C.

1.2 Background

NZ IFRS 4 requires an entity to disclose a Solvency Reserve. The Solvency Reserve as calculated under this Standard is designed to give a reasonable expectation that an entity has sufficient assets to:

- meet its obligations to existing policyholders, including appropriate allowances for future bonuses and to creditors under a range of adverse conditions; and
- meet its obligations to policyholders and creditors should all policies discontinue and current surrender values be paid.

In New Zealand there is no requirement to segregate different classes of life insurance business into separate life insurance statutory funds and indeed legislation only recognises one life insurance fund. The life insurance fund may contain both with-profits and non-profit business and the allocation of profits between policyholders and shareholders may vary between different classes of business within the entity. There is no requirement for classes of business to individually meet a required reserving level. Life and Accident Fund business should be considered in aggregate for the purposes of this Standard.

1.3 Purpose

The purpose of this Standard is to provide a framework for an Actuary to calculate the Solvency Reserve for an entity governed by NZ IFRS 4 Appendix C.

A higher level of capital will generally be required for the long-term financial soundness of the entity including its ability to meet policyholders' reasonable expectations and future capital requirements given the ongoing nature of the business. In any report prepared in accordance with this Standard the Actuary should also make recommendations in respect of the amount of additional capital necessary to ensure long-term financial soundness of the ongoing business.

1.4 Previous Versions

This Standard replaces the existing Professional Standard No. 5 with effect from 31 March 2009.

This Standard deals specifically with solvency, and must be read in conjunction with Professional Standard No. 1 (Reports and Advice To An Organisation Carrying On Long Term Insurance Business).

1.5 Legislation

This Standard is to be used when an Actuary is asked to advise on solvency as required for general purpose financial reporting in conjunction with the Financial Reporting Standards issued by the Accountant Standards Review Board established under the Financial Reporting Act 1993.

2 Effective Date

This Professional Standard is effective from 31 March 2009 and applies for reporting periods ending on or after 31 March 2009. Early adoption is permitted.

3 Definitions

Acquisition Costs: The fixed and variable costs of acquiring new business, including commissions and similar distribution costs, and costs of accepting, issuing and initially recording policies. Acquisition costs do not include general growth and development costs.

Admissible Assets: The total assets of the entity excluding those assets, or the parts of those assets, prescribed as inadmissible for the purposes of this Standard.

Actuary: A Fellow of the New Zealand Society of Actuaries.

Bank: A bank registered under the Reserve Bank of New Zealand Act.

Best Estimate Assumptions: Assumptions about future experience which are made using professional judgement, training and experience and are neither deliberately overstated nor deliberately understated. The Best Estimate Assumptions used for the purpose of this Standard should be identical to those used in the calculation of Policy Liabilities if a calculation in accordance with Professional Standard No. 3 (Determination of Life Insurance Policy Liabilities) is being made as at the same date.

Best Estimate Liability: The liability calculated using the Best Estimate Assumptions. The Best Estimate Liability reflects the liability for guaranteed benefits only.

Bonus: An amount added at the discretion of the entity to the benefits due under a Discretionary Policy.

Current Termination Value: The termination value of a policy at the reporting date.

Discretionary Policy: A policy where the entity has discretion over additions, including additions that represent investment earnings.

Investment Management Costs: The fixed and variable costs of managing the investment funds backing life insurance policy liabilities.

Maintenance Costs: The fixed and variable costs of administering policies subsequent to the sale and recording of the policies and the fixed and variable costs of administering the general operations of the entity. Maintenance Costs include all operating costs and expenses other than Acquisition Costs and Investment Management Costs.

Mid Swap Rate: The Mid Swap Rate is the rate (or rates) equivalent to a series of current, observable and objective New Zealand Dollar interest rate swap mid rates that relates to the term of the future liability cash flows.

NZX50: An index of the top fifty shares listed on the New Zealand Stock Exchange (NZX), as published by NZX from time to time, or any subsequent index replacing it.

Policy Liability: An entity's net contractual obligations under a life insurance contract liability or a life investment contract liability calculated in accordance with Professional Standard No 3 (Determination of Life Insurance Policy Liabilities).

Professional Standard No. 3 (Determination of Life Insurance Policy Liabilities): The Professional Standard issued by the New Zealand Society of Actuaries concerning the determination of life insurance policy liabilities for general purpose financial reporting.

Reinsurance: All arrangements where some part of individual or aggregate insurance risks is ceded to another entity or entities and includes cessions of direct writing entities to reinsurance entities or other direct writing entities and parent entities as well as retrocessions of reinsurers to their parent entities or other reinsurers.

Related Product Group: A grouping of related products as determined by the Actuary for the purposes of profit reporting in accordance with Professional Standard No. 3 (Determination of Life Insurance Policy Liabilities).

Servicing Costs: The combination of Maintenance and Investment Management Costs.

Solvency Assumptions: Assumptions about future experience made in the context of the more adverse experience prescribed for the purposes of this standard.

4 Principles

4.1 The Best Estimate Liability, determined in accordance with Professional Standard No. 3 (Determination of Life Insurance Policy Liabilities) reflects a best estimate of the entity's obligations to policyholders at a particular date.

4.2 However, prudent management of the life insurance industry requires that the level of security offered to policyholders exceeds that implied by a best estimate basis of calculation. This Standard requires the Actuary to consider whether an entity has available capital in excess of the Best Estimate Liability to provide primarily for the security of the policyholders' entitlements under a range of adverse conditions in the context of an entity closed to new business.

4.3 It is not the intention of this Standard to specify a basis that provides absolute security to policyholders. To attempt to do so would be prohibitive to the viability of the industry and hence not in the best interest of the policyholders. Rather, the prescribed reserves provide for a range of adverse but reasonably possible conditions.

4.4 This Standard sets out a basis for determining a minimum Solvency Reserve. The Actuary must consider whether this minimum is appropriate in the particular circumstances of the entity (in the context of the entity being closed to new business), and adjust his or her approach accordingly. The Actuary must comply with this Standard in full except in exceptional circumstances when the Actuary is convinced that full compliance would be inappropriate. If the Actuary does not comply in full, he or she must specify the extent and reasons for any non-compliance in the statement in section 16. `

4.5 At any time, the value of the assets of an entity governed by NZ IFRS 4 Appendix C should be of an amount considered sufficient at that date to meet its obligations to policyholders and creditors under a range of adverse conditions. This is referred to as the Solvency Reserve.

4.6 None of the assets disclosed in the accounts of the entity in excess of the Solvency Reserve should be inadmissible as defined in section 11.5.

4.7 The Actuary, in recommending the Solvency Reserve, must consider the entity's obligations to policyholders in respect of:

- guaranteed benefits under the policy in accordance with the policy document; and
- any additional guarantees or obligations implied by the promotional material of the entity.

4.8 In addition to financial reporting obligations, the Actuary (where practical) has a continuing responsibility to advise the entity in respect of any development that may cause the entity's Solvency Reserve to exceed the market value of its assets.

5 The Solvency Reserve

5.1 In assessing the Solvency Reserve of an entity consideration is given to:

- risks which may affect the value of the liabilities under policies; and
- risks which may affect the value of the assets supporting those liabilities.

5.2 The Solvency Reserve comprises the following components:

The Solvency Liability which is the value of the liabilities under the policies on the basis of assumptions which are more conservative (anticipate a more adverse experience) than Best Estimate Assumptions.

The Other Liabilities which are the liabilities of the entity to other creditors, but excluding subordinated debt arrangements.

The Expense Reserve which is a provision for the overrun of residual Fixed Acquisition Costs that can occur upon closing an entity to new business. These residual expenses are not anticipated in the Solvency Liability determination.

The Inadmissible Assets Reserve which is a reserve against the risks associated with asset values which are dependent on the ongoing conduct of business, holdings in associated or subsidiary financial services entities, and concentrated asset exposures.

The Resilience Reserve which is a reserve for adverse movements in investment markets to the extent they will not be matched by a corresponding movement in the liabilities.

5.3 The Solvency Reserve must provide for a value of the liabilities of the entity in respect of obligations to policyholders and creditors on a basis more conservative than best estimate as well as in scenarios of adverse experience.

5.4 In determining the Solvency Reserve the Actuary must allow for the consequences of the entity closing to new business. This may include an increase in voluntary discontinuances, a loss of contribution to expenses, possible adverse tax impacts, and possible adverse reinsurance impacts.

5.5 The Solvency Reserve, in considering scenarios of adverse experience, should provide for risks associated with both the valuation of the policy liabilities and the valuation of the assets, including the interdependencies between those risks that the Actuary considers might apply under such adverse scenarios.

NOTE: While both asset and liability risks are considered, all reserves against these risks are held as an additional liability. The value of the assets is not directly impacted by this Standard.

6 The Solvency Liability

6.1 The Solvency Liability must make provision for the risks pertaining to each element in respect of which an assumption is required in valuing the policy liabilities.

6.2 The minimum assumptions to reflect these risks - the Solvency Assumptions - are prescribed in relation to the Best Estimate Assumptions. The Solvency Liability for a Related Product Group must not be less than the Best Estimate Liability.

6.3 Where the benefits under a policy are dependent on the performance of the underlying net assets and related liabilities, the Solvency Liability must, in principle, be aligned with the net realisable market value of those assets and related liabilities.

6.4 The risks pertaining to each element include the risk of mis-estimation of the mean, the risk of deterioration of the assumed mean, the risk of adverse statistical fluctuations about the mean and the risk of unexpected changes in the underlying distribution of experience.

6.5 The Solvency Liability is determined by using the methods used to determine the Best Estimate Liability, but:

- allowing for current and future Bonuses subject to the appropriate application of discretions; and
- adopting prescribed Solvency Assumptions.

7 The Prescribed Solvency Assumptions

7.1 Discount Rates

For policies that are either Life Insurance Contracts or Life Investment Contracts, the Solvency Assumption for gross investment yield and liability discount rate will be as determined in paragraph 9.2 of Professional Standard No. 3 (Determination of Life Insurance Policy Liabilities), but subject to a maximum of the Mid Swap Rate.

7.2 Servicing Costs

7.2.1 The Solvency Assumption for Maintenance Costs must include a margin of 2.5% above the greater of the unit costs required to cover:

- actual Maintenance Costs in the twelve months prior to the valuation date; and
- expected Maintenance Costs in the twelve months subsequent to the valuation date.

7.2.2 The Solvency Assumption for Investment Management Costs must be based on an asset profile which under the adverse circumstances of the Solvency Liability would be expected to yield a return equal to the Solvency Assumption for gross investment yield referred to in paragraph 7.1. The Solvency Assumption must also include a margin of 2.5% above this base requirement. However, if the entity has contractually agreed to pay a higher Investment Management Cost regardless of the asset profile adopted, then this higher expense must be assumed.

7.2.3 When determining Servicing Costs for each policy, the Actuary must be satisfied that direct and indirect expenses have been allocated to individual policies in an appropriate manner.

NOTE: The Servicing Cost assumptions may be adjusted to allow for one-off expenses (both actual and expected), for example, expenses arising from major redundancy programs and/or merger implementations. These assumptions should exclude costs that would not be incurred if the entity ceased to write new business, provided this adjustment does not reduce the cost below best estimate. This provision must not be used to sanction the exclusion of operational expenses relating to the servicing of policies.

The risk margin for Servicing Costs should not be applied to any component of those expenses which is contractually agreed for the life of the policy, for example, renewal commission.

7.3 *Inflation Rate*

The Solvency Assumption for inflation in respect of Maintenance Costs and all other cash flows that are subject to inflation must be determined using the Best Estimate Assumption methodology, but based on the Solvency Assumption for gross investment yield. The Solvency assumption for inflation is subject to a minimum of 0%.

7.4 Taxation

7.4.1 Allowance for tax on investment earnings must be made in accordance with Best Estimate Assumptions, but based on the asset distribution underlying the Solvency Assumption for gross investment earnings.

7.4.2 The allowance for the rate of tax on other than investment items must be made in accordance with Best Estimate Assumptions.

7.5 Insurance Claims

7.5.1 The Solvency Assumptions for probabilities of death, disablement and other contingent events on which the payments of insurance claims are to be based are shown in the following table:

Insured Lives:	
Individual and Group	110% of best estimate mortality assumption
Annuitants:	
Base	90% of best estimate mortality assumption
Improvements	2% per annum in addition to the best estimate assumption
Total Permanent Disability:	
Individual and Group	120% of best estimate morbidity assumption
Disability Income:	
Individual and Group	
Active Lives	150% of best estimate of claims costs
Claims in Payment (Projection Method)	Reduction of 25% in best estimate termination rates
Claims in Payment (Case Estimate)	125% of best estimate case estimate, adjusted to allow for the prescribed investment earnings assumption. Limited to the case estimate calculated using the maximum benefit period of the individual policy.
Trauma:	
Individual and Group	130% of best estimate morbidity assumption
Other Insured Events:	
Individual and Group	130% of best estimate of claims costs

7.5.2 Appropriate assumptions must be applied (on bases consistent with the above) for claims which have been incurred but not reported (IBNR) and claims which have been reported but not admitted (RBNA).

7.5.3 The Actuary must make appropriate specific allowance for material specialised risks. A specialised risk is a risk that cannot be suitably allowed for through the use of a margin applied to the underlying Best Estimate Assumption. These specialised risks may be allowed for through the determination of specific additional reserves rather than being included as part of the risk margins.

7.6 Voluntary Discontinuances

7.6.1 The Solvency Assumption for the rate of voluntary discontinuances (including partial surrender) must reflect an adverse change in experience of 25% of the Best Estimate Assumption.

7.6.2 The Solvency Assumption for rates of premium dormancy and conversion of policies to paid up status must reflect an adverse change in experience of 25% of the Best Estimate Assumption.

7.6.3 An adverse change in experience may be an increase or a reduction in the rate of discontinuances. The adverse change must be that which increases the Solvency Reserve at the product grouping level utilised for best estimate assumptions.

7.7 Options Provided To Policyholders

7.7.1 The Solvency Assumption in relation to experience after the exercise of an option must allow for appropriate risk margins applied to Best Estimate Assumptions.

7.7.2 The Solvency Assumption for the take up rate of the option must reflect an adverse change of 10% of the Best Estimate Assumption.

7.8 Investment-Linked Policies

7.8.1 A risk margin must be included to reflect the additional risks that may be borne by the entity in conducting investment-linked business.

7.8.2 The prescribed margin is 0.25%, which must be applied to the Solvency Liability as determined immediately prior to the inclusion of this margin.

7.8.3 The prescribed margin of 0.25% must also be applied to the Current Termination Value as determined immediately prior to the inclusion of this margin.

8 Allowance for Reinsurance

8.1 In determining the Solvency Liability the Actuary must make proper allowance for reinsurance. The Actuary may reduce the liabilities in respect of policies by taking account of the reinsurance arrangements where reinsurance arrangements are through companies which:

- maintain a Solvency Reserve in accordance with this Standard, or
- maintain solvency reserves in accordance with legislative requirements in the European Union, United States, Australia or Canada.

8.2 The Actuary must consider the creditworthiness of the reinsurer and the degree of exposure of the entity to a reinsurer default when setting an appropriate allowance for reinsurance.

9 Current Termination Values

9.1 The Current Termination Value must be determined as the amount that would be paid on the basis of current practice in the event of voluntary termination of the policy. No policy can have a Current Termination Value less than zero.

9.2 If the entity's obligation under the policy involves:

- deferred payment of the Current Termination Value; or
- payments by instalment over a period; or
- payment in the form of an income stream;

then the Current Termination Value should be determined as the present value of those future payments, using assumptions consistent with this Standard.

9.3 Determination of the Current Termination Value must include allowance for an unsettled lump sum insurance claim on a policy, if applicable, and claims settlement costs such as medical evidence or potential legal costs of disputed claims, if appropriate. Amounts payable may be reduced by potential reinsurance recoveries, in accordance with the principles in section 8.

10 The Expense Reserve

10.1 The Solvency Reserve must provide for a reserve against the risk of an overrun in the residual Fixed Acquisition Costs of the entity in the event that the entity is closed to new business.

10.2 The Expense Reserve is determined as:

(1 – T) x Fixed Acquisition Costs

T is the nominal rate of tax appropriate for the entity. Allowance for tax deductibility of expenses may only be made where income is expected in the next financial year sufficient to justify that deduction, or the value of the tax deduction would reasonably be expected to be realised.

10.3 Fixed Acquisition Costs are to be determined as the total actual Acquisition Costs for the entity for the 12 months prior to the valuation date less the variable expenses included in that amount. Variable expenses are those expenses included in acquisition costs that in the Actuary's opinion are not contracted, are abnormal, are easily eliminated or are sufficiently matched to income. Variable expenses may include commission, advertising costs and direct marketing expenses.

10.4 Where administration services are provided by a third party, the Actuary must take into account the relationship between the entity and the third party as well as any contract between them. Matters to be considered in assessing the relationship must include the degree of reliance of the third party on the fees payable by the entity, and any extent to which costs would be likely to increase were the arrangement with the third party to cease.

10.5 The Expense Reserve must not be less than zero.

11 Asset Risks

11.1 The Solvency Reserve must make appropriate allowance for the risks associated with the assets supporting the liabilities.

11.2 These risks are:

- Adverse market movements;
- Asset realisation;
- Holdings in associated financial entities;
- Asset concentration;

- Credit, liability and marketability risks.

11.3 Furthermore, the asset and other liability values disclosed in the financial statements may not be equal to the net market values of those assets and other liabilities, allowing for realisation costs. A reserve for the difference between the reported and net realisable market values of the assets and other liabilities is to be included. However, no reserve is needed in respect of those assets backing liabilities which are directly linked to the net value of the assets and other liabilities as reported in the financial statements and where the liabilities would correspondingly change if the reported net values were changed.

11.4 It is not the intention of these reserves to limit the investment practices of entities. Rather it is to ensure that the risks associated with particular investment strategies are appropriately assessed and provided for.

11.5 The Inadmissible Assets Reserve

11.5.1 The closure of an entity to new business may require the downsizing of infrastructure and the rearrangement of assets to match the expected run-off of liabilities. The value of an asset in this context should be determined based on:

- the ability to realise the asset in the process of this rearrangement; or
- the ability to turn the asset into cash to meet the liabilities as they become due.

11.5.2 The Inadmissible Assets Reserve for the entity is determined as the sum of:

- the reserve prescribed in respect of assets used in the conduct of business; and
- the reserve prescribed in respect of asset concentration risks; and
- the reserve the Actuary considers appropriate for holdings in associated and subsidiary financial entities; and
- the alignment necessary to ensure assets and other liabilities are based on net market value; and
- the reserve the Actuary considers appropriate for other asset risks.

11.6 Assets Used in the Conduct of Business

11.6.1 Certain assets are disclosed in the financial statements at a value which may be dependent on the ongoing operation of

the business. On the cessation of new business, the value of those assets would likely be less. A reserve is held against that part of the value of such assets which would not be realisable in the adverse circumstance of a wind-down of business.

11.6.2 The prescribed reserve for assets used in the conduct of business is determined as the amount by which the stated value of the asset in the financial statements exceeds the value the asset would have in a run-off situation.

11.6.3 For the purpose of paragraph 11.6.2, the value to be ascribed to certain assets is subject to the following specific requirements:

a) *Loans to Directors, Employees, Advisers and Related Parties*: In respect of money loaned or advanced on an unsecured basis, no value is to be ascribed to the debt. In respect of money loaned or advanced on a secured basis, the value to be ascribed to the debt should not exceed the amount of the security.

b) *Policy Loans (including premiums due but not received):* The value of any debt due to the entity, which is secured on a policy of insurance issued by the entity, should not exceed the Current Termination Value of the policy. This does not apply in the case of premiums due from an entity under a contract of reinsurance.

c) *Computer Software:* The value of computer software owned by the entity should not exceed the known resale value of that software. If the resale value of the software is not known, then a zero value should be assumed.

d) *Future Income Tax Benefits:* The value of a future income tax benefit due to the entity should not exceed the value of any income tax benefit that would accrue and be realised on ceasing to write new business.

e) *Defined Benefit Superannuation Fund Surpluses:* Where the entity is an employer sponsor of a defined benefit superannuation fund, no value is to be ascribed to any surplus of that fund which might otherwise be recognised as an asset of the entity.

11.7 Asset Concentration Risks

11.7.1 The Solvency Reserve must include a reserve against the adverse impact of a concentration of funds in a particular asset or with a particular obligor.

11.7.2 Notwithstanding the prescribed limits (see paragraph 11.7.3 below), if in the opinion of the Actuary the overall portfolio of

assets of the entity has too little diversification, is too illiquid or has too great an exposure to any obligor of low credit standing, the Actuary should add to the reserve for inadmissible assets an amount considered necessary to adequately protect the interests of the policyholders.

11.7.3 (i) The prescribed reserve for asset concentration risks is determined as the total of the amounts by which the value of any single asset or single credit exposure denominated in the currency in which the liabilities are denominated exceeds the following limits:

Description of single gross asset or single credit exposure		Limit
1	Guaranteed by the NZ government	100%
2	Guaranteed by a national government with foreign currency rating at least AAA-	25%
3	Guaranteed by a supra-national institution of rating at least AAA-	25%
4	Guaranteed by an entity with rating at least AA-	25%
5	An issue of rating at least AA-	25%
6	Secured by Bank deposits	25%
7	Secured by a life insurance policy or reinsurance policy with an associated or subsidiary entity	100%
8	Secured by a life insurance policy with a life company, or by a reinsurance policy with a specialist reinsurer, other than in 7 above	25%
9	Guaranteed by a NZ regional or local government	10%
10	First mortgage, where mortgage not > 70% of market value	5%
11	Real estate, actively traded assets or income producing real property assets	5%
12	A mortgage other than a mortgage in 10 above	1%
13	An issue / issuer that is unsecured and not of investment grade	1%
14	Any other asset or credit exposure	1%

(ii) The limits in the table are to be applied to the entity's investment assets.

(iii) If an asset is denominated in a currency other than the currency in which the liabilities are denominated, the limit must be reduced by 20% (e.g. 10% becomes 8%).

(iv) The ratings in the table are Standard and Poors ratings. Other agencies' ratings can be applied if, in the opinion of the Actuary, they are equivalent to the ratings in the table.

(v) In considering what admissibility limits for the assets in rows 7 and 8 of the table should apply in practice, the Actuary should take into account the creditworthiness of the insurer / reinsurer as described in section 8 of this Standard.

(vi) Assets not specifically mentioned in the table may be included at limits consistent with the limits in the table.

11.7.4 Where the policy benefits carry direct asset exposure, as may be the case with investment-linked benefits, and the Actuary is satisfied that there has been full disclosure to policyholders of the risks to which they are exposed, no reserve is required under paragraph 11.7.3.

11.7.5 Where the asset or credit exposure is in respect of an amount of claims recovery under a reinsurance arrangement, the reserve under paragraph 11.7.3 must be determined on a basis consistent with the treatment of reinsurance assets under section 8.

11.7.6 Where the Inadmissible Assets Reserve is reduced by deferred tax provisions or other liabilities relevant to the inadmissible portion of the asset the reduction must only be to the extent those provisions/liabilities are assessed as being likely to be realised.

11.8 Holdings in Associated and Subsidiary Financial Entities

11.8.1 Where the associated entity is an entity that requires the maintenance of minimum capital, the Actuary must establish a reserve to the extent the value of the asset includes some value in respect of that capital.

11.8.2 Where the associated entity is not an entity that requires the maintenance of minimum capital, the Actuary should establish a reserve to the extent the value of the asset includes some value in respect of capital that a prudent and well managed entity would hold. The admissible amount must only reflect the likely realisation value upon the cessation of writing new business, taking into account the likely circumstances of the sale.

11.9 Alignment to Net Market Value

11.9.1 The Inadmissible Assets Reserve must include the net difference between the value disclosed in the financial statements and the net realisable market value (irrespective of whether this difference is positive or negative) of all assets and financial liabilities (other than policy liabilities) of the fund. Net realisable market value means the mid market value (or

equivalent estimated fair value) less (plus for liabilities) any marginal transaction costs (including duties or other charges) that would be incurred on realisation.

11.9.2 To the extent that the liabilities adopted for this Standard are based on asset values disclosed in the financial statements and would correspondingly change in value if such net realisable asset or related liability values were adopted for the financial statements, then this adjustment may be ignored in respect of those assets and liabilities along with the equivalent adjustment in paragraph 6.3. This adjustment is also not required in respect of assets already deemed inadmissible under this Standard.

11.10 Other Asset Risks

The Actuary, in assessing the asset risks, must:

- take account of the effective exposure of the entity to various asset classes, regardless of the physical asset holdings of the entity;
- consider exposure to counterparty risks including, but not limited to, futures and options contracts, swaps, hedges, warrants, forward rate and repurchase agreements;
- take account of the underlying exposure of the entity to assets by adopting a "look through" approach in respect of investment entities where the investment is greater than 1% of the assets of the fund. For this purpose, an investment entity is an entity whose assets are solely investments, where the sole purpose of the entity is investment activities and where the investor investing in that entity has security directly linked to those assets. Where these investments are geared, the debt is to be treated as if it were a liability of the entity.

12 The Resilience Reserve

12.1 The Actuary must provide for an appropriate reserve, the Resilience Reserve, sufficient to allow the entity to withstand prescribed shocks to the economic environment in which it operates that are likely to result in an adverse movement in the value of the assets relative to the value of the liabilities.

12.2 The Resilience Reserve is determined as the additional amount that needs to be held such that after the occurrence of a prescribed set of changes in the economic environment, the entity is able to meet the Solvency Liability plus Other Liabilities plus the Expense Reserve as determined in accordance with this Standard.

12.3 In determining the value of the Solvency Liability plus Other Liabilities plus the Expense Reserve in the post shock environment the Actuary should only apply discretions available under policies where it is:

- appropriate having regard to the principles in paragraph 4.6 and Section 13; and
- justifiable under the adverse conditions being assumed.

12.4 The Resilience Reserve is determined by reference to the Admissible Assets of the entity. It is permitted to hypothecate the Admissible Assets to the Solvency Liabilities plus Other Liabilities plus the Expense Reserve of the entity.

12.5 Where hypothecation is applied it should be applied consistently from one accounting period to another.

12.6 The Resilience Reserve is determined in accordance with the following formula:

$$L + RR = \Sigma(L_t' \times f_t)$$

where

RR = the resilience reserve

L = the liability held for the entity for solvency purposes to reflect all liability risks (including Other Liabilities and the Expense Reserve) prior to the prescribed change (and equals ΣLt)

Lt = the liability held for the hypothecated subgroup "t" for solvency purposes to reflect all liability risks (including Other Liabilities and the Expense Reserve) prior to the prescribed change

Lt' = the value of that liability after the prescribed change

ft = At / At'

A = the value of admissible assets of the entity prior to the prescribed change (and equals ΣAt)

At = the value of admissible assets of the hypothecated subgroup prior to the prescribed change

At' = the value of those assets at the Adjusted Yield and further reduced by the Adverse Exchange Movement factor and the Credit Risk Default Factor.

The Adjusted Yield (for each investment sector) is determined as

Current Yield + Credit Risk Yield Movement + DF_t x Prescribed Yield Change

Unless application of the diversification factor would have the effect of increasing the resilience reserve, in which case $DF_t = 1$.

DFt, the Diversification Factor is determined as

$$DF_t = \frac{\sqrt{(DE_t^2 + OE_t^2 + P_t^2 + F_t^2 + I_t^2)}}{(DE_t + OE_t + P_t + F_t + I_t)}$$

Where:

DE_t, OE_t and P_t are the proportionate holdings of assets in hypothecated subgroup t, in the asset sectors Domestic Equities, Overseas Equities and Property respectively each multiplied by the factor for that sector: (Increase in Yield / Current Yield)

F_t, I_t are the proportionate holdings of assets in hypothecated subgroup t, in the asset sectors Interest Bearing and Indexed Bonds respectively each multiplied by the factor for that sector: {(Asset Value at Current Yield / Asset Value at Yield after prescribed increase) - 1}

Note: DF_t is determined in the scenario of an increase in yields, and is used to determine the Adjusted Yield in that and all other scenarios. In determining F_t, cash is included in the interest bearing sector.

The Resilience Reserve should not be less than zero.

12.7 Determination of A'

12.7.1 Subject to paragraph 12.7.2 the prescribed changes to the economic environment are:

Investment Sector	**Change in Yield (%)**
Equities/Property	1.75
Interest Bearing	1.75
Indexed Bonds	0.60
Currency	**Exchange Movement**
All	10% reduction in value of assets exposed to a denomination other than that of the liabilities

12.7.2 The reduction (but not increase) in yield, in the case of the change in yield parameter for the Interest Bearing investment sector, should not exceed 20% of the Mid Swap Rate.

12.7.3 Yield, as referred to in the above table, is determined in respect of the holdings of the entity and should be taken to mean:

a) for Equities, earnings yield,

b) for Domestic Equities, based on the earnings yield under the NZX50 index as at the valuation date,

c) for Overseas Equities, based on the earnings yield under the Morgan Stanley Capital International (MSCI) World Developed Free Index at the valuation date. Where justified, the Actuary may use the earnings yield under another published index or combination of indices more appropriate to the actual portfolio held on the valuation date,

d) for Property, rental yield; The rental yield should be determined by annualising income (net of expenses) from leases in force at the valuation date, and dividing by the market value of properties owned at the valuation date,

e) for Redeemable Interest Bearing Securities, redemption yield;

f) for Irredeemable Interest Bearing Securities, running yield; and

g) for Indexed Bonds, real yield.

12.7.4 An addition to the resilience reserve must be made for credit risk in respect of interest bearing and indexed bond assets, including cash deposits and floating rate assets. This will be achieved by a reduction in the value of assets under the relevant adverse scenario. The change will not affect the value of liabilities under the adverse scenario unless the benefits under the policies are contractually linked to the performance of the assets held. In calculating the credit risk impact:

a) The applicable Credit Risk Yield Movement from the table below is included in the Adjusted Yield as determined in paragraph 12.6. The assumed term used for this purpose may differ from that used to determine sensitivity to interest rate shocks e.g. floating rate instruments not immediately redeemable may be regarded as dead short for the application of the prescribed yield change, but may have a longer term for the credit risk yield movement,

depending on the extent to which credit risk deterioration can be mitigated.

b) Each of the asset values determined after the adjustments in a) above is then reduced by the sum of the applicable Credit Risk Default Factor taken from the table below and the Adverse Exchange Movement factor from the table in paragraph 12.7.1.

Standard and Poors rating (or equivalent)	**Credit Risk Default Factor**	**Credit Risk Yield Movement**
AAA (and OECD government)	0.00%	0.00%
AAA	0.00%	0.20%
AA	0.00%	0.30%
A	0.00%	0.40%
BBB	0.75%	0.60%
BB	2.00%	0.80%
B	6.25%	0.90%
C	9.75%	0.90%

12.7.5 In calculating the Adjusted Yield under paragraph 12.6 the Credit Risk Yield Movement is always positive, even though the Prescribed Yield Change may be positive or negative, depending on the relevant adverse scenario being tested.

12.7.6 If an investment has not been publicly rated, the Actuary may determine an assumed rating if the investment can be shown by the use of appropriate methods to have equivalent credit risk characteristics to other rated assets. Such methods may include, in relation to a secured or mortgaged asset for which a substantive recent valuation has been obtained, consideration of the loan to value ratio and whether lenders mortgage insurance is in place. The deemed rating for assets that are not secured must be no higher than the equivalent of a Standard and Poors rating of B.

12.8 Determination of L'

12.8.1 In determining the change to the value of the liabilities, it is the Prescribed Yield Change for the Interest Bearing sector which is relevant. The adjusted yield is relevant only for the assets.

12.8.2 In determining the Resilience Reserve required, other liabilities such as provisions for deferred taxation should be adjusted in a manner consistent with the action the entity would take were asset values to change by the prescribed amount. However, in scenarios where asset values are assumed to fall, any resulting tax benefit should be taken into account only to the extent that the Actuary is satisfied that the tax benefit would accrue and be realised on ceasing to write new business.

12.9 Application of Prescribed Yield Changes

12.9.1 In applying the Prescribed Yield Changes of paragraph 12.7 to the determination of A' and L', the Actuary must address the worst combination of rising or falling yields for the different asset sectors to which the business is realistically exposed. At the very least, the following two scenarios must be tested:

- rising fixed interest yields (investment categories Interest Bearing and Indexed Bonds) and rising equity/property yields (investment categories Equities and Property), and
- falling fixed interest yields (investment categories Interest Bearing and Indexed Bonds) and rising equity/property yields (investment categories Equities and Property).

12.9.2 Where the circumstances of the entity are such that other scenarios are potentially relevant then they must also be tested.

13 Allowance for discretions

13.1 When Discretions may be Applied

13.1.1 Discretions may be applied at various stages of the determination of the Solvency Reserve:

- in the process of calculating the Solvency Liability (section 6); and
- in the process of determining the Resilience Reserve (section 12).

13.1.2 In both cases the valuation is being performed under an assumed scenario of adverse experience: in the former case under the prescribed Solvency Assumptions and in the latter case under the prescribed change in the economic environment.

13.1.3 The discretions assumed to be applied under the scenario of the prescribed Solvency Assumptions should be consistent with those assumptions.

13.1.4 The discretions assumed to be applied under the scenario of an adverse market movement should be consistent with that scenario. Discretions in respect of the Termination Value can appropriately be utilised at this stage of the calculations. When applying Termination Value discretions the Actuary should consider the impact of these discretions on future discontinuance rates and the impact on the Solvency Liability.

13.1.5 The following sections provide further guidance on the application of discretions. Application will always be a matter of professional judgement - that judgement should be made in accordance with the principles of this Standard.

13.2 Reduction in Bonuses

13.2.1 An entity is able to reduce or discontinue Bonuses on policy benefits and will likely do so if its future viability is threatened. In determining the Solvency Reserve, where it is likely that the Bonuses would be reduced under the scenario of adverse experience proposed, then it is appropriate to allow for that reduction. When applying Bonus reduction discretions the actuary should consider the impact of these discretions on future discontinuance rates and the impact on the Solvency Liability.

13.2.2 The amount and timing of the reduction in Bonuses assumed should be consistent with the entity's ability to reduce Bonuses in practice. For example, reductions in Bonuses or crediting rates may involve some component of smoothing and hence lag the actual investment experience. This type of timing or magnitude difference should be taken into account in the assessment of the Solvency Reserve.

13.2.3 Approximate methods may be used to determine levels of future Bonuses under the assumed scenarios of adverse experience.

13.3 Increases to Expense Charges - Inflation Linked

13.3.1 Where the entity has the discretion to increase policy expense charges in line with the changes in an inflation index and where the entity has regularly utilised such discretions in the recent past (say 3-5 years) it is appropriate to allow for inflation-linked increases to charges.

13.3.2 The amount and timing of the indexation of charges assumed in the projection should be consistent with normal company practice. For example, some indexation of policy fees may generally be delayed 6 months on average, or generally be

0.5% less than the actual inflation rate. This type of timing or magnitude difference should be taken into account in the assessment of the Solvency Reserve.

13.3.3 The underlying inflation rate should be the same as the rate calculated under section 7.3 of this Guidance Note.

13.4 Quantum (one-off) Increase to Expense Charges

13.4.1 Where the entity has a discretion to increase policy expense charges, other than as covered by section 13.3, and it is likely that the discretion would be exercised under the scenario of adverse experience proposed for assessing the Solvency Reserve, then it is appropriate to allow for the exercise of the discretion.

13.5 Premium Rate Increase

13.5.1 Where premium rates may be increased to reflect any change in experience, and it is likely that the discretion would be exercised under the scenario of adverse experience proposed, then it is appropriate to allow for the exercise of the discretion. The timing and extent of the discretion applied should be consistent with normal company practice.

13.5.2 In determining the Solvency Reserve, the Actuary should consider the unexpired risks, the guaranteed renewal options, the effect of anti-selection exercised by discontinuing policy owners, the delays in claims reporting and the time lags involved in assessing experience and making the subsequent changes to premium rates.

13.6 Claw-back of Acquisition Commission

13.6.1 Where acquisition commission paid may be recovered, and it is likely that the discretion would be exercised under the scenario of adverse experience proposed, then it is appropriate to allow for the exercise of the discretion. The timing and extent of the discretion applied should be consistent with normal company practice and the risk of adviser/broker default.

NOTE: It is not appropriate to assume application of discretions in the calculation of Current Termination Values described in section 9.

14 Calculation of the Solvency Reserve

14.1 The performance of each subsequent step in the calculation process described below should not reduce the progressive result from its amount at the completion of the previous step.

a) CURRENT TERMINATION VALUE: For each Related Product Group, determine the total of the Current Termination Values for all policies in that group.

b) MINIMUM OF SOLVENCY LIABILITY: For each Related Product Group, determine the total of the Solvency Liabilities for all policies in that group. Take the greater of this amount and that determined in 14.1.a). Aggregate the values for each Related Product Group across the entity.

c) ADD OTHER LIABILITIES: Increase the amount determined in 14.1.b) by the Other Liabilities of the entity.

d) ADD EXPENSE RESERVE: Increase the amount determined in 14.1.c) by the Expense Reserve for the entity.

e) ADD INADMISSIBLE ASSETS RESERVE: Increase the amount determined in 14.1.d) by the Inadmissible Assets Reserve for the entity.

f) ADD RESILIENCE RESERVE: Determine the Admissible Assets of the Entity, and on the basis of these assets, increase the amount determined in 14.1.e) by the Resilience Reserve for the entity.

g) MINIMUM OF POLICY AND OTHER LIABILITIES: For the entity determine the greater of the amount determined in 14.1.f) and the aggregate of total Policy Liabilities for all policies and Other Liabilities.

NOTE: In many cases in practice, the calculation process outlined in this section will be able to be simplified as the Actuary recognises that certain components in the calculation will dominate for certain types of business.

Allowance should be made by the Actuary in each of the steps in the above calculation process, as appropriate, for claims which have been incurred but not reported (IBNRs) and claims which have been reported but not admitted (RBNAs).

15 Materiality

15.1 The Solvency Reserve determined in accordance with this Standard is subject to materiality standards.

15.2 Particular values or components are considered material to the overall result of a calculation when their misstatement or omission would cause that result to be misleading to the users of the information.

15.3 Materiality tests assess the significance of the particular value or component by relating it to the amount of the overall result to which it contributes.

15.4 The base amount for materiality purposes is the difference between the gross assets of the entity and the Solvency Reserve of the entity.

15.5 In applying the materiality standard described in paragraphs 15.3 and 15.4, the Actuary should consider the materiality relative to the amount of both:

- the major individual components of the Solvency Reserve; and
- the overall cumulative effect of those individual components.

15.6 In applying the materiality standards described in paragraphs 15.3 and 15.4:

it is appropriate to use as the base amount for materiality purposes a rolling average of the base amount provided that the average so derived is a function of not less than three and not more than five years experience and reflects the current and anticipated future experience; and

it is appropriate, as the base amount approaches zero, for alternative key indicators to be used in establishing materiality.

15.7 Materiality will always be a matter of professional judgement. The following section provides guidance, through the definition of quantitative thresholds which may be used as a base in the judgement of materiality. Variations in amounts of 10% or more of the base amount may be presumed material, while variations in amounts of 5% or less of the base amount may be presumed immaterial.

15.8 Materiality applies to all aspects of the determination and covers the acceptability of grouped data, modelled projections and approximate valuation methods.

16 Statement by the Actuary

16.1 In any report in respect of a determination of the Solvency Reserve, the Actuary should give details of the calculation processes and the assumptions used in deriving the results. The report should include, as appropriate, a statement of:

- any discretions the Actuary has assumed will be exercised,
- the determination of the Expense Reserve,

- the determination of the Inadmissible Assets Reserve,
- the determination of the Resilience Reserve,
- the assumptions adopted in determining the Solvency Liability, including rates of future bonus,
- the extent to which assets assumed for profit reporting to be supporting Discretionary Policies have been assumed to be available for solvency of other classes of business, and
- the Termination Value basis or a sample of Termination Values on the current basis.

16.2 If the entity is disclosed as having a net deficit relative to the Solvency Reserve, the Actuary should state the possible implications of this issue.

16.3 Where benefits form part of a Related Product Group which is immaterial, abbreviated details may be given.

16.4 In addition to providing advice on the amount of the Solvency Reserve, the Actuary should provide recommendations regarding the amount of capital necessary, in the opinion of the Actuary, to ensure long-term financial soundness. If the Actuary has performed a calculation for this purpose based on standards issued by an overseas jurisdiction, it may be necessary to adapt some of the requirements of that standard to meet New Zealand conditions or the particular circumstances of the entity, or for other reasons. Broad details of any such adjustments should be included in the report.

16.5 The Actuary should be aware that a regulator may ask to view a report by the Actuary that covers the matters set out in sections 16.1 to 16.4 above.