

Discussion Draft of GN511

Economic Valuations

15 May 2003

The attached Discussion Draft of a new Guidance Note 511 (DDGN511) sets out a general framework for actuaries in preparing economic valuations of assets. It has been developed following the discussion of the paper "Economic Valuations – The Way Forward" at the Horizon meetings in May 2002.

A background paper titled "Economic Valuation Concepts" was prepared from that discussion paper and is available in Volume 8, Issue 4 2002 of the Australian Actuarial Journal.

While GN511 will be applicable to all economic valuations undertaken by members of the Institute, it is intended that the Discussion Draft will be supplemented by specific guidance in particular practice areas. The first of these areas is life insurance. The existing Guidance Note GN252 will become the first such practice-specific guidance note. A Discussion Draft of that revised Guidance Note (DDGN252) is also on issue for comment at the present time.

It is currently intended that, having been first issued as a Guidance Note, GN511 will become a Professional Standard after it has been in use for several years.

Members of the Institute are invited to provide comments and suggestions on the Discussion Draft, and an opportunity to do this will be afforded at a concurrent session of the Biennial Convention in Cooloom this month. An Exposure Draft will then be prepared for final consideration and ratification. We anticipate this Exposure Draft will be available for comment by October 2003.

Members are also invited to make written submissions about the Discussion Draft to the Economic Valuations Taskforce. Please submit them to the Institute office or the email address below by Friday 20 June 2003.

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Economic Valuations Guidance Note: Discussion Draft of GN511

IAAust Economic Valuations Taskforce

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DISCUSSION DRAFT OF GUIDANCE NOTE 511 ECONOMIC VALUATIONS

PURPOSE

This Guidance Note sets out the considerations that bear on the work involved in carrying out *economic valuations* of *economic assets*. It describes general principles and procedures for carrying out and reporting on the *economic valuation*.

APPLICATION

Except as noted in the Introduction (section 1.3), this Guidance Note applies to an economic valuation performed by a member of the Institute of Actuaries of Australia, and any advice pertaining to an economic valuation, which is likely, directly or indirectly, to be relied on by a Principal. Members who are not qualified actuaries are reminded that any advice they give must not be in a form that appears to be actuarial advice (as defined in the Code of Conduct and Guidance Note thereon) or could be construed to be actuarial advice by the Principal.

LEGISLATION

Members performing *economic valuations* should be aware of the requirements of relevant legislation, related regulations and standards (legal or professional) in so far as they relate to the *economic valuation* being undertaken. The Member may need to consider the implications of legislation or standards such as the following:

- Corporations Act 2001
- Financial Services Reform Act 2002
- Taxation law
- ASIC regulations and practice notes
- Australian Accounting Standards Board Standards

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- 1 • Legislation and regulations that govern the specific environment or
2 behaviour of the entity itself, such as life insurance legislation for life
3 insurers.

4 **DEFINITIONS AND CONCEPTS**

5 For the purposes of this Guidance Note the following terms will be used
6 with the meanings indicated. When used throughout the Guidance Note,
7 they will appear in italics.

8 *Assumption*

9 Any representation of reality, usually relating to future events,
10 which, given the *uncertainty* of those events, forms one of the
11 inputs upon which a *valuation* is based.

12 An *assumption* may refer to a single parameter or set of
13 parameters used in a *model*, or to the output of one *sub-model*
14 which is in turn an input into another *model*.

15 *Data*

16 The raw information from which an *economic model* is built and a
17 *valuation* is derived.

18 This includes but is not limited to accounting, statistical,
19 transactional, documentary, and environmental materials.
20 Information and *data* may be quantitative or qualitative, public or
21 private, and includes third party opinions and verbal
22 representations.

23 *Economic asset*

24 Any resource, property, rights or interests that can potentially
25 generate future cash flows to, or reduce future disbursements by,
26 any entity.

27 *Economic valuation*

28 The determination of an *economic value*.

29 *Economic value*

30 The current cash equivalent (allowing for time and risk) of all the
31 future cash flow benefits (or costs) that are expected to be

1 derived from ownership or use of an *economic asset* for a
2 specified *Principal*.

3 Alternative terms such as 'appraisal', 'appraisal value', 'economic
4 appraisal' are sometimes used outside this Guidance Note to
5 convey a similar concept.

6 *Market value*

7 An estimate of a potential *market price* of an *economic asset*:
8 • for a specific seller or range of sellers of the *economic asset*;
9 • for a specific buyer or range of buyers of the *economic asset*;
10 • with a set of specific market conditions; and
11 • at a specific time.

12 13 *Method*

14 The computational technique by which the *economic value* is
15 calculated. A *method* is likely to include the use of one or more
16 *models*.

17 *Model*

18 An analytical representation of how factors present in the real
19 world are assumed to behave, interact and produce future
20 outcomes. *Models* enable a decision-maker to better understand
21 the dynamics and uncertainties of the *economic asset* in its
22 environment.

23 *Model points*

24 A set of sample items of data (e.g. contracts, policies, claims) that
25 appropriately represent the full population of such data items for
26 use in the particular valuation *model*.

27 *Principal*

28 The person(s) or organisation that commissions the Member to
29 undertake an *economic valuation*.

30 *Risk free return*

31 The notional investment return that could be achieved over a given
32 time period with virtual certainty, representing the time value of
33 money.

1 *Uncertainty*

2 Any doubt about future outcomes, whether or not expressed,
3 quantifiable or based on empirical evidence.

4 *Valuation date*

5 The point in time in respect of which an *economic valuation* is
6 determined.

7 **CLASSIFICATION**

8 This Guidance Note is issued because a trial period is required before a
9 Professional Standard is produced. In general, the Member is expected
10 to disclose any departure from this Guidance Note but departure from the
11 Guidance Note is not, in itself, unprofessional conduct.

12 **FIRST ISSUED**

13 < Issue dates >

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1. INTRODUCTION

1.1 Role of economic valuations

Economic valuations are carried out for many purposes including but not limited to:

- supporting the management information of an organisation;
- contributing to the assessment of the value of a business (or part of a business) for the purpose of sale or acquisition;
- disclosing an *economic value* in the accounts of a company or elsewhere;
- undertaking a cost-benefit analysis of a project or opportunity; and
- assessing the effective allocation of financial resources.

1.2 General exclusions

This Guidance Note does not apply to a Member:

- (a) determining a *market value* of an *economic asset* – although it does apply to an *economic valuation* produced by a Member which may be used as a market value or to form the basis (directly or indirectly) of a *market value* (refer section 2.2);
- (b) undertaking an assessment of liabilities or prudential reserves ; or
- (c) pricing products or services, or determining funding rates for liabilities.

2. PROFESSIONAL CONSIDERATIONS

2.1 Training and experience

Before accepting a brief to conduct *economic valuation* work, the Member should consider whether he or she is professionally competent to do so, in accordance with the Code of Conduct.

1 Members may be asked to perform *economic valuations* in fields where
2 actuarial practice is not well established. In such cases the Member
3 must take steps to understand the financial drivers of *the economic asset*
4 and of the industry. The Member should be generally aware of *valuation*
5 *methods* and *assumptions* commonly used for valuing similar *economic*
6 *assets* by other valuers.

7 **2.2 Market valuations**

8 Members may be asked to provide advice on the *market value* of an
9 *economic asset*. These requests could be made in a variety of
10 circumstances, for example:

- 11 • as part of a merger or acquisition;
- 12 • for inclusion in published accounts; or
- 13 • for a transaction between related parties on an arms length basis.

14 There are many factors affecting *market values* that are not necessarily
15 encompassed within the *economic valuation* process and this Guidance
16 Note does not extend to advice provided by Members on *market values*
17 of *economic assets*.

18 However, this Guidance Note does apply where a Member prepares an
19 *economic valuation* that is likely to be used by others for another
20 purpose, such as the establishment of a *market value* of the *economic*
21 *asset*. In such a case, the Member should take steps to ensure that
22 communication to the *Principal* of the *economic value* discloses any
23 qualifications or limitations on the use of the *economic value* for the
24 expected purpose.

25 **2.3 Interaction with legal or regulatory requirements**

26 For certain types of valuations, minimum standards are laid down by law
27 or regulation, for example ASIC regulations regarding Independent
28 Expert's Reports. This Guidance Note supplements any such laws,
29 regulations or standards and should not be interpreted in any way that is
30 inconsistent with them.

31 In some fields (for example in property valuations or in economic
32 appraisals undertaken by government agencies and departments) there

1 are written codes or guidelines covering valuation approach and
2 reporting. The Member should comply with such codes or guidelines.

3 Where there is a conflict between this Guidance Note and any such
4 legislation, code or guidelines, the Member should consider his or her
5 general professional responsibilities under the Code of Conduct. In
6 general, any such inconsistency should be advised to the *Principal* and
7 should be referred to in the *economic valuation* report.

8 **2.4 Working with other parties**

9 Where a Member is asked to perform an *economic valuation* as a
10 component part of a larger *valuation*, this Guidance Note applies to the
11 *economic valuation* for which the Member takes responsibility.

12 This Guidance Note also applies to an *economic valuation* made jointly by
13 a Member and another person or firm.

14 A Member may sub-contract a component part of an *economic valuation*
15 to another person or firm where the Member has confidence in the
16 knowledge and experience of the sub-contractor. In these situations the
17 Member retains overall professional responsibility for the *economic*
18 *valuation*, including the delegated component, and this Guidance Note
19 applies to the entire *economic valuation*.

20 **2.5 Relationship to other standards or guidance**

21 Where appropriate for a particular actuarial practice area, more detailed
22 guidance may exist that is supplementary to the general framework set
23 out herein.

24 In the event of any ambiguities or inconsistencies between such practice
25 area guidance or standards and this Guidance Note, the practice area
26 guidance or standard will prevail.

1 3. GENERAL FRAMEWORK

2 **3.1 Valuation framework**

3 The fundamental steps that must be undertaken when performing an
4 *economic valuation* are:

5 *Step 1: Purpose, Use and Scope*

6 Review purpose and context; discuss and agree requirements of the
7 *Principal* including any *data, methods, models* or *assumptions* to be
8 specified by the *Principal* and also the level of materiality; understand
9 intended use of *economic valuation* results; familiarise yourself with the
10 *economic asset*; identify key areas of *uncertainty* for the *Principal*; clarify
11 the scope of the *economic valuation* in relation to the extent of the
12 components of the *economic asset* to be included.

13 *Step 2: Selection of Methods and Models*

14 Consider and select appropriate *method(s)* and *model(s)* to be used,
15 bearing in mind the purpose of the assignment.

16 *Step 3: Data*

17 Determine *data* requirements; research and analyse available *data*.

18 *Step 4: Build and Calibrate Models*

19 Build and test *model(s)*; set *model assumptions* by calibrating to available
20 *data*; undertake projection(s); deflate projected cash flows to current
21 cash equivalent.

22 *Step 5: Analysis of Results*

23 Review results, perform sensitivities, analyse and consider *uncertainty*.

24 *Step 6: Communication*

25 Prepare and deliver a written report on the *economic valuation*.

26 **3.2 Suitability of methods and models**

27 There is a range of generally recognised *methods* and *models* that can be
28 used to perform *economic valuations*. The principles set out in this

1 Guidance Note apply to the conduct of valuations regardless of the
2 *methods* or *models* employed.

3 The Member should be satisfied that the *methods* and *models* used to
4 perform the *economic valuation* are appropriate for the particular
5 circumstances. The *methods* and *models* used will depend on the size
6 and/or materiality of the *economic asset*, the complexity of the business
7 and/or products, the quality of *data* obtainable and the purpose of the
8 *economic valuation*.

9 When performing *economic valuations* using one *method* or *model*, the
10 Member should be aware of other widely used *methods* and *models* that
11 might produce materially different results. The Member should consider
12 the implications of these for both the *economic valuation* itself and the
13 communication of the *economic valuation* results.

14 **3.3 Transparency and objectivity**

15 The *models*, *methods* and *assumptions* used for the *economic valuation*
16 should be transparent, enabling valuation results and sensitivities in the
17 results to changes in particular *assumptions* to be understood by users of
18 the *economic valuation*. Transparency is generally enhanced by the
19 explicit recognition of cash flows, contingencies, economic variables and
20 the impact of *uncertainty*. The *data* and *assumptions* chosen by the
21 Member for use in the *modelling* and calibration processes should be as
22 objective as possible and free of bias.

23 Current cash equivalent of cash flows are often determined by
24 discounting at a risk-adjusted discount rate. Members should recognise
25 that such an approach blends the time value of money and market
26 uncertainty into a single figure. In some circumstances it may be
27 appropriate to treat these two components separately, for example when
28 valuing material non-linear payoffs (such as for options) or when the
29 uncertainty is changing over time.

1 **3.4 Reliable and consistent results**

2 The Member should use *models* that consistently produce reliable and
3 reproducible results across a range of circumstances that clearly includes
4 the environment of the *economic asset* being valued.

5 The Member should be satisfied that the *method* and *models* will, if
6 appropriate *data* and *assumptions* are used, produce credible *economic*
7 *valuation* results. In this regard, the Member needs to be satisfied that
8 the *model* adequately represents the relevant dynamics of the
9 component of the *economic asset* being modelled.

10 **3.5 Approximate valuations**

11 Actuaries may be asked to provide rough indications of the possible
12 *economic value* of an *economic asset*, based on a limited analysis of the
13 key drivers of the *economic value*.

14 Such limited valuations can be useful to a *Principal*, and this Guidance
15 Note should not be read as precluding a Member from making this type
16 of *economic valuation*, providing the Member is satisfied that he or she
17 has the relevant knowledge and experience.

18 Where such limited valuations are carried out or approximations are
19 used, the Member is expected to confirm the limited scope of the
20 *economic valuation* with the *Principal* and ensure that the limitations of
21 the *methods*, *models* and *data* used are adequately disclosed. The
22 Member should be careful to avoid creating the impression that the
23 results are more accurate than is the case.

24 **3.6 Roll-forward valuations**

25 In some circumstances it may be necessary and/or appropriate to provide
26 an *economic valuation* for a date later than that at which key *data* has
27 been captured and detailed *models* produced. Such an *economic*
28 valuation is commonly referred to as a roll-forward valuation.

29 Where this is the case, the Member should ensure that the controls on
30 the *data*, *models* and *assumptions* at the date that *data* is obtained are
31 suitable for the purpose of the *economic valuation*. The roll-forward
32 *method* used and the adjustments made should be consistent with the

1 use to which the *economic valuation* will be put and with materiality
2 standards appropriate to this use.

3 The *economic value* should be adjusted for material business experience
4 and cash flows that have occurred over the roll-forward period,
5 including:

- 6 • differences between actual experience from the expected experience
7 implied by the original *economic valuation*;
- 8 • any release of value from, or external application of value to, the
9 economic asset (eg dividend payments or capital transfers) or material
10 contracts or guarantees entered into over the period;
- 11 • material business, industry, financial or market experience that would
12 have an effect on the *assumptions* used to derive the *economic*
13 *value*.

14 The Member should take care to ensure that any approximate
15 adjustments take account of correlation effects between *assumptions*.

16 Where an *economic valuation* is required at a date earlier than that at
17 which data is currently available e.g. at a point during a financial period,
18 similar considerations may apply.

19 4. PURPOSE, USE AND SCOPE CONSIDERATIONS

20 4.1 Needs of the Principal

21 The Member should review with the *Principal* the purpose and context of
22 the *economic valuation*, to ensure that the complexity and scale of the
23 intended *valuation methods, models* and *data* are fit for that purpose.

24 The Member should also seek to understand the intended use of the
25 valuation results and any constraints that use might impose on the
26 Member in undertaking the *economic valuation*. Where the Member
27 believes that the constraints placed on the assignment by the Principal
28 are such that any resulting report by the Member is likely to be grossly
29 misleading to the Principal or other intended recipients, the assignment
30 should be declined.

1 The Member should seek to understand the extent to which the *Principal*
2 would expect to be rewarded for bearing particular risks arising from
3 interaction with the *economic asset*.

4 **4.2 Scope of economic asset**

5 The scope of the *economic asset* needs to be clearly understood by the
6 Member. The Member should consider both:

- 7 (a) the components of the *economic asset* to be valued; for example, to
8 what extent an *economic valuation* should make allowance for
9 business which is yet to be transacted, goodwill, particular business
10 units / products; and
- 11 (b) the extent to which the *economic valuation* is to make allowance for
12 the indirect impact of the use of the *economic asset* on the value of
13 other assets in which the *Principal* has a direct or indirect interest (for
14 example, synergy benefits; costs of remediation after an operation
15 has ceased), or the implications of structural changes that may be
16 made to the *economic asset*.

17 **4.3 Materiality**

18 The Member should discuss and agree with the *Principal* the general
19 materiality limits that will be used within the *economic valuation*.
20 Materiality limits may need to be applied at several different levels
21 including those in respect of:

- 22 • underlying *data*;
- 23 • which aspects of a business need to be modelled separately; and
- 24 • overall results.

25 In determining what materiality limits should apply, the Member will
26 usually need to consider:

- 27 • the quality of the data;
- 28 • the intended use of the *economic valuation*;
- 29 • the degree of *uncertainty*; and

-
- 1 • the sensitivity of the overall result to different *assumptions*.

2 5. VALUATION METHODS

3 5.1 Common valuation methods

4 A key element of the *economic valuation* is the *method* by which the
5 future cash flow benefits from the *economic asset* over all relevant future
6 periods are represented and then deflated into a current day cash
7 equivalent.

8 Some of the more common valuation *methods* used to assess *economic*
9 *value* are summarised below. The list should not be regarded as
10 exhaustive.

- 11 • *Asset replication*
- 12 • *Decision tree analysis (DTA)*
- 13 • *Discounted cash flows*
- 14 • *Earnings multiples / Price-earnings ratios / Volume ratios*
- 15 • *Monte Carlo simulations*
- 16 • *Real options*
- 17 • *State price deflators (SPD)*

18 As stated in 3.2, the Member should ensure that the *methods* and
19 *models* used to perform the *economic valuation* are appropriate for the
20 particular circumstances, and be aware of other widely used *methods*
21 and *models* that might be applied to the *economic valuation* of the
22 *economic asset* under consideration.

23 5.2 Allowing for uncertainty

24 The valuation *method* used should allow for the impact of *uncertainty* in
25 realising the projected cash flows on the *economic value* of the *economic*
26 *asset*. The form of the allowance for *uncertainty* should be consistent
27 with the type of *uncertainty* involved, so that the allowance varies
28 appropriately over time as the remaining level of *uncertainty* changes.

1 For example, if *uncertainty* grows the further out in time one looks, it
2 may be appropriate to allow for it in the discount rate. On the other
3 hand, if it is concentrated in the short term then it may be more
4 appropriate for example to allow explicitly for the range of possible cash
5 flows and their associated probabilities.

6 Adjustments for non-linear *uncertainty* should be allowed for explicitly
7 when making a risk adjustment to the *economic valuation*. Option pricing
8 models or similar methods should be considered for valuing any options
9 or guarantees inherent in the *economic asset*.

10 In determining an allowance for *uncertainty*, the Member should consider
11 whether it might be appropriate to use a different allowance for each
12 component of the *economic asset* in lieu of a single weighted average
13 allowance.

14 When using more than one form of allowance for *uncertainty*, care
15 should be exercised to avoid potential double counting or omission of
16 significant sources of *uncertainty*.

17 In allowing for uncertainty, the Member should select an approach that is
18 appropriate to the purpose and avoids spurious accuracy through the
19 application of a more detailed technique than the uncertainty and
20 knowledge about the behaviour of the economic asset warrants.

21 Allowing for uncertainty does not necessarily portray the extent of
22 uncertainty, guidance on which is given in section 9.6. Portraying the
23 extent of uncertainty can assist the Member in determining the allowance
24 that the Member makes for uncertainty in the economic value.

25 6. SELECTION OF MODEL

26 6.1 Introduction

27 *Models* are developed when there is uncertainty about the future. They
28 should represent the dynamics associated with an economic asset, its
29 cash flows, and its environment, and the way uncertainty may impact
30 the *economic value* of the *economic asset*.

1 There are four major types of *models* commonly used by Actuaries in
2 undertaking *economic valuation* work:

3 *cash flow models*

4 A *model* of the future cash flows expected to be generated by the
5 *economic asset*. The complexity of the *model* will vary depending on
6 the scope and purpose of the *economic valuation* and the number of
7 potentially material drivers of the cash flows.

8 *probability models*

9 A *model* of particular contingencies that affect selected cash flows
10 applicable to the *economic asset*. These may include *models* of event
11 occurrence, claim incidence, contract termination and take-up of
12 product features and options.

13 *economic models*

14 A *model* of the economic variables and their interrelationships that
15 affect the cash flows applicable to the *economic asset*. These
16 include factors such as future investment earnings, rates of inflation,
17 etc.

18 *risk models*.

19 A *model* used to generate the *assumptions* required to allow for the
20 impact of *uncertainty* on the *economic value*. The risk model
21 adopted should be based on observed market *data* and relationships,
22 and needs to be consistent with the other *models* underpinning the
23 *valuation*.

24 The *economic valuation* of an *economic asset* may involve the use of a
25 combination of *models*.

26 It may be important to adopt a more sophisticated *model* of particular
27 variables in circumstances where the cash flows exhibit asymmetry or
28 option-like behaviour that is dependent on the outcome of these variables
29 and where this may produce significant differences to the *economic*
30 *value*.

1 **6.2 Cash flow models**

2 All cash flows that are material to the *economic valuation* should be
3 reflected in the cash flow *model*. Certain cash flows may only have an
4 indirect effect on the *economic valuation*. While it might be possible to
5 derive a value for the *economic asset* by modelling only the drivers of
6 cash flow that directly affect the result, a more robust result is generally
7 achieved when underlying cash flows are also modelled.

8 The time interval between successive cash flows generally should not be
9 longer than one year. Shorter intervals may be appropriate, especially at
10 durations closer to the *valuation date*, where these could have a material
11 impact on the result.

12 Subject to considerations of materiality, *cash flows* should be projected
13 for the period of time that the *economic asset* is expected to produce
14 cashflows.

15 Terminal values may be used where there is limited information loss in
16 doing so

17 **6.3 Probability models**

18 Some of the cash flows being modelled may be contingent on the
19 occurrence of particular events. This is particularly so for *economic*
20 *assets* within the field of insurance, but is not confined to such assets.

21 In more sophisticated *models*, particularly those utilising stochastic
22 techniques, the distribution of these uncertain events may be derived
23 from separate *models* reflecting the forces which potentially affect the
24 distribution of those events.

25 The Member should take particular care in determining how such *models*
26 should treat the potential impact of contingencies that have very low
27 probability of occurrence but a very high cash flow outcome. Scenario
28 testing or stress testing may be helpful tools for examining the potential
29 impact of such contingencies on the value of the economic asset.

30 **6.4 Economic models**

31 Some of the cash flows in the cash flow *model* may be dependent on the
32 value of certain economic variables in the environment of the *economic*

1 *asset*. These may include future investment returns, inflation rates, the
2 impact of taxation, etc.

3 **6.5 Risk models**

4 A range of *models* exists to allow for *uncertainty* within the *economic*
5 *valuation*. These might include:

- 6 • Capital Asset Pricing Model (CAPM) or similar models for determining
7 risk adjusted discount rates
- 8 • state price deflator models for deflating cash flows using 'real world'
9 probabilities
- 10 • risk-neutral models for deflating cash flows in a risk neutral
11 environment (that is, where 'real world' probabilities are replaced by
12 'risk-neutral' probabilities)
- 13 • explicit risk models for determining appropriate margins to apply to
14 cash flows.

15 The risk model should be practical, transparent and appropriate to the
16 nature of the *uncertainty*.

17 **6.6 Consistent and arbitrage-free models**

18 All *models* and their associated *assumptions* should be consistent within
19 themselves and with each other.

20 An arbitrage exists in a *model* when a portfolio of assets can be
21 constructed which produces a return, after removing the *uncertainty*,
22 which is greater than the assumed risk free return. This outcome may
23 distort the *economic valuation*.

24 For example, it is generally recognised that the value of a portfolio of
25 insurance policies should be independent of the nature of the assets
26 backing the liabilities. Assuming an unmatched portfolio of assets should
27 produce the same result as if a matched portfolio was assumed: the
28 difference in risk should be offset by the change in the level of risk
29 adjustment. However, if the *models* used are not arbitrage-free then the
30 valuation may produce different results for different assumed asset
31 portfolios.

1 Where the cash flow *model* includes allowance for the holding of
2 reserves either for regulatory solvency purposes or to cover assessed
3 economic *uncertainty* then the Member should ensure that an appropriate
4 relationship exists between the size of the reserves held, the earning rate
5 on the assets backing those reserves and the adjustment for risk in the
6 *economic valuation*.

7 7. DATA

8 7.1 Introduction

9 The Member should consider the quality of the available *data* and be
10 aware of what *data* is and is not available for the *economic valuation*.
11 Where available, alternative sources of *data* (for example, published
12 industry *data*) should be examined to provide independent verification of
13 *data* provided.

14 7.2 Sources of data

15 The Member should consider what potential sources of *data* exist and
16 determine which of these are appropriate given the constraints and
17 scope of the *economic valuation*.

18 The Member should endeavour to obtain detailed *data* on the operations
19 and experience of the *economic asset*, including up-to-date internal
20 management reports. Where such detailed *data* is not available, the
21 Member should explain the limitations to the *Principal*, and make
22 appropriate use of other available published or industry *data*.

23 7.3 Data verification

24 The Member should review the *data* obtained for reasonableness, internal
25 consistency and completeness, and to ensure that the *data* is appropriate
26 for the *model* used in the valuation.

27 The Member should also have regard to possible distortions in the *data*
28 that may arise from, for example:

- 29 • recent acquisitions, disposals or mergers

-
- 1 • changes to systems, reports, or classifications
 - 2 • consolidation or segmentation across entities
 - 3 • changes in the business or management of the *economic asset*
 - 4 • market changes
 - 5 • regulatory changes
 - 6 • competitive changes

7 The Member should consider whether to adjust the *data* to eliminate
8 possible distortions or otherwise adjust for expected changes in
9 conditions going forward.

10 Where *data* is provided in the form of a report or analysis, the Member
11 should understand the scope and context of that work, and where
12 appropriate should discuss the results with the person who prepared the
13 report or analysis in order to be satisfied that the *data* is appropriate for
14 the purposes of the *economic valuation*.

15 In some circumstances it may be necessary or appropriate for a Member
16 to use unverified *data*. In these instances this should be disclosed in the
17 report and communicated to the Principal.

18 **7.4 Analysis and application**

19 The *data* available will influence the choice of the *method* and *models*
20 used for the *valuation*. If the *data* does not, or is insufficient to, support
21 the use of a particular *method* or *model*, the Member should use a more
22 suitable approach if one is available.

23 **8. BUILDING MODELS AND SETTING ASSUMPTIONS**

24 **8.1 Building models**

25 Models should be constructed based on analysis of the key features and
26 value drivers of the *economic asset*. In a simplified *model*, some of these
27 key drivers may be considered to be implicit within other drivers.

1 *Models* and their *assumptions* should be developed from the historic
2 operating performance of the *economic asset* unless the Member forms
3 the view that the past experience is not a credible guide to the future.
4 The Member should modify the *models* and/or the *assumptions* as
5 necessary for known or expected future trends or changes in future
6 performance. This would include allowance for any material *data*
7 available for time periods following the *valuation date* up until the
8 finalisation of the report to the *Principal*.

9 Where the same type of *data* is required to calibrate more than one
10 *model* (for example, both an *economic model* and a *risk model*) then
11 those *models* should be calibrated to the same *data*.

12 **8.2 Setting assumptions**

13 *Assumptions* are determined by calibrating the *models* to available *data*.

14 There can be a range of *assumptions* that the Member could determine
15 as being acceptable, based on the requirements and purpose of the
16 *economic valuation*.

17 Except where the choice of *assumptions* is in line with a *Principal's*
18 instructions and this instruction is disclosed in the Member's valuation
19 report, *assumptions* should be:

- 20 • appropriate to the purpose, scope and proposed use of the *economic*
21 *valuation*
- 22 • explicit rather than implicit where they have a material impact on the
23 assessment of *economic value*
- 24 • free from bias
- 25 • robust, in that the *assumptions* make allowance for expected future
26 changes in the operating environment such as pricing cycles,
27 experience improvements, margin squeeze, inflation etc
- 28 • reasonable both individually and in aggregate and should appropriately
29 reflect any material correlations between them
- 30 • consistent with the available *data* about the *economic asset*, its
31 environment and market

-
- 1 • set taking account of the recent operating experience of the
2 *economic asset*, where this is available. Otherwise, the Member
3 should consider other potential information sources such as industry
4 experience or *assumptions* used by the *Principal* for other valuations
- 5 • complete, that is all relevant *assumptions* that may reasonably be
6 expected to materially affect the valuation result should be
7 considered, and allowance be made for all of the business of the
8 *economic asset* that contributes materially to the cash flows to be
9 valued
- 10 • reflective of the key drivers of the behaviour of the *economic asset*
- 11 • consistent with the needs, specific requirements or position of the
12 *Principal*

13 Where stochastic modelling or a similar approach is chosen, the Member
14 should take particular care to be satisfied that the underlying assumption
15 distributions are realistic.

16 Any discount rate should be set consistent with how taxes (and franking
17 credits) and debt costs are modelled, as well as any implied leverage
18 within the *economic asset* itself.

19 **8.3 Model points**

20 Model points are a particular form of *assumption* used in some forms of
21 cash flow *model*.

22 The number of model points chosen will vary dependent on the nature,
23 homogeneity or complexity of the *economic asset*, the circumstances of
24 the *economic valuation* and the extent to which particular model points
25 exhibit different characteristics of the business of the *economic asset*.

26 The Member should use a sufficient number of model points such that
27 none of the key features of the *data* that are likely to be significant to the
28 *economic valuation* are lost in the grouping process.

29 **8.4 Testing the model**

30 The Member should ensure that all *models* are checked for reliability and
31 consistency. The degree of checking should be appropriate to the

1 importance of the model in the context of the overall value of the
2 *economic asset*, the purposes for which the model is used and the
3 materiality requirements of the valuation. The model checking process
4 should include both technical and peer review, whether the *model* has
5 been newly developed for this valuation or adapted from previous work.

6 *Models* should be tested to ensure that the results conform to
7 expectations. Structured spot checks should also be undertaken to
8 ensure that the *model* adequately deals with a range of circumstances,
9 including circumstances that may not have been previously encountered.

10 In undertaking such testing, extreme or outlying results should be
11 considered and where appropriate investigated against the *data* on which
12 the *model* was calibrated to ensure that they are indicative of reality.

13 There is inherent *uncertainty* in future operating experience. The Member
14 is encouraged to quantify the materiality of the *uncertainty* by making
15 sensitivity tests and/or other technique(s).

16 9. CHECKING AND ANALYSIS OF RESULTS

17 9.1 Checking of valuation results

18 In addition to testing the valuation models, the Member should perform an
19 appropriate range of validation tests and reasonableness checks on the
20 valuation result.

21 The extent of testing required will depend on the complexity of the
22 valuation and the materiality of various elements of the valuation. Where
23 a more complex valuation method has been used, it is common practice
24 to apply one or more simpler valuation methods, such as a ratio valuation
25 method, in order to provide a reasonableness check on the overall
26 valuation result. It is also common practice for the Member to develop a
27 range of check ratios from the valuation results and use these to become
28 satisfied that the results of the valuation are reasonable.

29 There is inherent *uncertainty* in future operating experience. The Member
30 is encouraged to quantify the materiality of the *uncertainty* by making
31 sensitivity tests and/or by other technique(s). Such tests supplement the
32 reasonableness checking the Member has performed and deepen the
33 Member understanding of the dynamics of the valuation result.

1 The Member is strongly encouraged to maximise the usefulness of the
2 *economic valuation* by undertaking an analysis of the results of the
3 valuation. The Member's purpose in such an analysis should be to
4 provide the *Principal* with insight into the *economic valuation* and the
5 results calculated.

6 The Member should perform an appropriate level of reasonability tests
7 and cross-checks of the results (and intermediate calculations). The use
8 of alternative valuation techniques and benchmarks may be particularly
9 effective in this respect.

10 **9.2 Components of value**

11 Where appropriate, the Member should identify relevant component parts
12 of the value of the *economic asset* or of the valuation. In various
13 circumstances, these might include components such as:

- 14 • New business versus existing business
- 15 • Line of business
- 16 • Market segment
- 17 • Distribution source
- 18 • Sources of synergy benefits.

19 In addition, analysis that enables the Principal to better understand the
20 nature of the value is encouraged. For example, in different
21 circumstances the Principal may find it useful to understand how much
22 value may be viewed as:

- 23 • surplus to the operating needs of the business;
- 24 • cash (or other highly liquid assets)
- 25 • required as capital for the operating needs of the business;
- 26 • tangible or intangible (in an accounting sense); or
- 27 • more or less certain (or in different degrees of uncertainty).

28 **9.3 Analysis of change in value**

1 An *economic asset* may be valued at regular intervals, for example,
2 annually for holding value purposes. The Member should compare the
3 *economic valuation* result with the previous *economic valuation* result, if
4 one exists, and make an analysis of the change in *economic value*.

5 The analysis of change should generally identify, as a minimum:

- 6 • the effect of changes in the valuation *method*
- 7 • the effect of changes in the valuation *assumptions*. Detail of the
8 effect of the more material individual *assumption* changes should be
9 shown separately
- 10 • the effect of operating experience during the period.

11 **9.4 Key drivers of value**

12 Where appropriate, the Member should analyse the key drivers of the
13 *economic value* (for example volumes, transactions, claims rates) so that
14 the essential dynamics of the valuation result can be explained in terms
15 of its key drivers. Where such an analysis is undertaken, the Member
16 should understand not only the key *economic value* drivers (the direct
17 drivers) but also the business or environmental factors that are the key
18 influences on the direct drivers.

19 **9.5 Analysing and portraying uncertainty**

20 All *economic valuations* will have *uncertainty* in their results. Section 5.2
21 considered *uncertainty* in the context of assessing how much would
22 need to be paid to compensate a *Principal* for taking on that *uncertainty*.
23 This section considers how to demonstrate the extent of *uncertainty* in
24 the *economic valuation* to the *Principal*.

25 The Member should consider which aspects of *uncertainty* are material
26 to the purpose of the *economic valuation* being undertaken. These
27 should be drawn to the particular attention of the *Principal*. This will
28 assist in determining the allowance that the Member makes for
29 *uncertainty* in determining the *economic value* and assist in
30 communication of the result to the *Principal*. There are a number of
31 approaches which can be taken including:

1 *Stochastic modelling and simulations*

2 The approach of using random variable models for one or more
3 *assumptions* coupled with multiple calculation runs to simulate the
4 variability expected to be experienced in reality.

5 *Scenario testing*

6 The approach of testing more than one complete set of
7 interdependent *assumptions* of a *model*, each set representing a
8 potential, or representative, future economic or business state.

9 *Sensitivity testing*

10 The approach of varying one or more *assumptions* of a *model* in
11 order to explore the sensitivity of the results being measured by the
12 *model* to the changes in those *assumptions*.

13 *Stress testing*

14 The approach of running a *model* using a variety of significantly
15 adverse scenarios or individual *assumptions* and observing the
16 impacts on the key outcomes measured by the *model*.

17 The Member should select an approach that:

- 18 • is appropriate to the purpose
- 19 • avoids spurious accuracy through the application of a more detailed
20 technique than the *uncertainty* and knowledge about the behaviour of
21 the *economic asset warrants*.

22 **(a) Stochastic modelling**

23 Where stochastic modelling or a similar approach is chosen, the Member
24 should take particular care to be satisfied that the underlying distributions
25 are realistic.

(b) Sensitivity testing

Where a sensitivity test approach is chosen, the Member should:

- choose sensitivities which focus on the *assumptions* most material to the results or likely to be of most interest to the *Principal*
- choose assumption variations that are reasonably likely without being extreme (unless variations in the 'tail' of a distribution or process are being considered).
- vary each of the key *assumptions* to examine roughly equivalent confidence levels around each of those *assumptions*
- have regard to non-symmetrical features of the sensitivities, and break-even or 'switching' points.
- treat correlated *assumptions* (for example, inflation, interest, lapses etc) appropriately

(c) Scenario testing

Where a scenario testing approach is chosen, the Member should:

- choose scenarios which are internally consistent
- choose scenarios which represent a range of operating conditions to which the *economic asset* could reasonably be expected to be exposed
- include scenarios where non-symmetrical features of the *economic asset* will be appropriately tested

(d) Stress testing

Where a stress testing approach is chosen, the Member should:

- choose sets of conditions which appropriately examine the stress scenarios that are likely to be material to the *economic valuation* or of interest to the *Principal*.
 - treat correlated *assumptions* appropriately
-

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- 1 • consider the extent to which behaviour of the *economic asset* or its
2 management may change under stressed conditions and adjust
3 appropriately for these where possible.

4 10. COMMUNICATION AND DISCLOSURES

5 10.1 Principles

6 The Member must take all reasonable steps to ensure that the results of
7 the *economic valuation* are communicated to the *Principal* in an
8 appropriate manner and not in a manner likely to give a misleading
9 impression. In particular, the Member should ensure to the extent
10 possible that any significant implications or limitations of the *economic*
11 *valuation* are disclosed. If the Member believes that the results of the
12 *economic valuation* will be disclosed to a third party, the Member must
13 take all reasonable steps to ensure that the disclosure to the third party
14 will also be appropriate and not misleading.

15 The appropriate level of disclosure is ultimately a matter of judgement
16 and will depend on many factors, including:

- 17 • the complexity of the *economic asset* being valued;
- 18 • the scope of the assignment given to the Member;
- 19 • the level of reliance upon, and the degree of independent
20 verification of, information, documents and data
- 21 • the degree of subjectivity or *uncertainty* in the *economic valuation*;
22 and
- 23 • the level of sophistication of the *Principal* for whom the *economic*
24 *valuation* was determined.

10.2 Written report

The Member should provide a written report addressing each of the following:

- a statement of the identification and qualifications of the Member and the capacity in which the Member is acting
- a statement of the purpose of the *economic valuation*, the identity of the *Principal* and the intended use of the valuation report
- a description of the scope of the *economic asset*
- the *valuation date*
- a description of the scope of the assignment given to the Member
- identification of *data* used and gaps or potential errors in the *data*
- a description of the primary *methods* and *models* used
- a description of the validation techniques employed to validate the *models* used and the results of the *economic valuation*
- a description of the *assumptions* made and their derivation including significant *assumptions* regarding the future legislative framework and operating environment
- a statement where the actual *method(s)*, *models* and/or *assumptions* used were not chosen by the Member but either selected by the *Principal* or required by relevant codes or legislation. Where appropriate, any implications of the use of *methods*, *models* or *assumptions* not chosen by the Member should be stated, and the Member should indicate whether any of those are inappropriate in the context of this *economic valuation*.
- the results of the *economic valuation* including the value of key components along with any limitations attaching to the results
- a description of material uncertainties in the *economic valuation*
- a description of the sensitivity testing performed and key results

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- 1 • an analysis of the change in value from the last *economic valuation* (if
2 any). Key results of the analysis should be clearly brought to the
3 attention of the *Principal*
- 4 • reference where appropriate to any material changes that have
5 occurred to the *economic asset* or its operating environment
6 subsequent to performing the *economic valuation* but before delivery
7 of the valuation report
- 8 • a statement of compliance with this Guidance Note. Any conflicts
9 between any legislative requirements or other practice codes
10 applicable to the *economic valuation* and the Code of Conduct or this
11 Guidance Note should be disclosed, for example, requirements in
12 respect of real property valuations where the *economic valuation*
13 includes a valuation of real property

14 Elaboration of some items is given in the following sections.

15 **10.3 Purpose of the valuation**

16 Where the result of an *economic valuation* could reasonably be
17 construed to be a *market value* but is not, a clear statement and
18 explanation that it is not a *market value* should be given.

19 **10.4 Scope of the assignment**

20 The description of the scope of the *economic valuation* should make
21 reference to the terms of engagement including relevant instructions
22 given to the Member. The report should discuss the scope of the
23 assignment and any limitations imposed by the *Principal*.

24 Any aspects of the *economic valuation* that were explicitly excluded from
25 the scope of the Member's work, but which would usually be expected
26 to have been included in an *economic valuation* undertaken by a
27 Member, should be clearly stated. The Member should comment on
28 whether this makes the economic valuation result inappropriate for the
29 Principal's purpose. Likewise, the Member should state any aspects
30 included in the economic valuation which would usually be excluded.

1 **10.5 Data and reliances**

2 The report should identify the information, documents, and *data* used
3 and upon which the Member relied. The degree of independent
4 verification of the *data* undertaken by the Member should be disclosed as
5 well as any shortcomings or limitations of the *data* for the purpose of an
6 *economic valuation*. The extent of reliance on advice prepared by a third
7 party should be disclosed, including advice about matters (such as tax)
8 beyond the training or experience of the Member.

9 The Member should disclose any significant *data* problems that give rise
10 to *uncertainty* in the *economic valuation* and assess the materiality of
11 that *uncertainty*.

12 The *valuation report* should specify the extent and rationale for any
13 material adjustments to the underlying *data* and consider the potential
14 materiality of such *adjustments* to the overall results.

15 **10.6 Methods and models**

16 If *data* was obtained at a date other than the *valuation date*, a
17 description of the *method* used to adjust the *data* to the *valuation date*
18 should be included together with comment on the effect of any
19 approximations involved.

20 **10.7 Results and limitations**

21 In some situations the Member may consider it more appropriate to
22 disclose an *economic valuation* range than a single valuation result. If a
23 range is provided, the Member should also provide advice on how to
24 interpret the range, for example by explaining the factors that might be
25 likely to result in values towards the higher or lower end of the range.

26 The valuation report should identify any limitations attaching to the
27 *economic valuation* and its applicability.

28 Any limitations the Member places on the distribution or use of the report
29 should be stated.

10.8 Assumptions

The *economic valuation assumptions* should be set out in detail. The basis for determining each material *assumption* should be described. The reasonableness of the *assumptions* for the purposes of the *economic valuation* should be discussed including the extent to which they are:

- consistent with past experience
- specified by the *Principal*
- stipulated by a particular code, legislation etc.

Discussion should include the following:

- where *assumptions* are based on company or other experience studies, the report should describe those studies
- where *assumptions* are based on judgement or industry experience, the Member should discuss any relevant factors which led to the choice of *assumptions*
- where *assumptions* differ from recent experience because of trends, known changes in the environment or anticipated changes in the operations of the entity, the Member should discuss the factors which led to the *assumptions* used
- where *assumptions* were set using input or expertise from outside sources, the report should disclose the sources of such information
- reasons should be given for any significant differences between the *assumptions* underlying the *economic valuation* and those underlying any other published or internal reports such as pricing, business planning or management reporting.

10.9 Departure from Guidance Note

Where the Member is not able to make an unqualified statement that the *economic valuation* and the report comply with this Guidance Note, an explanation of any qualifications or reasons for departures from this Guidance Note should be disclosed in the *valuation report*.

END OF DISCUSSION DRAFT OF GUIDANCE NOTE 511

GN511

Questions for Possible Discussion at IAAust Biennial Convention, May 2003

1. Is it sufficient to cover specific assumptions such as tax or the risk free rate of return in a generic fashion, or there be specific guidance in relation to specific assumptions? If so, what should it say?
2. Does the draft guidance note adequately allow for simple ("back-of-the-envelope") valuations?
3. Do the valuation methods listed in Section 5 represent an appropriate list? Should other methods be added? Should some of those included be deleted?
4. Should this guidance note provide more detail regarding the application of valuation methods, for example:
 - Advantages/disadvantages
 - Instances in which the method would be more or less appropriate
 - Particular risks/things to be careful of in applying the method?
5. Is further detail required in relation to the actuary's understanding of the nature of the economic asset?
6. Should the guidance note provide more detail regarding the application of risk models, for example more on the relationship between risk discount rate and the assumed level of capital and/or gearing?
7. Is the distinction and relationship between economic valuations (to which this guidance applies) and market valuations (to which it doesn't) made sufficiently clear?
8. Is there sufficient guidance for the preparation of economic valuations in the context of making capital budgeting or project evaluation decisions?
9. Is the application of the guidance to all members of the Institute appropriate?

Note that while the document will initially be issued as a Guidance Note, it is intended that it will eventually become a Professional Standard. Guidance Notes specific to areas of practice e.g. GN252 for Life Insurance appraisal values, will provide detailed application to some areas of work. However, for areas where a specific guidance note is not prepared, GN511 will need to provide sufficient support for members in undertaking this work.