LLOYD'S SOLVENCY II TECHNICAL PROVISION GUIDANCE

2024

CONTACT DETAILS

For technical queries:

Market Reserving & Capital

Reserving@lloyds.com

CONTENTS

1 INTRODUCTION

The majority of this section's requirements are based on Articles 48, 76 & 83 of the Level 1 texts, Articles 17 & 272 of the Level 2 texts, Guidelines 12 & 82 of the Level 3 Guidance on the valuation of technical provisions and Guideline 6 of the Level 3 Guidance on contract boundaries.

1.1 Disclaimer

Lloyd's notes that the Prudential Regulation Authority (PRA) published Policy Statement 15/24 finalising PRA rules and policy materials that will replace Solvency II assimilated law in 2024. This guidance will continue to refer to the regime as Solvency II until such time as all references to Solvency II can be changed across all relevant materials; we highlight that this is in line with the PRA approach as at the publication date of this document.

1.2 Key Changes

Solvency II seeks to create a harmonised, risk-based approach to supervision, solvency and capital requirements for insurers within the EU.

This guidance is an update of the detailed version issued in November 2019.

The majority of the previous guidance still holds. The areas where there have been changes or clarifications are listed below and detailed further in the guidance.

The main update to the November 2019 guidance relates to the risk margin and discounting credit, which are summarised below:

Section 10 - Discounting

- The PRA will provide the risk-free interest rate structures to be used in discounting technical provisions. The PRA publish these rate structures on a monthly basis on or before the eighth working day following the reporting date. Agents should refer to relevant Solvency II Lloyd's reporting return instructions (i.e. QSR and/or ASR) for further details on use of these rates for Lloyd's reporting.

Section 11 – Risk Margin

- Changes made to this section following the Government's reforms to the risk margin as set out in the Insurance and Reinsurance Undertakings (Prudential Requirements) (Risk Margin) Regulations 2023, which came into force on 31 December 2023. Specifically, HMT's SI makes an amendment to the Commission Delegated Regulation (EU) 2015/35 to:
    - Reduce the cost of capital rate used in the risk margin calculation from 6% to 4% for life and non-life insurance and reinsurance obligations
    - Amend the risk margin formula and introduce a risk tapering factor of 0.9 for life insurance and reinsurance obligations, subject to a floor of 0.25.
- The PRA notes PPOs are eligible for the 0.9 risk tapering factor given they are treated as life insurance obligations within the existing regime. Insurance firms may have a pipeline of claims which could become PPOs, of which a proportion will be settled as a cash lump-sum and the rest as PPOs. Firms' best estimate liability calculations are based on a probabilistic expectation of how these claims will settle.

All of these items are discussed in more detail throughout the document.

Technical provisions are the largest item on an insurance undertaking's balance sheet, meaning an undertaking's financial strength is sensitive to movements in their value.

This guidance is intended to assist managing agents in valuing technical provisions on a Solvency II basis. The guidance offers practical solutions in places, but these should not be taken as Lloyd's "rules" or as the only solutions and in many cases alternative approaches, with justification, are equally valid. The guidance is intended to cover all applicable requirements; in broad terms this means satisfying the relevant requirements of the level 1, 2 and 3 texts. Appendix 6 includes a list of these requirements, at a high level, and a broad mapping to the guidance provided to show under which section this is covered. The document also includes references to other documents where applicable, for example to PRA supervisory statements.

Solvency valuations are required alongside the valuation basis under UK GAAP for accounting purposes.

1.3 General Principles

There are a number of general principles which underlie Solvency II and several of these apply in the calculation of technical provisions. The key principles for calculation of technical provisions are listed below and then discussed further as part of the detailed guidance:

- The selection and use of adequate and appropriate valuation techniques
- The use of expert judgement, which must be justified
- Allowing for future management actions, the effect of which are likely to be disclosed

Proportionality, for which any simplifications must be justified

1.4 Technical provisions

Below are the key changes that translate from a UK GAAP basis to a SII basis,. All of these are discussed in more detail in the main document.

- Movement to a cashflow basis for valuation of both gross business and outwards reinsurance
- Removal of any implicit or explicit margins within technical provisions to give a “true best estimate” for solvency purposes, defined as the mean of the full range of all possible future outcomes
- Introduction of the valuation of very low probability extreme events including latent claims, referred to as “Events not in Data” (ENIDs)
- Removal of the requirements to hold an unearned premium reserve and to allow for other non-monetary items. These are replaced by “premium provisions”, valued on a best estimate basis. This also includes a requirement to take account of all future premium cash inflows
- Movement to recognising contracts on a “legal obligation basis”. This means the inclusion of business not valued as part of the technical provisions under UK GAAP - for example 1st January renewals entered into prior to a 31/12 valuation
- The basis for recognising existing contracts also impacts reinsurance contracts and their expected cashflows
- Introduction of discounting, leading to increased volatility in reserves
- Introduction of the principle of a market consistent basis and calculation of a Risk Margin (or Market Value Margin)
- Valuation of liabilities segmented by at least Solvency II lines of business
- Introduction of governance requirements for an explicit ”actuarial function” with defined responsibilities, of which many relate to technical provisions
- Introduction of explicit data requirements
- Increases to documentation and validation requirements
- Introduction of explicit links to other areas of Solvency II such as internal models
- Introduction of the principle of proportionality that underlies the calculations

1.5 Minimum segmentation

Solvency II requires technical provisions to be segmented by defined lines of business. There are also requirements to value the best estimate in all (significant) currencies.

Lloyd’s view is that the fundamental underlying principle to ensure suitable and accurate assessment of best estimate technical provisions is to value the liabilities by homogeneous risk groups, at least for calculation of undiscounted best estimates. Results on this basis may then require further allocation to significant currencies or aggregation to lines of business to finalise the calculation.

The Solvency II lines of business represent the minimum level of granularity at which to perform the calculation. The principle of substance over form should underlie any segmentation.

Business written at Lloyd’s is expected to fall into one of the groups summarised below (a subset of all Solvency II minimum lines of business), with further details given in the Segmentation section.

12 direct classes (non-life and health)

12 proportional classes (non-life and health, corresponding to those above)

4 non-proportional (non-life and health)

4 “Other” life insurance classes covering death, health or miscellaneous

4 “Other” life reinsurance classes covering reinsurance of death, health or miscellaneous

1 class for annuities stemming from non-life contracts relating to health obligations

1 class for annuities stemming from non-life contracts relating to obligations other than health

Lloyd’s expects agents to use a reasonable basis to allocate business to the Solvency II minimum lines of business. Appendix 5 contains a risk code mapping that may assist agents in the process of allocating obligations to the Solvency II minimum lines of business. Note that additional data sources or assumptions may be needed to allocate and report to the required levels.

1.6 Best estimate cashflows

The technical provisions must be calculated gross using a cashflow basis with a separate explicit calculation for outwards reinsurance, also using a cashflow basis. Further to the minimum segmentation noted above, the best estimate must also be split between claims and premium provisions for non-life business.

The cashflows include future cash in-flows such as premiums. Provisions are therefore net of future premium receipts which can make them negative. The inclusion of premium provisions and move to a cashflow basis is a major change to the Solvency I basis.

The best estimates must not include margins for optimism or conservatism. Reserves held in excess of the best estimate must be excluded from the technical provision calculation for solvency (but may still be included for financial reporting purposes). Future profits recognised through the calculation of a best estimate premium provision (rather than the unearned premium reserve approach under UK GAAP) will be eligible as tier 1 capital.

Cashflows must be discounted for the time value of money. The yield curves for major currencies to apply by currency will be supplied by supervisors and will be fixed for each valuation date.

In the event that the overall weighted discount rate is negative throughout the term of the cashflow, the impact of discounting would be expected to increase the Technical Provisions.

1.7 Recognition of contracts

Another major change compared to the UK GAAP basis is the system for recognising existing contracts. Under the legal obligation basis of Solvency II, all existing contracts must be valued, whether the contracts have incepted or not.

Distinct areas to be considered can be split into:

1.7.1 Business incepted at valuation date

Gross claims cashflows within claims provisions (earned incepted business)

Gross claims cashflows within premiums provisions (unearned incepted business)

Gross future premium receivable (incepted business)

1.7.2 Business not incepted at valuation date

Gross future premium and claims cashflows for policies not yet incepted by the valuation date, but already forming part of contractual obligations (“unincepted” business). These form part of the premium provision.

For a 31 December valuation this will generally **include the 1st January renewals for the coming year.**

There is an associated impact on delegated authority or binder business which must be assessed on a “look through” basis with the boundaries of the actual underlying contracts of insurance being tested (rather than the delegated authority or binder that are not contracts of insurance). This may include estimations if data is not immediately available.

1.8 Reinsurance

The technical provisions are calculated gross, with reinsurance calculated separately under the same principles. Reinsurance recoveries will continue to allow for expected non-payment whether caused by default or dispute.

The Solvency II principles require:

- Consideration of different cashflows for gross claims and outwards reinsurance recoveries including the timing of defaults or disputes
- Valuation of high layer non-proportional covers allowing for “all possible future outcomes”.
- Recognition of existing contracts

When considering which cashflows to include in the calculation of reinsurance recoveries in the best estimate underlying technical provisions the key principle is to ensure these are consistent with the inwards policies included in the same valuation. Two specific areas that should be addressed:

1. Future reinsurance cover not yet bought that will cover existing inwards contracts (e.g. LOD cover incepting in the following year). Cashflows from these contracts would be included in technical provisions (assuming sufficient justification as per EIOPA’s guidelines); this includes the expected proportion of the premium (of the future reinsurance cover) that applies to the existing inwards contracts. In this instance, the selected proportion of the expected future reinsurance premiums will need to be clearly justified. By adopting this approach syndicates’ net of reinsurance technical provisions would typically increase.
2. Existing reinsurance contracts that will provide recoveries from inwards contracts that are NOT “existing” at the valuation date (e.g. RAD cover already purchased for the forthcoming year or existing LOD covers). To ensure consistency with the inwards contracts valuation, only cashflows in respect of reinsurance recoveries that relate to existing inwards contracts should be included. Any future premiums payable on existing reinsurance contracts (e.g. minimum and deposit premiums, and/or outward reinsurance premiums owed in respect of the ceded business to date) should be included. These premium payments should be included at the level to which they are contractually obliged based on existing inwards cover only, with no consideration to the future inwards business. This is irrespective of the accounting treatment adopted by the managing agent to allocate reinsurance costs equitably across years of account.

1.9 Expenses

Managing agents should take into account all expenses that would be incurred in running-off the existing business, including a share of the relevant overhead expenses e.g. professional fees. This share should be assessed on the basis that the syndicate continues writing new business. Expense provisions under Solvency II should include items such as investment manager’s costs that would not be covered under UK GAAP.

As a result expense provisions will be typically greater under Solvency II compared to UK GAAP.

1.10 ENIDs

UK GAAP technical provisions only make allowance for items that are implicitly included within the data or are “reasonably foreseeable”. Under Solvency II the best estimate must have reference to “all possible outcomes”. This will include latent claims or very extreme high severity, low probability claims.

These items (both latent claims and extreme events) have been labelled “Events not in data” and adjustments need to be made to ensure that they are included in technical provisions. This will lead to an increase in technical provisions under Solvency II compared to UK GAAP.

1.11 Uncertainty

Gross and reinsurance cashflows should adequately recognise the uncertainty inherent within them, though not through the use of implicit or explicit prudence. This includes:

Considering timing of cashflows

Links between loss size, timings and reinsurance defaults

ENIDs

1.12 Risk margin (or Market Value Margin (MVM))

A risk margin increases the overall value of the technical provisions from the discounted best estimate to an amount equivalent to a theoretical level needed to transfer the obligations to another insurance undertaking.

Where the best estimate and risk margins are calculated separately, which is the case for the vast majority of non-life business, risk margins should be calculated using a cost of capital approach.

The cost of capital approach requires the risk margin to be calculated by determining the cost of providing an amount of eligible own funds equal to the Solvency Capital Requirement (SCR) necessary to support the current obligations over their lifetime. There are suitable simplifications available to calculate risk margins; risk margin calculation is covered in further detail in section 11 of this guidance.

1.13 Process and methodology

Valuation of technical provisions requires the collection of qualitative and quantitative information on the underlying liabilities and the application of expert judgment to that information. Valuation of technical provisions should, therefore, not be entirely model-driven.

The valuation process includes the following elements:

Collection and analysis of data

Determination of assumptions

Modelling, parameterisation and quantification

Expert review of estimation

Controls

Documentation (including of expert judgement)

1.14 Assumptions

Assumptions used within the calculation of Solvency II technical provisions must be consistent both with financial market information and "generally available" insurance risk data. They must be documented, justified and validated in line with the validation and back-testing requirements.

1.15 Validation and back-testing

Validation techniques are defined as the tools to ensure that the valuation methods, assumptions and results of the technical provision calculation are appropriate and relevant.

Actual versus expected analyses forms a significant part of the validation process.

The whole valuation process itself should also be reviewed and verified by someone who has adequate knowledge and skills and is independent of the process of valuation.

1.16 Data implications

The data underlying the calculation needs to be accurate, complete and appropriate.

An assessment of the appropriateness, accuracy and completeness of the data is required by the actuarial function.

1.17 Documentation

As with all other processes under Solvency II, all steps in the technical provisions valuation process need to be thoroughly documented. The results should be shared with relevant business experts and their views should be captured and included in the feedback loop, where appropriate.

The test standard that may be applied is whether another, suitably skilled, individual could reproduce the results based on the documentation and data alone.

1.18 Actuarial function

Solvency II explicitly requires firms to have an actuarial function with defined responsibilities.

In relation to Technical provisions, article 48 of the Directive requires the actuarial function to, as a minimum:

(a) coordinate the calculation of technical provisions;

(b) ensure the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions;

(c) assess the sufficiency and quality of the data used in the calculation of technical provisions;

(d) compare best estimates against experience;

(e) inform the administrative, management or supervisory body of the reliability and adequacy of the calculation of technical provisions;

(f) oversee the calculation of technical provisions in the cases set out in Article 82;

The requirements for the actuarial function in respect of technical provisions are expanded further in Article 272 of the level 2 delegated acts:

1. In coordinating the calculation of the technical provisions, the actuarial function shall include all of the following tasks:

(a) apply methodologies and procedures to assess the sufficiency of technical provisions and to ensure that their calculation is consistent with the requirements set out in Articles 75 to 86 of Directive 2009/138/EC;

(b) assess the uncertainty associated with the estimates made in the calculation of technical provisions;

(c) ensure that any limitations of data used to calculate technical provisions are properly dealt with;

(d) ensure that the most appropriate approximations for the purposes of calculating the best estimate are used in cases referred to in Article 82 of Directive 2009/138/EC;

(e) ensure that homogeneous risk groups of insurance and reinsurance obligations are identified for an appropriate assessment of the underlying risks;

(f) consider relevant information provided by financial markets and generally available data on underwriting risks and ensure that it is integrated into the assessment of technical provisions;

(g) compare and justify any material differences in the calculation of technical provisions from year to year;

(h) ensure that an appropriate assessment is provided of options and guarantees included in insurance and reinsurance contracts.

2.The actuarial function shall assess whether the methodologies and assumptions used in the calculation of the technical provisions are appropriate for the specific lines of business of the undertaking and for the way the business is managed, having regard to the available data.

3.The actuarial function shall assess whether the information technology systems used in the calculation of technical provisions sufficiently support the actuarial and statistical procedures.

4.The actuarial function shall, when comparing best estimates against experience, review the quality of past best estimates and use the insights gained from this assessment to improve the quality of current calculations.

The comparison of best estimates against experience shall include comparisons between observed values and the estimates underlying the calculation of the best estimate, in order to draw conclusions on the appropriateness, accuracy and completeness of the data and assumptions used as well as on the methodologies applied in their calculation.

5.Information submitted to the administrative, management or supervisory body on the calculation of the technical provisions shall include at least a reasoned analysis on the reliability and adequacy of their calculation and on the sources and the degree of uncertainty of the estimate of the technical provisions. That reasoned analysis shall be supported by a sensitivity analysis that includes an investigation of the sensitivity of the technical provisions to each of the major risks underlying the obligations which are covered in the technical provisions. The actuarial function shall clearly estate and explain any concerns it may have concerning the adequacy of technical provisions.

Lloyd's has produced specific guidance on the actuarial function. However it is still worth recapping the high level requirements for the actuarial function especially as they mainly relate to technical provisions. All of the required elements regarding technical provisions are covered within this guidance.

2 GENERAL REQUIREMENTS

The majority of this section's requirements are based on Articles 75, 77 & 84 of the Level 1 texts, Articles 7, 23, 34, 56 & 60 of the Level 2 texts and Guidelines 38-40, 44-52, 64-67 & 82 of the Level 3 Guidance on the valuation of technical provisions.

There are a number of general requirements that underlie the calculation of technical provisions for Solvency II. These will apply to both life and non-life obligations:

2.1 Basis of calculation

The underlying basis of calculation of technical provisions under Solvency II is an on-going basis which values undertakings as going concerns. In the context of technical provisions, the main impact is to assume contracts run to their maturity and a proportion of expected future costs (such as general overheads) will be covered by future business. If an undertaking is not expecting to write future business then the relevant basis would be a run-off basis. The main difference of a run-off basis from an on-going basis is that future expenses/costs cannot be assumed to be proportionally covered by future business. In general, the expense provisions are higher under a run-off basis. This basis is consistent with UK GAAP.

2.2 Use of adequate techniques

The responsibility for the choice of adequate techniques for the best estimate liability calculation rests with the managing agent and specifically the actuarial function. However, Lloyd's may require, giving reasons, the reassessment of the technical provisions, using an alternative technique or assumptions, if this reassessment or the use of a different technique is believed to better reflect the objective of the valuation.

The valuation of the best estimate should meet the following requirements:

The managing agent must be able to demonstrate appropriateness of the valuation, including the robustness of the techniques and assumptions used, having regard to the nature, scale and complexity of risks. In order to meet this requirement, a managing agent must be able to provide sound rationale for the choice of one technique over other relevant techniques.

The managing agent must assess the degree of judgment required in each method and to what extent it is able to carry out such judgment in an objective and verifiable manner.

The managing agent must be able to demonstrate that the valuation techniques and underlying assumptions are realistic and reflect the uncertain nature of the cash-flows (but without the addition of prudence).

Valuation techniques must be chosen on the basis of the nature of the liability being valued and from identification of risks which materially affect the underlying cash-flows. For example, it may be appropriate to use different techniques for attritional, large and catastrophe losses.

The assumptions underlying the valuation technique must be validated and reviewed by the managing agent.

Any valuation technique and its results must be capable of being audited.

If data is grouped, the managing agent must be able to demonstrate that the grouping process appropriately creates homogeneous risk groups that allow for the risk characteristics of the individual policies. This applies to either claims or policy data.

Having regard to the previous bullet points, i.e. having ensured that valuation techniques are appropriate and robust given the nature, scale and complexity of the risk, managing agents must ensure that their capabilities (e.g. actuarial expertise, IT systems) are commensurate with the actuarial and statistical techniques used.

The assumptions must appropriately reflect the uncertainty inherent in the cashflows (though without the addition of prudence). Note that this does not necessarily imply best estimates have to be calculated using a stochastic methodology and the only requirement is correspondence to the probability-weighted average. Also, the best estimate must be the average of the discounted cashflows and not the discounted average of the cashflows, where this is different.

2.3 Appropriate valuation techniques

Valuation techniques considered to be appropriate actuarial and statistical methodologies to calculate the best estimate include simulation, deterministic and analytical techniques, or a combination thereof.

When considering the valuation technique, managing agents should consider the following factors, subject to proportionality:

Whether or not the cash-flows are materially path-dependent.

Whether there are material non-linear inter-dependencies between several drivers of uncertainty.

Whether the cash-flows are materially affected by potential future management actions.

The presence of risks having a material asymmetric impact on the value of the cash-flows. In particular, this would include contracts with embedded options and guarantees or if there are “complex” reinsurance contracts in place.

Whether the value of options and guarantees is materially affected by the policyholder behaviour assumed in the model.

The availability of relevant data.

For the estimation of non-life best estimate liabilities, deterministic and analytical techniques may be more appropriate than simulation techniques. This may be the case because:

- Deterministic methods are usually the starting point for any estimation of best estimate. The application of simulation techniques can add useful insight into ranges around the mean and measures of uncertainty but they will not necessarily produce more accurate estimates of the best estimate due to the significant degree of uncertainty in the calibration of stochastic models.
- The best estimate of simulation and deterministic methods may well be the same, not least because deterministic results are often used to calibrate simulation methods, meaning that the best estimate for Solvency II purposes will be the same for either method.

Both deterministic and simulation models are parameterised by the historical data available. Therefore, regardless of whether a deterministic or simulation model is used, the resulting mean estimates will normally be based on development seen in the history and will not contain "all possible future outcomes".

Also, regardless of the technique, judgment is required in making additions or adjustments to the estimates to allow for circumstances not included in the history that need to be incorporated into the best estimates (for example, latent claims and events not in data – see ENIDs section). In all the methods, judgment is a fundamental requirement.

2.3.1 Use of simplified methods

The term "simplified method" refers to a situation where a specific valuation technique has been simplified in line with the proportionality principle, or where a valuation method is considered to be simpler than a certain reference or benchmark method. In practice, every method is likely to have some degree of simplification.

The set of available methods needs to be categorised as "simplified" or "non-simplified".

Article 40 of the Delegated Acts details the circumstances in which Technical Provisions can be calculated as a whole and the method to use. Due to the complex and varied nature of the cash-flows to be modelled and that these risks are unlikely to be replicated in all possible scenarios this is unlikely to be relevant for Lloyd’s.

2.3.2 Calculation of Technical Provisions on a quarterly basis.

As per EIOPA guidelines 50 and 51 simplified methods such as roll-forward calculations can be applied to estimate the technical provisions on a quarterly basis, however the assumptions should be updated when the actual versus expected analysis indicates that significant changes have taken place during the quarter.

2.4 Future management actions

Future management actions can be allowed for within the estimation of future-cashflows and hence the assessment of the provisions for insurance liabilities where a managing agent would reasonably expect to carry this out in specific circumstances. Managing agents are required to document all future management actions which are taken into account explicitly within a comprehensive future management actions plan. Managing agents should not assume that future management actions would be taken that would be contrary to their obligations towards policy holders and beneficiaries, legal provisions applicable to the syndicate, and/or Lloyd's requirements. Future management actions should be consistent with any public statements that have been made and subject to objectivity, realism and verifiiability as defined in more detail below.

For example. these actions might include:

• Withdrawal of cover or changes in policy conditions (e.g. for war business); and

• Future purchase of reinsurance.

In particular, buying of future reinsurance is generally seen as a future management action that should be included in an assessment of technical provisions. Existing inwards business is normally written on the assumption that future reinsurance will be purchased to cover its run-off. Therefore, in calculating the net best estimate, the costs of future reinsurance should be included if this represents a reasonable assumption about future management actions. Supporting evidence will be required for such assumptions. An agent should make allowance for the proportion of the reinsurance to be purchased in the future that would provide cover for the risks that are "existing" as at the valuation date. Managing agents have primary responsibility for verifying whether their future management actions are objective, realistic and verifiable. If these criteria cannot be demonstrated, the management action should not be taken into account.

The assumptions used to project the cash-flows should reflect the actions that management would reasonably expect to carry out in the circumstances of each scenario over the duration of the projection. This implies that future reinsurance should be anticipated in calculating net best estimates.

2.4.1 Objectivity

Objectivity means that for the purpose of the calculation of the best estimate the managing agent should define what future management actions will be taken and when each would be taken. This will need to cover all scenarios which are relevant for the valuation of the best estimate.

For example, future reinsurance costs will necessarily reflect events in the period before the reinsurance is purchased. The assumptions used at the valuation date should include allowance for all scenarios and sufficient evidence for these assumptions will be required.

For this purpose, managing agents should maintain a comprehensive plan which outlines the future management actions which may be used and the extent/circumstances to which they can expect to be used. The plan should include:

Documentation with a clear description of the situations that trigger the future management actions and their rationale.

Documentation of the processes by which the future management actions will be carried out.

Documentation of the ongoing work required to ensure that the managing agent is in a position to carry out the management action in question.

Description of the order of exercise of the future management actions where the order of application has an influence on the outcome.

Identification of the persons whose responsibility it is to ensure that the future management actions are carried out.

Clarification of how the planned action has been reflected in the calculation of the best estimate.

Sign-off from the board or delegated sub-committee on each of the above points.

Description of the back-testing controls.

Description of the reporting procedures to apply, which should include at least an annual report to the board of the managing agent.

For a reinsurance undertaking, the liability will depend on the future management actions taken by the cedant undertaking as well. In this case, the reinsurer's technical provisions could be larger than the insurer's credit taken for the same block of business. Moreover, the reinsurer may consider the future management actions of the cedant insurer

as "policyholder's behaviour", provided the assumptions in this respect meet the requirements generally set out for the rest of assumptions used in the calculation of the technical provisions.

2.4.2 Realism

Realism should be interpreted as meaning that the managing agent considers it both possible and also realistic that it will carry out such actions in the circumstances being considered. Realism also implies consistency with the managing agent's current principles and practices in running its business, unless there is sufficient current evidence that the managing agent will change its practice and has taken the necessary steps to implement this change.

Future management actions in different scenarios shall be internally consistent when calculating the best estimate. Furthermore, extreme scenarios shall consider the effect of future management actions consistently with the recalculation for the SCR. In particular, the future management actions shall also consider that, in some scenarios, such actions may be not applied due to practical considerations.

The managing agent should also estimate the time taken to implement changes, any costs associated with these actions, and any likely changes to policyholder behaviour following these future management actions. The cash-flows included in the technical provisions should reflect this accordingly.

2.4.3 Verifiability

Verifiability should be interpreted as meaning that there is sufficient evidence to demonstrate that the future management actions are objective and realistic. In particular, the assumptions should be verifiable from the following:

The comprehensive plan and documentation discussed under objectivity.

From public indications, if available, that it would expect to take (or not take) the action in the type of circumstance being considered.

Through the comparison of assumed future management actions and management actions actually taken by the managing agent in previous years; the managing agent should document and be able to explain any relevant deviations.

Through the comparison of future management actions taken into account in the current and in the past valuations; the (re)insurance undertaking should document and be able to explain any significant change in the expected future management actions.

Through the quantification of the effect of future management actions either individually or in aggregate.

The level of justification required for a given management action will depend on the impact of that management action. The effect of management actions assumed within the determination of the technical provisions may have to be publicly disclosed.

2.5 Proportionality

The principle of proportionality underpins Solvency II and is intended to support the consistent application of the principle-based solvency requirements for all insurance and reinsurance undertakings. The application of proportionality can have a very significant impact on expected actions and managing agents need to consider the application carefully.

The managing agent is responsible for applying appropriate methods to calculate the technical provisions taking into account the **nature, scale and complexity** of the risks. The risks to be considered, in this context, include all those which materially affect the amount or timing of cash-flows required to settle the contracts in the portfolio to be valued. The managing agent should be able to explain what methods are used and why the specific methods are selected.

In assessing whether a valuation method could be considered proportionate to the underlying risks, the managing agent should have regard to the following steps:

2.5.1 Step 1: Assessment of nature, scale and complexity

The managing agent should assess the nature, scale and complexity of risks underlying an undertaking’s insurance obligations

Assessment of nature and complexity

The nature and the complexity of a risk are closely related, and for the purposes of an assessment of proportionality could best be characterised together. Indeed, complexity could be seen as an integral part of the nature of a risk, which is a broader concept. In mathematical terms, the nature of the risks underlying the insurance contracts could be described by the probability distribution of the future cashflows arising from the contracts. This encompasses the following characteristics:

The degree of homogeneity of the risks

The variety of different sub-risks or risk components of which the risk is comprised

The way in which these sub-risks are interrelated with one another

The level of certainty, i.e. the extent to which the future cashflows can be predicted

The nature of the occurrence or crystallisation of the risk in terms of frequency and severity

The type of the development of claims payments over time

The extent of potential policyholder loss, especially in the tail of the claims distribution

The first three bullet points in the previous paragraph are related to the complexity of risks generated by the contracts, and are difficult to separate in practice.

When assessing the nature and complexity of the insured risks, additional information in relation to the circumstances of the particular portfolio should be taken into account. This could include:

The type of business from which the risks originate (e.g. direct business or reinsurance business)

The degree of correlation between different risk types, especially in the tail of the risk distribution

Any risk mitigation instruments applied, and their impact on the underlying risk profile

The managing agent should also seek to identify factors which would indicate the presence of more complex and/or less predictable risks. The degree of complexity or uncertainty of the risks is associated with the level of calculation sophistication and/or level of expertise necessary to carry out the valuation. In general, the more complex the risk, the more difficult it will be to model and predict the future cashflows required to settle the obligations arising from the insured portfolio.

To analyse and quantify more complex and/or less predictable risks, more sophisticated and elaborate tools will generally be required, as well as sufficient actuarial expertise. However this needs to be balanced against the available data (which may be sparse) and emphasises the need for appropriate actuarial expertise in these circumstances.

Assessment of scale

Assigning a scale introduces a distinction between "small" and "large" risks. The managing agent may use a measurement of scale to identify (sub-) risks where the use of simplified valuation methods would likely be considered proportionate to the underlying risks, provided this is also commensurate with their nature and complexity.

A measurement of scale may also be used to introduce a distinction between material and non-material risks. Introducing materiality in this context would provide a threshold or cut-off point below which it would be regarded as justifiable to use simplifications for certain risks.

To measure the scale of risks, further than introducing an absolute quantification of the risks, the undertaking will also need to establish a benchmark or reference volume which leads to a relative rather than an absolute assessment. In this way, risks may be considered "small" or "large" relative to the established benchmark. Such a benchmark may be defined, for example, in terms of a volume measure, such as premiums or technical provisions that serves as an approximation for risk exposure.

To determine an appropriate benchmark for a relative measurement of scale, it is important to specify at which level the assessment is carried out; a risk which is small with regard to the business as a whole may still have a significant impact within a smaller segment, e.g. a certain line of business.

At least the following four different levels may usefully be distinguished in the context of a calculation of technical provisions:

Individual homogeneous risk groups;

Individual line of business;

The business of the syndicate as a whole; and

The group to which the syndicate belongs.

Following this principles-based framework, managing agents would be expected to use an interpretation of scale which is best suited to the specific circumstances of each managed syndicate and to the risk profile of their portfolio. Whatever interpretation of scale for risks or obligations is followed, this should lead to an objective and reliable assessment.

2.5.2 Step 2: Assessing model error

The managing agent should assess whether a specific valuation method can be regarded as proportionate to the nature, scale and complexity of the risks identified in Step 1. Where simplified approaches are used, this could introduce additional model error. The higher the model error, the less reliance can be placed on the suitability of the estimate derived from that model to represent a market-consistent valuation.

The managing agent shall assess the error that results from the use of a given valuation method and the continued use of the method should be considered proportionate if the model error is non-material. For this purpose the managing agent should define a concept on materiality which specifies the criteria on the basis of which a decision on the materiality of a potential misstatement of technical provisions is made.

When determining how to address materiality, the managing agent should consider the purpose of the work and its intended users. For a valuation of technical provisions and, more generally, for a qualitative or quantitative assessment of risk for solvency purposes, this should include both Lloyd's and the PRA.

An assessment of the model error may be carried out, by:

Sensitivity analysis in the framework of the applied model: this means to vary the parameters and/or the data thereby observing the range where a best estimate might be located.

Comparison with the results of other methods: applying different methods gives insight into potential model errors. These methods would not necessarily need to be more complex.

Descriptive statistics: in some cases the applied model allows the derivation of descriptive statistics on the estimation error contained in the estimation. Such information may assist in quantitatively describing the sources of uncertainty.

Back-testing: comparing the results of the estimation against experience may help identify systemic deviations which are due to deficiencies in the modelling.

The managing agent is not required to quantify the degree of model error in precise quantitative terms, or to recalculate the value of its technical provisions using a more accurate method in order to demonstrate that the difference between the result of the chosen method and the result of a more accurate method is immaterial. Instead, it would be sufficient for the undertaking to demonstrate that there is reasonable assurance that the model error implied by the application of the chosen method (and hence the difference between the two amounts) is immaterial.

Where several valuation methods are appropriate, the managing agent should normally apply the one which is most appropriate but retain a regard for consistency over time. Where a valuation technique is expected to lead to a significant degree of model error then, where practicable, an alternative, more appropriate method should be applied instead.

In some circumstances, it may be unavoidable to apply a valuation method that has material model error. In such cases, the managing agent should document that this is the case and consider the implications with regard to the reliability of the valuation and its overall solvency position. In particular, it should assess whether the increased level of estimation uncertainty is adequately addressed in the determination of the SCR and the setting of the risk margin in the technical provisions.

2.5.3 Step 3: Back-testing

The actuarial function should track the appropriateness of best estimates over time. Where such back-testing identifies systematic deviation between best estimate expectations and experience, the steps to assess whether the chosen valuation methodology is appropriate should be performed again. If it is deemed not to be appropriate, the managing agent should switch to a more appropriate method.

Such a check should also take place following a significant change in risk profile. The scope and the frequency of back testing should be proportionate to the materiality of assumptions and the size of the deviation.

3 SEGMENTATION

The majority of this section's requirements are based on Article 80 of the Level 1 texts, Articles 33 & 35 of the Level 2 texts, Guidelines 17 & 19-23 of the Level 3 Guidance on the valuation of technical provisions and Guideline 5 of the Level 3 Guidance on Contract boundaries.

As a minimum, managing agents must segment each managed syndicate's obligations into the prescribed lines of business when calculating their technical provisions. Further segmentation into homogeneous risk groups should be applied, as appropriate. A homogeneous risk group is a set of obligations which are managed together and which have similar characteristics. The classification will be specific to each syndicate.

The use of apportionments from internal class used to manage business to Solvency II line of business is expected. Lloyd's view is that the **fundamental split** that should drive the calculation of best estimates within technical provisions is a split into **homogeneous risk groups**. This will ensure results of any such assessments will be as reliable and credible as is possible.

The principle of substance over form should be followed in segmenting contracts between lines of business. In other words, the segmentation should reflect the nature of the risks underlying the contract (substance), rather than the legal form of the contract (form). This means an approach of calculation at a homogeneous risk group level and then appropriate allocation, with justification, would be acceptable.

Lloyd's expects agents to use a reasonable basis to allocate business to the Solvency II minimum lines of business.

Appendix 5 contains a risk code mapping that may **assist** agents in the process of allocating obligations to the Solvency II minimum lines of business. Note that the exact mapping for an individual syndicate will depend on the precise definition of business written within each grouping. Agents should not use the mapping without considering the features of business underwritten.

This mapping does not give sufficient information to split out all data to the required level for Solvency II. Additional data sources or assumptions may be needed to allocate and report to the required levels. This may include the separation between direct and proportional business, often modelled together, or separating out facultative non-proportional reinsurance, sometimes modelled with direct business.

3.1 Minimum lines of business (Non-Life)

The minimum lines of business for which non-life technical provisions must be calculated under Solvency II are set out below. This list reflects the classes of business to be used as detailed in Annex 1 of Delegated Acts (Commission Delegated Regulations 2015/35)

1 Medical expenses insurance

Medical expense insurance obligations where the underlying business is not pursued on a similar technical basis to that of life insurance, other than obligations included in line of business 3 (Workers' compensation insurance).

Medical expense insurance obligation means an insurance obligation that covers the provision of preventive or curative medical treatment or care due to illness, accident, disability and infirmity, or financial compensation for such treatment or care.

2 Income protection insurance

Income protection insurance obligations where the underlying business is not pursued on a similar technical basis to that of life insurance, other than obligations included in line of business 3 (Workers' compensation insurance).

Income protection insurance obligation means an insurance obligation that covers financial compensation in consequence of illness, accident, disability or infirmity other than the financial compensation referred to in the medical expenses line of business.

3 Workers' compensation insurance

Health insurance obligations which relate to accidents at work, industrial injury and occupational diseases and where the underlying business is not pursued on a similar technical basis to that of life insurance.

Workers' compensation insurance obligation means an insurance obligation that covers the provision or financial compensation referred to in the medical expenses or income protection lines of business and which relates to accidents at work, industrial injury and occupational diseases.

4 Motor vehicle liability insurance

Insurance obligations which cover all liabilities arising out of the use of motor vehicles operating on land (including carrier's liability).

5 Other motor insurance

Insurance obligations which cover all damage to or loss of land vehicles (including railway rolling stock).

6 Marine, aviation and transport insurance

Insurance obligations which cover all damage or loss to sea, lake, river and canal vessels, aircraft, and damage to or loss of goods in transit or baggage irrespective of the form of transport. Insurance obligations which cover liabilities arising out of the use of aircraft, ships, vessels or boats on the sea, lakes, rivers or canals (including carrier's liability).

7 Fire and other damage to property insurance

Insurance obligations which cover all damage to or loss of property other than those included in the lines of business 5 and 6 due to fire, explosion, natural forces including storm, hail or frost, nuclear energy, land subsidence and any event such as theft.

8 General liability insurance

Insurance obligations which cover all liabilities other than those in the lines of business 4 (Motor vehicle liability insurance) and 6 (Marine, aviation and transport insurance).

9 Credit and suretyship insurance

Insurance obligations which cover insolvency, export credit, instalment credit, mortgages, agricultural credit and direct and indirect suretyship.

10 Legal expenses insurance

Insurance obligations which cover legal expenses and cost of litigation.

11 Assistance

Insurance obligations which cover assistance for persons who get into difficulties while travelling, while away from home or while away from their habitual residence.

12 Miscellaneous financial loss

Insurance obligations which cover employment risk, insufficiency of income, bad weather, loss of benefit, continuing general expenses, unforeseen trading expenses, loss of market value, loss of rent or revenue, indirect trading losses other than those mentioned above, other financial loss (non-trading) as well as any other risk of non-life insurance not covered by the lines of business 1 to 11.

13 to 24 Proportional non-life reinsurance

The lines of business 13 to 24 shall include proportional reinsurance obligations which relate to the obligations included in lines of business 1 to 12 respectively.

Inwards non-proportional reinsurance must be segmented, to a minimum level, into the following lines of business:

25 Non-proportional health reinsurance

Non-proportional reinsurance obligations relating to insurance obligations included in lines of business 1 to 3.

26 Non-proportional Casualty reinsurance

Non-proportional reinsurance obligations relating to insurance obligations included in lines of business 4 and 8.

27 Non-proportional marine, aviation and transport reinsurance

Non-proportional reinsurance obligations relating to insurance obligations included in line of business 6 (Marine, aviation and transport insurance).

28 Non-proportional property reinsurance

Non-proportional reinsurance obligations relating to insurance obligations included in lines of business 5, 7 and 9 to 12.

3.2 Minimum lines of business (Health)

Health insurance obligations written on a similar technical basis to non-life insurance are known as Non-SLT Health obligations ("Similar to non-Life Techniques") and must be segmented into Medical Expenses, Income Protection or Workers' compensation lines of business, as above.

Health insurance obligations pursued on a similar technical basis to that of life insurance are known as SLT Health obligations and should be segmented and valued according to the segmentation for life insurance obligations.

3.3 Minimum lines of business (Life)

Life insurance and reinsurance business shall be segmented into 16 lines of business, as follows:

Insurance with profit participation
Index-linked and unit-linked insurance
Other life insurance
Life reinsurance.

Each of these should further be segmented into:

- Contracts where the main risk driver is death
- Contracts where the main risk driver is survival
- Contracts where the main risk driver is disability/ morbidity risk
- Savings contracts (contracts that resemble financial products providing no or negligible insurance protection).

Life insurance obligations shall be allocated to the line of business that best reflects the technical nature of the underlying risks.

Lloyd's expects that of the 16 lines of business for life business, life syndicates would only need to use the insurance and reinsurance lines within the "Other" grouping (and are likely to require only some of these).

There are two life lines of business for annuities stemming from non-life contracts relating to either health, or other than health, obligations, discussed below.

3.4 Annuities relating to non-life and health policies

If non-life or health insurance policies give rise to the payment of annuities whose valuation requires the use of appropriate life actuarial techniques, the provisions for claims outstanding should be carried out separately for annuities and other claims. For premium provisions, a separate calculation of annuity obligations should be performed if a substantial amount of incurred claims will give rise to the payment of annuities.

Discounting to value these liabilities may impact the provisions required under Solvency II.

Lloyd's expects that there will be some technical provisions, including those related to Periodical Payment Orders (PPOs), which will need to be reported separately in the lines of business for annuities stemming from non-life contracts that relate to non-life and health obligations.

3.5 Contracts covering multiple lines of business and "unbundling"

Contracts covering risks from non-life and life business should be unbundled into their life and non-life parts. Contracts covering risks under different lines should be unbundled or allocated into the appropriate lines of business.

A contract covering life obligations should always be unbundled according to the top-level segments (life minimum lines of business 1-4) defined above. It should be further unbundled to the second level of segmentation (segmentations a-d, above) in circumstances where it:

covers a combination of risks relating to different lines of business; and

could be constructed as stand-alone contracts covering each of the different risks.

Subject to the principle of proportionality, unbundling may not be required in cases where there is one major risk driver. In this case, the contract may be allocated according to the major risk driver. The principle of substance over form should also be applied in allocating each of the unbundled components to different lines of business.

3.6 Homogeneous risk groups for calculation of best estimates

The principle of substance over form should be followed in segmenting contracts between lines of business. In other words, the segmentation should reflect the nature of the risks underlying the contract (substance), rather than the legal form of the contract (form).

Syndicates are expected to further split lines of business beyond the prescribed minimum lines of business into homogeneous risk groups for calculation and projection purposes. These are sets of obligations which are managed together and which have similar characteristics. This classification is specific to each syndicate.

The risks within each group should be sufficiently similar as to allow for a reliable valuation of technical provisions. This will require segmentation of risks of the same line of business and written in the same currency but with different underlying risk profiles (see below).

As with standard actuarial techniques, large individual claims will be separated from the remainder of the homogeneous risk group if this would be considered to produce a more reliable valuation or their inclusion would distort results.

Homogeneous risk groups should be considered the most important segmentation level for modelling technical provisions and it is this level that should be considered first by agents. In the event that a homogeneous risk group contains risks falling to more than one of the minimum Solvency II lines of business, agents should use reasonable methods to allocate the results of the calculation to these lines of business.

3.7 Currency groups

The best estimate should be calculated separately for obligations of different currencies. This should be on a currency basis that reflects both how the best estimate of the cashflows will be settled and the assets that support the liabilities. Agents need to be clear when interpreting this requirement and have regard for correspondence between the settlement currency and assets underlying the liability. The principle of substance over form suggests that the underlying grouping should be on a basis which segments by similar risk characteristic, for example original currency, and that this should then be allocated to settlement currency if required. This is consistent with the Pillar 3 requirements which require reporting by material original currency.

For example, if a syndicate were to settle all claims in one currency but the underlying assets supporting the liabilities were held in the original currency (and converted to the settlement currency only on settlement) then the original currency would be a more suitable split. In this situation the syndicate is not facing a currency risk. Conversely, if the syndicate converted all estimated unpaid liabilities to the settlement currency and only held assets in that settlement currency then the split should be based on settlement currency. In this case, the syndicate would face currency risk. However, for a best estimate it is common to assume future exchange rates are equal to the current levels and this would not increase the best estimate but the currency risk would be expected to be accounted for in the Internal Model and hence impact the SCR calculations.

The requirement for best estimates to be calculated "by currency" shall have proportionality applied.

Lloyd's view is that calculating best estimates by homogeneous risk groups remains the key principle.

Syndicates must have the ability to provide best estimates split by significant currency; and this split may be based on an allocation to currency from the homogeneous risk group. The definition of significant currency will vary by syndicate but in most cases this will include currencies from the following list: USD, GBP, CAD, EUR.

From 1 January 2025 onwards, the PRA will cease to publish technical information for Australian Dollar (AUD), Danish Krone (DKK), Swedish Krona (SEK), and Norwegian Krone (NOK). This is due to those currencies no longer meeting the criteria outlined in paragraphs 3.3 to 3.5B of the Statement of Policy 'The PRA's approach to the publication of Solvency II technical information'. The PRA will continue to publish technical information for GBP, USD, EUR, and CAD. For the avoidance of doubt, the PRA will publish technical information for AUD, DKK, SEK, and NOK until 31 December 2024.

Agents should also note the requirements for reporting via the Reserving Return Annual (RRA), instructions for which are available on Lloyd's website. These note that requirement that syndicates will no longer have to submit on a 6 plus 1 currency basis (which was previously a requirement in the Technical Provisions Data Return) but on a settlement currency basis that is consistent with currencies utilised within the syndicates own reserving exercise. This must include at least USD and GBP.

3.7.1 Consistency with financial market data

Agents should consider whether any exchange rates used to convert to settlement currencies (if the technical provisions are calculated at settlement currency level) are consistent with financial market data on future rates, as per the requirements for validation and selection of assumptions.

3.7.2 Discounting

Cashflows are required to be discounted using a risk-free interest rate term structure that is appropriate to the currency[1]. Homogeneous risk groups should therefore have regard for currency where possible to minimise requirements to allocate cashflows prior to discounting.

3.7.3 Homogeneous risk groups

It follows that syndicates should consider where risks have a mismatch between currency of settlement and location of risk as homogeneous risk groups may require that risks of different locations (but identical settlement currencies) are separated out. This may affect, for example, business located outside the USA that is written in USD, or business written in the Eurozone but in locations where underlying risk characteristics are significantly different.

Syndicates should also consider data availability in setting up homogeneous risk groups by currency, to ensure that appropriate discount rates are available.

Syndicates also need to consider where different allocations may be needed for premiums, claims and expenses. The potential complications only serve to highlight that calculations should focus on estimating liabilities by homogeneous risk group and secondary to this process is the allocation to currency for discounting and reporting purposes.

3.8 Potential practical issues

3.8.1 Homogeneous risk groups

The required high level segmentation may not match the way the business is managed, either in relation to technical provisions or capital modelling. For instance, some syndicates may not separate proportional reinsurance from other reinsurance in such a way that allows allocation to the required lines of business. If changes are required, historic data will need to be rebased in line with required segmentation.

Data may not currently be collected at the level required for mapping risks to a single Solvency II line of business which would require apportionments for some classes of business until the required data can be obtained.

Lloyd's expects agents to use a reasonable basis to allocate business to the Solvency II minimum lines of business.

Appendix 5 contains a risk code mapping that may **assist** agents in the process of allocating obligations to the Solvency II minimum lines of business. Note that the exact mapping for an individual syndicate will depend on the precise definition of business written within each grouping shown within the mapping. Agents should not use the mapping without considering the features of business underwritten.

This mapping does not give sufficient information to split out all data to the required level for Solvency II. Additional data sources or assumptions may be needed to allocate and report to the required levels. This may include the separation between direct and proportional business, often modelled together, or separating out facultative non-proportional reinsurance, sometimes modelled with direct business.

It will be the actuarial function's responsibility to decide on applying proportionality with regards to segmentation.

[1] See article 77 (2) of Directive 2009/138/EC

Additional data will almost certainly be required to allocate the homogeneous risk groups to currency.

3.8.2 Unbundling multiple lines of business

Unbundling life and non-life parts of some policies may be challenging. This may affect business such as Accident & Health or Travel insurance, where there may also be an amount of life cover. There may also be problems when unbundling non-life contracts where a single policy has constituent parts falling within different Solvency II lines. For example, motor policies may cover both property and liability risks. Where more than one of these parts is material, the proportionality principle means that the unbundling requirement cannot be ignored.

There may be large changes in reserving practices for any Health policy that would fall into the Solvency II "SLT Health" line of business where these would have to be valued in line with Solvency II life valuation requirements.

3.9 Key considerations

3.9.1 Possible methodologies

Technical provisions must be calculated using at least the level of segmentation detailed above, and for obligations of different currency. Homogeneous risk groups will need to be defined at a lower level of granularity. These requirements may mean that class of business groupings used by syndicates need to be adjusted, as well as historical data used as part of the reserving process.

Syndicates should start with their current classes of business and currency splits. The high level considerations will then be:

Do these classes allow for the business to be directly segmented into Solvency II lines of business?

What is the most appropriate basis to split into currencies for discounting?

Do these splits result in all significant currencies (for Solvency II purposes) being calculated separately?

Do these splits involve bundled contracts?

Does the current split leave homogeneous risk groups?

Are there any additional data requirements to meet the Solvency II splits?

Are the proposed splits consistent with the internal model?

The actuarial function will need to consider all these points.

4 CALCULATION OF BEST ESTIMATE AND CASHFLOWS

The majority of this section's requirements are based on Article 79 of the Level 1 texts, Articles 11, 24, 26, 28, 30 & 32 of the Level 2 texts and Guidelines 17, 25, 35-37, 41-43, 53-60, 74 & 88 of the Level 3 Guidance on the valuation of technical provisions.

Solvency II technical provisions are made up of the sum of a best estimate and a risk margin. This section gives an overview of the approach for calculating the best estimate. The risk margin is discussed in a separate section of this document.

The best estimate must be valued on a cashflow basis, incorporating all expected cash inflows and outflows related to existing obligations.

Extract from Article 77(2) of Directive 2009/138/EC : Calculation of the technical provisions

The best estimate shall correspond to the probability-weighted average of future cashflows, taking account of the time value of money (expected present value of future cashflows), using the relevant risk-free interest rate term structure.

The calculation of the best estimate shall be based upon up-to-date and credible information and realistic assumptions and be performed using adequate, applicable and relevant actuarial and statistical methods.

The cash flow projection used in the calculation of the best estimate shall take account of all the cash in- and out-flows required to settle the insurance and reinsurance obligations over the lifetime thereof.

The best estimate shall be calculated gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles. Those amounts shall be calculated separately, in accordance with Article 81.

4.1 Requirements for cashflow projections

The best estimate must be calculated gross, with separate calculation of the amounts recoverable from outwards reinsurance contracts and special purpose vehicles. In the case of co-insurance the cash-flows of each co-insurer should be calculated as their proportion of the expected cash-flows without deduction of the amounts recoverable from reinsurance and special purpose vehicles.

As discussed in the Segmentation section, there are minimum requirements for the segmentation of technical provision calculation by line of business, currency and homogeneous risk group.

The cashflow projection used in the calculation of the best estimate shall take account of all potential cash in- and out-flows required to settle the insurance and reinsurance obligations over their lifetime. Therefore all cashflows incurred in meeting liabilities should be identified and valued but there is no explicit requirement to calculate all cashflows separately.

As per Article 11 of the delegated acts contingent liabilities also need to be recognised where they are material as liabilities.

Examples of cash in- and out-flows which must be taken into account are shown below:

Inwards cashflows

Future premiums due for incepted contracts (on both earned and unearned business)

Future premiums due for unincepted contracts (see Premium Provisions section)

Adjustment premiums

Inwards reinstatement premiums due

Recoverables for salvage and subrogation

Recoverables from reinsurance contracts and special purpose vehicles (for calculation of net best estimates)

Cashflows relating to investment returns should NOT be included.

4.1.1 Outwards cashflows

Benefits (including claims payments) payable to policyholders or beneficiaries

Expenses incurred in servicing (re)insurance obligations (see Expenses section)

Other gross cashflows, such as taxation directly relating to settling of insurance obligations (though this is unlikely to be an issue for most of Lloyd's business)

Premiums payable in respect of reinsurance contracts and special purpose vehicles (for calculation of net best estimates).

Projected cashflows must also take into account the time value of money to give discounted best estimate provisions, as described further in the Discounting section.

Appropriate allowances for future inflation must be included within the cashflow projections. Care should be taken to identify the type of inflation to which particular cashflows are exposed (e.g. consumer price inflation, salary inflation, court award etc), which may differ significantly by class of business. Development factor methods are normally based on implicit assumptions regarding claim inflation. Agents should consider whether historical inflation assumptions implicit within the data are appropriate for future cashflows.

Best estimate cash-flow projections should make appropriate allowances either implicitly or explicitly for the following:

4.1.2 Possible changes in future cashflows due to claims environment

Demographic

Legal

Medical

Technological

Social or economic

4.1.3 Contract features

Options or guarantees

Policyholder behaviour (such as likelihood of lapse or cancellation)

Future management actions (discussed in General Requirements section)

Distribution of benefits

4.1.4 Time horizon

The time horizon used in the calculation of the best estimate should be the full lifetime of the existing (re)insurance contracts on the date of valuation. The determination of the lifetime of the (re)insurance portfolio should be based on up-to-date and credible information and realistic assumptions about when the existing contracts will be discharged, cancelled or expired. Cancellation assumptions are often implicit in premium projections under current practice and can be material in some classes, for example, motor business. Any cancellation assumptions should be capable of being validated including the use of expert judgement and reference to past data.

4.1.5 Options and guarantees

Insurers are required to identify all contractual options and financial guarantees (and the risk drivers that materially affect their cost or frequency of take-up) embedded in their insurance contracts. Their valuation should be based on relevant actuarial techniques, allowing for the nature, scale and complexity of the underlying risks. Managing agents should adopt methods that are justifiable and proportionate, and as a last resort can use the method prescribed by EIOPA in Guideline 54 of the Level 3 texts. The best estimates must take into account the uncertainties behind the total cost.

Non-financial guarantees, such as reinstatement premiums and experience adjustments should also be taken into account within valuation of technical provisions. Where relevant, these should be valued like financial guarantees.

Most non-life contracts do not contain options or guarantees but undertakings should be clear and with appropriate justification if options and guarantees are not considered explicitly in the calculation of technical provisions.

4.1.6 Policyholder behaviour

Managing agents must identify where future policyholders' behaviour can affect the value of contractual options or guarantees. Where the cash-flows of a contract change if an option is exercised, the valuation should allow for the probability that policyholders exercise the option.

Though more material for life lines of business, this may also affect cancellation and lapse assumptions in some non-life lines of business, such as Motor. Where credible and relevant discontinuance experience is available, managing agents should make use of it.

4.1.7 Future Discretionary Benefits

For certain life insurance liabilities future discretionary benefits should be allowed for and should consider all legal and contractual obligations, simulation may lead to a more appropriate and robust valuation of the best estimate liability. It is unlikely that liabilities of this nature will be significant for Lloyd's.

4.2 Non-life insurance obligations

The best estimate should be calculated separately in respect of premium provisions and claims provisions.

4.2.1 Premium provisions

The best estimate of premium provisions is the expected present value of the following cash in-flows and cash out-flows:

cashflows from future premiums relating to future claims (including those from unincepted policies);

cashflows arising from future claims events;

cashflows arising from allocated and unallocated claims administration expenses in respect of claims events occurring after the valuation date;

cashflows arising from ongoing administration of in-force policies; and

cashflows arising from subrogation and salvage from unexpired risks.

Premium provisions should take account of expected profits during remaining periods on risk and of the time value of money over the period until settlement of relevant cash out-flows. In such circumstances the best estimate may be negative. This is acceptable and undertakings are not required to set the value of the best estimate to zero. The normal current practice is to reserve to ultimate on an underwriting year basis and to split the ultimate between earned and unearned.

Managing agents need to further consider any differences in the average duration of earned and unearned provisions.

4.2.2 Claims provisions

The best estimate of provisions for claims outstanding is the expected present value of all future claim payments, expenses and premiums arising from claims events that have occurred before or at the valuation date. These may include inflows arising from subrogation and salvage.

4.3 Substance over form in valuation methodologies

Under the principle of substance over form, the choice over whether life or non-life valuation methodologies should be used must be based on the nature of the obligation and identification of the risks that materially affect the underlying cashflows.

4.4 Life insurance obligations

As a starting point, the cash-flow projection should be based on a policy-by-policy approach, but reasonable actuarial methods and approximations may be used. Methods should take account of duration of liabilities and allow for any uncertainties associated with biometric risk factors. The projection of future cash-flows based on suitable model points can be permitted if the following conditions are met:

The grouping of policies and their representation by model points is acceptable provided that it can be demonstrated by the undertaking that the grouping does not misrepresent the underlying risk and does not significantly misstate the costs.

The grouping of policies should not distort the valuation of technical provisions by, for example, forming groups containing life policies with guarantees that are "in the money" and life policies with guarantees that are "out of the money".

Sufficient validation should be performed by the undertaking to be reasonably sure that the grouping of life policies has not resulted in the loss of any significant attributes of the portfolio being valued. Special attention should be given to the amount of guaranteed benefits and any possible restrictions (legislative or otherwise) for an undertaking to treat different groups of policyholders fairly (e.g. no or restricted subvention between homogeneous groups).

The projection on a policy-by-policy basis would be an undue burden on the undertaking compared to the projection based on suitable model points.

Unlike non-life, the valuation of life obligation will often require assumptions on future financial market parameters or scenarios, for example to value future options or guarantees. This can often involve the use of Economic Scenario Generators (ESGs). Just like when external models are used (as with internal models), an undertaking needs to understand, document and validate the assumptions and ensure they are appropriate for the task. This is covered in more detail by guidelines 55-60 in EIOPA's level 3 guidance document BoS 14/166. Given the use of ESGs is very rarely used in non-life technical provisions valuations; this is not detailed further in this guidance but further information can be found in Lloyd's Capital Guidance Section 8.10.

In certain specific circumstances, the best estimate element of technical provisions may be negative (e.g. for some individual contracts). This is acceptable and undertakings should not set the value of the best estimate to zero with respect to those individual contracts.

No implicit or explicit surrender value floor should be assumed for the amount of the market consistent value of liabilities for a contract. This means that if the sum of a best estimate and a risk margin of a contract is lower than the surrender value of that contract there is no need to increase the value of insurance liabilities to the surrender value of the contract.

4.5 Health obligations

Health insurance obligations are defined as all types of insurance compensating or reimbursing losses caused by illness, accident or disability.

Health insurance obligations pursued on a similar technical basis to that of life insurance (SLT Health) should be valued in accordance with sub-section "Life insurance obligations"; and

Health insurance obligations not pursued on a similar technical basis to that of life insurance (Non-SLT Health) should be valued in accordance with sub-section "Non-life insurance obligations".

Agents need to categorise standard health insurance classes written at Lloyd's. There may be significant changes to the existing reserving basis for any health classes falling into the SLT category. This applies equally to obligations that have been or will be settled as annuities. Significant changes to the discount rates used (which will now have to be risk-free) to value these liabilities may have major effects on the provisions required under Solvency II.

4.6 Uncertainty within future cashflows

The best estimate must correspond to the probability-weighted average of future cash-flows and will therefore allow for uncertainty in these future cash-flows. In this context, allowance for uncertainty refers to the consideration of the variability of the cash-flows necessary to ensure that the best estimate represents the mean of the full distribution of those cash-flows. **Allowance for uncertainty does not suggest that additional margins should be included within the best estimate.**

Causes of uncertainty in the cash-flows that shall be taken into consideration in the estimation of the best estimate and the application of the valuation technique, where relevant, may include the following:

Fluctuations in the timing, frequency and severity of claim events.

Fluctuations in the period needed to settle claims.

Fluctuations in the amount of expenses.

Changes in the value of an index/market value used to determine claim amounts.

Changes in both entity and portfolio specific factors such as legal, social, or economic factors, where relevant.

Uncertainty in policyholder behaviour (which may be of relevance to non-life policies as well as life policies).

The exercise of discretionary future management actions.

Path dependency, where the cash-flows depend not only on circumstances such as economic conditions on the cash-flow date, but also on those circumstances at previous dates.

Interdependency between two or more causes of uncertainty.

4.7 Potential practical issues

Quantification and validation of the inflation implicitly included within common reserving methodologies is also challenging. Assessment of the precise measures of inflation against which to validate these implicit assumptions is not trivial.

Assumptions about whether policies are likely to be cancelled before natural expiry may be needed for determination of the lifetime of obligations. In line with other assumptions made (see Assumptions section), these will need to be documented and validated. Lapse rates are unlikely to be always captured for non-life obligations.

Where appropriate, large and catastrophe claims should be separated from other data to allow more reliable calculation of technical provisions. The derivation and validation of assumptions required to project the explicit timings of cashflows for these types of claims will involve subjective assumptions.

4.7.1 Stochastic approaches

The Solvency II best estimate provision must correspond to the probability-weighted average of the discounted projected cashflows which may be read as suggesting that stochastic reserving may be a preferred approach. Any method of calculating provisions that takes into account variability and uncertainty should be considered but it is important to stress stochastic methods are not currently mandated.

As developments in stochastic reserving take place more emphasis will naturally be placed on these approaches and active research is being undertaken in these fields. Therefore, stochastic approaches may be performed in parallel. Currently, a common approach is to ‘scale’ the output from a stochastic method to align the mean with a best estimate from a deterministic approach (which often place reliance on actuarial judgement). This would not change the mean best estimates but can add to understanding the uncertainties.

It is important that the method used meets the requirement for best estimates to correspond to probability-weighted average of future cashflows.

4.8 Key Considerations

4.8.1 Possible methodologies

More detailed discussion of requirements and methodologies can be found in the sections relating to each individual component.

Current methodologies are expected to form the base for Solvency II technical provisions calculations as other methods continue to be developed.

Some general considerations relating to cashflows are set out below. This is not intended to be exhaustive.

The time interval for cashflow projections must be selected. This will primarily depend on the granularity at which undiscounted cashflows can be produced and sufficient detail must be included to be able to calculate technical provisions in a reliable and credible manner. Lloyd's expect that the majority of syndicates would aim to produce cashflows at a quarterly interval level although this can vary.

Each element of Solvency II technical provisions must be calculated and projected on a cashflow basis. Many of these cashflows are interdependent and will all require discounting. This means that a model can be set up that is capable of showing all of the cashflow patterns projected into the future.

As discussed in the Segmentation section, large and catastrophe-type claims should be separated from the remainder of claims cashflows. The cashflows for large claims will be subjective.

There will be elements for which it is difficult to derive a cashflow pattern (for example, claims projections for a class of business with sparse development data). Reasonable assumptions would have to be made to give a suitable pattern and these assumptions may be based on another cashflow projection that would be expected to have similar features (such as the same class of business in a currency with a more material volume of business).

5 GROSS OUTSTANDING CLAIMS PROVISIONS

The majority of this section's requirements are based on Article 77 of the Level 1 texts, Article 36 of the Level 2 texts and Guidelines 69-70 of the Level 3 Guidance on the valuation of technical provisions.

5.1 Best estimate claims provisions

The value of non-life insurance obligations should be calculated (and reported) separately for provisions for claims outstanding and premium provisions. Cashflows must be separated into those that apply to each.

Provisions for claims outstanding relate to the cashflows in respect of claims events occurring before or at the valuation date, whether the claims arising from those events have been reported or not. The cashflows projected comprise all future claims payments, often described as:

Claims Outstanding (case reserves)

Incurred But Not Reported claims ("IBNR")

Incurred But Not Enough Reported claims ("IBNER")

Claims provisions cashflow projections should also include all claims management and claims administration expenses arising from these events. Premiums relating to claims that have already occurred should be incorporated into the calculation of outstanding claims provisions.

As outlined in the Segmentation section, claims provisions are required separately for homogeneous risk groups and this will normally be the level of the underlying calculations. Cashflows are also required by (significant) currency and to obtain these there may involve allocation from homogeneous risk groups.

Where claims events that have occurred give rise to the payment of annuities, these should be treated as life insurance obligations and calculated separately using appropriate techniques.

Under Solvency II, best estimates must not include margins for optimism or conservatism. Reserves held in excess of the best estimate must be excluded from the technical provision calculation for solvency. This may also mean that negative IBNR/IBNERs are to be held for risk groups where there are expectations that future profits will emerge from claims provisions.

5.2 Potential practical issues

Claims provisions relate to accident year calculation whilst syndicates commonly calculate provisions on an underwriting year basis.

Where allocation to significant currency is required, the basis for allocation will require consideration and, in most cases, new data.

Current methods do not adequately allow for latent or extreme claims (termed Events Not In Data or ENIDs). This is discussed later in the ENIDs section.

5.3 Key Considerations

5.3.1 Possible methodologies

It is anticipated that stochastic methodologies that allow explicitly for uncertainty in timings and amounts of reinsurance may develop over time.

The main difference to the projections under Solvency II and UK GAAP basis is the removal of prudence and production of a cashflow. The underlying requirement to use homogeneous risk groups is in line with UK GAAP but allocating results to all significant currencies is a key difference.

The projection methods used for the calculation of IBNR are similar to those used for UK GAAP reporting, such as chain ladder development factor models, Bornhuetter-Ferguson estimates and many other commonly used actuarial methods. The difference is the production of expected cashflows. Large claims are stripped out of past data and valued separately.

Outstanding reported claims should be analysed separately either by consideration of the number of claims reported and their average cost or using a case – by – case estimation.

There needs to be an explicit assessment of reinsurance recoveries and their timings (relative to the gross).

5.3.2 Main modifications required compared to traditional actuarial approaches

Some of the reserving process changes required under Solvency II will depend upon whether syndicates use accident year or underwriting year data for UK GAAP reporting (and the processes used to adjust underwriting year data for reporting). Some adjustments are described in more detail in other sections of this document.

Below is a non-exhaustive list of the main modifications required:

1 Margins within reserves must be removed. This will require removal of prudence within reserving methods and assessment of what methodologies and processes are compatible with deriving a best estimate.

Cashflows will be required for all lines of business/homogeneous risk groups/significant currencies. For classes that cannot be projected using a method which also gives cashflows (such as for classes with very limited data), an assumption about cashflow patterns must be made.

If using an underwriting year basis, syndicates must consider how cashflow patterns for claims provisions differ from those assigned to premiums provisions, rather than simply applying a proportion to split total reserves.

All cashflows must be adjusted for the time value of money and cashflows are to be generated by currency. This may require grouping of classes of business to a different level from traditional actuarial approach.

Additions for ENIDs (on both claims and premiums provisions) need to be included. These additions would reflect the possibility for latent claim events and are discussed further in the ENIDs section.

Indirect expenses, as well as many additional expense items, are required to be projected alongside claims cashflows and are discussed further in the Expenses section.

Inflation associated with claims and claims handling expenses is usually implicitly allowed for in data, with the assumption that future inflation will continue in the same way as historical inflation. Any deviation from this assumption should be considered and documented carefully.

6 GROSS PREMIUM PROVISIONS

The majority of this section's requirements are based on the Level 1 texts, Articles 18 & 36 of the Level 2 texts, Guidelines 68, 72-73 & 75-77 of the Level 3 Guidance on the valuation of technical provisions and Guidelines 1-4 & 7 of the Level 3 Guidance on contract boundaries.

6.1 Best estimate premium provisions

Premium provisions relate to claims events occurring after the valuation date and during the remaining in-force coverage period of policies. The cashflow projections should comprise all future claims payments and claims management expenses arising from those events, cashflows arising from ongoing administration of the in-force policies and expected future premiums stemming from these events. As with claim provisions, the valuation should take account of the time value of money and the best estimates must not include margins.

6.1.2 Policies to include

The best estimate should include all future cash-flows associated with "existing" contracts. This is on **a legal obligation basis** and is discussed later. This will include legally obliged prospective 1/1 renewals for a valuation as at 31 December.

6.1.3 Items to include

The best estimate of premium provisions should be calculated as the expected present value of future in- and out-going cashflows, being a combination of:

Future premium receivable relating to future claims;

Cashflows resulting from future claims events;

Cashflows arising from allocated and unallocated claims management expenses; and

Cashflows arising from ongoing administration of the in-force policies.

Premium provisions should be calculated in accordance with the general provisions for the determination of technical provisions as set out in Articles 75 to 78 of the Level 1 text. Such a valuation would take account of expected profits (premiums exceeding costs) during remaining periods on risk.

In many circumstances the best estimate may be negative (there is no requirement to set the value to zero).

Under Solvency II there is no concept of items such as Unearned Premium Reserve (which under UK GAAP is set at 100% of the unearned portion of the unexpired risk from business incepted prior to the valuation date). Under Solvency II the unearned business is instead held on a best estimate basis (and therefore takes account of profit to be earned in the future).

Premium provisions are reduced by the amount of expected future premium cash inflows. Future premiums will offset the expected future claims payment cashflows and lower the overall premium provisions.

Treatment of reinsurance premium is covered in the reinsurance section.

The valuation of premium provisions should take account of future policyholder behaviour such as the likelihood of policy lapse during the remaining period (where this has a material effect). This may only have a material effect for a few classes of non-life business but will be required if material profit on contracts is assumed to emerge (as lapsed policies would not generate these profits).

Where a material amount of claims arising from premium provisions are expected to give rise to the payment of annuities, an appropriate assessment should be made. These annuities should be treated as life insurance obligations and calculated separately using appropriate techniques.

6.2 Definition of existing contracts

Contracts are recognised as an 'existing contract' once the syndicate becomes a party to the contract of insurance. The boundary for existing contracts is based on when an undertaking becomes a party of the contract or when the contract between undertaking and policyholder is legally formalised. In particular, the recognition may take place earlier than the inception of insurance cover because, from an economic point of view, the obligation to provide cover already exists and has an economic value before the inception. The definition also uses a test of "unilateral right to cancel" as a standard. i.e. unless an undertaking can reject the premium or make unlimited adjustments to the premium or benefits then the contract should be recognised as "existing".

Tacit renewals which have already taken place at the valuation date should lead to recognition of the renewed contract. A contract is derecognised as an existing contract only when the obligation specified in the contract is discharged, cancelled or expired.

For the calculation of the best estimate, the boundaries of an existing contract can be defined as follows:

Where the insurer has a unilateral right to cancel the contract, reject the premium, or an unlimited ability to amend the premium or the benefits (or otherwise re-underwrite the risk) at some point in the future, any premiums received beyond that point (and any resulting cash out-flows) do not belong to the existing contract. If these rights relate only to a part of the contract, only this part should be excluded from the existing contract.

Future premiums and any resulting cash out-flows which relate to an option or guarantee that provides rights under which the policyholder can renew the contract, extend the insurance coverage to another person, extend the insurance period, increase the insurance coverage or establish new insurance cover, belong to the existing contracts. These are not likely to be a material issue for Lloyd's.

All other cashflows relating to the contract should be included in the calculation of the best estimate. In particular, future premiums (and any resulting cash out-flows) should be included if their payment by the policyholder is legally enforceable.

In principle, this boundary assessment should be done for each (re)insurance contract individually. In practice, where this is not workable, a less detailed level of granularity can be used if this does not lead to materially different results. The granularity should be at least at the minimum segmentation level detailed in the Segmentation section.

Future premiums can be split into two categories:

6.2.1 Future Premiums that relate to incepted exposure

This can either be on earned exposure or unearned exposure. For example:

Premiums paid in instalments and due in the future (see following page)

Inwards reinstatements from an incurred reinsurance claim

Other M&D adjustment premiums

Profit-related or swing premiums

6.2.2 Premiums that relate to 'unincepted' exposure (i.e. attaching after the valuation date)

This could be due to:

"Tacit" renewals

Premiums written before a valuation date, but incepting afterwards

Pipeline renewals through binder business.

This approach is clarified by para 1.128 of EIOPA's level 3 guidance document BoS 14/166

Insurance and reinsurance undertakings should ensure that premium provisions at the valuation date include the valuation of all recognised obligations within the boundary of insurance or reinsurance contracts, for all exposure to future claims events, where:

(a) Cover has incepted prior to the valuation date;

(b) cover has not incepted prior to the valuation date, but the insurance or reinsurance undertaking has become party to the insurance or reinsurance contract providing the cover.

As mentioned above, the crucial consideration is whether or not the contracts are legally enforceable or on what terms a (re)insurer could avoid the liability associated with the exposure. Agents should consider the concept of contract certainty when assessing if they have become a party to the contract.

The allowance of profit from future exposures on existing contracts requires an allowance for associated cancellations or lapses. In the situation of a policyholder not paying a premium, the policies may be automatically cancelled and no longer represent a liability for an insurer. Any such assumptions shall be realistic and based on current experience and anticipated future experience.

There is an associated impact on delegated authority or binder business which must be assessed on a "look through" basis with the boundaries of the actual underlying contracts of insurance being tested (rather than the delegated authority or binder that are not contracts of insurance). This may include estimations if data is not immediately available. Estimates can be based on historical experience of specific binders, the likely number of contracts, their terms and conditions and hence the length of their contract boundaries and likely corresponding cash-flows. This estimated assessment should be updated as soon as reasonable when more detailed information becomes available.

This approach is consistent with para 2.15 of EIOPA's level 3 guidance document BoS 14/165:

A need to reassess the contract boundaries can arise, where a delegated underwriting authority or binder exists which can sign business on behalf of the undertaking. The undertaking requires information on the underlying insurance contracts written within the binder to assess the contracts which fall within the contract boundary at a given valuation date. If this information is not available, estimates will need to be made.

Classification as existing business is simply required to draw a line between what business should and should not be included within a valuation at a particular date. This would not necessarily need to consider any future management actions regarding what would be done in reality.

6.3 Premium receivable

The best estimate premium provisions must be based on projection of all relevant cashflows, including premiums to be received in the future from existing policies. Some premium receivable may be in respect of policies that have not yet incepted at the valuation date.

6.4 Future premium cashflows relating to incepted earned exposure

Some future premiums will relate to earned exposures. Premiums relating to claim events that have already occurred should be incorporated into the calculation of outstanding claims provisions, rather than premium provisions.

6.5 Potential practical issues

The calculation basis of premium provisions will bring a number of practical issues. These are:

The Solvency II approach will require further calculation on sufficiency of premium provisions compared to UK GAAP

The payment patterns of earned and unearned business are required to be considered separately.

Inclusion of expected profits over the remaining periods of risk is a significant change. Given all expected profit from existing business would be acknowledged at the valuation date this is likely to be most significant for long-tail business where upfront premiums may be followed by claims payments far into the future (with significant discounting credit).

The requirement for taking account of future premium cashflows is not in line with IFRS 4: Insurance Contracts[1] and UK GAAP. As things currently stand, this means that technical provisions will need to be calculated on different bases for accounting and solvency.

Lapse data is unlikely to be currently considered as part of the reserving process and may not be available.

6.5.1 Inclusion of "unincepted" business

The inclusion of unincepted business needs to be linked to any internal model. It is important not to double-count such policies or their expected outcomes (profit). An explicit link to the internal model will therefore need to be considered.

[1] Details available at *www.**ifrs**.org/**IFRS**s/Documents/Technical-summaries.../**IFRS**%204.pdf*

Depending on the line of business, the inclusion of unincepted business may represent a substantial additional volume of business in the premium provisions (though the net effect on the amounts may be small or even negative).

The effects of contract certainty should also be considered and an agent may need a standard methodology for determining what policies should and should not be included with respect to Lloyd's business.

Data for determination of what is an 'existing' policy, particularly for those not yet incepted, will be required.

6.5.2 Illustrative example of the impact of changes to unearned provisions methodology

The following is a simple, manufactured example to illustrate the fundamental differences between UK GAAP provisions for unearned exposures and Solvency II premium provisions (and in particular to illustrate the impact of future premiums). Discounting, risk margins and unincepted business are deliberately ignored for simplicity – this example is purely illustrative.

Assuming a single policy with:

uniform risk running from 1 July to 30 June

claims payments paid in the month following the quarter of occurrence

total premium of 100, payable by 40 on day 1 and 3 equal payments of 20 on the 15th of the month following each quarter

a claims ratio of 72%

a valuation date of 31st December

The cashflows and the premium earning pattern can be summarised as follows

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	**Total**
Premiums	(40)	0	0	(20)	0	0	(20)	0	0	(20)	0	0	0	(100)
Paid claims	0	0	0	18	0	0	18	0	0	18	0	0	18	72
Cashflow	(40)	0	0	(2)	0	0	(2)	0	0	(2)	0	0	18	(28)
Premium Earning	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	0	(100)

Figures in this table are subject to rounding

The resulting Solvency 'balance sheets' under UK GAAP and under Solvency II principles are then as follows

UK GAAP		**Solvency II principles**	
Assets	82	Assets	42
Cash	42	Cash	42
Receivables	40		
Liabilities	68	Liabilities	14
OS claims	18 (on earned)	Claim reserve	18 (to be paid in Jan)
UPR	50	Premium reserve	(4)
Available profit	**14**	**Available profit**	**28**

The main observations from a move from UK GAAP to Solvency II in this stylised example are that

The overall quantum of the provisions are smaller

The entire profit is acknowledged in the year the policy is written

The premium reserve is negative

There is no concept of non-monetary items such as UPR

If discounting were applied, the premium reserve shown in this example would reduce and become more negative. This is because the duration of cash in-flows (premiums) is usually smaller than the duration of cash out-flows (claims payments) and could have a significant impact for longer tailed classes.

6.6 Key Considerations

6.6.1 Possible methodologies

The projection of cashflows associated with premium provisions is outlined below:

- There is no requirement to hold a provision for 100% of unearned premium (and an Additional Unexpired Risk Reserve if expected claims and expenses are greater than unearned premiums). Provisions for claims on unearned premiums must be held at a best estimate.
- In addition, premium provisions are reduced by the amount of expected future premium cash inflows.
- Expected cashflows in respect of policies that have not yet incepted but for which a contractual obligation has started must be included. These were assigned to the following underwriting year (with the exception of those for binder business) and excluded from the current valuations.

There is a requirement for explicit assessment of outwards reinsurance recoveries and their timings (relative to the gross).

6.6.2 Cash inflows

Projections of cashflows associated with premium cash inflows are likely to be similar, in many respects, to traditional methodologies for projecting premiums. It is likely that triangulated data will be projected forward using approaches such as chain ladder development factor models and many other commonly used actuarial methods.

However, there will need to be a few modifications to allow for the additional requirements of Solvency II. These assume that all contracts that are not classed as “existing” have been excluded from the calculation.

Margins must be removed. This means “haircuts” on expected premium inflow will not be permitted.

An additional year of account will need to be added in, for expected cashflows in respect of business which is a contractual obligation but has not yet incepted by the valuation date.

Where possible, the implicit effects of lapses should be extracted and analysed separately.

Cashflows will be required for all lines of business/homogeneous risk groups/currencies. For classes that cannot be projected using a method which also gives cashflows (such as for classes with very limited data), an assumption about cashflow patterns must be made.

For most unincepted contracts, there will be some information available about what policies have been written. Assumptions will need to be made about claim and premium cashflows and used to calculate best estimate provisions (which may turn out to be negative). This could be linked to the premium pricing basis. For others, the expected income can be extrapolated from earlier years of account or inception rates by month.

6.6.3 Cash outflows

An allowance for ENIDs in assessment of claims for future premiums should also be included. This is covered in the ENIDs section.

As with claims outstanding, the majority of the assessment will be undertaken using current standard techniques.

The main modifications from current practice to allow for additional requirements are shown below. Note that some of the reserving process changes required under Solvency II will depend upon whether syndicates currently use accident year or underwriting year data (and the processes used to adjust underwriting year data for reporting).

- Margins within reserves must be removed (and held outside of the Solvency II technical provisions). Provisions for unearned premiums will no longer be held at a 100% loss ratio. This will require explicit assessment of expected claims from unearned exposures.

- Cashflows will be required for all lines of business/homogeneous risk groups/significant currencies. For classes that cannot be projected using a method which also gives cashflows (such as for classes with very limited data), an assumption about cashflow patterns must be made.
- If using an underwriting year basis, syndicates must consider how cashflow patterns for claims provisions differ from those assigned to premiums provisions, rather than simply applying a proportion to split total reserves.
- An additional year may need to be added into projection methodologies for expected claims in respect of business as described above.
- All cashflows must be adjusted for the time value of money and cashflows are to be generated by currency. This may require grouping of classes of business to a different level from traditional actuarial approach.
- Additions for ENIDs (on both claims and premiums provisions) should be added. For premium provisions, these additions would include the possibility for "mega" catastrophe-type claim events and are discussed later.
- Indirect expenses, as well as many additional expense items, are required to be projected alongside claims cashflows and are discussed further in the Expenses section.
- Inflation associated with claims and claims handling expenses is usually implicitly allowed for in data, with the assumption that future inflation will continue in the same way as historical inflation. Any deviation from this assumption should be considered and documented carefully.

6.6.4 Existing contracts

It is important that syndicates clearly define and document what business should be included and excluded from the technical provision calculation. This requires consideration of which contracts can be defined as "existing".

The first step in determining whether cashflows should be included may be to group contracts together and:

If the contract relates to incepted exposure, the cashflows should be included

If the contract relates to unincepted exposure and cannot legally be cancelled by the (re)insurer, the cashflows should be included within premium provisions

If the contract relates to unincepted exposure but can legally be cancelled by the (re)insurer, the cashflows should not be included within the provisions.

If contracts can be cancelled, but not until after a period of time has elapsed, then cashflows relating to policy inceptions during that period of time may also need to be included.

Agents should investigate the legal position regarding cancellation of contracts and use this to create a definition or assumption for assigning business to the block of "existing" business that must be included within a valuation.

This definition is the responsibility of the actuarial function.

7 REINSURANCE

The majority of this section's requirements are based on Articles 77 & 81 of the Level 1 texts, Articles 41-42, 57 & 61 of the Level 2 texts, Guidelines 78-81 of the Level 3 Guidance on the valuation of technical provisions and Guideline 8 of the Level 3 Guidance on contract boundaries.

7.1 Reinsurance within technical provisions

The held technical provisions for Solvency II correspond to the probability-weighted average of all future cashflows including cashflows recoverable from reinsurance contracts and special purpose vehicles. This should take account of the time value of money, using the relevant risk-free interest rate, and the adjustment for the expected losses due to the default of the counterparty.

Recoverables from reinsurance contracts, including recoverables from any special purpose vehicles should be shown separately on the asset side of the balance sheet (as "recoverables from reinsurance contracts and special purpose vehicles"). Recoveries due on paid claims (i.e. those where collection notes have been sent out but not received – reinsurance accruals) do not sit within the technical provisions.

Calculation of amounts recoverable from reinsurance contracts and special purpose vehicles must be performed on a consistent basis as for calculation of the gross best estimates. Risk margins are not required in respect of reinsurance and special purpose vehicle recoverables (as risk margins are calculated at a net level).

7.1.1 What contracts to include?

When considering which cashflows to include in the calculation of reinsurance premium and recoveries in the best estimate underlying technical provisions the key principle is to ensure these are consistent with the inwards policies included in the same valuation. Two specific areas that should be addressed are:

1. Future reinsurance cover not yet bought that will cover existing inwards contracts (e.g. LOD cover incepting in the following year). Cashflows from these contracts would be included in technical provisions (assuming sufficient justification as per EIOPA's guidelines); this includes the expected proportion of the premium (of the future reinsurance cover) that applies to the existing or legally obliged inwards contracts. In this instance, the selected proportion of the expected future reinsurance premiums will need to be clearly justified. By adopting this approach syndicates' net of reinsurance technical provisions would typically increase.

2. Existing or legally obliged reinsurance contracts that will provide recoveries from inwards contracts that are NOT "existing" at the valuation date (e.g. RAD cover already purchased for the forthcoming year or existing LOD covers). To ensure consistency with the inwards contracts valuation, only cashflows in respect of reinsurance recoveries that relate to existing or legally obliged inwards contracts should be included. Any future premiums payable on existing or legally obliged reinsurance contracts (e.g. minimum and deposit premiums, and/or outward reinsurance premiums owed in respect of the ceded business to date) should be included. These premium payments should be included at the level to which they are contractually obliged based on existing or legally obliged inwards cover, with no consideration to the future inwards business. This is irrespective of the accounting treatment adopted by the managing agent to allocate reinsurance costs equitably across years of account.

7.1.2 Worked examples

These examples are purposefully simplistic and designed to represent how the principles above are expected to be applied in practice.

The examples all consider a company with a single annual inwards contract that is bound on 1 July with total premium of 200, paid in equal instalments, quarterly in advance. This same inwards contract is expected to be written year on year. Three different options for outwards reinsurance cover for the company are considered:

- An annual 50% quota share contract with:
  - Premiums of 50% of inwards business paid quarterly in advance.
  - Premium based on the inwards premium only, with no minimum premium applied.
- An annual excess of loss contract with:
  - Premium of 40 paid in equal instalments quarterly in advance.
  - Premium that is fixed for the duration of the cover and does not change based on the volume of inwards business.

- An annual excess of loss contract with profit commission (PC):
  - Premium of 40 paid in equal instalments quarterly in advance.
  - Premium that is fixed for the duration of the cover and does not change based on the volume of inwards business.
  - An expected loss ratio for the contract of 50%.
  - PC that returns 25% of the profit (premiums – claims) arising from the contract to the insurer. The PC is paid at the beginning of the quarter following the end of the contract.

For the first two contract types two different commencement dates are used in the examples. One commencement date is used for the excess of loss with PC to illustrate how this type of arrangement applies an adjustment to the contract cashflows. As for the inwards contract, whatever reinsurance arrangement is in place is expected to be renewed year on year. For the purpose of this example all contracts (inwards and outwards) are assumed not to be a legal obligation until the date on which cover commences.

The table below shows the premium cashflows expected from each arrangement and those to be included in a technical provisions exercise with a 31 December valuation date.

		July	Oct	Jan	April	July	Oct
Expected	Inwards	50	50	50	50	50	50
	A - 50% quota share to be purchased on 1 Jan	-25	-25	-25	-25	-25	-25
	B - 50% quota share purchased 1st Oct	-25	-25	-25	-25	-25	-25
	C - Excess of loss cover to be purchased on 1 Jan	-10	-10	-10	-10	-10	-10
	D - Excess of loss cover purchased 1st Oct	-10	-10	-10	-10	-10	-10
	E - Excess of loss cover with PC purchased on 1 Oct	-10	-5	-10	-10	-10	-5
Included in net TPs	Inwards			50	50		
	A - 50% quota share to be purchased on 1 Jan			-25	-25		
	B - 50% quota share purchased 1st Oct			-25	-25		
	C - Excess of loss cover to be purchased on 1 Jan			-10	-10		
	D - Excess of loss cover purchased 1st Oct			-10	-10	-10	
	E - Excess of loss cover with PC purchased 1st Oct			-10	-10	-10	6.25

There is one bound inwards contract at the valuation date. The outstanding premium income for the technical provisions is from the 6 months remaining to the expiry of this contract.

Example A – Future reinsurance cover – 50% quota share to be purchased on 1 January

As outlined in point 1 under 7.1.1 the future purchase of reinsurance can be assumed as a management action (provided there is sufficient justification of this). In this case the contract will provide cover for two quarters of the existing business and premium payments related to these are therefore included in the technical provision.

Example B – Existing reinsurance cover – 50% quota share purchased on 1 October

One premium payment has already been made on this contract and so is not included as a future cashflow for technical provisions. As outlined in point 2 under 7.1.1 the future premium payments are based on the existing inwards business only. Two further quarterly payments are due before the expiry of this business. As the premium is based on inwards volumes only, and there is no further inwards business included in the technical provisions, there is no premium payable for the fourth quarter of this cover.

Example C – Future reinsurance cover – Excess of loss cover to be purchased on 1 January

As for example A, the purchase of this cover is assumed as a future management action (requiring associated justification). The premium included is therefore based on the cover that will be provided to existing inwards business over two future quarters.

Example D – Existing reinsurance cover –Excess of loss cover purchased on 1 October

One premium payment has already been made on this contract and so is not included as a future cashflow for technical provisions. Given the premium for this contract in this example is fixed the full future premium amount is a contractual obligation at the valuation date. As outlined in point 2 under 7.1.1 all future premium payable is therefore included in the technical provisions exercise, regardless of the expected future inwards business.

Example E – Existing reinsurance cover –Excess of loss cover with PC purchased on 1 October

In this example the premium payments are identical to those of example D. The difference is that the expected return of profit commission is also included in the valuation. The level of this profit commission is also increased from the expected basis as there is no inwards business for the fourth quarter of the contract included in the valuation, and so

the profit to the reinsurer under the contract is assumed to equal the premium for this quarter. Similar considerations would apply to any adjustment premium terms.

7.1.3 Worked examples - summary

The key items affecting the cashflows under each of the above examples are:

- Whether the reinsurance contract is an existing or legally obliged arrangement, or is to be purchased in future.
- The terms of the contractually obliged premium for the reinsurance contract. Specifically any minimum or adjustment premiums or profit commissions, and the extent to which the reinsurance premium is linked to inwards business.

Under each of the examples, only recoveries relating to inwards business included in the technical provisions should be included, with no allowance for recoveries on expected future business.

7.2 Segmentation of recoverables

Recoverables for special purpose vehicles and finite reinsurance should be calculated separately from the balance of reinsurance recoverables.

Recoverables in respect of non-life business must be calculated separately for claims provisions and premium provisions, consistent with the gross insurance obligations. As per article 36 of the Delegated Acts (level 2 texts) that claims provisions relate to events which have occurred (whether or not they have been reported) and premium provisions relate to future events which fall within the contract boundary. For example the reinstatement premium (whether inwards or outwards) associated with a recent known event should be considered to be a claims provision and an allowance for reinstatement premium related to future events should be considered to be a premium provision.

Debtors and creditors relating to settled claims should not be included within the reinsurance recoverables, but shown as separate items in the balance sheet including the corresponding counterparty risk.

Best estimate liabilities are required to be segmented at least by Solvency II line of business. Lloyd's view is that the most important element when calculating the gross technical provisions is having data split into homogeneous risk groups. In some cases, this will mean results are allocated to Solvency II line of business. The same concept should apply to expected reinsurance recoveries.

Ideally, the calculation of reinsurance recoveries would apply using an identical split to the calculation of the inwards gross losses. This may not be realistic in some cases, for example to Whole Account Stop loss covers. In such instances, it is acceptable to calculate the expected cashflows at a more suitable level (likely to be at the level the cover works at) and then allocate to the Solvency II lines of business as appropriate. The methods for allocation should remain constant over time and the choice documented clearly.

7.3 Calculation of recoverables

7.3.1 Cashflows

The calculation of recoverables can be performed either directly as the probability-weighted average of future recoverable cashflows or indirectly as the difference between the gross and net best estimates. The indirect method should only be used if it is expected to produce a corresponding result to the direct method.

Calculation of recoverables should include at least:

7.3.1.1 Cash inflows

Recoverables from reinsurance and SPV contracts in respect of claims payments

Recoverables from reinsurance and SPV contracts in respect of allocated claims expenses

Revenues from reinsurance commission and profit sharing arrangements (from technical sources relevant to individual reinsurance contracts)

7.3.1.2 Cash outflows

Future premiums payable for or in respect of reinsurance and SPV contracts

If relevant, outflows from profit sharing arrangements

The time value of money must be taken into account in the calculation of reinsurance recoveries.

Expenses related to the internal processes for reinsurance and SPVs (such as administration or management) should be allowed for in the expenses forming part of the gross best estimate.

Where recoverables from special purpose vehicles depend upon external indicators (such as a parametric trigger), rather than directly indemnifying for losses, allowance for recoveries related to either claims or premiums provisions should only be taken into account to the extent that they can be verified in a "deliberate, reliable and objective manner". The basis risk of the contract not being triggered must also be considered. In addition, only payments related to insurance risk should be accounted for in recoverables. All payments that do not relate to underwriting risk (for example those that relate to market risk) should be accounted for elsewhere.

7.3.2 Adjustments

Reinsurance recoverables should be calculated assuming no counterparty default. An adjustment for counterparty default should then be explicitly calculated and applied separately.

Deposits made in respect of the reinsurance cash inflows or outflows must be shown separately in the balance sheet. Suitable adjustment must be made to the recoverables to avoid any double-counting.

7.3.3 Gross to net techniques for calculating recoverables

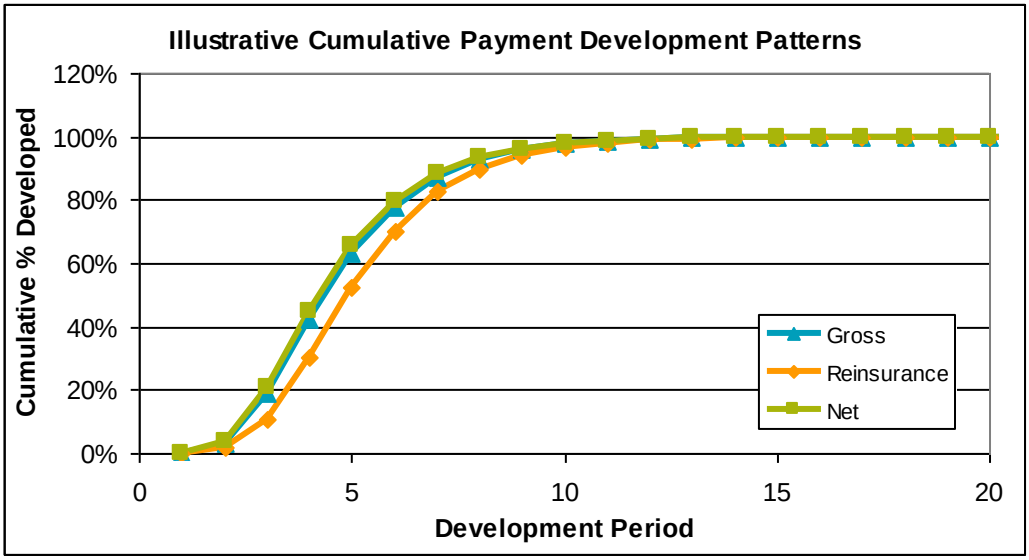
Gross to net techniques[1] may be used as long as the particular methodology selected is proportionate to the underlying risks. Any methods used must ensure that:

- there is correspondence between gross and net best estimates of a homogeneous risk group
- claims provisions and premium provisions are calculated separately
- the net calculation is performed at a level that adequately matches the granularity of relevant reinsurance programmes
- the allowance for counterparty default is reflected appropriately
- calculation methodologies distinguish at least between lines of business for premium provisions
- calculation methodologies distinguish at least between lines of business and between accident years not fully developed for claims provisions

7.3.4 Simplifications in calculation of recoverables

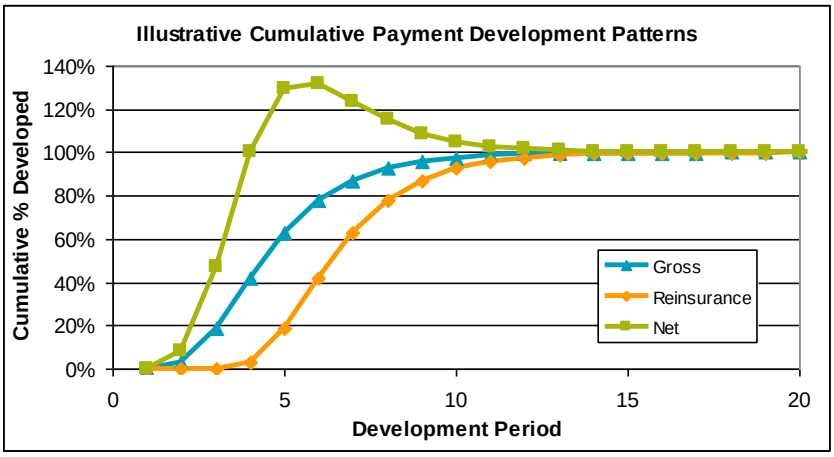
Where the timing of gross claim payments and corresponding recoveries is markedly different, this should be reflected in the projection of cashflows. Where the timings can be shown to be sufficiently similar, they may be assumed to correspond and projections can use the timing of direct payments.

For example, where reinsurers' share of the obligations is low and there is little lag between gross payments and reinsurance recoveries, the assumption that patterns are similar may be reasonable, as illustrated in the diagram below:



However, where reinsurance is significant or has large lags from direct payments, such simplifications may not be appropriate, as illustrated below:

[1] See Guideline 80 of EIOPA level 3 guidance document BoS14/166,



Reinsurance and SPV cashflow projections must also take into account the effects of discounting.

7.4 Allowance for counterparty default

Recoverables from reinsurance and SPVs must be adjusted for expected losses due to counterparty default. This adjustment should approximate the expected present value of the losses in the event of default, weighted by the probability of default for each counterparty. The adjustment should be made for expected losses whether due to insolvency, dispute or any other reason.

The adjustment must be based on a market-consistent assessment of the probability of default and the average loss following such a default. For example, in a stress scenario the probability of default or the loss given default may be greater than the long term averages. The assessment of such an adjustment should be based upon current, reliable and credible information. This requirement still applies when the information is sourced from a third party.

The determination of the adjustment should take account of default events during the whole run-off period of the recoverables. The adjustment for default must take into account the risk that counterparties survive some years and default at some other point in the whole run-off period of the recoverables. In particular, it is not sufficient to multiply the expected loss due to immediate default by the probability of default over the current year.

Instruments used to mitigate the effects of counterparty default risk (for example, collateral or LOCs) may be taken into account in the adjustment, but any associated credit risk must also be taken into account. The default risk of the underlying instrument should be included as equivalent to the default risk of the reinsurance.

The counterparty default adjustment should be calculated separately at least for each line of business, counterparty and (for non-life) separately for premium provisions and claims provisions. This is likely to require the allocation of reinsurance premiums and claims to class of business. An allowance must also be made for the reinsurance recoveries assumed on additional provisions in respect of future and unincepted premiums.

A separate calculation of default by counterparty may be onerous, especially if the expected loss is small. Where the probability of default and recovery rate of several counterparties coincide, and if calculations at the level of individual counterparty are an undue burden, then the adjustment for these counterparties could be calculated together.

Further considerations in relation to counterparty default are discussed in Section 13 of the Lloyd's Capital Guidance.

7.4.1 Loss given default

The loss given default is the expected present value of the change in recovery cashflows, resulting from a default of the counterparty. If no reliable estimate of the recovery rate for a counterparty is available, the rate used should be no higher than 50%.

7.4.2 Probabilities of default

Where possible, estimates of the probability of default should reflect the point-in-time impact of the insurance cycle, rather than long-term averages. If it is not possible to calculate such estimates in a reliable, objective and prudent manner, through-the-cycle estimates of the probability of default might be used with appropriate justification.

Techniques in current use, such as transition matrices, are appropriate. The assessment of the probability of default should take into account the fact that the probability increases with the time horizon of the assessment.

Possible sources of data for assumptions include:

- Credit spreads;
- Credit ratings;
- Solvency assessment information; and
- Financial reporting information.

7.4.3 Application to claims and premium provisions

For claims provisions, details of the counterparties underlying notified outstanding reinsurance recoveries will be available. Assumptions will need to be applied for the counterparties (or rating group if simplification is followed) involved with recoveries on IBNR/IBNER. Assumptions here may use the same proportions of reinsurance by credit rating as for reinsurance on outstanding claims, paid reinsurance recoveries or reinsurance premium for recent years. Assumptions regarding reinsurance recoveries for premium provisions may need to take into account similar historic proportions but will also include assumptions underlying business plans. Any change in the distribution of reinsurers by rating must be taken into account.

7.5 Potential practical issues

7.5.1 Recoverables from reinsurance and special purpose vehicles

Net best estimates will need to be produced by line of business. Calculation of reinsurance recoverables at the minimum levels of segmentation may be difficult for reinsurance spanning multiple lines of business/currencies.

The recoverables expected from whole account reinsurances will need to be allocated to lines of business to be able to calculate net best estimates at the level of segmentation required. Expert judgement will be required and underlying assumptions documented, including validation of assumptions.

Multi-year reinsurance contracts may be in place, but may be covering policies that are not yet a contractual obligation of an undertaking. Premium for these contracts should be treated in the same way as described in 8.1. Any (future) premium for reinsurance cover that is not yet existing or legally obliged should have such costs apportioned and only the proportion relating to existing contracts (whether incepted or not) included to ensure consistency. To the extent the multi-year cover is already existing or a legal obligation the premium should be included in full to the extent it is contractually obliged based on existing contracts (whether incepted or not).

7.5.2 Allowance for counterparty default

A full calculation by individual counterparty will be time-consuming and potentially complex. It is expected that many undertakings will elect to use the simplifications suggested and group reinsurers by rating. This will result in similar groupings to current practice.

However the revised article 44 of the directive also makes it clear that sole reliance can't be placed on credit rating agencies:

4a.In order to avoid overreliance on external credit assessment institutions when they use external credit rating assessment in the calculation of technical provisions and the Solvency Capital Requirement, insurance and reinsurance undertakings shall assess the appropriateness of those external credit assessments as part of their risk management by using additional assessments wherever practicably possible in order to avoid any automatic dependence on external assessments.

This is reinforced in article 259 (4) of the delegated acts:

4.In addition to the requirements set out in Article 44(4a) of Directive 2009/138/EC for the purposes of the calculation of technical provisions and the Solvency Capital Requirement, internal risk management methodologies shall not rely solely or automatically on external credit assessments. Where the calculation of technical provisions or of the Solvency Capital Requirement is based on external credit assessments by an ECAI or based on the fact that an exposure is unrated, that shall not exempt insurance and reinsurance undertakings from additionally considering other relevant information.

This does not mean undertakings cannot rely on external credit ratings, quite the opposite, but the key point is to ensure they are not solely relied upon and the actuarial function should be clear on how this is ensured.

Although primarily focussed on calculation of credit risk within the SCR, Article 199 of the delegated acts discusses assessment of probabilities of default and includes suggested values.

Lloyd's security would be treated as 100% for syndicate level calculations for solvency provisions (but not SCR calculations).

7.6 Key Considerations

7.6.1 Possible methodologies: reinsurance recoveries

EIOPA suggests two main methods for deriving reinsurance recoveries:

Calculated directly as the probability-weighted average of future recoverable cashflows
Calculated indirectly as the difference between the gross and net best estimate

If the timings of gross payments and recoveries can be shown to be sufficiently similar, an undertaking may use the timing of gross payments in the cashflow projection for recoverables. Where timings are different, cashflow projections must allow for these differences between gross payments and recoveries. For example, this can be achieved by assuming a lag between the gross payments and associated recoveries. They can be based on an analysis of historical differences.

It is expected that in most cases traditional actuarial techniques would be followed. For example net to gross ratios are expected to be widely used and in some cases, direct net projections would be favoured.

Exact calculation of expected reinsurance recoveries for large or exceptional claims will be expected, this is also consistent with the traditional actuarial approach.

One area that would require a different approach is non-working non-proportional reinsurances. The probability weighted mean of recoveries will be non-zero. However, traditional actuarial approaches may assume a zero recovery as a best estimate. To overcome this either a stochastic approach or method that results in non-zero expected recoveries (for example ratios based on premium) would be required.

7.6.2 Possible methodologies: reinsurance counterparty default

Calculation of an allowance for counterparty default within reinsurance recoverables will be more detailed than current methods unless expected reinsurance recoveries are small. The counterparty default adjustment must be calculated separately for each line of business, counterparty and (for non-life) separately for premium provisions and claims provisions.

For premium provisions, assumptions will need to be made for the proportion of reinsurance recoverables that will be attributed to each counterparty or group of counterparties. A possible approach would be to apply the same proportion as seen in the claims provisions or based on reinsurance premiums by credit rating.

Counterparties will be grouped by credit rating, if applying the simplification suggested by EIOPA. This will assume that default rates and recovery percentages across rating groups are the same. As the 50% maximum recovery rate is likely to apply for all counterparties, this simplification should hold.

To correctly allow for the risk of counterparty default over the run-off of reinsurance recoverables, the cashflows of reinsurance recoverables are required over time (as they are assumed to increase over time). The probabilities of default used will depend on credit rating group meaning reinsurance cashflows need to be split by rating group. However, simple apportionments may be applied.

If it is assumed that reinsurance payment patterns are homogeneous across the credit ratings of counterparties (note that these patterns are already separated out by class of business), then a simple proportion of the overall reinsurance cashflow could be taken for each rating group.

Probabilities of default are required by credit rating and by duration (consistent with the cashflow projection time period). The cashflow time interval assumptions are expected to be consistent with the gross projections – expected to be quarterly, half yearly or annual. The default probabilities are likely to be based on credit rating information such as S&P default rates that are currently available.

The process results in an expected probability of default and loss given default for each future time period for each line of business and each rating group. This is more detailed than the traditional actuarial approach.

8 EXPENSES

The majority of this section's requirements are based on Article 78 of the Level 1 texts, Article 31 of the Level 2 texts and Guidelines 26-34 & 71 of the Level 3 Guidance on the valuation of technical provisions.

8.1 Inclusion of expense cashflows

The best estimate should reflect all cashflows arising from expenses that will be incurred servicing existing policies during their lifetime.

Expenses include both allocated and unallocated expenses. Allocated expenses are those that are directly assignable to individual claims. Unallocated (or overhead) expenses comprise all other expenses which the undertaking incurs in settling its obligations which will include some costs not directly attributable to settling claims. Current "ULAE" would naturally make up part of the total unallocated expense cashflows.

Unallocated expenses must now be projected as for the cashflow projections and allocated between business lines, homogeneous risk groups and currency. They should also be allocated between earned and unearned exposure. Previously, these indirect expenses could be included at a whole business level.

Examples of expense items to include are:

Acquisition expenses including commissions

Salaries

Property costs (rent, depreciation, heating, lighting, cleaning)

Other administration expenses

IT costs

Investment management expenses

Claims management expenses

Expenses in relation to the management/admin of reinsurance contracts and SPVs

Expenses related to hedging programs

8.2 Allocation of expense cashflows

Those expenses which cannot be directly allocated to claims should be allocated using professional judgement and realistic assumptions to lines of business or homogeneous risk group. Such allocation should be done on an economic basis following realistic and objective principles. The principles and their application should be documented, as should the explanation for any changes. The split of unallocated claim expenses should only be changed if a new split will better reflect the current situation.

Agents should consider where expenses are paid in a currency different from that in which obligations are settled. Under the cashflow basis of Solvency II and the requirement to allocate in a realistic way, these should, subject to the principle of proportionality, be allocated to the currency in which they are paid.

For non-life business, syndicates should further split expenses between premium and claims provisions on an economic basis. For example:

Claims management and administration expenses arising from claim events that have occurred prior to the valuation date (earned) should be allocated to claims provisions.

Expenses (including commissions) connected with ongoing administration of the in-force policies should be allocated to premium provisions.

Claims management and administration expenses connected with future claims events stemming from in-force policies should be allocated to premium provisions.

Future premiums and associated claims are also included within the best estimate technical provisions. Expenses related to future premiums on existing policies must also be taken into account. This will include acquisitions costs as well as the costs of administering the expected claims associated with the future premiums.

8.3 Calculation of expense cashflows

Expense provisions should reflect the undertaking's own data and any relevant market data. Expense cashflows must take into account assumptions about how expenses will develop in the future, i.e. cashflows should allow for uncertainty in the amount, frequency and severity of expense cashflows. In particular, assumptions should be made for inflation. For example, the future expense assumptions must use an inflation rate appropriate to the driver of the expense, with different assumptions for wage or goods inflation. Inflation assumptions should be consistent with economic assumptions.

Assumptions about cashflows must consider future changes in the environment (such as legal, demographic, medical, technological, social or economic).

Future cost reductions should not be incorporated, except where they have already been realised by the valuation date. Newly established syndicates may make allowance for cost reduction in their first five years, but the assumptions underpinning any such cost reductions should be realistic, objective and based on verifiable data.

8.3.1 Ongoing business basis

Undertakings should take account of all expenses that would be incurred in running-off the existing business, including direct expenses and a share of the relevant overhead expenses.

Expenses should be calculated on the assumption of an ongoing business basis. Indirect overhead expenses should be allocated on this basis with the assumption that the syndicate continues writing new business. The syndicate should assume that volumes continue at the same level (unless the syndicate is ceasing to write new business). This assumed new business may support an increasing share of the overheads into the future, with less allocated to the business existing at the valuation date.

A going concern basis is more consistent with the concept of a notional transfer to a reference undertaking. However, if it is thought very likely that a firm may close in the near future, a “run-off” assumption should apply with expenses calculated accordingly.

8.4 Potential practical issues

Some allowance for expenses may implicitly be included in claims projections. Methodologies used for expense projection must avoid double-counting.

If expenses are assumed to develop in line with a specific development pattern, such as for claims, there may be an implicit assumption that inflation applying to expenses is the same as that applying within the claims development pattern. It may be difficult to assess whether this is reasonable and, if not, an adjustment would be required.

Projections using paid chain ladder methods may give ultimate claims including implicit allowance for some expenses. Outstanding claims reserves would need to ensure a consistent approach or incurred projections may include only a partial allowance for expenses.

Best estimates of expenses will need to be associated with a cashflow pattern. These patterns, if not derived as part of the best estimate calculation methodology, will be challenging and involve judgement.

Including investment management expenses as a separate cashflow rather than an offset to investment returns may be a change in approach for most syndicates. It is important to make sure investment expenses are not double counted. The risk-free rates provided are not “net of investment expenses”.

Methods of allocating indirect expenses and overheads are likely to incorporate a large degree of judgement and there may be many ways of performing the allocation. The most appropriate allocation methodologies may require data that is not readily available.

The actuarial function needs to decide and document the rationale for the allowance for expenses in the technical provision calculations.

8.5 Key Considerations

8.5.1 Possible methodologies

Best estimates are required at a line of business level and so expenses will need to be split appropriately between lines of business and currency. Different expense items will need different allocation and projection methodologies and these expenses must also be allocated to either claims or premiums provisions.

There may be information already produced within an insurance undertaking to appropriately allocate claims expenses (such as financial information, accounts or business planning data).

An expense investigation may be required to assess the most appropriate method of allocating expenses across lines of business and into the future.

The list below suggests possible methods by which different expenses could be allocated.

Investment management expenses: these could be allocated based on the level of funds under management. A measure for allocation may be the relative sizes of reserves within different lines.

Administration expenses: Depending on the source of administration expenses, these could be allocated using in-force policy counts, relative staff hours spent on different lines, unearned premiums or volumes of reserves.

ULAE could be allocated by the underlying best estimate provisions; a proportional method could be used if the proportion is stable over time and where the expenses are distributed uniformly overly the lifetime of the portfolio

Assuming an uplift for ENIDs is applied to technical provisions, these uplifts should consider whether additional expenses may be incurred during the run-off of such expected claims amounts.

If a proportional method is used to run off expenses (such as running off claims expenses in line with reserves), agents should consider what level of implicit inflation is being applied to such an expense run off and whether this is appropriate.

9 EVENTS NOT IN DATA (ENIDS)

9.1 Allowance for all possible future outcomes

Article 77 (2) of the directive and Article 30 of the delegated acts requires a probability weighted average of all possible future outcomes which should take account of all uncertainties in the cashflows. UK GAAP requires technical provisions to include all items that are "reasonably foreseeable". It also comments that technical provision should have regard to historic levels of claims and development.

Regardless of the technique used (whether stochastic or deterministic) to calculate the mean best estimates, parameterisation using historic data will only allow for the scale of events that have been observed within the history. Even if an attempt were made to explicitly adjust for this, it would be difficult to fully capture the effects of “all possible future events”. Many methods would result in an underestimation of the “true” mean.

Judgement is required in making additions or adjustments to the estimates to allow for circumstances not included in the history that will need to be incorporated into the best estimates (for example, latent claims or low probability high impact claims). In all the methods, judgement is a fundamental requirement.

This can leave a gap between the UK GAAP bases for technical provisions and that under Solvency II. The gap relates to events or circumstances that are not reasonably foreseeable (i.e. have low probabilities) and are at levels not contained in historical data (i.e. potentially have a very large severity). These have been called both “binary events” and "ENIDs" and the term ENID is more widely used. In the PRA’s supervisory statement SS5/14[1] sections 2.4-2.7 describe ENIDs and specifically in 2.6 that ENIDs should be taken into account when calculating technical provisions and that a simple percentage uplift without justification is not an adequate method.

An allowance for ENIDs fills the gap between UK GAAP and the Solvency II requirements. Allowance for ENIDs needs to be made within both claims provisions in a similar fashion to a latent claim allowance and premiums provisions with the added risk of a “mega” catastrophe.

Guideline 73 of the EIOPA guidance states that appropriate consideration should be given to the likelihood of infrequent, high severity claims and latent claims. Although this section specifically refers to premium provisions it is Lloyd’s view that an allowance for events which have occurred but which are not yet reported (such as latent claims) should also be included within the outstanding claims provisions.

9.2 Illustration of ENIDs

There is a very large range of possible events that could fall into this category. For illustrative purposes, the following list gives some ideas of events that could (but not necessarily would) fall into the category of ENIDs. Also, depending on an insurer’s risk profile, some of the events may not even give rise to significant losses at all.

It is also worth noting some historic events that might fall into this category, the health hazard type of losses such as asbestos and US pollution of the 1980s are prime examples. Others such as the LMX or PA spirals may also be considered to be in this category.

There is also the risk of extreme events not included in pricing assumptions impacting the premium provisions for unexpired exposures. Examples of these could be meteor strike, tsunami and unexpected volcanic eruptions.

1 PRA Supervisory Statement SS5/14. Solvency II: calculation of technical provisions and the use of internal models for general insurers

9.2.1 Products impacting health

Nanotechnology
Aspartame
Electro Magnetic Fields
GM Crops
Nuclear waste

9.2.2 Social/environmental issues

Global warming linked to current polluters
Director liabilities widened

9.2.3 Legislative/political changes

Step change in court rulings (e.g. Ogden tables)
Political intervention
Rulings that ignore underwriting conditions “for the greater good”

9.2.4 Contact uncertainty

Removal of claims made wordings
Retrospective change in conditions (e.g. surplus lines in Florida)
Specific exclusions removed
Not fully understanding exposures

9.2.5 Events

Meteor strikes
Mega volcanoes
Tsunami

This list is illustrative but certainly not exhaustive.

9.3 Potential practical issues

There is a need for undertakings to make some allowance for latent claims and ENIDs when setting technical provisions. However, there is significant uncertainty around any such requirements.

Calibrating the requirements in respect of ENIDs is extremely subjective and would involve significant judgement. Results of any such methodology would be extremely sensitive to assumptions made.

Meeting validation, back-testing and data requirements for the assumptions underlying the methodology will also be very difficult.

9.4 Key Considerations

9.4.1 General methodologies

If only looking at historical events (over a relatively short period of time) then it is asserted this will not represent a “full distribution” and especially so for tail events. One basic approach to allow for ENIDs is to remove the truncation inherent in a parameterisation based only on observed historical data. In practice, such an allowance could typically be done in one of three ways:

- Adjusting the underlying assumptions within the best estimate to ensure the likely impact of the event is included in the projection.
- Calculating the best estimate reserve separately under the assumptions that an ENID event either does or does not occur. The two projections could be combined with a probability weighting.
- Adding an explicit amount or load to the best estimate excluding ENIDs.

Currently, methods similar to the first are the most common way of allowing for events outside of the scope of historical data. That is, some allowance for latent claims is often made by selecting more prudent assumptions to take account of the possibility of losses of a scale not contained in the history. In the first and third methods, events would not necessarily be identified explicitly.

One of the underlying principles of Solvency II is transparency, meaning any load or assumption to adjust for ENIDs should be explicit. The methods chosen should also be relatively simple to avoid spurious results. In most circumstance this would rule out the first method of "just being more prudent" to allow for uncertainty.

9.4.2 Practical suggestions

In reality there are many possible approaches to allowing for ENIDs. Three are highlighted below:

9.4.2.1 Use history as a guide

Investigate the historical proportional impact on reserves of latent or extreme events. This could be conducted at a line of business level over the last 30 or 40 years. This would be mainly health hazard type claims such as: asbestos, pollution, tainted blood products, silicone implants, Agent Orange, DES etc.

The result is an estimate of frequency (e.g. X latent claims in 30 years) and severity, average impact is y% of average reserves over the period.

Advantages of this type of approach are that it would give an explicit load for latent/unexpected claims and is relatively straight-forward to calculate. Disadvantages are that historic events may not be a good guide to future events and that it may not cover "all possibilities". It would also not necessarily provide an allowance for large events in unearned provisions.

9.4.2.1 Estimate vulnerability to a range of current threats – 'scenario' approach

Build a probability and severity database of current possible ENIDs. These could be explicitly valued and included within the technical provisions calculations.

Advantages of this type of approach are that it would give an explicit load for latent/unexpected claims and is relatively straight-forward to calculate once assumptions have been made. However, it would be almost impossible to assign realistic probability/severity assumptions for such losses. It would also, in practical terms, be impossible to allow for "all possible" outcomes.

9.4.2.3 Uplift reserve to allow for limited range of understanding

Actuarial functions use their expert judgement in setting technical provisions and will aim for mean reserves. The resulting mean based on historic data alone is expected to underestimate a true mean as it will only include information which is realistically foreseeable. If an assumption is made about the level at which events are realistically foreseeable (for example, up to a 1:200 year level) then derived uplifts could be applied to estimate a mean allowing for incomplete information.

Using a combination of data available and judgement for fitting a tail, an assumption can be made about the distribution of reserves. This could also be derived using a bootstrap-type methodology.

An assumption can then be made about the likelihood of events included within the data (the 1 in X year events). For consistency with capital setting, this level for "realistically foreseeable" events could be assumed to be 1 in 200. An uplift factor can be derived as the ratio of the "true mean" to the "mean only including realistically foreseeable events". Reserves are calculated using standard techniques and the uplift factor applied.

To illustrate the example, if it is assumed that the reserves estimated using current techniques (i.e. only allowing for reasonably foreseeable events) will exclude the tail of the distribution beyond the 1:200 point and the loss distribution is of a certain type (e.g. lognormal) then the difference between the estimated mean (using current techniques) and the "true" mean can be explicitly calculated and added as an ENID load.

This approach would be subjective and rely on the assumptions made to fit a distribution, approximate the tail of the "true" distribution and about the level of likelihood of events seen in the data. It would be very sensitive to any of these assumptions. The method may also be very sensitive to assumptions about how quickly any such uplift ratios are expected to run off for older years of account.

9.4.3 Validation

Any method to allow for ENIDs would be very subjective and rely on significant levels of judgement. Validation against existing observed data would be, by definition, extremely difficult.

However, it would be possible to look at a number of scenarios to check the reasonableness of any proposed ENID adjustments. These could be based on the opinions of a number of experts about frequency and severity of different binary events (much like method 2 suggested above).

10 DISCOUNTING

The majority of this section's requirements are based on Article 44 of the Level 1 texts and Articles 43-47 & 49-54 of the Level 2 texts.

10.1 Calculation of discounted best estimate provisions

The best estimate shall correspond to the probability-weighted average of future cashflows, taking account of the time-value of money using the relevant risk-free interest rate term structure.

For each currency, a risk-free interest rate term structure is defined following a uniform methodology. This interest rate term structure should be used to measure the time value of cash-flows payable in the currency. The requirement implies that there should be as many term structures used as there are currencies in which business is written.

Investment expenses should be allowed for in the cashflows underlying the calculation of technical provisions and not within the risk-free interest rates used for discounting. This will avoid double counting investment expenses.

In the event that the overall weighted discount rate is negative throughout the term of the cashflow then the impact of discounting would be expected to increase the technical provisions.

10.2 Risk-free interest rate term structures

Term structures will be available for all relevant currencies, for all relevant maturities and to all insurers, whatever their size. For each valuation date, the risk-free interest rate term structure will be determined on the basis of market data at that date and will consist of rates for all durations. This means that for a given currency and valuation date, each syndicate will use the same risk-free interest rate term structure.

The PRA will provide the risk-free interest rate structures to be used in discounting technical provisions. The PRA publish these rate structures on a monthly basis on or before the eighth working day following the reporting date. Agents should refer to relevant Solvency II Lloyd's reporting return instructions for further details on use of these rates for Lloyd's reporting.

For currencies for which the PRA does not publish technical information/discount rates, it is a firm's responsibility to propose discount rates that complies with Solvency II requirements and justify its approach to its supervisor. The PRA considers that suitable approaches may include, subject to discussion with a firm's supervisor, use of:

- Publicly available source of discount rates (e.g. from EIOPA). However, firms should consider carefully whether the public source complies with the Solvency II requirements, and what adjustments may be necessary before it is suitable for the calculation of its UK technical provisions; or
- The discount rates of one of the PRA's relevant currencies that is a suitable proxy for another currency, with adjustments where necessary.

Further information can be found at the following link.

10.3 Determining the risk-free interest rate term structure

For each currency, the relevant risk-free interest rate term structure must be determined on the basis of financial market data relevant for the valuation date. The term structure should meet the prescribed "risk-free rate criteria", as set out below:

- The rates should be free of credit risk.
- There should be no technical bias from supply and demand distortions.
- The rates should be realistic and it should be possible for all undertakings to earn the rates in practice in a risk-free manner.
- Data and methods used to derive the rates should be robust and give a reliable and accurate estimate.
- Rates should be based on instruments within deep, liquid and transparent markets giving reliable market values.

- The financial instruments used to derive a risk-free interest rate term structure should only be used for maturities where the risk-free rate criteria are met. Different financial instruments may be needed for other maturities where the risk-free rate criteria are not met.

The principle of proportionality may not allow approximate derivations of the risk-free term structure.

Article 44 of the Delegated Acts states that swap rates should be used as a starting point for derivation of the risk-free interest rate term structure and must be adequately adjusted to remove credit risk and technical bias.

If swap rates meeting the risk-free rate criteria are not available, government bonds may be used, with suitable adjustment to meet the criteria. If neither swaps nor government bonds are available or cannot be suitably adjusted, other financial instruments (as similar to swaps as possible) should be used, with any adjustments required to approximate swap rates meeting the risk-free rate criteria.

10.4 Matching and Volatility Adjustment

Under Solvency II there are two types of adjustments to Technical Provisions in respect of the relevant risk-free interest rate term structure which is used to calculate discounted best estimate of the liabilities. The adjustments are mutually exclusive i.e. if one is used for a subset of liabilities, then the others cannot be used for the same subset of liabilities. In the UK any adjustments to the basic risk-free rate require regulatory approval prior to use.

10.4.1 Matching Adjustment

First is Matching Adjustment which allows firms to benefit from using less liquid assets held to maturity in a portfolio backing specific liabilities. The application of this adjustment is subject to an extensive list of strict conditions which are listed in Appendix 1. This adjustment is unlikely to apply to most general insurers. For example, condition (e) of Article 77b is that the only underwriting risks connected to the portfolio of liabilities are longevity risk, expense risk, revision risk and mortality risk. For general insurers this condition is likely to be only satisfied for portfolios of annuities stemming from non-life insurance or reinsurance contracts and in particular, Periodical Payment Orders (PPOs). Conditions (a) and (b) of the same Article require that there are dedicated assets held against these liabilities. The assets must have similar cashflow characteristics as the liabilities, should be identified, organised and managed separately from other investments and must be held to maturity unless changes are required to maintain replication of cashflows. The above three conditions are only likely to be satisfied where the general insurer holds a dedicated portfolio of assets matching its PPO portfolio and holds these assets to maturity.

10.4.2 Volatility Adjustment

Second is the Volatility Adjustment (VA) - an adjustment to the Solvency II risk-free discount rate designed to mitigate the effect of short-term volatility in financial markets on valuation of insurers' long-term liabilities under Solvency II.

For each relevant currency, the volatility adjustment shall be based on the spread between the interest rate that could be earned from assets included in a reference portfolio for that currency and the rates of the relevant basic risk-free interest rate term structure for that currency. PRA calculates and publishes the risk-free interest rate term structure with and without volatility adjustment monthly.

Any SCR calculations should not account for a risk of loss of basic own funds stemming from changes to the volatility adjustment.

In consultation paper CP11/15 PRA has communicated three statutory conditions for use of Volatility Adjustments in the UK:

- The VA is correctly applied to the relevant risk-free interest rate term structure in order to calculate the best estimate
    - Relevant liabilities to be clearly described including currency and country of sale
    - Matching adjustment should not be applied to the same liabilities
- The application of the VA does not create an incentive for the undertaking to engage in pro-cyclical investment behaviour
    - Interaction between the decision to invest in an asset and the decision to hold VA should be appropriate, to avoid buying risky items during stable market periods and selling risky assets during periods of market volatility
    - Liquidity plan should demonstrate sufficient assets to meet claims during the periods of stress without resorting to selling illiquid assets
- The firm does not breach a relevant requirement as a result or consequence of applying the VA
    - Prudent Person Principle
    - Taking into account liability features
    - Use of VA should be reflected in ORSA

10.5 Extrapolation for longer-term insurance liabilities

A term structure necessarily contains a finite number of points, and (re)insurers may need to either interpolate between points or extrapolate beyond the horizon for which a sufficient degree of liquidity exists (i.e. beyond the "final liquid point").

As per Section 2.11 of EIOPA-BoS-20/75, the discount factor increases with time to maturity, the extrapolation of the risk-free curve significantly impacts the present value of long term insurance liabilities. Therefore, the technique of extrapolation needs to adhere to the desired risk-free criteria set out in this guidance (in particular the criterion of realism), with the exception of liquidity.

As per directive Article 77a and the delegated acts Article 46 the principles for extrapolation should be the same for all currencies. The determination shall take into account relevant financial instruments for those markets which are deep, liquid and transparent and should ensure a smooth convergence to the ultimate forward rate. The methodology to determine the ultimate forward rate shall be clearly specified and determined in a transparent, prudent, reliable and objective manner that is consistent over time.

Interpolation or extrapolation at longer durations is unlikely to be material for Lloyd's business (life or non-life) but quarterly interpolation is likely to be needed.

10.6 Other issues

There will be situations when estimated liabilities do not exhibit reliable cashflow patterns, such as very large claims or low-volume lines of business.

This would require some subjective selection of payment amounts and dates and to discount at those points in time.

For (re)insurers with low-volume of business in an "unusual" currency which represents a small share of their total business, proportionality would imply that approximations can be used. Two solutions would be:

1. Grouping this business with similar business labelled in one of the main global currencies. This would introduce a mismatch between the term structure used and the actual assets held by the undertaking, while keeping homogeneity.
2. Grouping this business with a larger homogeneous line of business labelled in the same currency but with different risk attributes. This would dilute homogeneity while avoiding any risk of asset/liability mismatch.

The selected approach must be chosen and justified by the actuarial function.

When an internal model is used, managing agents must demonstrate that they adhere to Lloyd's 'Principles for Doing Business', in particular, that the role of the ESG is explained and its materiality on capital assessed annually, for example with regards to parametrisation assumptions or as a result of ESG version updates. Further information is provided in Section 12.3 of the Lloyd's Capital guidance.

10.7 Potential practical issues

Best estimate provisions will be sensitive to the risk-free interest rate term structures used to discount. The means technical provisions will be significantly more volatile than they are currently.

Results will be sensitive to the interpolation of discount rates to use between points of a term structure, especially in year 1. The early sections of an interest rate term structure would need to use as much detail as possible.

10.8 Key Considerations

10.8.1 Possible methodologies

- Assess which currencies are to be used. Solvency II requirements state that the best estimate should be calculated separately for obligations of different currencies. However, some currencies are likely to be immaterial and proportionality means analysis is not performed separately for these.
- Decide on the time period granularity. This will depend on the granularity of the undiscounted cashflows produced and the availability of term structure data. Cashflows are likely to be calculated quarterly or annually.
- Derive term structures for the main currencies, for the required granularity. These will be provided by the PRA.
- The actuarial function should consider whether a stochastic method is required to vary the cashflows (term structures are fixed). This is unlikely to be required.
- Discounting of cashflows can be carried out either deterministically or stochastically.
- Sensitivity testing of different discount rates will be important, considering the potential volatility of technical provisions to these assumptions. This would give syndicates an idea of how liabilities could move at different valuation dates.

11 RISK MARGIN

The majority of this section's requirements are based on Article 77 of the Level 1 texts, Articles 37-39 & 58 of the Level 2 texts and Guidelines 61-63 of the Level 3 Guidance on the valuation of technical provisions.

11.1 General requirements

The Government's reforms to the risk margin are set out in the Insurance and Reinsurance Undertakings (Prudential Requirements) (Risk Margin) Regulations 2023, which came into force on 31 December 2023. Specifically, HMT's SI makes an amendment to the Commission Delegated Regulation (EU) 2015/35 to:

- Reduce the cost of capital rate from 6% to 4% for life and non-life insurance and reinsurance obligations
- Amend the risk margin formula and introduce a risk tapering factor of 0.9 for life insurance and reinsurance obligations, subject to a floor of 0.25.

The risk margin shall be such as to ensure that the value of the technical provisions is equivalent to the amount insurance and reinsurance undertakings would be expected to require in order to take over and meet the insurance and reinsurance obligations.

Technical provisions for non-life business written at Lloyd's should be calculated as the sum of an explicit best estimate and an explicit risk margin. Risk margins should be calculated using a cost of capital approach.

The cost of capital approach requires the risk margin to be calculated by determining the cost of providing an amount of eligible own funds equal to the Solvency Capital Requirement (SCR) necessary to support the obligations over their lifetime[1]. This approach is intended to reflect the costs incurred by a notional reference undertaking in raising capital to accept a transfer of liabilities.

The underlying approach is to calculate the insurer's technical provisions and SCR for each year in the future until the business is fully run off. Calculation of SCRs is covered in Lloyd's detailed SCR guidance.

The formula below provides a general approach for calculating the overall risk margin(whether using the standard formula or an internal model). Note this includes the risk tapering component mentioned above.

$$RM = CoC \times \sum_{t \geq 0} \frac{SCR(t) \times \max(\lambda^t, \lambda_{floor})}{(1 + r(t+1))^{t+1}}$$

Where:

- (a) CoC denotes the Cost-of-Capital rate currently at 4%;
- (b) the sum covers all integers including zero;
- (c) $\mathrm{SCR(t)}$ denotes the Solvency Capital Requirement for the notional reference undertaking
- (d) $\mathrm{r(t+1)}$ denotes the basic risk-free interest rate for the maturity of t+1 years.
- (e) λ denotes the risk tapering factor, and equals
  - (i) 0.9 for life insurance and reinsurance obligations, and
  - (ii) 1.0 for non-life insurance and reinsurance obligations;
- (f) λ_{floor} denotes the floor of the risk tapering factor, and equals 0.25.
- (g) λ^tdenotes the risk tapering factor to the power of t years.

11.2 Risks to take into account within the risk margin

Only the business existing at the valuation date (t=0) is taken into account in the SCR used for calculation of the risk margin. It will include all 'existing' business that is to be taken into account in technical provision best estimates (including any policies bound but not yet incepted by the valuation date). The underwriting risk in respect of non-obligated future business (not included within the technical provision best estimate) is not taken into account.

[1] See article 77 (5) of the Directive 2009/138/EC

The SCR used for calculation of the risk margin should consist of:

- Underwriting risk (both reserve and premium risk) with respect to the existing business. This includes any business associated with legally obliged future premiums, as set out in the Premium Provisions section
- Counterparty default risk with respect to the ceded reinsurance and special purpose vehicles
- Operational risk
- Unavoidable market risk, excluding interest rate risk

This is therefore a subset of the actual SCR, ignoring new business and some portion of market risk.

"Unavoidable" market risk (excluding interest rate risk) must be included. Though assets are assumed to be de-risked under the notional transfer, there would still be some market risk following an assumed inability to perfectly match the cashflows of long term liabilities. It is not necessary to fully replicate cashflows to eliminate the market risk SCR. Replication of best estimate cashflows is sufficient to reduce market risk SCR to an immaterial level for the purposes of the risk margin calculation. For non-life liabilities and short-term life insurance obligations, the market risk SCR for the risk margin calculation can usually be reduced to zero and hence is all "avoidable".

Internal models may be used to calculate the SCR as long as at least the risks listed above are included. Where used, the internal model needs to be able to isolate this subset from the total SCR.

The PRA notes PPOs are eligible for the 0.9 risk tapering factor given they are treated as life insurance obligations within the existing regime. Insurance firms may have a pipeline of claims which could become PPOs, of which a proportion will be settled as a cash lump-sum and the rest as PPOs. Firms' best estimate liability calculations are based on a probabilistic expectation of how these claims will settle. The PRA does not object to firms adopting a similar approach in the risk margin calculation, where the 0.9 risk tapering factor is applied to potential PPO obligations on a probabilistic basis.

Some firms may not have systems in place to project capital requirements on PPO obligations only, ie separate from all other non-life lines of business, for the purpose of applying the 0.9 risk tapering factor. The PRA encourages such firms to propose potential simplifications to their risk margin calculation to their relevant supervisory contact. Further information can be found in the following publication.

11.3 Calculation of the risk margin

The SCR for each future year until business is run off must be projected. Each of the future SCRs (strictly, subsets of the SCRs) will be multiplied by the cost of capital rate to get the cost of holding these future SCRs.

This series of associated costs of holding the capital will be discounted to the valuation date (t=0) using a risk-free yield curve. The sum of the discounted values is the risk margin.

Undertakings are required to allocate the whole risk margin to Solvency II minimum line of business level, based on the segmentation laid down by the implementing measures. The approach suggested is as follows:

Calculate the risk margin for the whole business of the undertaking

Allocate this total risk margin between lines of business, taking into account the contribution of that line of business to the SCR

The allocation to line of business should reflect the contribution of each line of business to the overall SCR during the lifetime of the business. A first step in analysing such a contribution can involve calculating the SCR for each line of business in isolation. Where the relative SCRs do not vary significantly over time the following simplification:

$$CoCM_{LOB} = \left(\frac{SCR_{RU,LOB}(0)}{\sum_{LOB} SCR_{RU,LOB}(0)} \right) * CoCM$$

Where:

$CoCM_{LOB}$ is the risk margin allocated to line of business, LOB

$SCR_{RU,LOB}(0)$ is the SCR of the reference undertaking for line of business, LOB, at time t=0

CoCM is the risk margin for the whole business

The segmentation may differ from the one laid down by the implementing measures. However, the risk margin shall always be valued at least at the Solvency II lines of business level. It is likely that agents will need to aggregate risk

groups used within the internal model to the Solvency II minimum lines of business before applying risk margin calculations or allocations.

With respect to non-life business, the risk margin should not be calculated separately for premium provisions and claim provisions. Managing agents may consider it appropriate to allocate risk margin entirely to reserve risk, or to apply some of the credit to premium risk as well. Lloyd's requires managing agents to state in the supporting SCR methodology document which approach has been used and how much has been allocated to reserve and/or premium risk. This will allow Lloyd's to adjust appropriately when assessing the aggregation of premium and reserve risk. Lloyd's expects that the allocation should not result in either premium or reserve risk contributing a profit to the ultimate SCR.

The risk margin is defined net of reinsurance only. Some forms of whole account reinsurance will therefore have to be allocated in a pragmatic and justifiable way to the lines of business for calculation of risk margins (as with the calculation of the best estimate). If an internal model is used, the risk margins can be calculated on gross and RI separately, if necessary.

11.4 Cost of capital rate

The cost of capital rate used is an additional annual rate, above the relevant risk-free rate, that a (re)insurance undertaking would incur holding an amount of eligible own funds equal to the SCR necessary to support the run-off of its obligations. In the general methodology set out above, this rate is applied to the subset SCR in each future period. The risk margin should ensure the technical provisions can be transferred even in a stressed scenario. The cost of capital rate should therefore be a long-term rate, reflecting both periods of stability and stress, and should not be adjusted to follow market cycles.

The rate will be the same for all (re)insurance undertakings and is currently 4%. This is a change from the 6% assumed for valuations prior to 31 December 2023.

11.5 Simplifications

The requirements on simplifications set out below are derived from corresponding EIOPA guidelines on the hierarchy of risk margin techniques.[1]

In general, the risk margin calculations and, accordingly, the underlying projection of future SCRs should be as accurate as possible. If a managing agent is able to carry out a full projection of all future SCRs, for any or all lines of business, then it is expected to do so.

However, precise calculation of risk margins is likely to be difficult for many managing agents. Simplified methods are expected to be widely used in practice. To allow for this, the following hierarchy of simplifications regarding the methods to be used for projecting SCRs for each line of business should be used. Ranging from the most complex to the simplest, these are:

1 Approximate the individual risks or sub-risks within some or all modules and sub-modules to be used for the calculation of future SCRs
2 Approximate the whole SCR for each future year, e.g. by using a proportional approach
3 Estimate all future SCRs at once, e.g. by using an approximation based on the duration approach
4 Approximate the risk margin directly as a percentage of the best estimate

The PRA issued a Supervisory Statement 5/14 in April 2014 and this includes:

2.2 The PRA considers the risk margin to be a significant part of the technical provisions calculation, so it is important that firms consider whether the methods used there are in fact adequate. This should include consideration of the underlying assumptions.

2.3 For example, firms should not approximate the future Solvency Capital Requirements used to calculate the risk margin as proportional to the projected best estimate unless this has been shown not to lead to a material misstatement of technical provisions.

We agree with this sentiment and before applying a simplified method to calculate the risk margin, managing agents must ensure that the method is proportionate to the underlying risks and compatible with the Solvency II valuation principles. The level of complexity used to calculate the risk margin is not required to go beyond that necessary to capture the risk profile of the business.

When a managing agent has decided to use a simplified method, it should also consider whether the method could be used for the projections of the overall SCR or if the relevant sub-risks (e.g. underwriting, operation, reinsurance counterparty default) should be projected separately. In this context, the managing agent should also consider whether it should carry out the simplified projections of future SCRs individually for each future year or if it is possible to calculate all SCRs in one step.

11.5.1 Specific simplification: decayed run off method

We note that it is unlikely a proportionate approach will adequately capture the run off.

Questions that would lead to this conclusion are similar to:

– is reserve risk proportional to the reserves or does risk increase as the provisions get smaller? In reality relative risk increases as the size of a portfolio reduces

[1] Guidelines 61 and 62 of EIOPA level 3 guidelines BoS 14/166

– is operational risk really proportional to the technical provisions? In reality, certain risks like operational risk are relatively constant over time

With this in mind, agents need to consider either estimating the expected future development of individual risk components (e.g. reserve risk separately from operational risk). An alternative method is to estimate the "decay" effect by adjusting the proportionate run off.

Whilst the risk margin is not the largest element of technical provisions, the possible impact on the risk margin is significant. To illustrate, a simple example is used that includes a proportionate (or claims) run off, a square root decay of the claims run off and looking at risk components separately. This is just for illustration.

The simplified "risk based" approach assumes the following for different risk categories:

– 'Riskiness' of net provisions and reinsurance recoveries increases by 10% a year

– 20% of operational risk relates to provisions and the risk on these reduces, all other operational risk is constant

– No unavoidable market risk or premium risk

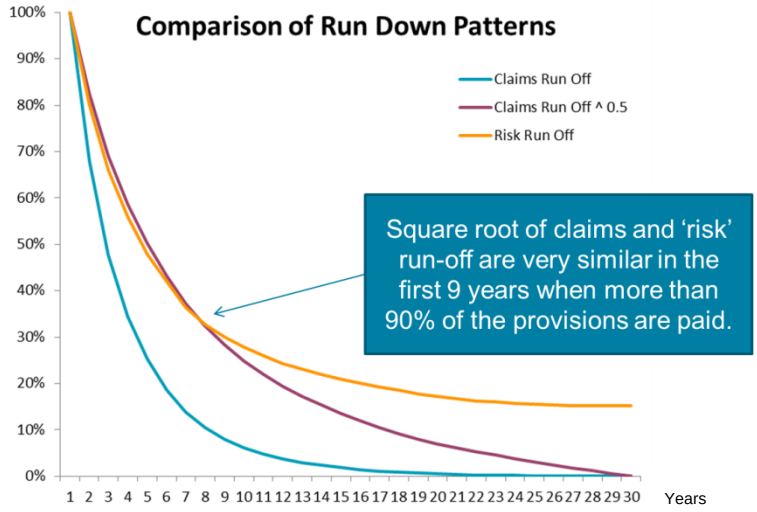
The following table shows results for the first 10 years:

Year	1	2	3	4	5	6	7	8	9	10
Claims Run-off	10,000	6,791	4,773	3,444	2,522	1,862	1,393	1,049	800	618
% Claims Remaining	100%	68%	48%	34%	25%	19%	14%	10%	8%	6%
SCR Run Down (Claims)	4,000	2,717	1,909	1,378	1,009	745	557	420	320	247
SCR Run Down (Claims^0.5)	4,000	3,296	2,763	2,348	2,009	1,726	1,493	1,296	1,131	994
SCR Run Down (Risk)	4,000	3,203	2,642	2,236	1,916	1,677	1,456	1,310	1,198	1,111

Under this simple example, the impact on the risk margin is significant

	Risk Margin	% Change from Claims RO
Claims	794	100%
Claims ^ 0.5	1,401	176%
Risk	1,603	202%

And the shape of the differing approaches can be shown as follows:



Based on this simple approach it does seem like the square root approach appears to produce a reasonable match to the 'risk' approach for most of the most significant years. However this was based on crude assumptions and more justification would be needed in practice.

11.6 Quarterly calculations

The following are based on EIOPA's technical specifications produced in April 2014[1].

Since full calculations of the SCR are not necessarily carried out during the year, a possible simplification may be to fix the risk margin at a given point in time (t) during the forthcoming year (i.e. CoCM(t)) basing on the assumption that the ratio of the risk margin to the best estimate technical provisions (net of reinsurance) will stay constant during the year. The Risk Margin at a given point in time during the forthcoming year (i.e. CoCM(t)) could be calculated as follows:

$$CoCM(t) = CoCM(0) \times BE_{Net}(t) / BE_{Net}(0), \qquad 0<t<I$$

Where:

CoCM(0) is the risk margin, as calculated at time t=0 for the reference undertaking's portfolio of (re)insurance obligations in an individual line of business.

$BE_{Net}(0)$ and $BE_{Net}(t)$ are the best estimate net technical provisions, as assessed at times t=0 and t respectively, for the reference undertaking's portfolio of (re)insurance obligations.

It may be inappropriate to apply this formula in cases where the best estimates are expected to decrease, in relative terms to the business, e.g. in cases of negative best estimates or best estimates close to zero. Furthermore, there may be situations, such as run-off undertakings, that may deserve specific analysis.

Another situation where this approach may not be appropriate is when undertaking's business is expected to strongly increase in the short term, leading to both a lower best estimate (due to allowance for profit at inception) and a higher duration of the obligations: in this case, in fact, this simplification leads to a lower risk margin, while an increased risk margin would be expected due to the increased duration of the liabilities.

Moreover, the assumption of stability of the SCR to the best estimate over time could not be met if the undertaking has commuted a reinsurance treaty or when a purchase of a book of business causes a change in the proportional split. Accordingly, in cases where the above simplification is not appropriate, it may be a better approximation to let the risk margin stay unchanged during the year (i.e. CoCM(t) = CoCM(O)).

A combination of the two approaches described above is also possible, e.g. by fixing the risk margin at the beginning of the year as a floor for the risk margin to be used during the year, that is:

$$CoCM(t) = \max\{(CoCM(O)/BE_{Net}(O)).BE_{Net}(t); CoCM(O)\}.$$

In some circumstances, it may be unavoidable for the undertaking to apply a valuation method which leads to an increased level of estimation uncertainty in the valuation. This could be the case where e.g. there is only insufficient pertinent past experience data available to derive or validate assumptions or in case of portfolios with high-severity-low-frequency claims.

11.7 Potential practical issues

If the internal model is used to derive the SCRs underlying the allocation of risk margins, the SCRs will need to be output by Solvency II line of business, as used for technical provision best estimates. This may be difficult if the segmentation used for the SCR in the internal model doesn't match the way risks are modelled in the internal model.

Outputting an SCR that is essentially a subcomponent of the actual internal model SCR (i.e. excluding new business, market risk, non-reinsurance counterparty default risk) may require extra flexibility in model design.

Decisions over use of simplifications should be made independently for each line of business. Use of different methodologies for different lines could prove to be complicated.

Using the higher-tier methods for calculating SCRs (shown in the list of simplifications shown above) may prove to be difficult. "Fuller" methods will require sophisticated calculations and will probably need intensive computing power. The choice of appropriate simplifications may have changed recently as approaches have developed.

We note that some Managing Agents may not have systems in place to project capital requirements on PPO obligations only, i.e. separate from all other non-life lines of business, for the purpose of applying the 0.9 risk tapering

[1] Technical Specification for the Preparatory Phase EIOPA 14/209

factor. Our expectation is that Managing Agents should consider the materiality of PPOs and potential PPOs within their reserves when considering whether to apply the risk tapering factor.

11.8 Key Considerations

11.8.1 Possible methodologies

Methodologies will vary greatly by the level of sophistication of an internal model and the outputs it is able to produce. The hierarchy of simplifications suggested by EIOPA should be used to determine what approach should be followed. Decisions about the use of simplifications should be made with justification.

All methods will need to consider the following steps:

Estimate an SCR for existing business and for the risk modules required
This will exclude new business, avoidable market risk (including all interest rate risk) and non-reinsurance counterparty default risk.

An appropriate adjustment should be made for any unincepted business (if not already incorporated within the SCR)

Project what this SCR will be at each future point in time
An appropriate simplified approach will be used for many undertakings.

Apply the cost of capital and discount to the valuation date.
Discounting should be based on the appropriate risk-free interest rate term structure for the currency of obligations being considered.

Lloyd's proposes that unless an internal model that is capable of producing projected SCRs is available, then at least a decayed run off approach should be considered. Any final choice still needs to be justified.

12 ASSUMPTIONS AND USE OF EXPERT JUDGEMENT

The majority of this section's requirements are based on Article 84 of the Level 1 texts, Articles 2, 19 & 22 of the Level 2 texts and Guidelines 7, 15 & 24 of the Level 3 Guidance on the valuation of technical provisions.

12.1 Assumptions underlying technical provision calculation

Assumptions used within the calculation of technical provisions must be set consistently both with information provided by financial markets and "generally available" data on (re)insurance risks. All assumptions, both explicit and implicit, must be considered through all stages of the best estimate calculation:

Data

Analysis

Modelling

Validation

12.2 Appropriateness of assumptions

Certain general principles apply in assessing the appropriateness of an assumption:

1 Assumptions must be set in a realistic manner.

2 Assumptions should be derived consistently over time without arbitrary changes. Any changes made, and the impact of these changes, should be traced, explained, documented and quantified.

3 Assumptions should be derived consistently across homogeneous risk groups and lines of business.

4 Expert judgement should be taken into account when setting assumptions; this is explained further below.

5 The data on which the assumption is based should be credible for the purpose and meet the statistical quality standards with regard to appropriateness, completeness and accuracy.

6 Assumptions should be documented, including details of the suitability of data sources, derivation of assumptions and limitations in the results.

7 Assumptions shall make appropriate allowance for possible trends or future changes (undertaking/portfolio specific factors as well as legal, social, economic or environmental factors).

8 The level of documentation should reflect the materiality of the assumption.

9 Where external data is used to support an assumption, the external data source should satisfy the criteria set out below:

10 Assumptions should use the managing agent's knowledge of the business and practices for managing the business.

11 Assumptions should be easy for third parties to understand, well documented and should consider the internal/external data or qualitative information used as a basis. Reasons for making the assumptions should be sufficiently documented.

12 **The documentation of any assumptions or methodologies underlying any external data used should be available so that the data can be validated. In particular, it should be possible to assess the relevance of the data given the characteristics of the underlying insurance portfolio.**

13 **When external data is relied upon in preference to internal data, the managing agent should be able to demonstrate that the external data better reflects the underlying risk profile.**

14 **When data is produced sufficiently frequently, it should be analysed for trends, variations over time and variations between observations. Depending on the results of this analysis, adjustments to the data may be required.**

15 **Appropriate methods should be used to validate external data, with standards equivalent to those applying to the validation of internal data.**

12.3 Assumptions consistent with generally available (re)insurance risks

Generally available data refers to a combination of:

Internal data, consisting of undertaking-specific data and portfolio-specific data.

External data sources such as industry or market data.

All relevant data (whether internal or external), to which an agent has reasonable access, should be taken into account to arrive at the assumption best reflecting the characteristics of the underlying insurance portfolio.

The extent to which external data is taken into account should be based on the availability, quality and relevance of external data and the amount and quality of internal data. Assumptions should be based solely on external (or internal) data only if there is no relevant internal (or external) data which could be used. Where both are available, expert judgement should be applied in deciding whether to use internal data, external data or a blend of both.

11.3.1 Appropriateness of assumptions

The appropriateness of any assumption should be determined according to the principles set out below.

12.4 Assumptions consistent with financial market information

Assumptions used must be consistent with financial market information. Such assumptions include:

Interest rate term structures

Currency rates of exchange

Market inflation rates (CPI, Wage etc.)

Economic scenario files

Managing agents will need to demonstrate that assumptions are calibrated appropriately relative to information provided by financial markets. Any implicit assumptions within reserving methodologies will need to be considered. For example, the implicit claims inflation within commonly-used chain ladder techniques. Methods must be capable of applying different assumptions within the calculation if financial market information suggests that implicit assumptions are not appropriate.

Market-consistent asset models used to produce assumptions must reproduce prices that can be verified in the market, and be arbitrage free. These market-consistent asset models must take into account the nature and term of liabilities, the current risk-free term structure and an appropriate volatility measure.

The calibration process should use market prices from financial markets that are deep, liquid and transparent. If that is not possible, other market prices may be used. In this case, any distortions should be identified and corrected for in a deliberate, reliable and objective manner. A financial market is deep, liquid and transparent if it meets the requirements set out in Article 1 of the implementing measures (guideline 57 of EIOPA guidance). Where calibration cannot be carried out against a deep, liquid and transparent market, the managing agent must be able to demonstrate that the calibration is appropriate and in line with the criteria set out in the Level 1 text.

The calibration of such assumptions may be based on adequate actuarial and statistical analysis of economic variables.

12.5 Use of expert judgement

Expert judgment may apply in respect of data used in the calculation of the best estimates, the assumptions underlying the calculations, and the method applied to derive the best estimate. Expert judgement is a key element when setting technical provisions.

General conditions about the application of expert judgement

Expert judgement may be used as long as a number of conditions are met:

Expert judgement should be compatible with all EIOPA advice regarding technical provisions.

Use of expert judgement should not replace appropriate collection, processing and analysis of data according to EIOPA advice on data quality standards.

Expert judgement should not be used in isolation unless there is no reliable alternative.

If expert judgement is applied in isolation or has a significant impact on the best estimates, managing agents must test reasonable alternative assumptions to ensure the selected assumption appropriately reflects uncertainty in the outcome.

Persons applying expert judgment should have adequate experience and sufficient relevant knowledge and understanding of the subject.

The actuarial function will decide on the application of expert judgement.

12.5.1 Documentation on the use of expert judgement

Expert judgement should be justified, explained and validated. According to the proportionality principle, the process leading to the use of expert judgment should be documented in such a manner that the document makes possible the accountability and verification of the expert judgment. The documentation should reflect:

the inputs on which expert judgment is based;

the objectives and decision criteria used;

any material limitations and the steps taken, if any, to mitigate the effect of such limitations; and

the validation and back-testing envisaged or carried out for the expert judgment.

Users of results of expert judgement should receive clear and comprehensive information of the existence of the expert judgement and any relevant information on its content, degree of reliance and limitations (including appropriate sensitivity analysis).

12.5.2 Tests of the expert judgement

Expert judgement should:

Be back-tested with additional experience gained or any emerging information.

Be, where possible, benchmarked by comparing it with other expert opinions, either internally (provided the expert is independent of the original expert) or externally (taking due account of any potential conflicts of interest).

Significant elements of expert judgment should be subject to a sensitivity analysis.

12.6 Potential practical issues

It will be challenging to adequately quantify, validate and document the assumptions implicit within certain reserving methodologies. Different homogeneous risk groups are likely to have significantly different assumptions implicit within the reserving methodologies.

It is accepted that insurance data may not always be fully appropriate, complete and accurate. Therefore judgement will almost always be needed.

Processes for quantifying impact of changes in assumptions can be complex.

Assumptions used should be consistent with those used in the internal model.

Consideration of the assumptions at every stage of the process is likely to involve significantly more work than current practices.

The selection of best estimates will always be subjective and will in reality lead to a range of best estimates.

Use of external data requires that reliance can be placed on the provider’s data validation processes. Even if it cannot be adequately validated, external data may still be better than internal data.

13 VALIDATION AND BACK-TESTING

The majority of this section's requirements are based on Article 81 of the Level 1 text, Articles 29 & 264 of the Level 2 texts and Guidelines 8 & 83-87 of the Level 3 Guidance on the valuation of technical provisions.

13.1 Validation

Validation techniques are defined as the tools and processes used throughout the setting of technical provisions to ensure that the valuation methods, assumptions and results of the technical provision calculation are appropriate and relevant. They can be qualitative as well as quantitative.

Managing agents must use validation techniques throughout the calculation of the best estimate in order to:

Validate the amounts of the technical provisions.

Ensure the applicability and relevance of the methods and assumptions applied.

Ensure that the actuarial methods and statistical methodologies are appropriate to the nature, scale and complexity of the risks supported by the syndicate.

Regularly compare against experience the best estimate and assumptions underlying the calculations.

Validation methods assist in the calculation of the best estimate by:

Encouraging understanding of how the cash-flows may emerge in the future and tracing any flaws in the valuation process.

Justifying the applicability and relevance of methods used in the calculation of the best estimate.

Validating the appropriateness, completeness and accuracy of assumptions and modelling used in the calculation

Testing the valuation process itself

Managing agents must consider the validation methods which are most appropriate to ensure the above requirements are met.

The validation process should be proportionate, considering the significance of the impact on the value of the technical provisions. It should be performed regularly, and be dynamic to allow refinement of validation processes.

The validation process should include appropriate documentation and should be overseen by an expert who fulfils requirements specified for providing expert judgement. The actuarial function is responsible for the validation process.

13.2 Requirements for validation

Validation should be carried out at sufficient granularity. For non-life insurance, this would ideally be at the level of homogeneous risk groups. For life insurance, this is at least at the level of product types. The validation should be carried out separately for the gross best estimate and for reinsurance recoverables, and also for claims provisions and premium provisions.

All relevant and material assumptions should be validated and, to the extent that it is statistically feasible, for each such assumption separately. The appropriateness of assumptions should be determined according to the following criteria:

Assumptions must be realistic.

Assumptions should be derived consistently from year to year without arbitrary changes.

Expert judgement may be used.

The data on which assumptions are based should be appropriate, complete and accurate.

Assumptions must be documented, and the level of supporting documentation must be consistent with materiality.

When based on external data, a number of checks must have been carried out.

Validation should be used to identify emerging features and trends in the historical data, to validate underlying assumptions, to test the quality of fit and appropriateness of the valuation model etc.

Validation should be carried out at least once a year and in any case where there are indications of substantial changes. Validation may be needed between best estimate calculations in response to significant changes in the external environment, assumptions or results of goodness of fit test results. This, however, may not involve a "full validation" but rather monitor for possible items requiring validation (through monitoring experience versus expectations).

13.3 Back-testing or comparison against experience

Back-testing techniques must be applied to ensure that the best estimate and the assumptions underlying its calculation are regularly tested against emerging experience.

This is useful for two purposes:

As a posterior validation of expert judgement

To check the validity of the usual underlying assumption that past performance is a good indicator of future performance

Any significant deviations between actual and predicted values identified through back-testing must be analysed to determine their underlying causes. The cause may be a consequence of random variation, a systemic effect, assumption error, parameter error or a combination of factors. Depending on the cause identified in each instance, the back-testing may imply that an adjustment to the calculation method is needed.

13.4 Potential practical issues

The validation needs to be completed by an "independent" function not directly involved in setting the technical provisions. This may not be possible for smaller syndicates where proportionality may apply. However, objective challenge must be retained. For larger syndicates, the validation process will need to be carefully considered.

13.5 Key Considerations

13.5.1 Possible methodologies: Validation

There are many validation tests currently available and selection of these will be part of the reserving process. For example

Chain-ladder: the assumption on a unique loss development factor from one column to another can be tested by plotting cumulative values of column k and k+1 on the x and y axes, plotting the line y = a*x (where a is the LDF), and see if the points roughly align on the line

Chain-ladder: if no explicit inflation assumption is made, it should be demonstrated that the implicit assumption of a uniform inflation is valid

Individual large loss selections can be compared to underlying exposures

Expense assumptions can be compared to budgets

Options and Guarantees: can compare with the price of a portfolio of market instruments created to replicate the contract (if such a portfolio is available)

13.5.2 Possible methodologies: Back-testing

One of the strongest tools for back-testing is to use comparisons of actual and expected experience. The selected models need to be demonstrably suitable for projecting liabilities.

It is expected the actual versus expected analyses would be conducted gross (and undiscounted) but can be net results. The segmentation should be at least by Solvency II line of business level.

Other tools used for back-testing will include analysis of change and unwinding of discount rates.

14 DATA IMPLICATIONS

The majority of this section's requirements are based on Article 82 of the Level 1 texts, Articles 19-21 & 27 of the Level 2 texts and Guidelines 1-6, 8-14 & 16 of the Level 3 Guidance on the valuation of technical provisions.

14.1 Data quality requirements

Level 1 text: Article 82 – Data quality and application of approximations, including case-by-case approaches, for technical provisions

Member States shall ensure that insurance and reinsurance undertakings have internal processes and procedures in place to ensure the appropriateness, completeness and accuracy of the data used in the calculation of their internal provisions.

14.1.1 Definition of the term "data"

"Data" in this context refers to all the non-qualitative information needed to carry out a valuation of technical provisions. Assumptions are not regarded as data, but data is normally key to the development of assumptions.

14.1.2 General requirements on data quality in the context of valuing technical provisions

Managing agents should make all efforts to ensure that the data available for the valuation of technical provisions is as appropriate, complete and accurate for that purpose as possible. The combination of accuracy, completeness and appropriateness of the data should be sufficient to support the application of adequate provisioning methodologies.

Managing agents should assess and monitor the quality of the data used in the valuation of technical provisions (including data used to set a particular assumption). This assessment should be carried out on the basis of the three criteria: appropriateness, completeness and accuracy.

Internal processes and procedures need to cover the systems for data quality management and the collection, storage and processing of the data. These data management systems will usually need to be formalised.

The degree of appropriateness, completeness and accuracy of the data should be consistent with the principle of proportionality. However, application of the proportionality principle should not lead to lower incentives for improving data quality.

Assessment of data quality with regard to appropriateness and completeness should be done at portfolio level, consistent with the level of segmentation applied in the calculation of technical provisions. It should also be performed at a more granular level where relevant including, if necessary, analysis relating to individual items.

Assessment of data quality with regard to accuracy should be done at the level of individual data items. The assessment of data accuracy should include appropriate cross-checks and tests as to its consistency with other relevant data and with the same data at different points in time.

Under Solvency II, the actuarial function is required to assess and "review" the sufficiency and quality of data used in the calculation of technical provisions and determine if it appears to be reasonable and consistent for the purposes of the analysis. The actuarial function's assessment should consider the level of appropriateness, accuracy and completeness of the available data and convey recommendations on improving data quality, where appropriate. Data auditing should be performed by the internal audit function. External auditors will also be required to audit specific sets of data and provide formal tests relating to data accuracy.

14.1.3 Appropriateness of data

Data is considered appropriate if:

It is suitable for the intended purpose; and

It is relevant to the portfolio of risks being analysed.

Hence, to be appropriate for valuation purposes, data needs to be representative of the portfolio of liabilities being valued and suitable to be used to estimate the cash-flows from the liabilities (consistent with a prospective view on the behaviour of the relevant risks).

For elements of the calculation of technical provisions, fully appropriate data may not exist. In this circumstance expert judgement is required to determine the most appropriate data available (allowing for realistic costs considerations), to factor in the limitations arising from any data shortfall in the calculation and results. It is important that expert judgement and limitations are adequately communicated and this will be the responsibility of the actuarial function.

14.1.4 Completeness of data

Data is considered complete if:

It allows for the recognition of all the main homogeneous risk groups within the liability portfolio;

It has sufficient granularity to allow for the identification of trends and to the full understanding of the behaviour of the underlying risks (to a level sufficient for valuation purposes); and

If sufficient historical information is available for the application of adequate valuation methodologies.

14.1.5 Accuracy of data

Data is considered accurate if:

It is free from material mistakes, errors and omissions;

The recording of information is adequate, performed in a timely manner and is kept consistent across time;

A high level of confidence is placed on the data; and

The managing agent is able to demonstrate that it recognises the data set as credible by using it throughout its operations and decision-making processes.

The assessment of data accuracy should include appropriate cross-checks and tests as to its consistency with other relevant data and with the same data at different points in time.

Keeping the recording of data consistent across time will be a significant challenge. For example, adjustments made can be very different across time, IT systems may change (or have changed historically), and the data of newly acquired entities may be brought into the main system. It is also important to note situations where data recording is not kept consistent, but there is no impact on accuracy. Expert judgement is again key in this area.

14.2 Deficiencies in data

Not all data may meet these criteria, either because of:

the nature or size of the portfolio, for example:

A low number of claims due to low frequency;

Insufficient history in a new company or line of business;

Small volume of business;

Historical data no longer adequate due to environment changes; or

deficiencies in internal processes, for example:

IT mistakes;

High collection costs; or

A lack of control over data due to outsourcing of services or sales channel involving intermediaries.

Where a syndicate's internal data provides an inadequate basis for calculating technical provisions, the managing agent should assess the reasons and what it can do to increase the quality and quantity of the data.

The suggested courses of action following such an assessment are:

Where the lack of data is related to deficiencies in processes and procedures (both internal and those involving third parties): prepare and implement an appropriate plan to remedy the situation and improve the collecting, storing and validation of the data.

Where the deficiency is related to the quality of the data: the managing agent should consider if adjustments could be made to the data to improve its quality. Any such adjustments should be carefully justified and documented and the integrity of the raw data should be protected. Agents should also consider whether any external data could be used.

Where there is an unavoidable lack of internal data affecting appropriateness or completeness, evaluate if further judgemental adjustments or assumptions may need to be applied to allow the valuation to be performed (using appropriate approximations).

In no case should the use of approximations be seen as an alternative to implementing appropriate systems and processes for collecting material relevant information, building historical databases and improving data quality.

The principle of proportionality means that where the nature, scale and complexity of risks are high, companies should pay increased attention to the standards and requirements regarding data management.

14.3 Data quality management

The process of data quality management is likely to be more rigorous than current practices. There will be large challenges in implementing the process, though ongoing management may be significantly less difficult. Data quality management should be an ongoing process comprising the following phases:

14.3.1 Definition of the data

Definition of the data comprises the identification of the needs in terms of data, a detailed description of the items that should be collected and the eventual relations between the different items. Managing agents should consider the difference between items that should be collected and items that are actually collected.

14.3.2 Assessment of the quality of the data

Assessment of the quality of the data involves the verification of its appropriateness, completeness and accuracy for the purpose of calculating technical provisions. This assessment should have due regard to the quality and performance of the channels used to collate, store, process and transmit data (including third party data). Checking the appropriateness criteria will require checking that the assumptions adequately reflect the uncertainty of cashflows (this can be done by carrying out goodness of fit tests). As well as objective measures and indicators, expert judgement is required to carry out this assessment.

14.3.3 Resolution of the problems identified

Any material problems arising from the above analysis should lead to the managing agent trying to solve them. The agent should then work towards the improvement of data collection, storage and other relevant processes so as to ensure the quality of future data. The data problems should be documented, including a description of possible solutions and assignment of responsibilities for actions relating to the selected solution.

14.3.4 Monitoring data quality

Data quality should be monitored periodically, focussing in particular on the relevant IT systems and the processes used to collect, store, transmit and process data. Where appropriate, adjustments or corrections should be applied, either qualitatively or quantitatively, depending on circumstances. The process of monitoring data quality can, to some extent, be based on objective measures; however, expert judgment is a key requirement.

Lloyd's expects that full data quality assessments should take place at least annually, with monitoring performed quarterly to determine whether updates of full assessments are required.

14.4 Internal processes on identification, collection and processing of data

Data should be identified, collected, stored and maintained on a comprehensive basis and the underlying processes and procedures should be transparent.

Data should be collected at a sufficiently granular level to support the application of adequate provisioning methodologies and to generate results of sufficient detail and robustness. Since provisioning sometimes needs to be done at contract or event level, this means that, normally, data will need to be available at contract or event level.

Relevant historical data should be retained and remain available.

Any adjustments to the original data, in particular the correction of any data errors and omissions, must be documented, as must the reasons for the adjustments. The original database should be maintained.

14.5 Issues of data quality in the context of a provisioning analysis and review

Considerations of data quality for the purpose of setting technical provisions, and any adjustments subsequently deemed appropriate, must necessarily be carried out at a level of granularity that reflects the specific methodology, assumptions or parameters under review.

However, the requirement to set up internal processes and procedures adequate to deliver quality data does not relate to such a granular level. This should be considered from the perspective of calculating technical provisions, without necessarily relating it to the application of particular methodologies.

In the particular case of external and market information, the verification of the three criteria implies:

Appropriateness and completeness: the assessment of these criteria is normally performed at the portfolio level. Where relevant, however, the assessment shall also be performed at a more granular level, including, if necessary, analysis relating to individual items. Managing agents are expected to verify that the inclusion of individual items of external and market information contribute towards the enhancement of the appropriateness and completeness criteria, having regard to the intended purpose of the analysis.

Accuracy: as individual items of external and market information have not been collected and compiled by the managing agent itself, the assessment of their accuracy is likely to be challenging. The verification of this criterion will have to consider the reliability of the sources of information and the consistency and stability of its process of collecting and publishing information across time.

Moreover, measurement of the quality and credibility of internal data should have regard to available industry or market data which is deemed comparable. Any material deviations should be identified and interpreted, for instance by referring to the specificities of the own portfolio being valued.

14.5.1 Role of internal/external auditors and actuarial function

External auditors will audit specific sets of data, in line with current techniques. As per Article 48 of the directive and Article 272 of the Delegated Acts, the actuarial function is expected to review data to check it is appropriate and consistent for the purposes of the analysis as well as ensuring that any data limitations are appropriately dealt with. The actuarial function should also judge how much credibility should be placed on historic data and other assumptions. The actuarial function should analyse unusual observations and outliers.

External data and benchmarks must be reviewed to ensure they are reliable enough to be used.

As per Article 47 of the directive and Article 271 of the Delegated Acts the internal audit function is responsible for the adequacy and effectiveness of the internal control systems.

14.6 Potential practical issues

14.6.1 Data quality

Assessing precisely whether the data quality is sufficient is likely to be judgemental and involve heavy use of the proportionality principle. It will be difficult to define an exact threshold of data quality which must be passed. This means documentation of decisions is essential.

In many cases, fully appropriate data will not be available and, in others, there may not be anything other than partially suitable data available. Deciding on whether the data quality requirements are met, given application of proportionality, will be a difficult task. This is no different to the current situation.

14.6.2 Data systems

In some syndicates, an extensive review and possible overhaul of data systems may be required. There may also be a need for bringing in data from underwriting systems for use as part of the technical provisions calculation.

Data systems will need to be fully understood by those who will be using them in technical provision calculations (particularly where new data items are being considered) and precise definitions of data items will be needed. For example, those working with “paid” claims data to project claims payment cashflows would need to know whether the data shows true cashflows or just the designation of a claim as ready for payment.

There needs to be consistency with technical provisions data and the internal model data.

14.7 Key Considerations

14.7.1 Possible methodologies

The current processes for data storage should be reviewed. Areas for particular attention should be:

Formation of data dictionary

Integration of data systems for different uses (ideally a single source)

Define roles (actuarial function and internal audit)

Test for appropriateness/completeness against proposed methods

14.7.2 Additional data requirements

Lloyd's will continue to consider introducing new risk codes to allow easier mapping to Solvency II requirements.

Prospective methods, potentially based on accident year projections, will need additional data items. Where possible, data should be stored at as granular a level as possible, to allow future modification to extracts as these methods develop.

15 DOCUMENTATION

The majority of this section's requirements are based on Article 265 of the Level 2 texts.

15.1 Documentation of technical provision calculation

Level 1 text: Article 84 - Appropriateness of the level of technical provisions

Upon request from the supervisory authorities, insurance and reinsurance undertakings shall demonstrate the appropriateness of the level of their technical provisions, as well as the applicability and relevance of the methods applied, and the adequacy of the underlying statistical data used.

All steps in the valuation process should be documented. Views of experts from other business areas should be built into a process of feedback.

Together with this documentation, agents should be able to demonstrate:

The robustness of the valuation process

The appropriateness of the level of technical provisions

The applicability of methods and assumptions applied

The adequacy of underlying data used.

All documents produced and used during the process of valuation of the best estimate of technical provisions that enable assessment of the appropriateness of the level of best estimate, as well as the applicability and relevance of the methods used, should be stored and made immediately available to the supervisor on request.

15.2 Potential practical issues

Documenting specific exclusions and selections is onerous due to the potential volumes involved. Establishing a formal documentation and feedback process may be a large step for some syndicates.

Proportionality is a key concept within Solvency II. However, the test standard that may be applied is whether another, suitably skilled, individual could reproduce the results based on the documentation and data alone.

The documentation standards are more specific than current requirements which may, in turn, lead to more formal procedures to be put in place.

Appendices

Appendix 1 Extracts from L1 & L2 text and guidelines from L3 text

Extracts from Level 1 text

Level 1 text

Directive of the European Parliament and of the Council on the taking-up and pursuit of the business of insurance and reinsurance (Solvency II)(Recast) – 25/11/2009 & 16/04/2014

Extracts from Article 44: Risk management

2 'Where insurance or reinsurance undertakings apply the matching adjustment referred to in Article 77b or the volatility adjustment referred to in Article 77d, they shall set up a liquidity plan projecting the incoming and outgoing cashflows in relation to the assets and liabilities subject to those adjustments.';

2a As regards asset-liability management, insurance and reinsurance undertakings shall regularly assess:

(a) the sensitivity of their technical provisions and eligible own funds to the assumptions underlying the extrapolation of the relevant risk-free interest rate term structure referred to in Article 77a;

(b) where the matching adjustment referred to in Article 77b is applied:
(i) the sensitivity of their technical provisions and eligible own funds to the assumptions underlying the calculation of the matching adjustment, including the calculation of the fundamental spread referred to in Article 77c(1)(b), and the possible effect of a forced sale of assets on their eligible own funds;

(ii) the sensitivity of their technical provisions and eligible own funds to changes in the composition of the assigned portfolio of assets;

(iii) the impact of a reduction of the matching adjustment to zero;

(c) where the volatility adjustment referred to in Article 77d is applied:
(i) the sensitivity of their technical provisions and eligible own funds to the assumptions underlying the calculation of the volatility adjustment and the possible effect of a forced sale of assets on their eligible own funds;

(ii) the impact of a reduction of the volatility adjustment to zero.

Extracts from Article 48: Actuarial function

1. Insurance and reinsurance undertakings shall provide for an effective actuarial function to:

(a) coordinate the calculation of technical provisions;

(b) ensure the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions;

(c) assess the sufficiency and quality of the data used in the calculation of technical provisions;

(d) compare best estimates against experience;

(e) inform the administrative, management or supervisory body of the reliability and adequacy of the calculation of technical provisions;

(f) oversee the calculation of technical provisions in the cases set out in Article 82;

(g) express an opinion on the overall underwriting policy;

(h) express an opinion on the adequacy of reinsurance arrangements; and

(i) contribute to the effective implementation of the risk-management system referred to in Article 44 (…).

2. The actuarial function shall be carried out by persons who have knowledge of actuarial and financial mathematics, commensurate with the nature, scale and complexity of the risks inherent in the business of the insurance or reinsurance undertaking, and who are able to demonstrate their relevant experience with applicable professional and other standards.

Extract from Article 75: Valuation of assets and liabilities

1. Member States shall ensure that, unless otherwise stated, insurance and reinsurance undertakings value assets and liabilities as follows:
(a) assets shall be valued at the amount for which they could be exchanged between knowledgeable willing parties in an arm's length transaction;
(b) liabilities shall be valued at the amount for which they could be transferred, or settled, between knowledgeable willing parties in an arm's length transaction.

When valuing liabilities under point (b), no adjustment to take account of the own credit standing of the insurance or reinsurance undertaking shall be made.2.

The Commission shall adopt implementing measures to set out the methods and assumptions to be used in the valuation of assets and liabilities as laid down in paragraph 1.

Those measures, designed to amend non-essential elements of this Directive by supplementing it, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 301(3).

Extracts from Article 76: General provisions

1. Member States shall ensure that insurance and reinsurance undertakings establish technical provisions with respect to all of their insurance and reinsurance obligations towards policyholders and beneficiaries of insurance or reinsurance contracts.

2. The value of technical provisions shall correspond to the current amount insurance and reinsurance undertakings would have to pay if they were to transfer their insurance and reinsurance obligations immediately to another insurance or reinsurance undertaking.

3. The calculation of technical provisions shall make use of and be consistent with information provided by the financial markets and generally available data on underwriting risks (market consistency).

4. Technical provisions shall be calculated in a prudent, reliable and objective manner.

5 Following the principles set out in paragraphs 2, 3 and 4 and taking into account the principles set out in Article 75(1), the calculation of technical provisions shall be carried out in accordance with Articles 77 to 82 and 86.

Extracts from article 77: Calculation of technical provisions

1. The value of technical provisions shall be equal to the sum of a best estimate and a risk margin (…)

2. The best estimate shall correspond to the probability-weighted average of future cash-flows, taking account of the time value of money (expected present value of future cash-flows), using the relevant risk-free interest rate term structure.

The calculation of the best estimate shall be based upon up-to-date and credible information and realistic assumptions and be performed using adequate, applicable and relevant actuarial and statistical methods.

The cash-flow projection used in the calculation of the best estimate shall take account of all the cash in- and out-flows required to settle the insurance and reinsurance obligations over the lifetime thereof.

The best estimate shall be calculated gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles. Those amounts shall be calculated separately (…).

3. The risk margin shall be such as to ensure that the value of the technical provisions is equivalent to the amount that insurance and reinsurance undertakings would be expected to require in order to take over and meet the insurance and reinsurance obligations.

4. *Insurance and reinsurance undertakings shall value the best estimate and the risk margin separately.*

However, where future cash flows associated with insurance or reinsurance obligations can be replicated reliably using financial instruments for which a reliable market value is observable, the value of technical provisions associated with those future cash flows shall be determined on the basis of the market value of those financial instruments. In this case, separate calculations of the best estimate and the risk margin shall not be required.

5. *Where insurance and reinsurance undertakings value the best estimate and the risk margin separately, the risk margin shall be calculated by determining the cost of providing an amount of eligible own funds equal to the Solvency Capital Requirement necessary to support the insurance and reinsurance obligations over the lifetime thereof.*

The rate used in the determination of the cost of providing that amount of eligible own funds (Cost-of-Capital rate) shall be the same for all insurance and reinsurance undertakings and shall be reviewed periodically.

The Cost-of-Capital rate used shall be equal to the additional rate, above the relevant risk-free interest rate, that an insurance or reinsurance undertaking would incur holding an amount of eligible own funds (…) equal to the Solvency Capital Requirement necessary to support insurance and reinsurance obligations over the lifetime of those obligations.

Extracts from article 77a: Extrapolation of the relevant risk-free interest rate term structure

The determination of the relevant risk-free interest rate term structure referred to in Article 77(2) shall make use of, and be consistent with, information derived from relevant financial instruments. That determination shall take into account relevant financial instruments of those maturities where the markets for those financial instruments as well as for bonds are deep, liquid and transparent. For maturities where the markets for the relevant financial instruments or for bonds are no longer deep, liquid and transparent, the relevant risk-free interest rate term structure shall be extrapolated.

The extrapolated part of the relevant risk-free interest rate term structure shall be based on forward rates converging smoothly from one or a set of forward rates in relation to the longest maturities for which the relevant financial instrument and the bonds can be observed in a deep, liquid and transparent market to an ultimate forward rate.

Extracts from article 77b: Matching adjustment to the relevant risk-free interest rate term structure

1. *Insurance and reinsurance undertakings may apply a matching adjustment to the relevant risk-free interest rate term structure to calculate the best estimate of a portfolio of life insurance or reinsurance obligations, including annuities stemming from non-life insurance or reinsurance contracts subject to prior approval by the supervisory authorities where the following conditions are met:*

(a) the insurance or reinsurance undertaking has assigned a portfolio of assets, consisting of bonds and other assets with similar cash-flow characteristics, to cover the best estimate of the portfolio of insurance or reinsurance obligations and maintains that assignment over the lifetime of the obligations, except for the purpose of maintaining the replication of expected cash flows between assets and liabilities where the cash flows have materially changed;

(b) the portfolio of insurance or reinsurance obligations to which the matching adjustment is applied and the assigned portfolio of assets are identified, organised and managed separately from other activities of the undertakings, and the assigned portfolio of assets cannot be used to cover losses arising from other activities of the undertakings;

(c) the expected cash flows of the assigned portfolio of assets replicate each of the expected cash flows of the portfolio of insurance or reinsurance obligations in the same currency and any mismatch does not give rise to risks which are material in relation to the risks inherent in the insurance or reinsurance business to which the matching adjustment is applied;

(d) the contracts underlying the portfolio of insurance or reinsurance obligations do not give rise to future premium payments;

(e) the only underwriting risks connected to the portfolio of insurance or reinsurance obligations are longevity risk, expense risk, revision risk and mortality risk;

(f) where the underwriting risk connected to the portfolio of insurance or reinsurance obligations includes mortality risk, the best estimate of the portfolio of insurance or reinsurance obligations does not increase by more than 5 % under a mortality risk stress that is calibrated in accordance with Article 101(2) to (5);

(g) the contracts underlying the portfolio of insurance or reinsurance obligations include no options for the policy holder or only a surrender option where the surrender value does not exceed the value of the assets, valued in accordance with Article 75, covering the insurance or reinsurance obligations at the time the surrender option is exercised;

(h) the cash flows of the assigned portfolio of assets are fixed and cannot be changed by the issuers of the assets or any third parties;

(i) the insurance or reinsurance obligations of an insurance or reinsurance contract are not split into different parts when composing the portfolio of insurance or reinsurance obligations for the purpose of this paragraph.

Notwithstanding point (h) of the first subparagraph, insurance or reinsurance undertakings may use assets where the cash flows are fixed except for a dependence on inflation, provided that those assets replicate the cash flows of the portfolio of insurance or reinsurance obligations that depend on inflation.

In the event that issuers or third parties have the right to change the cash flows of an asset in such a manner that the investor receives sufficient compensation to allow it to obtain the same cash flows by re-investing in assets of an equivalent or better credit quality, the right to change the cash flows shall not disqualify the asset for admissibility to the assigned portfolio in accordance with point (h) of the first subparagraph.

2. *Insurance or reinsurance undertakings that apply the matching adjustment to a portfolio of insurance or reinsurance obligations shall not revert back to an approach that does not include a matching adjustment. Where an insurance or reinsurance undertaking that applies the matching adjustment is no longer able to comply with the conditions set out in paragraph 1, it shall immediately inform the supervisory authority and take the necessary measures to restore compliance with those conditions. Where the undertaking is not able to restore compliance with those conditions within two months of the date of non-compliance, it shall cease to apply the matching adjustment to any of its insurance or reinsurance obligations and shall not apply the matching adjustment for a period of a further 24 months.*

3. *The matching adjustment shall not be applied with respect to insurance or reinsurance obligations where the relevant risk-free interest rate term structure to calculate the best estimate for those obligations includes a volatility adjustment under Article 77d or transitional measure on the risk-free interest rates under Article 308c.*

Extracts from article 77c: Calculation of the matching adjustment

1. *For each currency the matching adjustment referred to in Article 77b shall be calculated in accordance with the following principles:*

   (a) the matching adjustment must be equal to the difference of the following:

   - *(i) the annual effective rate, calculated as the single discount rate that, where applied to the cash flows of the portfolio of insurance or reinsurance obligations, results in a value that is equal to the value in accordance with Article 75 of the portfolio of assigned assets;*
   - *(ii) the annual effective rate, calculated as the single discount rate that, where applied to the cash flows of the portfolio of insurance or reinsurance obligations, results in a value that is equal to the value of the best estimate of the portfolio of insurance or reinsurance obligations where the time value of money is taken into account using the basic risk-free interest rate term structure;*

   (b) the matching adjustment must not include the fundamental spread reflecting the risks retained by the insurance or reinsurance undertaking;

(c) notwithstanding point (a), the fundamental spread must be increased where necessary to ensure that the matching adjustment for assets with sub-investment grade credit quality does not exceed the matching adjustments for assets of investment grade credit quality and the same duration and asset class;

(d) the use of external credit assessments in the calculation of the matching adjustment must be in accordance with Article 111(1)(n).

2. For the purposes of paragraph 1(b), the fundamental spread shall be:

(a) equal to the sum of the following:

(i) the credit spread corresponding to the probability of default of the assets;

(ii) the credit spread corresponding to the expected loss resulting from downgrading of the assets;

(b) for exposures to Member States' central governments and central banks, no lower than 30 % of the long-term average of the spread over the risk-free interest rate of assets of the same duration, credit quality and asset class, as observed in financial markets;

(c) for assets other than exposures to Member States' central governments and central banks, no lower than 35 % of the long-term average of the spread over the risk-free interest rate of assets of the same duration, credit quality and asset class, as observed in financial markets. The probability of default referred to in point (a)(i) of the first subparagraph shall be based on long-term default statistics that are relevant for the asset in relation to its duration, credit quality and asset class. Where no reliable credit spread can be derived from the default statistics referred to in the second subparagraph, the fundamental spread shall be equal to the portion of the long-term average of the spread over the risk-free interest rate set out in points (b) and (c).

Extracts from article 77d: Volatility adjustment to the relevant risk-free interest rate term structure

1. Member States may require prior approval by supervisory authorities for insurance and reinsurance undertakings to apply a volatility adjustment to the relevant risk-free interest rate term structure to calculate the best estimate referred to in Article 77(2).

2. For each relevant currency, the volatility adjustment to the relevant risk-free interest rate term structure shall be based on the spread between the interest rate that could be earned from assets included in a reference portfolio for that currency and the rates of the relevant basic risk-free interest rate term structure for that currency. The reference portfolio for a currency shall be representative for the assets which are denominated in that currency and which insurance and reinsurance undertakings are invested in to cover the best estimate for insurance and reinsurance obligations denominated in that currency.

3. The amount of the volatility adjustment to risk-free interest rates shall correspond to 65% of the risk-corrected currency spread. The risk-corrected currency spread shall be calculated as the difference between the spread referred to in paragraph 2 and the portion of that spread that is attributable to a realistic assessment of expected losses or unexpected credit or other risk of the assets. The volatility adjustment shall apply only to the relevant risk-free interest rates of the term structure that are not derived by means of extrapolation in accordance with Article 77a. The extrapolation of the relevant risk-free interest rate term structure shall be based on those adjusted risk-free interest rates.

4. For each relevant country, the volatility adjustment to the risk-free interest rates referred to in paragraph 3 for the currency of that country shall, before application of the 65% factor, be increased by the difference between the risk-corrected country spread and twice the risk-corrected currency spread, whenever that difference is positive and the risk-corrected country spread is higher than 100 basis points. The increased volatility adjustment shall be applied to the calculation of the best estimate for insurance and reinsurance obligations of products sold in the insurance market of that country. The risk-corrected country spread is calculated in the same way as the risk- corrected currency spread for the currency of that country, but based on a reference portfolio that is representative for the assets which insurance and reinsurance undertakings are invested in to cover the best estimate for insurance and reinsurance obligations of products sold in the insurance market of that country and denominated in the currency of that country.

5. The volatility adjustment shall not be applied with respect to insurance obligations where the relevant risk-free interest rate term structure to calculate the best estimate for those obligations includes a matching adjustment under Article 77b.

Extracts from article 77e: Technical information produced by the European Insurance and Occupational Pensions Authority

3. Where the technical information referred to in paragraph 1 is adopted by the Commission in accordance with paragraph 2, insurance and reinsurance undertakings shall use that technical information in calculating the best estimate in accordance with Article 77, the matching adjustment in accordance with Article 77c, and the volatility adjustment in accordance with Article 77d. With respect to currencies and national markets where the adjustment referred to in paragraph 1(c) is not set out in the implementing acts referred to in paragraph 2, no volatility adjustment shall be applied to the relevant risk- free interest rate term structure to calculate the best estimate.

Extracts from article 78: Other elements to be taken into account in the calculation of technical provisions

(1) All expenses that will be incurred in servicing insurance and reinsurance obligations;

(2) Inflation, including expenses and claims inflation;

(3) All payments to policy holders and beneficiaries, including future discretionary bonuses, which insurance and reinsurance undertakings expect to make, whether or not those payments are contractually guaranteed, unless those payments fall under Article 91(2).

Extracts from article 79: Valuation of financial guarantees and contractual options included in insurance and reinsurance contracts

When calculating technical provisions, insurance and reinsurance undertakings shall take account of the value of financial guarantees and any contractual options included in insurance and reinsurance policies.

Any assumptions made by insurance and reinsurance undertakings with respect to the likelihood that policy holders will exercise contractual options, including lapses and surrenders, shall be realistic and based on current and credible information. The assumptions shall take account, either explicitly or implicitly, of the impact that future changes in financial and non-financial conditions may have on the exercise of those options.

Extracts from article 80: Segmentation

Insurance and reinsurance undertakings shall segment their insurance and reinsurance obligations into homogeneous risk groups, and as a minimum by lines of business, when calculating their technical provisions.

Extracts from article 81: Recoverables from reinsurance contracts and special purpose vehicles

The calculation by insurance and reinsurance undertakings of amounts recoverable from reinsurance contracts and special purpose vehicles shall comply with Articles 76 to 80.

When calculating amounts recoverable from reinsurance contracts and special purpose vehicles, insurance and reinsurance undertakings shall take account of the time difference between recoveries and direct payments.

The result from that calculation shall be adjusted to take account of expected losses due to default of the counterparty. That adjustment shall be based on an assessment of the probability of default of the counterparty and the average loss resulting therefrom (loss-given-default).

Extracts from Article 82: Data quality and application of approximations, including case-by-case approaches, for technical provisions

Member States shall ensure that insurance and reinsurance undertakings have internal processes and procedures in place to ensure the appropriateness, completeness and accuracy of the data used in the calculation of their technical provisions.

Where, in specific circumstances, insurance and reinsurance undertakings have insufficient data of appropriate quality to apply a reliable actuarial method to a set or subset of their insurance and reinsurance obligations, or amounts recoverable from reinsurance contracts and special purpose vehicles, appropriate approximations, including case-by-case approaches, may be used in the calculation of the best estimate.

Extracts from Article 83: Comparison against experience

Insurance and reinsurance undertakings shall have processes and procedures in place to ensure that best estimates, and the assumptions underlying the calculation of best estimates, are regularly compared against experience.

Where the comparison identifies systematic deviation between experience and the best estimate calculations of insurance or reinsurance undertakings, the undertaking concerned shall make appropriate adjustments to the actuarial methods being used and/or the assumptions being made.

Extracts from Article 84: Appropriateness of Technical Provisions.

Upon request from the supervisory authorities, insurance and reinsurance undertakings shall demonstrate the appropriateness of the level of their technical provisions, as well as the applicability and relevance of the methods applied, and the adequacy of the underlying statistical data used.

Extracts from Article 85: Increase of Technical Provisions

To the extent that the calculation of technical provisions of insurance and reinsurance undertakings does not comply with Articles 76 to 83, the supervisory authorities may require insurance and reinsurance undertakings to increase the amount of technical provisions so that they correspond to the level determined pursuant to those Articles.

Extracts from article 129: Calculation of the Minimum Capital Requirement

4. Insurance and reinsurance undertakings shall calculate the Minimum Capital Requirement at least quarterly and report the results of that calculation to supervisory authorities. (…)

Extracts from the Delegated Acts (Level 2 texts)

Delegated Acts (Commission Delegated Regulations 2015/35) – relevant selections on the Technical Provisions

http://ec.europa.eu/internal_market/insurance/docs/solvency/solvency2/delegated/141010-delegated-act-solvency-2_en.pdf

General Provisions

Article 2 (Expert Judgement)

1. Where insurance and reinsurance undertakings make assumptions about rules relating to the valuation of assets and liabilities, technical provisions, own funds, solvency capital requirements, minimum capital requirements and investment rules, these assumptions shall be based on the expertise of persons with relevant knowledge, experience and understanding of the risks inherent in the insurance or reinsurance business.

2. Insurance and reinsurance undertakings shall, taking due account of the principle of proportionality, ensure that internal users of the relevant assumptions are informed about their relevant content, their degree of reliability and their limitations. For that purpose, service providers to whom functions or activities have been outsourced shall be considered to be internal users.

Article 7 Valuation assumptions

Insurance and reinsurance undertakings shall value assets and liabilities based on the assumption that the undertaking will pursue its business as a going concern.

Article 11 Recognition of contingent liabilities

1. Insurance and reinsurance undertakings shall recognise contingent liabilities, as defined in accordance with Article 9 of this Regulation, that are material, as liabilities.

2. Contingent liabilities shall be material where information about the current or potential size or nature of those liabilities could influence the decision-making or judgement of the intended user of that information, including the supervisory authorities.

Article 17 (Recognition and de-recognition of insurance and reinsurance obligations)

For the calculation of the best estimate and the risk margin of technical provisions, insurance and reinsurance undertakings shall recognise an insurance or reinsurance obligation at the date the undertaking becomes a party to the contract that gives rise to the obligation or the date the insurance or reinsurance cover begins, whichever date occurs earlier. Insurance and reinsurance undertakings shall only recognise the obligations within the boundary of the contract.

Insurance and reinsurance undertakings shall derecognise an insurance or reinsurance obligation only when it is extinguished, discharged, cancelled or expires.

Article 18 (Boundary of an insurance or reinsurance contract)

1. The boundaries of an insurance or reinsurance contract shall be defined in accordance with paragraphs 2 to 7.

2. All obligations relating to the contract, including obligations relating to unilateral rights of the insurance or reinsurance undertaking to renew or extend the scope of the contract and obligations that relate to paid premiums, shall belong to the contract unless otherwise stated in paragraphs 3 to 6.

3. Obligations which relate to insurance or reinsurance cover provided by the undertaking after any of the following dates do not belong to the contract, unless the undertaking can compel the policyholder to pay the premium for those obligations:

(a) the future date where the insurance or reinsurance undertaking has a unilateral right to terminate the contract;

(b) the future date where the insurance or reinsurance undertaking has a unilateral right to reject premiums payable under the contract;

(c) the future date where the insurance or reinsurance undertaking has a unilateral right to amend the premiums or the benefits payable under the contract in such a way that the premiums fully reflect the risks.

- *Point (c) shall be deemed to apply where an insurance or reinsurance undertaking has a unilateral right to amend at a future date the premiums or benefits of a portfolio of insurance or reinsurance obligations in such a way that the premiums of the portfolio fully reflect the risks covered by the portfolio.*
- *However, in the case of life insurance obligations where an individual risk assessment of the obligations relating to the insured person of the contract is carried out at the inception of the contract and that assessment cannot be repeated before amending the premiums or benefits, insurance and reinsurance undertakings shall assess at the level of the contract whether the premiums fully reflect the risk for the purposes of point (c).*
- *Insurance and reinsurance undertakings shall not take into account restrictions of the unilateral right as referred to in points (a), (b) and (c) of this paragraph and limitations of the extent to which premiums or benefits can be amended that have no discernible effect on the economics of the contract.*

4. Where the insurance or reinsurance undertaking has a unilateral right as referred to in paragraph 3 that only relates to a part of the contract, the same principles as defined in paragraph 3 shall apply to that part of the contract.

5. Obligations that do not relate to premiums which have already been paid do not belong to an insurance or reinsurance contract, unless the undertaking can compel the policyholder to pay the future premium, and where all of the following requirements are met:

(a) the contract does not provide compensation for a specified uncertain event that adversely affects the insured person;

(b) the contract does not include a financial guarantee of benefits.

6. For the purpose of points (a) and (b), insurance and reinsurance undertakings shall not take into account coverage of events and guarantees that have no discernible effect on the economics of the contract.

7. Where an insurance or reinsurance contract can be unbundled into two parts and where one of those parts meets the requirements set out in points (a) and (b) of paragraph 5, any obligations that do not relate to the premiums of that part and which have already been paid do not belong to the contract, unless the undertaking can compel the policyholder to pay the future premium of that part.

Data quality

Article 19 Data used in the calculation of technical provisions

1. *Data used in the calculation of the technical provisions shall only be considered to be complete for the purpose of Article 82 of Directive 2009/138/EC where all of the following conditions are met:*
   - *(a) the data include sufficient historical information to assess the characteristics of the underlying risks and to identify trends in the risks;*
   - *(b) the data are available for each of the relevant homogeneous risk groups used in the calculation of the technical provisions and no relevant data is excluded from being used in the calculation of the technical provisions without justification.*
2. *Data used in the calculation of the technical provisions shall only be considered to be accurate for the purpose of Article 82 of Directive 2009/138/EC where all of the following conditions are met:*
   - *(a) the data are free from material errors;*
   - *(b) data from different time periods used for the same estimation are consistent;*
   - *(c) the data are recorded in a timely manner and consistently over time.*
3. *Data used in the calculation of the technical provisions shall only be considered to be appropriate for the purpose of Article 82 of Directive 2009/138/EC where all of the following conditions are met:*
   - *(a) the data are consistent with the purposes for which they will be used;*
   - *(b) the amount and nature of the data ensure that the estimations made in the calculation of the technical provisions on the basis of the data do not include a material estimation error;*
   - *(c) the data are consistent with the assumptions underlying the actuarial and statistical techniques that are applied to them in the calculation of the technical provisions;*
   - *(d) the data appropriately reflect the risks to which the insurance or reinsurance undertaking is exposed with regard to its insurance and reinsurance obligations;*
   - *(e) the data were collected, processed and applied in a transparent and structured manner, based on a documented process that comprises all of the following:*
     - *i. the definition of criteria for the quality of data and an assessment of the quality of data, including specific qualitative and quantitative standards for different data sets;*
     - *ii. the use of and setting of assumptions made in the collection, processing and application of data;*
     - *iii. the process for carrying out data updates, including the frequency of updates and the circumstances that trigger additional updates;*
   - *(f) Insurance or reinsurance undertakings shall ensure that their data are used consistently over time in the calculation of the technical provisions.*
   -
   - *For the purposes of point (b), an estimation error in the calculation of the technical provisions shall be considered to be material where it could influence the decision-making or the judgement of the users of the calculation result, including the supervisory authorities.*
4. *Insurance and reinsurance undertakings may use data from an external source provided that, in addition to fulfilling the requirements set out in paragraphs 1 to 4, all of the following requirements are met:*
   - *(a) insurance or reinsurance undertakings are able to demonstrate that the use of that data is more suitable than the use of data which are exclusively available from an internal source;*
   - *(b) insurance or reinsurance undertakings know the origin of that data and the assumptions or methodologies used to process that data;*
   - *(c) insurance or reinsurance undertakings identify any trends in that data and the variation, over time or across data, of the assumptions or methodologies in the use of that data;*
   - *(d) insurance or reinsurance undertakings are able to demonstrate that the assumptions and methodologies referred to in points (b) and (c) reflect the characteristics of the insurance or reinsurance undertaking's portfolio of insurance and reinsurance obligations.*

Article 20 (Limitations of Data)

Where data does not comply with Article 19, insurance and reinsurance undertakings shall document appropriately the limitations of the data including a description of whether and how such limitations will be remedied and of the functions within the system of governance of the insurance or reinsurance undertaking responsible for that process. The data, before adjustments to remedy limitations are made to it, shall be recorded and stored appropriately.

Article 21 (Appropriate use of approximations to calculate the best estimate)

- *Where insurance and reinsurance undertakings have insufficient data of appropriate quality to apply a reliable actuarial method, they may use appropriate approximations to calculate the best estimate provided that all of the following requirements are met:*

a) the insufficiency of data is not due to inadequate internal processes and procedures of collecting, storing or validating data used for the valuation of technical provisions;

b) the insufficiency of data cannot be remedied by the use of external data;

c) it would not be practicable for the undertaking to adjust the data to remedy the insufficiency.

Assumptions underlying the calculation of technical provisions

Article 22 (General provisions)

1. Assumptions shall only be considered to be realistic for the purposes of Article 77(2) of Directive 2009/138/EC where they meet all of the following conditions:

(a) insurance and reinsurance undertakings are able to explain and justify each of the assumptions used, taking into account the significance of the assumption, the uncertainty involved in the assumption as well as relevant alternative assumptions;

(b) the circumstances under which the assumptions would be considered false can be clearly identified;

(c) unless otherwise provided in this Chapter, the assumptions are based on the characteristics of the portfolio of insurance and reinsurance obligations, where possible regardless of the insurance or reinsurance undertaking holding the portfolio;

(d) insurance and reinsurance undertakings use the assumptions consistently over time and within homogeneous risk groups and lines of business, without arbitrary changes;

(e) The assumptions adequately reflect any uncertainty underlying the cash flows.

- *For the purpose of point (c), insurance and reinsurance undertakings shall only use information specific to the undertaking, including information on claims management and expenses, where that information better reflects the characteristics of the portfolio of insurance or reinsurance obligations than information that is not limited to the specific undertaking or where the calculation of technical provisions in a prudent, reliable and objective manner without using that information is not possible.*

2. Assumptions shall only be used for the purpose of Article 77(3) of Directive 2009/138/EC where they comply with paragraph 1 of this Article.

3. Insurance and reinsurance undertakings shall set assumptions on future financial market parameters or scenarios that are appropriate and consistent with Article 75 of Directive 2009/138/EC. Where insurance and reinsurance undertakings use a model to produce projections of future financial market parameters, it shall comply with all of the following requirements:

(a) it generates asset prices that are consistent with asset prices observed in financial markets;

(b) it assumes no arbitrage opportunity;

(c) The calibration of the parameters and scenarios is consistent with the relevant risk-free interest rate term structure used to calculate the best estimate as referred to in Article 77(2) of Directive 2009/138/EC.

Article 23 (Future management actions)

1. Assumptions on future management actions shall only be considered to be realistic for the purposes of Article 77(2) of Directive 2009/138/EC where they meet all of the following conditions:

(a) the assumptions on future management actions are determined in an objective manner;

(b) assumed future management actions are consistent with the insurance or reinsurance undertaking's current business practice and business strategy, including the use of risk-mitigation techniques; where there is sufficient evidence that the undertaking will change its practices or strategy, the assumed future management actions are consistent with the changed practices or strategy;

(c) assumed future management actions are consistent with each other;

(d) assumed future management actions are not contrary to any obligations towards policy holders and beneficiaries or to legal requirements applicable to the undertaking;

(e) assumed future management actions take account of any public indications by the insurance or reinsurance undertaking as to the actions that it would expect to take or not take.

2. Assumptions about future management actions shall be realistic and include all of the following:

- *(i) comparison of assumed future management actions with management actions taken previously by the insurance or reinsurance undertaking;*
- *(ii) a comparison of future management actions taken into account in the current and in the past calculations of the best estimate;*
- *(iii) an assessment of the impact of changes in the assumptions on future management actions on the value of the technical provisions.*

- *Insurance and reinsurance undertakings shall be able to explain any relevant deviations in relation to points (i) and (ii) upon request of the supervisory authorities and, where changes in an assumption on future management actions have a significant impact on the technical provisions, the reasons for that sensitivity and how the sensitivity is taken into account in the decision-making process of the insurance or reinsurance undertaking.*

3. *For the purpose of paragraph 1, insurance and reinsurance undertakings shall establish a comprehensive future management actions plan, approved by the administrative, management or supervisory body of the insurance and reinsurance undertaking, which provides for all of the following:*
   - *(a) the identification of future management actions that are relevant to the valuation of the technical provisions;*
   - *(b) the identification of the specific circumstances in which the insurance or reinsurance undertaking would reasonably expect to carry out each respective future management action referred to in point (a);*
   - *(c) the identification of the specific circumstances in which the insurance or reinsurance undertaking may not be able to carry out each respective future management action referred to in point (a), and a description of how those circumstances are considered in the calculation of technical provisions;*
   - *(d) the order in which future management actions referred to in point (a) would be carried out and the governance requirements applicable to those future management actions;*
   - *(e) a description of any on-going work required to ensure that the insurance or reinsurance undertaking is in a position to carry out each respective future management action referred to in point (a);*
   - *(f) a description of how the future management actions referred to in point (a) have been reflected in the calculation of the best estimate;*
   - *(g) a description of the applicable internal reporting procedures that cover the future management actions referred to in point (a) included in the calculation of the best estimate;*
4. *Assumptions about future management actions shall take account of the time needed to implement the management actions and any expenses caused by them.*
5. *The system for ensuring the transmission of information shall only be considered to be effective for the purpose of Article 41(1) of Directive 2009/138/EC where the reporting procedures referred to in point (g) of paragraph 3 of this Article include at least an annual communication to the administrative, supervisory or management body.*

Article 24 (Future discretionary benefits)

Where future discretionary benefits depend on the assets held by the insurance or reinsurance undertaking, undertakings shall base the calculation of the best estimate on the assets currently held by the undertakings and shall assume future changes of their asset allocation in accordance with Article 23. The assumptions on the future returns of the assets shall be consistent with the relevant risk-free interest rate term structure, including where applicable a matching adjustment, a volatility adjustment, or a transitional measure on the risk-free rate, and the valuation of the assets in accordance with Article 75 of Directive 2009/138/EC.

Article 26 (Policyholder behaviour)

- *When determining the likelihood that policy holders will exercise contractual options, including lapses and surrenders, insurance and reinsurance undertakings shall conduct an analysis of past policyholder behaviour and a prospective assessment of expected policyholder behaviour. That analysis shall take into account all of the following:*
- *(a) how beneficial the exercise of the options was and will be to the policy holders under circumstances at the time of exercising the option;*
- *(b) the influence of past and future economic conditions;*
- *(c) the impact of past and future management actions;*
- *(d) any other circumstances that are likely to influence decisions by policyholders on whether to exercise the option.*
- *The likelihood shall only be considered to be independent of the elements referred to in points (a) to (d) where there is empirical evidence to support such an assumption.*
-
- *Article 25 Separate Calculation of Future Discretionary Benefits*
- *When calculating technical provisions, insurance and reinsurance undertakings shall determine separately the value of discretionary benefits.*

Article 27 Credibility of information

- *Information shall only be considered to be credible for the purposes of Article 77(2) of Directive 2009/138/EC where insurance and reinsurance undertakings provide evidence of the credibility of the information taking into account the consistency and objectivity of that information, the reliability of the source of the information and the transparency of the way in which the information is generated and processed.*

Cashflow projections for the calculations of the best estimate

Article 28 (Cashflows)

- *The cash flow projection used in the calculation of the best estimate shall include all of the following cash flows, to the extent that these cash flows relate to existing insurance and reinsurance contracts:*

(a) benefit payments to policy holders and beneficiaries;
(b) payments that the insurance or reinsurance undertaking will incur in providing contractual benefits that are paid in kind;
(c) payments of expenses as referred to in point (1) of Article 78 of Directive 2009/138/EC;
(d) premium payments and any additional cash flows that result from those premiums;
(e) payments between the insurance or reinsurance undertaking and intermediaries related to insurance or reinsurance obligations;
(f) payments between the insurance or reinsurance undertaking and investment firms in relation to contracts with index-linked and unit-linked benefits;
(g) payments for salvage and subrogation to the extent that they do not qualify as separate assets or liabilities in accordance with international accounting standards, as endorsed by the Commission in accordance with Regulation (EC) No 1606/2002;
(h) taxation payments which are, or are expected to be, charged to policy holders or are required to settle the insurance or reinsurance obligations.

- *Article 29 (Expected future developments in the external environment)*

The calculation of the best estimate shall take into account expected future developments that will have a material impact on the cash in- and out-flows required to settle the insurance and reinsurance obligations over the lifetime thereof. For that purpose future developments shall include demographic, legal, medical, technological, social, environmental and economic developments including inflation as referred to in point (2) of Article 78 of Directive 2009/138/EC.

Article 30 (Uncertainty of cashflows)

- *The cash flow projection used in the calculation of the best estimate shall, explicitly or implicitly, take account of all uncertainties in the cash flows, including all of the following characteristics:*

(a) uncertainty in the timing, frequency and severity of insured events;
(b) uncertainty in claim amounts, including uncertainty in claims inflation, and in the period needed to settle and pay claims;
(c) uncertainty in the amount of expenses referred to in point (1) of Article 78 of Directive 2009/138/EC;
(d) uncertainty in expected future developments referred to in Article 29 to the extent that it is practicable;
(e) uncertainty in policyholder behaviour;
(f) dependency between two or more causes of uncertainty;
(g) dependency of cash flows on circumstances prior to the date of the cash flow.

Article 31 (Expenses)

1. A cash flow projection used to calculate best estimates shall take into account all of the following expenses, which relate to recognised insurance and reinsurance obligations of insurance and reinsurance undertakings and which are referred to in point (1) of Article 78 of Directive 2009/138/EC:

(a) administrative expenses;
(b) investment management expenses;
(c) claims management expenses;
(d) acquisition expenses.

The expenses referred to in points (a) to (d) shall take into account overhead expenses incurred in servicing insurance and reinsurance obligations.

2. *Overhead expenses shall be allocated in a realistic and objective manner and on a consistent basis over time to the parts of the best estimate to which they relate.*

3. *Expenses in respect of reinsurance contracts and special purpose vehicles shall be taken into account in the gross calculation of the best estimate.*

4. *Expenses shall be projected on the assumption that the undertaking will write new business in the future.*

Article 32 (Contractual options and financial guarantees)

When calculating the best estimate, insurance and reinsurance undertakings shall take into account all of the following:

(a) *all financial guarantees and contractual options included in their insurance and reinsurance policies;*

(b) *all factors which may affect the likelihood that policy holders will exercise contractual options or realise the value of financial guarantees.*

Article 33 (Currency of the obligation)

The best estimate shall be calculated separately for cash flows in different currencies.

Article 34 (Calculation methods)

1. *The best estimate shall be calculated in a transparent manner and in such a way as to ensure that the calculation method and the results that derive from it are capable of review by a qualified expert.*
2. *The choice of actuarial and statistical methods for the calculation of the best estimate shall be based on their appropriateness to reflect the risks which affect the underlying cash flows and the nature of the insurance and reinsurance obligations. The actuarial and statistical methods shall be consistent with and make use of all relevant data available for the calculation of the best estimate.*
3. *Where a calculation method is based on grouped policy data, insurance and reinsurance undertakings shall ensure that the grouping of policies creates homogeneous risk groups that appropriately reflect the risks of the individual policies included in those groups.*
4. *Insurance and reinsurance undertakings shall analyse the extent to which the present value of cash flows depend both on the expected outcome of future events and developments and on how the actual outcome in certain scenarios could deviate from the expected outcome.*
5. *Where the present value of cash flows depends on future events and developments as referred to in paragraph 4, insurance and reinsurance undertakings shall use a method to calculate the best estimate for cash flows which reflects such dependencies.*

Article 35 (Homogeneous risk groups of life insurance obligations)

The cash flow projections used in the calculation of best estimates for life insurance obligations shall be made separately for each policy. Where the separate calculation for each policy would be an undue burden on the insurance or reinsurance undertaking, it may carry out the projection by grouping policies, provided that the grouping complies with all of the following requirements:

(a) *there are no significant differences in the nature and complexity of the risks underlying the policies that belong to the same group;*

(b) *the grouping of policies does not misrepresent the risk underlying the policies and does not misstate their expenses;*

(c) *the grouping of policies is likely to give approximately the same results for the best estimate calculation as a calculation on a per policy basis, in particular in relation to financial guarantees and contractual options included in the policies.*

Article 36 (Non-life Insurance obligations)

1. *The best estimate for non-life insurance obligations shall be calculated separately for the premium provision and for the provision for claims outstanding.*
2. *The premium provision shall relate to future claim events covered by insurance and reinsurance obligations falling within the contract boundary referred to in Article 18. Cash flow projections for the calculation of the premium provision shall include benefits, expenses and premiums relating to these events.*
3. *The provision for claims outstanding shall relate to claim events that have already occurred, regardless of whether the claims arising from those events have been reported or not.*
4. *Cash flow projections for the calculation of the provision for claims outstanding shall include benefits, expenses and premiums relating to the events referred to in paragraph 3.*

Risk Margin

Article 37 (Calculation of the risk margin)

1. *The risk margin for the whole portfolio of insurance and reinsurance obligations shall be calculated using the following formula:*

$$RM = CoC \cdot \sum_{t \geq 0} \frac{SCR(t)}{(1+r(t+1))^{t+1}}$$

where:

(a) CoC denotes the Cost-of-Capital rate;

(b) the sum covers all integers including zero;

(c) SCR(t) denotes the Solvency Capital Requirement referred to in Article 38(2) after t years;

(d) r(t+1) denotes the basic risk-free interest rate for the maturity of t+1 years.

The basic risk-free interest rate r(t+1) shall be chosen in accordance with the currency used for the financial statements of the insurance and reinsurance undertaking.

2. *Where insurance and reinsurance undertakings calculate their Solvency Capital Requirement using an approved internal model and determine that the model is appropriate to calculate the Solvency Capital Requirement referred to in Article 38(2) for each point in time over the lifetime of the insurance and reinsurance obligations, the insurance and reinsurance undertakings shall use the internal model to calculate the amounts SCR(t) referred to in paragraph 1.*

3. *Insurance and reinsurance undertakings shall allocate the risk margin for the whole portfolio of insurance and reinsurance obligations to the lines of business referred to in Article 80 of Directive 2009/138/EC. The allocation shall adequately reflect the contributions of the lines of business to the Solvency Capital Requirement referred to in Article 38(2) over the lifetime of the whole portfolio of insurance and reinsurance obligations.*

Please note the amendments to Article 37 as outlined by the Government's reforms to the risk margin are set out in the Insurance and Reinsurance Undertakings (Prudential Requirements) (Risk Margin) Regulations 2023, which came into force on 31 December 2023. Specifically, HMT's SI makes an amendment to the Commission Delegated Regulation (EU) 2015/35.

These Regulations amend Articles 37 (calculation of the risk margin), 39 (cost-of-capital rate) and 312 (deadlines for submitting supervisory reports) of Commission Delegated Regulation (EU) 2015/35 of 10 October 2014 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of insurance and reinsurance (Solvency II) ("Regulation 2015/35") and regulation 54 of the Solvency 2 Regulations 2015 (S.I. 2015/575) (transitional measures on technical provisions).

Regulation 2015/35 and the Solvency 2 Regulations 2015 are revoked by section 1(1) of, and Schedule 1 to, the Financial Services and Markets Act 2023 (c. 29) and it is proposed to bring the revocations into force at the same time as regulations restating elements of the revoked legislation to be made under section 4 of that Act (power to restate and modify saved legislation).

The Regulations change the calculation of the risk margin. This is the amount of capital that insurance and reinsurance undertakings are required to hold to ensure that they are able to transfer their liabilities to another insurer if required. The revised calculation reduces the amount of risk margin that insurers must hold. The Regulations also remove some of the requirements for insurance and reinsurance undertakings to make reports to the Prudential Regulation Authority. They also alter the conditions under which that Authority must revoke an approval to apply a transitional deduction to an undertaking's technical provisions. Technical provisions are the reserves an undertaking must hold against their expected future claims due to policyholders and beneficiaries, including a buffer against the risk of the failure of the undertaking.

A full impact assessment of the effect that this instrument will have on the costs of business, the voluntary sector and community bodies is available from HM Treasury, 1 Horse Guards Road, London, SW1A 2HQ and is published with the Explanatory Memorandum alongside this instrument at www.legislation.gov.uk.

Article 38 (Reference undertaking)

1. *The calculation of the risk margin shall be based on all of the following assumptions:*
   - (a) *the whole portfolio of insurance and reinsurance obligations of the insurance or reinsurance undertaking that calculates the risk margin (the original undertaking) is taken over by another insurance or reinsurance undertaking (the reference undertaking);*
   - (b) *notwithstanding point (a), where the original undertaking simultaneously pursues both life and non-life insurance activities according to Article 73(5) of Directive 2009/138/EC, the portfolio of insurance obligations relating to life insurance activities and life reinsurance obligations and the portfolio of insurance obligations relating to non-life insurance activities and non-life reinsurance obligations are taken over separately by two different reference undertakings;*
   - (c) *the transfer of insurance and reinsurance obligations includes any reinsurance contracts and arrangements with special purpose vehicles relating to these obligations;*
   - (d) *the reference undertaking does not have any insurance or reinsurance obligations or own funds before the transfer takes place;*
   - (e) *after the transfer, the reference undertaking does not assume any new insurance or reinsurance obligations;*
   - (f) *after the transfer, the reference undertaking raises eligible own funds equal to the Solvency Capital Requirement necessary to support the insurance and reinsurance obligations over the lifetime thereof;*
   - (g) *after the transfer, the reference undertaking has assets which amount to the sum of its Solvency Capital Requirement and of the technical provisions net of the amounts recoverable from reinsurance contracts and special purpose vehicles;*
   - (h) *the assets are selected in such a way that they minimise the Solvency Capital Requirement for market risk that the reference undertaking is exposed to;*
   - (i) *the Solvency Capital Requirement of the reference undertaking captures all of the following risks:*
     - i. *underwriting risk with respect to the transferred business,*
     - ii. *where it is material, the market risk referred to in point (h), other than interest rate risk,*
     - iii. *credit risk with respect to reinsurance contracts, arrangements with special purpose vehicles, intermediaries, policyholders and any other material exposures which are closely related to the insurance and reinsurance obligations,*
     - iv. *operational risk;*
   - (j) *the loss-absorbing capacity of technical provisions, referred to in Article 108 of Directive 2009/138/EC, in the reference undertaking corresponds for each risk to the loss-absorbing capacity of technical provisions in the original undertaking;*
   - (k) *there is no loss-absorbing capacity of deferred taxes as referred to in Article 108 of Directive 2009/138/EC for the reference undertaking;*
   - (l) *the reference undertaking will, subject to points (e) and (f), adopt future management actions that are consistent with the assumed future management actions, as referred to in Article 23, of the original undertaking.*

2. *Over the lifetime of the insurance and reinsurance obligations, the Solvency Capital Requirement necessary to support the insurance and reinsurance obligations referred to in the first subparagraph of Article 77(5) of Directive 2009/138/EC shall be assumed to be equal to the Solvency Capital Requirement of the reference undertaking under the assumptions set out in paragraph 1.*

3. *For the purposes of point (i) of paragraph 1, a risk shall be considered to be material where its impact on the calculation of the risk margin could influence the decision-making or the judgment of the users of that information, including supervisory authorities.*

Article 39 (Cost of Capital rate)

The Cost-of-Capital rate referred to in Article 77(5) of Directive 2009/138/EC shall be assumed to be equal to 6 %.

Recoverables from reinsurance contracts and special purpose vehicles

Article 41 (General provisions)

1. *The amounts recoverable from reinsurance contracts and special purpose vehicles shall be calculated consistently with the boundaries of the insurance or reinsurance contracts to which those amounts relate.*
2. *The amounts recoverable from special purpose vehicles, the amounts recoverable from finite reinsurance contracts as referred to in Article 210 of Directive 2009/138/EC and the amounts recoverable from other reinsurance contracts shall each be calculated separately. The amounts recoverable from a special purpose vehicle shall not exceed the aggregate maximum risk exposure of that special purpose vehicle to the insurance or reinsurance undertaking.*

3. *For the purpose of calculating the amounts recoverable from reinsurance contracts and special purpose vehicles, cash flows shall only include payments in relation to compensation of insurance events and unsettled insurance claims. Payments in relation to other events or settled insurance claims shall be accounted for outside the amounts recoverable from reinsurance contracts and special purpose vehicles and other elements of the technical provisions. Where a deposit has been made for the cash flows, the amounts recoverable shall be adjusted accordingly to avoid a double counting of the assets and liabilities relating to the deposit.*

4. *The amounts recoverable from reinsurance contracts and special purpose vehicles for non-life insurance obligations shall be calculated separately for premium provisions and provisions for claims outstanding in the following manner:*
   a. *the cash flows relating to provisions for claims outstanding shall include the compensation payments relating to the claims accounted for in the gross*
   b. *provisions for claims outstanding of the insurance or reinsurance undertaking ceding risks;*
   c. *the cash flows relating to premium provisions shall include all other payments.*

5. *Where cash flows from the special purpose vehicles to the insurance or reinsurance undertaking do not directly depend on the claims against the insurance or reinsurance undertaking ceding risks, the amounts recoverable from those special purpose vehicles for future claims shall only be taken into account to the extent that it can be verified in a prudent, reliable and objective manner that the structural mismatch between claims and amounts recoverable is not material.*

Article 42 (Counterparty default risk)

1. *Adjustments to take account of expected losses due to default of a counterparty referred to in Article 81 of Directive 2009/138/EC shall be calculated separately from the rest of the amounts recoverable.*

2. *The adjustment to take account of expected losses due to default of a counterparty shall be calculated as the expected present value of the change in cash flows underlying the amounts recoverable from that counterparty, that would arise if the counterparty defaults, including as a result of insolvency or dispute, at a certain point in time. For that purpose, the change in cash flows shall not take into account the effect of any risk mitigating technique that mitigates the credit risk of the counterparty, other than risk mitigating techniques based on collateral holdings. The risk mitigating techniques that are not taken into account shall be separately recognised without increasing the amount recoverable from reinsurance contracts and special purpose vehicles.*

3. *The calculation referred to in paragraph 2 shall take into account possible default events over the lifetime of the reinsurance contract or arrangement with the special purpose vehicle and whether and how the probability of default varies over time. It shall be carried out separately by each counterparty and for each line of business. In non-life insurance, it shall also be carried out separately for premium provisions and provisions for claims outstanding.*

4. *The average loss resulting from a default of a counterparty, referred to in Article 81 of Directive 2009/138/EC, shall not be assessed at lower than 50 % of the amounts recoverable excluding the adjustment referred to in paragraph 1, unless there is a reliable basis for another assessment.*

5. *The probability of default of a special purpose vehicle shall be calculated on the basis of the credit risk inherent in the assets held by the special purpose vehicle.*

Relevant risk-free interest rate term structure

Article 43 (General provisions)

The rates of the basic risk-free interest rate term structure shall meet all of the following criteria:

(a) insurance and reinsurance undertakings are able to earn the rates in a risk-free manner in practice;

(b) the rates are reliably determined based on financial instruments traded in a deep, liquid and transparent financial market.

The rates of the relevant risk-free interest rate term structure shall be calculated separately for each currency and maturity, based on all information and data relevant for that currency and that maturity. They shall be determined in a transparent, prudent, reliable and objective manner that is consistent over time.

Basic risk-free interest rate term structure

Article 44 (Relevant financial instruments to derive the basic risk-free interest rates)

1. *For each currency and maturity, the basic risk-free interest rates shall be derived on the basis of interest rate swap rates for interest rates of that currency, adjusted to take account of credit risk.*

2. *For each currency, for maturities where interest rate swap rates are not available from deep, liquid and transparent financial markets the rates of government bonds issued in that currency, adjusted to take account of the credit risk of the government bonds, shall be used to derive the basic risk-free interest rates, provided that, such government bond rates are available from deep, liquid and transparent financial markets.*

Article 45 Adjustment to swap rates for credit risk

The adjustment for credit risk referred to in Article 44(1) shall be determined in a transparent, prudent, reliable and objective manner that is consistent over time. The adjustment shall be determined on the basis of the difference between rates capturing the credit risk reflected in the floating rate of interest rate swaps and overnight indexed swap rates of the same maturity, where both rates are available from deep, liquid and transparent financial markets. The calculation of the adjustment shall be based on 50 percent of the average of that difference over a time period of one year. The adjustment shall not be lower than 10 basis points and not higher than 35 basis points.

Article 46 (Extrapolation)

1. *The principles applied when extrapolating the relevant risk-free interest rate term structure shall be the same for all currencies. This shall also apply as regards the determination of the longest maturities for which interest rates can be observed in a deep, liquid and transparent market and the mechanism to ensure a smooth convergence to the ultimate forward rate.*

2. *Where insurance and reinsurance undertakings apply Article 77d of Directive 2009/138/EC, the extrapolation shall be applied to the risk-free interest rates including the volatility adjustment referred to in that Article.*

3. *Where insurance and reinsurance undertakings apply Article 77b of Directive 2009/138/EC, the extrapolation shall be based on the risk-free interest rates without a matching adjustment. The matching adjustment referred to in that Article shall be applied to the extrapolated risk-free interest rates.*

Article 47 (Ultimate forward rate)

1. *For each currency, the ultimate forward rate referred to in paragraph 1 of Article 46 shall be stable over time and shall only change as a result of changes in long-term expectations. The methodology to derive the ultimate forward rate shall be clearly specified in order to ensure the performance of scenario calculations by insurance and reinsurance undertakings. It shall be determined in a transparent, prudent, reliable and objective manner that is consistent over time.*

2. *For each currency the ultimate forward rate shall take account of expectations of the long-term real interest rate and of expected inflation, provided those expectations can be determined for that currency in a reliable manner. The ultimate forward rate shall not include a term premium to reflect the additional risk of holding long-term investments.*

Volatility adjustment

Article 49 Reference portfolios

1. *The reference portfolios referred to in Article 77d(2) and (4) of Directive 2009/138/EC shall be determined in a transparent, prudent, reliable and objective manner that is consistent over time. The methods applied when determining the reference portfolios shall be the same for all currencies and countries.*

2. *For each currency and each country, the assets of the reference portfolio shall be valued in accordance with Article 10(1) and shall be traded in markets that, except in periods of stressed liquidity, comply with Article 40(3). Financial instruments traded in markets that temporarily cease to comply with Article 40(3) may only be included in the portfolio where that market is expected to comply with the criteria again within a reasonable period.*

3. *For each currency and each country, the reference portfolio of assets shall meet all of the following requirements:*

(a) for each currency, the assets are representative of the investments made by insurance and reinsurance undertakings in that currency to cover the best estimate for insurance and reinsurance obligations denominated in that currency; for each country, the assets are representative of the investments made by insurance and reinsurance undertakings in that country to cover the best estimate for insurance and reinsurance obligations sold in the insurance market of that country and denominated in the currency of that country;

(b) where available the portfolio is based on relevant indices which are readily available to the public and published criteria exist for when and how the constituents of those indices will be changed;

(c) the portfolio of assets includes all of the following assets:

– bonds, securitisations and loans, including mortgage loans
– equity
– property

For the purposes of points (a) and (b), investments of insurance and reinsurance undertakings in collective investment undertakings and other investments packaged as funds shall be treated as investments in the underlying assets.

Article 50 Formula to calculate the spread underlying the volatility adjustment

For each currency and each country the spread referred to in Article 77d(2) and (4) of Directive 2009/138/EC shall be equal to the following:

$$S = w_{gov} \cdot \max(S_{gov}, 0) + w_{corp} \cdot \max(S_{corp}, 0)$$

where:

(a) wgov denotes the ratio of the value of government bonds included in the reference portfolio of assets for that currency or country and the value of all the assets included in that reference portfolio;

(b) Sgov denotes the average currency spread on government bonds included in the reference portfolio of assets for that currency or country;

(c) wcorp denotes the ratio of the value of bonds other than government bonds, loans and securitisations included in the reference portfolio of assets for that currency or country and the value of all the assets included in that reference portfolio;

(d) Scorp denotes the average currency spread on bonds other than government bonds, loans and securitisations included in the reference portfolio of assets for that currency or country.

For the purposes of this Article, 'government bonds' means exposures to central governments and central banks.

Article 51 Risk-corrected spread

The portion of the average currency spread that is attributable to a realistic assessment of expected losses, unexpected credit risk or any other risk referred to in Article 77d(3) and (4) of Directive 2009/138/EC shall be calculated in the same manner as the fundamental spread referred to in Article 77c (2) of Directive 2009/138/EC and Article 54 of this Regulation.

Matching adjustment

Article 52 Mortality risk stress

1. The mortality risk stress referred to in Article 77b(1)(f) of Directive 2009/138/EC shall be the more adverse of the following two scenarios in terms of its impact on basic own funds:

(a) an instantaneous permanent increase of 15% in the mortality rates used for the calculation of the best estimate;

(b) an instantaneous increase of 0.15 percentage points in the mortality rates (expressed as percentages) which are used in the calculation of technical provisions to reflect the mortality experience in the following 12 months.

2. *For the purpose of paragraph 1 the increase in mortality rates shall only apply to those insurance policies for which the increase in mortality rates leads to an increase in technical provisions taking into account all of the following:*

(a) multiple insurance policies in respect of the same insured person may be treated as if they were one insurance policy;

(b) where the calculation of technical provisions is based on groups of policies as referred to in Article 35, the identification of the policies for which technical provisions increase under an increase of mortality rates may also be based on those groups of policies instead of single policies, provided that it yields a result which is not materially different.

3. With regard to reinsurance obligations, the identification of the policies for which technical provisions increase under an increase of mortality rates shall apply to the underlying insurance policies only and shall be carried out in accordance with paragraph 2.

Article 53 Calculation of the matching adjustment

1. For the purpose of the calculation referred to in Article 77c(1)(a) of Directive 2009/138/EC insurance and *reinsurance undertakings shall only consider the assigned assets whose expected cash flows are required to replicate the cash flows of the portfolio of insurance and reinsurance obligations, excluding any assets in excess of that. The 'expected cash flow' of an asset means the cash flow of the asset adjusted to allow for the probability of default of the asset that corresponds to the element of the fundamental spread set out in Article 77c(2)(a)(i) of Directive 2009/138/EC or, where no reliable credit spread can be derived from the default statistics, the portion of the long term average of the spread over the risk-free interest rate set out in Article 77c(2)(b) and (c) of that Directive.*
2. *The deduction of the fundamental spread, referred to in Article 77c(1)(b) of Directive 2009/138/EC, from the result of the calculation set out in Article 77c(1)(a) of that Directive, shall include only the portion of the fundamental spread that has not already been reflected in the adjustment to the cash flows of the assigned portfolio of assets, as set out in paragraph 1 of this Article.*

Article 54 Calculation of the fundamental spread

3. *The fundamental spread referred to in Article 77c(2) shall be calculated in a transparent, prudent, reliable and objective manner that is consistent over time, based on relevant indices where available. The methods to derive fundamental spread of a bond shall be the same for each currency and each country and may be different for government bonds and for other bonds.*
4. *The calculation of the credit spread referred to in Article 77c(2)(a)(i) of Directive 2009/138/EC shall be based on the assumption that in case of default 30 % of the market value can be recovered.*
5. *The long-term average referred to in Article 77c(2)(b) and (c) of Directive 2009/138/EC shall be based on data relating to the last 30 years. Where a part of that data is not available, it shall be replaced by constructed data. The constructed data shall be based on the available and reliable data relating to the last 30 years. Data that is not reliable shall be replaced by constructed data using that methodology. The constructed data shall be based on prudent assumptions.*
6. *The expected loss referred to in Article 77c(2)(a)(ii) of Directive 2009/138/EC shall correspond to the probability-weighted loss the insurance or reinsurance undertaking incurs where the asset is downgraded to a lower credit quality step and is replaced immediately afterwards. The calculation of the expected loss shall be based on the assumption that the replacing asset meets all of the following criteria:*
   (a) the replacing asset has the same cash flow pattern as the replaced asset before downgrade;
   (b) the replacing asset belongs to the same asset class as the replaced asset;
   (c) the replacing asset has the same credit quality step as the replaced asset before downgrade or a higher one.

Proportionality and simplifications

Article 56 (Proportionality)

7. *Insurance and reinsurance undertakings shall use methods to calculate technical provisions which are proportionate to the nature, scale and complexity of the risks underlying their insurance and reinsurance obligations.*
8. *In determining whether a method of calculating technical provisions is proportionate, insurance and reinsurance undertakings shall carry out an assessment which includes:*
   a. *an assessment of the nature, scale and complexity of the risks underlying their insurance and reinsurance obligations;*
   b. *an evaluation in qualitative or quantitative terms of the error introduced in the results of the method due to any deviation between the following:*
      i. *the assumptions underlying the method in relation to the risks;*
      ii. *The results of the assessment referred to in point (a).*
9. *The assessment referred to in point (a) of paragraph 2 shall include all risks which affect the amount, timing or value of the cash in- and out-flows required to settle the insurance and reinsurance obligations over their lifetime. For the purpose of the calculation of the risk margin, the assessment shall include all risks referred to in Article 38(1)(i) over the lifetime of the underlying insurance and reinsurance obligations. The assessment shall be restricted to the risks that are relevant to that part of the calculation of technical provisions to which the method is applied.*
10. *A method shall be considered to be disproportionate to the nature, scale and complexity of the risks if the error referred to in point (b) of paragraph 2 leads to a misstatement of technical provisions or their components that could influence the decisions-making or judgment of the intended user of the information relating to the value of technical provisions, unless one of the following conditions are met:*

a. *no other method with a smaller error is available and the method is not likely to result in an underestimation of the amount of technical provisions;*
b. *The method leads to an amount of technical provisions of the insurance or reinsurance undertaking that is higher than the amount that would result from using a proportionate method and the method does not lead to an underestimation of the risk inherent in the insurance and reinsurance obligations that it is applied to.*

Article 57 (Simplified calculation of recoverables from reinsurance contracts and special purpose vehicles)

1. *Without prejudice to Article 56 of this Regulation, insurance and reinsurance undertakings may calculate the amounts recoverable from reinsurance contracts and special purpose vehicles before adjusting those amounts to take account of the expected loss due to default of the counterparty as the difference between the following estimates:*
   a. *the best estimate calculated gross as referred to in Article 77(2) of Directive 2009/138/EC;*
   b. *the best estimate, after taking into account the amounts recoverable from reinsurance contracts and special purpose vehicles and without an adjustment for the expected loss due to default of the counterparty (unadjusted net best estimate) calculated in accordance with paragraph 2.*
2. *Insurance and reinsurance undertakings may use methods to derive the unadjusted net best estimate from the gross best estimate without an explicit projection of the cash flows underlying the amounts recoverable from reinsurance contracts and special purpose vehicles. Insurance and reinsurance undertakings shall calculate the unadjusted net best estimate based on homogeneous risk groups. Each of those homogeneous risk groups shall cover not more than one reinsurance contract or special purpose vehicles unless those reinsurance contracts or special purpose vehicles provide a transfer of homogeneous risks.*

Article 58 (Simplified calculation of the risk margin)

Without prejudice to Article 56, insurance and reinsurance undertakings may use simplified methods when they calculate the risk margin, including one or more of the following:

(a) *methods which use approximations of the amounts denoted by the terms SCR(t) referred to in Article 37(1);*

(b) *methods which approximate the discounted sum of the amounts denoted by the terms SCR(t) as referred to in Article 37(1) without calculating each of those amounts separately.*

Article 60 (Simplified calculation of the best estimate for insurance obligations with premium adjustment mechanism)

Without prejudice to Article 56, insurance and reinsurance undertakings may calculate the best estimate of life insurance obligations with an arrangement by which the insurance undertaking has the right or the obligation to adjust the future premiums of an insurance contract to reflect material changes in the expected level of claims and expenses (premium adjustment mechanism) using cash flow projections which assume that changes in the level of claims and expenses occur simultaneously with premium adjustments and which result in a net cash flow that is equal to zero, provided that all of the following conditions are met:

(a) *the premium adjustment mechanism fully compensates the insurance undertaking for any increase in the level of claims and expenses in a timely manner;*

(b) *the calculation does not result in an underestimation of the best estimate;*

(c) *the calculation does not result in an underestimation of the risk inherent in those insurance obligations.*

Article 61 (Simplified calculation of the counterparty default adjustment)

Without prejudice to Article 56 of this Regulation, insurance and reinsurance undertakings may calculate the adjustment for expected losses due to default of the counterparty, referred to in Article 81 of Directive 2009/138/EC, for a specific counterparty and homogeneous risk group to be equal as follows:

$$Adj_{CD} = -\max\left(0.5 \cdot \frac{PD}{1-PD} \cdot Dur_{\text{mod}} \cdot BE_{rec}; 0\right)$$

where:

(a) *PD denotes the probability of default of that counterparty during the following 12 months;*

(b) *Dur_{mod} denotes the modified duration of the amounts recoverable from reinsurance contracts with that counterparty in relation to that homogeneous risk group;*

(c) *BE_{rec} denotes the amounts recoverable from reinsurance contracts with that counterparty in relation to that homogeneous risk group.*

System of Governance

Article 259 (Risk Management System)

4.In addition to the requirements set out in Article 44(4a) of Directive 2009/138/EC for the purposes of the calculation of technical provisions and the Solvency Capital Requirement, internal risk management methodologies shall not rely solely or automatically on external credit assessments. Where the calculation of technical provisions or of the Solvency Capital Requirement is based on external credit assessments by an ECAI or based on the fact that an exposure is unrated, that shall not exempt insurance and reinsurance undertakings from additionally considering other relevant information.

Article 264 (Valuation of technical provisions – validation)

1. Insurance and reinsurance undertakings shall validate the calculation of technical provisions, in particular by comparison against experience as referred to in Article 83 of Directive 2009/138/EC, at least once a year and where there are indications that the data, assumptions or methods used in the calculation or the level of the technical provisions are no longer appropriate. The validation shall cover the following:
   a. the appropriateness, completeness and accuracy of data used in the calculation of technical provisions as set out in Article 19 of this Regulation;
   b. the appropriateness of any grouping of policies in accordance with Article 34 of this Regulation;
   c. the remedies to limitations of the data referred to in Article 20 of this Regulation;
   d. the appropriateness of approximations referred to in Article 21 of this Regulation for the purposes of calculating the best estimate;
   e. the adequacy and realism of assumptions used in the calculation of technical provisions for the purposes of meeting the requirements in Articles 22 to 26 of this Regulation;
   f. the adequacy, applicability and relevance of the actuarial and statistical methods applied in the calculation of technical provisions;
   g. the appropriateness of the level of the technical provisions as referred to in Article 84 of Directive 2009/138/EC necessary to comply with Article 76 of that Directive.

2. For the purposes of point (d) of paragraph 1, insurance and reinsurance undertakings shall assess the impact of changes in the assumptions on future management actions on the valuation of the technical provisions. Where changes in an assumption on future management action have a significant impact on the technical provisions, insurance and reinsurance undertakings shall be able to explain the reasons for this impact and how the impact is taken into account in their decision-making process.

3. The validation shall be carried out separately for homogeneous risk groups. It shall be carried out separately for the best estimate, the risk margin and technical provisions calculated according to the market value of financial instruments which reliably replicate future cash flows in accordance with Article 40 of this Regulation. It shall be carried out separately for technical provisions where the matching adjustment referred to in Article 77b of Directive 2009/138/EC is applied. In relation to the best estimate, it shall be carried out separately for the gross best estimate and amounts recoverable from reinsurance contracts and special purpose vehicles. In relation to non-life insurance obligations, it shall be carried out separately for premium provisions and provisions for claims outstanding.

Article 265 (Valuation of Technical provisions – documentation)

1. Insurance and reinsurance undertakings shall document the following processes:
   a. the collection of data and analysis of its quality and other information that relates to the calculation of technical provisions;
   b. the choice of assumptions used in the calculation of technical provisions, in particular the choice of relevant assumptions about the allocation of expenses;
   c. the selection and application of actuarial and statistical methods for the calculation of technical provisions;
   d. the validation of technical provisions.

2. For the purposes of point (a) of paragraph 1, the documentation shall include:
   a. a directory of the data used in the calculation of the technical provisions, specifying their source, characteristics and usage;
   b. the specification for the collection, processing and application of data referred to in Article 19(3)(e);
   c. where data are not used consistently over time in the calculation of technical provisions, a description of the inconsistent use and its justification.

3. For the purposes of point (b) of paragraph 1, the documentation shall include:
   a. a directory of all the relevant assumptions that the calculation of technical provisions are based upon; this shall include assumptions on future management actions;
   b. a justification for the choice of the assumption in accordance with Subsection 1 of Section 3 of Chapter III;
   c. a description of the inputs on which the choice is based;

d. the objectives of the choice and the criteria used for determining the appropriateness of this choice;

e. any material limitations in the choice made;

f. a description of the processes in place to review the choice of assumptions;

g. a justification for the changes of assumptions from one period to another and an estimation of the impact of material changes;

h. *the relevant deviations referred to in Article 23(2).*

Article 272 Actuarial function

1. *In coordinating the calculation of the technical provisions, the actuarial function shall include all of the following tasks:*

a apply methodologies and procedures to assess the sufficiency of technical provisions and to ensure that their calculation is consistent with the requirements set out in Articles 75 to 86 of Directive 2009/138/EC;

b assess the uncertainty associated with the estimates made in the calculation of technical provisions;

c) ensure that any limitations of data used to calculate technical provisions are properly dealt with;

d ensure that the most appropriate approximations for the purposes of calculating the best estimate are used in cases referred to in Article 82 of Directive 2009/138/EC;

e ensure that homogeneous risk groups of insurance and reinsurance obligations are identified for an appropriate assessment of the underlying risks;

f consider relevant information provided by financial markets and generally available data on underwriting risks and ensure that it is integrated into the assessment of technical provisions;

g compare and justify any material differences in the calculation of technical provisions from year to year;

h ensure that an appropriate assessment is provided of options and guarantees included in insurance and reinsurance contracts.

2. The actuarial function shall assess whether the methodologies and assumptions used in the calculation of the technical provisions are appropriate for the specific lines of business of the undertaking and for the way the business is managed, having regard to the available data.

3. The actuarial function shall assess whether the information technology systems used in the calculation of technical provisions sufficiently support the actuarial and statistical procedures.

4. The actuarial function shall, when comparing best estimates against experience, review the quality of past best estimates and use the insights gained from this assessment to improve the quality of current calculations. The comparison of best estimates against experience shall include comparisons between observed values and the estimates underlying the calculation of the best estimate, in order to draw conclusions on the appropriateness, accuracy and completeness of the data and assumptions used as well as on the methodologies applied in their calculation.

5. Information submitted to the administrative, management or supervisory body on the calculation of the technical provisions shall include at least a reasoned analysis on the reliability and adequacy of their calculation and on the sources and the degree of uncertainty of the estimate of the technical provisions. That reasoned analysis shall be supported by a sensitivity analysis that includes an investigation of the sensitivity of the technical provisions to each of the major risks underlying the obligations which are covered in the technical provisions. The actuarial function shall clearly estate and explain any concerns it may have concerning the adequacy of technical provisions.

6. Regarding the underwriting policy, the opinion to be expressed by the actuarial function in accordance with Article 48(1)(g) of Directive 2009/138/EC shall at least include conclusions regarding the following considerations:

(a) sufficiency of the premiums to be earned to cover future claims and expenses, notably taking into consideration the underlying risks (including underwriting risks), and the impact of options and guarantees included in insurance and reinsurance contracts on the sufficiency of premiums ;

(b) the effect of inflation, legal risk, change in the composition of the undertaking's portfolio, and of systems which adjust the premiums policy-holders pay upwards or downwards depending on their claims history (bonus-malus systems) or similar systems, implemented in specific homogeneous risk groups;

(c) the progressive tendency of a portfolio of insurance contracts to attract or retain insured persons with a higher risk profile (anti-selection).

7. Regarding the overall reinsurance arrangements, the opinion to be expressed by the actuarial function in accordance with Article 48(1)(h) of Directive 2009/138/EC shall include analysis on the adequacy of the following:

(a) the undertaking’s risk profile and underwriting policy;

(b) reinsurance providers taking into account their credit standing;

(c) the expected cover under stress scenarios in relation to the underwriting policy;

(d) the calculation of the amounts recoverable from reinsurance contracts and special purpose vehicles.

8. The actuarial function shall produce a written report to be submitted to the administrative, management or supervisory body, at least annually. The report shall document all tasks that have been undertaken by the actuarial function and their results, and shall clearly identify any deficiencies and give recommendations as to how such deficiencies should be remedied.

Extracts from the most relevant EIOPA Guidance (Level 3)

Extract from EIOPA-BoS-14/166 - Guidelines on valuation of technical provisions

The following lists the 88 guidelines only, the full text is available via the references section and copies of the reference documents are also provided on Lloyds.com to accompany this guidance.

Section 1: Data quality

Clarification of the concepts of completeness and appropriateness of data

Guideline 1 – Completeness of data

Guideline 2 – Appropriateness of data

Review and validation of data quality

Guideline 3 – Data checks

Guideline 4 – Consideration of other analysis conducted

Guideline 5 - Consideration of the methodologies to be applied

Guideline 6 - Source and use of data

Guideline 7 – Application of expert judgment

Guideline 8 - Validation and feedback process

Limitations of data

Guideline 9 – Identification of the source of material limitations

Guideline 10 - Impact of shortcomings

Guideline 11 – Data adjustments

Guideline 12 – Recommendations of the actuarial function

Guideline 13 – Application of expert judgment upon material limitations

Guideline 14 – Documentation of data limitations

Market data

Guideline 15 – Use of market data

Guideline 16 - Conditions on market data

Section 2: Segmentation and unbundling

Guideline 17 - Segmentation of insurance or reinsurance obligations stemming from health and other non-life insurance contracts

Guideline 19 - Determining and assessing appropriateness of a homogeneous risk group

Guideline 20 - Calculations at the level of grouped policies

Guideline 21 - Unbundling of insurance or reinsurance contracts covering multiple risks

Guideline 22 - Granularity of segmentation

Guideline 23 – Segmentation in respect of premium provisions and claims provisions

Section 3: Assumptions

Guideline 24 - Consistency of assumptions

Biometric risk factors

Guideline 25 – Modelling biometric risk factors

Guideline 26 – Expenses for hedging

Guideline 27 – Availability of market data

Guideline 28 – Expenses taken into account on contractual terms

Expense allocation

Guideline 29 – Granularity of allocation of expenses

Guideline 30 – Apportionment of overheads

Guideline 31 – Changing the approach to the split of overhead expenses

Projection of Expenses

Guideline 32 – Consistency of expenses with other cash-flows

Guideline 33 – Changes in expenses

Guideline 34 – Simplifications in respect of expenses

Treatment of financial guarantees and contractual options

Guideline 35 – Charges for embedded options

Guideline 36 - Appropriateness of assumptions

Guideline 37 - Assumptions on policyholder behaviour

Future management actions

Guideline 38 – Allowance for future management actions

Guideline 39 - Consistency of management actions with other assumptions

Guideline 40 – Interrelation with cedant undertaking

Future discretionary benefits

Guideline 41 – Allowance for future discretionary benefits

Guideline 42 - Assumptions on future discretionary benefits

Guideline 43 – Assumptions in respect of modelling distribution of future discretionary benefits

Section 4: Methodologies to calculate technical provisions

Proportionality assessment

Guideline 44 – General principle of proportionality

Guideline 45 – Assessment of nature and complexity of the risks

Guideline 46 – Identification of complex risk structures

Guideline 47 – Assessment of scale of the risks

Guideline 48 – Granularity of materiality assessment

Guideline 49 – Consequences of material error identified in the proportionality assessment

Methods applied for calculations of technical provisions during the year

Guideline 50 – Simplified calculation of technical provisions during the year

Guideline 51 - Computation of the best estimate for life and non-life quarterly technical provision

Guideline 52 - Computation of the best estimate for life quarterly technical provision

Methodologies for the valuation of contractual options and financial guarantees

Guideline 53 - Decision on methodology

Guideline 54 – Methodologies for the valuation of contractual options and financial guarantees

Economic Scenario Generators (ESG)

Guideline 55 - Documentation of the ESG

Guideline 56 - General understanding of the ESG

Guideline 57 – Calibration process: market data and choice of the financial instruments

Guideline 58 - Tests (accuracy, robustness and market-consistency)

Guideline 59 – Random and pseudo random number generators

Guideline 60 - On-going appropriateness of an ESG

Calculation of the risk margin

Guideline 61 – Methods to calculate the risk margin

Guideline 62 – Hierarchy of methods for the calculation of the risk margin

Guideline 63 – Allocation of the overall risk margin

Calculation of technical provisions as a whole

Guideline 64 – Capturing uncertainty

Guideline 65 – Reliable replication

Guideline 66 – Short term disruptions

Guideline 67 – Unbundling of obligations valued as a whole

Future premiums

Guideline 68 – future premium cash-flows versus premium receivable

Calculation of claims provisions

Guideline 69 – Methods to calculate provisions for outstanding reported claims

Guideline 70 – Methods to calculate provisions for incurred but not reported claims

Guideline 71 – Methods for the valuation of claims settlement expenses – unallocated loss adjustment expenses (ULAE)

Calculation of premium provisions

Guideline 72 – Cover

Guideline 73 - Considerations for claims costs projections

Guideline 74 - Uncertainty of policyholder behaviour

Guideline 75 – Negative premium provision

Calculation of Expected Profits in Future Premiums (EPIFP)

Guideline 76 - Separation of insurance obligations

Guideline 77 - Assumptions used to calculate EPIFP

Methodologies to calculate recoverables from reinsurance contracts and special purpose vehicles

Guideline 78 - Extent of allowance for future reinsurance purchase

Guideline 79 – Simplified calculation of recoverables from reinsurance contracts and special purpose vehicles – premium provisions

Guideline 80 – Simplified calculation of recoverables from reinsurance contracts and special purpose vehicles – provisions for claims outstanding

Guideline 81 – Simplified calculation of the counterparty default adjustment

General Principles in respect of methodologies to calculate technical provisions

Guideline 82 – The projection period

Section 5: Validation

Guideline 83 – Proportionality of technical provisions validation

Guideline 84 – Selection of validation approaches and processes

Guideline 85 – Qualitative and quantitative approaches

Guideline 86 - Regular and dynamic validation process

Guideline 87 – Comparison against experience – deviations

Guideline 88 - Comparison against market for contracts with options and guarantees

Extract from: EIOPA-BoS-14/165 - Guidelines on contract boundaries

The following lists the 8 guidelines only, the full text is available via the references section and copies of the reference documents are also provided on Lloyds.com to accompany this guidance.

1. Guidelines on contract boundaries

Guideline 1 – Consistent application of the principles

Guideline 2 – Unilateral right

Guideline 3 – Ability to compel

Guideline 4 – Full reflection of the risk

Guideline 5 – Unbundling of the contract

Guideline 6 – Identification of a discernible effect on the economics of a contract

Guideline 7 – Estimation of obligations

Guideline 8 – Reinsurance contracts

The following is a specific extract from EIOPA BoS 14/165 as this is of particular relevance:

2.15. A need to reassess the contract boundaries can arise, where a delegated underwriting authority or binder exists which can sign business on behalf of the undertaking. The undertaking requires information on the underlying insurance contracts written within the binder to assess the contracts which fall within the contract boundary at a given valuation date. If this information is not available, estimates will need to be made.

2.16. Estimates of contracts entered into can be based on historical experience of specific binders in terms of numbers of contracts likely to be entered into and their terms and conditions and hence the length of their contract boundaries and likely corresponding cash-flows.

2.17. The undertaking would aim to minimise any delay in receiving detailed information from the binder and would make a revised assessment of the contracts entered into and their corresponding contract boundaries as soon as reasonable after this information was received.

2.18. In the situation that updated exposure information becomes available after the signature of the contract (e.g. because the underlying exposure changes in the case of some liability contracts or underlying exposure is unknown at the time of signing for contracts covering voyages undertaken in a certain time period) one would not expect this to lead to a change in the contract boundary. If, however, this analysis leads to a change in contract boundary, the contract boundary would be updated.

Appendix 2 Definitions

Best estimate

The technical provisions shall be equal to the sum of a best estimate and a risk margin. The best estimate is calculated gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles. Where best estimate is mentioned without further detail, it is the gross best estimate.

Correspondence (principle of)

Principle whereby all cash in-flows and cash out-flows relating to existing (re)insurance obligations should be taken into account when valuing the liability.

Earned business

Portion of existing (re)insurance obligations relating to risk which is expired as at the valuation date.

Going concern assumption

The assumption that undertaking is going to continue in operation for the foreseeable future and that it has neither the intention nor the necessity of liquidation.

Homogeneous risk group

Homogenous risk group is a set of (re)insurance obligations which are managed together and which have similar risk characteristics in terms of, for example, underwriting policy, claims settlement patterns, risk profile of policyholders, likely policyholder behaviour, product features (including guarantees), future management actions and expense structure. The risks in each group should be sufficiently similar and the group sufficiently large that a meaningful statistical analysis of the risks can be done. The classification is undertaking specific.

Incepted business

This refers to business written by an undertaking and which cover start date falls before the valuation date.

Market consistency

Consistent with information provided by the financial markets and generally available data on underwriting risks (Article 76 Level 1 text).

Outstanding claims provisions

Provisions for claims outstanding relate to the claims events that have occurred before or at the valuation date – whether the claims arising from those events have been reported or not. The cash-flows projected should comprise all future claims payments as well as claims management expenses arising from these events.

Portfolio specific

Depending on the characteristics of the insurance portfolio, i.e. that the characteristic would apply irrespective of which undertaking holds the liability.

Premium provisions

Premium provisions relate to claims events occurring after the valuation date and during the remaining in-force period of existing policies held by the undertaking. The cash-flow projections should comprise all future claims payments and claims management expenses arising from those events, cash-flows arising from ongoing administration of the in-force policies and expected future premiums stemming from existing policies.

Proportionality (principle of)

The Level 1 Directive explicitly requires that implementing measures be applied in a manner which is proportionate to the nature, complexity and scale of the risks bearing upon an undertaking, in particular with regards to very small insurance undertakings. This principle lays ground for the application of simplifications.

Realistic

Aiming at identifying scenarios or parameters as they are or will be in the future, without distorting the situations and by neither underestimating nor overestimating the value of the parameters.

Signed business

(Re)insurance obligations that the undertaking has contractually accepted to bear as at the valuation date.

Substance over form (principle of)

The distinctions between life and non-life techniques are aimed towards the nature of the liabilities (substance), which may not necessarily match the legal form (form) of the contract that originated the liability. The principle of substance over form holds that the choice between life or non-life actuarial methodologies should be based on the nature of the liabilities being valued and from the identification of risks which materially affect the underlying cash-flows.

Undertaking specific

Specific to the undertaking and thus with potential to differ from that of other market participants holding an obligation that is identical in all respects.

Unearned business

Portion of existing (re)insurance obligations relating to risk which is unexpired as at the valuation date.

Unincepted business

This refers to business written or signed by an undertaking and which cover start date falls after the valuation date.

Unsigned business

(Re)insurance obligations that the undertaking has not contractually accepted to bear as at the valuation date.

Validation techniques

The tools and processes used by the (re)insurance undertaking to ensure valuation methods, assumptions and results of the best estimate calculation are appropriate and relevant.

Appendix 3 References

Publications from EC

Level 1

Level 2

Publication from EIOPA

BoS 14/166

BoS 14/165

Publication from others

PRA Supervisory Statement 5/14 - Solvency II: calculation of technical provisions and the use of internal

models for general insurers

Extract relating to technical provisions:

2 Technical provisions

Realistic assumptions and adequate methods

2.1 Article 77(2) of the Directive requires technical provisions to be calculated using 'realistic assumptions and adequate methods'. Article 77(3) and the expected associated provisions in the Delegated Acts extend this requirement to the calculation of the risk margin.

Risk margin

2.2 The PRA considers the risk margin to be a significant part of the technical provisions calculation, so it is important that firms consider whether the methods used there are in fact adequate. This should include consideration of the underlying assumptions.

2.3 For example, firms should not approximate the future Solvency Capital Requirements used to calculate the risk

margin as proportional to the projected best estimate unless this has been shown not to lead to a material misstatement of technical provisions.

Events not in data

2.4 Many firms use reserving methods that project forwards from historical data. On its own, this is unlikely to satisfy the Directive requirement for a probability-weighted average of future cash-flows, since not all possible future cash-flows — or the events that cause them — may be represented in the data.

2.5 Although these events are sometimes referred to as 'binary events' or 'extreme events', such terms suggest that

events not found in the data are necessarily extreme or rare. This is not the case, so the PRA prefers to use the term 'events not in data', or ENID.

2.6 Firms should take ENID into account when calculating technical provisions. Applying a simple percentage uplift without justification is not an adequate method.

2.7 Where outliers are removed from the data as part of the reserving process, this removes events from the data. Firms should make an allowance for this in the technical provisions calculation unless they have shown that it would not be possible for these, or similar, events to occur again in future.

Premium provisions

2.8 Many firms use business plan loss ratios to set the level of premium provisions. Using optimistic business plan loss ratios for this purpose is not realistic, and will not produce a best estimate as required by Article 77 of the Directive.

Approximations

2.9 A number of firms have approximated an aspect of the technical provisions calculation on grounds of materiality.

Where this is the case, firms should quantify the materiality. Where firms make a number of such approximations, their cumulative materiality should also be considered; it is not adequate simply to demonstrate that each aspect taken alone is immaterial.

2.10 For example, where firms have assumed that the impact of lapses on technical provisions is not material, they should quantify the materiality, and consider this together with the impact of other simplifying assumptions made.

Appendix 4 Document Updates

This appendix outlines the major changes made to the document between the versions issued in March 2011 and now. It is only intended to provide a high level description and does not contain all the actual changes that have occurred in the document:

The majority of the original guidance still holds. The areas where there have been changes or clarifications are listed below and detailed further in the guidance.

The main update to the 2011 guidance relates to the contract boundaries to be considered for outwards reinsurance. It has been clarified that for existing or legally obliged reinsurance contracts any contractually obliged premiums arising from current business should be included in full, with no consideration to the future inwards business. For future reinsurance contracts the expected proportion of the premium that applies to existing inwards contracts should be included, this proportion will need to be clearly justified.

The four other areas that have seen either changes or clarifications since 2011 are:

- Confirmation of the treatment of contract boundaries on binders business as a “look through” basis. This is unchanged from Lloyd’s original proposed approach.
- Recommendation that a “proportionate” run off simplification for the calculation of the risk margin is not appropriate without justification. This is a change from the original guidance.
- Introduction of matching and volatility adjustments to risk-free rates and a description of why these are generally not significant for Lloyd’s entities.
- Relabelling “binary events” as “Events not in Data” or ENIDs, although their treatment is essentially unchanged from the original guidance

The confirmation relating to the treatment of contract boundaries is based on the following extracts:

It is supported by paragraphs 1. and 3. of Article 41 of the level 2 Delegated Acts:

1. The amounts recoverable from reinsurance contracts and special purpose vehicles shall be calculated consistently with the boundaries of the insurance or reinsurance contracts to which those amounts relate.

3. For the purpose of calculating the amounts recoverable from reinsurance contracts and special purpose vehicles, cash flows shall only include payments in relation to compensation of insurance events and unsettled insurance claims […].

It is further supported by guideline 78 in EIOPA’s guidelines on technical provisions BoS 14/166:

Insurance and reinsurance undertakings should recognise future cash-flows relating to future reinsurance purchasing covering obligations already recognised in the balance-sheet - to the extent that it is replacing any expiring reinsurance arrangements and if it can be demonstrated that it meets the conditions stated below [the conditions are not included here]

Appendix 5 Solvency II Risk Code Mapping

This appendix contains a risk code mapping to **assist** agents in the allocation of business to Solvency II line of business. This mapping does not give sufficient information to split out all data to the required level for Solvency II and further separation of data may be required. This would include information to split out data between direct and proportional business, or between facultative reinsurance and direct insurance. The field of “transaction type” has been included in the mapping below to highlight this split.

Note that the exact mapping for an individual syndicate will depend on the precise definition of business written within each grouping shown. Agents should not use the mapping without considering the features of business underwritten.

Note that the mapping included here is now final however there may change in future updates. Note also that the mapping is based on assumptions where risk codes and transaction types are not sufficient to provide clear split. Agents should consider for themselves where business written within risk codes should fall in a Solvency II context.

Updates to the risk code mapping can be found in Lloyd’s website in file “Risk Code Mappings and Descriptions” .

Appendix 6 Mapping of Solvency II requirements to guidance

The guidance is intended to cover all applicable requirements, in broad terms this mean satisfying the relevant requirements of the level 1, 2 and 3 texts. The section below includes a list of these requirements, at a high level, and a broad mapping to the guidance provided to show under which section this is covered.

Although there are areas where industry and regulatory practice will continue to develop, there are no longer seen as major areas of uncertainty in requirements in respect of Technical Provisions under Solvency II and therefore this document is not expected to change substantially over time.

Classification: Confidential

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 1	Article 44: Risk management	11.4 Matching & Volatility Adjustment
Level 1	Article 48: Actuarial function	1.17: Actuarial function
Level 1	Article 75: Valuation of assets and liabilities	3.1: Basis of calculation 3.2: Use of adequate techniques 3.3: Appropriate valuation techniques
Level 1	Article 76: General provisions	1: Introduction (which includes high level principle). 3: General requirements.
Level 1	Article 77: Calculation of technical provisions	3: General requirements 5: Calculation of BE and cashflows 6: Gross o/s claims prov 7: Gross prem prov 8: Reinsurance recoveries; 11:Discounting 12: Risk margin
Level 1	Article 78: Other elements to be taken into account in the calculation of technical provisions	9: Expenses; sub section 9.3 covers inflation
Level 1	Article 79: Valuation of financial guarantees and contractual options included in insurance and reinsurance contracts	5.1.5 & 5.1.6: Options and guarantees
Level 1	Article 80: Segmentation	4: Segmentation
Level 1	Article 81: Recoverables from reinsurance contracts and special purpose vehicles	8: Reinsurance recoveries
Level 1	Article 82: Data quality and application of approximations, including case-by-case approaches, for technical provisions	15: Data quality
Level 1	Article 83: Comparison against experience	1.17: Actuarial function 14.3: Back-testing or comparison against experience
Level 1	Article 84: Appropriateness of Technical Provisions	3.2: Use of adequate techniques 3.3: Appropriate Valuation Techniques 13.2: Appropriateness of Assumptions 13.3.1: Appropriateness of Assumptions
Level 1	Article 85: Increase of technical provisions	Not appropriate for Lloyd's
Level 2	Article 2: Expert judgement	13: Assumptions and use of Expert Judgement
Level 2	Article 7: Valuation assumptions	3.1: Basis of calculation.
Level 2	Article 11: Recognition of contingent liabilities	5.1: Requirements for cashflow projections
Level 2	Article 17: Recognition and de-recognition of insurance and reinsurance obligations	1.6: Recognition of contracts
Level 2	Article 18: Boundary of an insurance or reinsurance contract	7.2: Definition of existing contracts

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 2	Article 19: Data used in the calculation of technical provisions	15.1: Data quality requirements 13.2: Appropriateness of Assumptions
Level 2	Article 20: Limitations of Data	15.2: Deficiencies in data 15.6: Potential practical issues
Level 2	Article 21: Appropriate use of approximations to calculate the best estimate	15.2: Deficiencies in data
Level 2	Article 22: General provisions	13: Assumptions and use of Expert Judgement
Level 2	Article 23: Future management actions	3.4: Future management actions
Level 2	Article 24: Future discretionary benefits	5.1.7: Future Discretionary Benefits
Level 2	Article 26: Policyholder behaviour	5.1.6: Policyholder behaviour
Level 2	Article 27: Credibility of information	15.5: Issues of data quality in the context of a provisioning analysis and review
Level 2	Article 28: Cashflows	5: Cashflows
Level 2	Article 29: Expected future developments in the external environment	10.2: Illustration of ENIDs 14.2: Requirements for validation
Level 2	Article 30: Uncertainty of cashflows	5.6: Uncertainty within future cashflows
Level 2	Article 31: Expenses	9: Expenses
Level 2	Article 32: Contractual options and financial guarantees	5.1.5: Options & Guarantees
Level 2	Article 33: Currency of the obligation	4.7: Currency groups
Level 2	Article 34: Calculation methods	3: General requirements
Level 2	Article 35: Homogeneous risk groups of life insurance obligations	4: Segmentation
Level 2	Article 36: Non-life insurance obligations	6: Gross Claims provisions 7: Gross Premium provisions
Level 2	Article 37: Calculation of the risk margin	12: Risk margin
Level 2	Article 38: Reference undertaking	12: Risk margin
Level 2	Article 39: Cost of Capital rate	12.4: Cost of capital rate
Level 2	Article 41: General provisions (reinsurance)	8: Reinsurance recoveries
Level 2	Article 42: Counterparty default risk	8.4: Allowance for counterparty default
Level 2	Article 43: General provisions (discounting)	11: Discounting
Level 2	Article 44: Relevant financial instruments to derive the basic risk-free interest rates	11.3: determining the risk-free interest rate term structure
Level 2	Article 45: Adjustment to swap rates for credit risk	11.3: determining the risk-free interest rate term structure
Level 2	Article 46: Extrapolation	11.5: Extrapolation for longer-term insurance liabilities
Level 2	Article 47: Ultimate forward rate	11.5: Extrapolation for longer-term insurance liabilities

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 2	Article 49 Reference portfolios	11.4.2: Volatility adjustment
Level 2	Article 50 Formula to calculate the spread underlying the volatility adjustment	11.4.2: Volatility adjustment
Level 2	Article 51 Risk-corrected spread	11.4.2: Volatility adjustment
Level 2	Article 52: Mortality risk stress	11.4.1: Matching adjustment
Level 2	Article 53 Calculation of the matching adjustment	11.4.1: Matching adjustment
Level 2	Article 54 Calculation of the fundamental spread	11.4.1: Matching adjustment
Level 2	Article 56: Proportionality	3.5: ProportionalityThroughout the document, with suggested approaches / limitations in all areas.
Level 2	Article 57: Simplified calculation of recoverables from reinsurance contracts and special purpose vehicles	8.3.4: Simplifications in calculation of recoverables
Level 2	Article 58: Simplified calculation of the risk margin	12.5: Simplifications
Level 2	Article 60: Simplified calculation of the best estimate for insurance obligations with premium adjustment mechanism	3.3: Appropriate Valuation techniques - makes general reference to circumstances for simplified approaches
Level 2	Article 61: Simplified calculation of the counterparty default adjustment	8.5.2: Allowance for counterparty default 8.6: Suggested approaches
Level 2	Article 259(4) : Risk Management System, reliance on external credit ratings	8.5
Level 2	Article 264: Valuation of technical provisions – validation	14: Validation & Backtesting
Level 2	Article 265: Valuation of Technical provisions – documentation	16: Documentation
Level 2	Article 272: Actuarial function	1.17: Actuarial function
Level 3 - Guidelines on valuation of technical provisions	Guideline 1: Completeness of data	15.1.4: Completeness of data

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 2: Appropriateness of data	15.1.3: Appropriateness of data
Level 3 - Guidelines on valuation of technical provisions	Guideline 3: Data checks	15.1.2: General requirements on data quality in the context of valuing technical provisions 15.3: Data quality management
Level 3 - Guidelines on valuation of technical provisions	Guideline 4: Consideration of other analysis conducted	15.1.2: General requirements on data quality in the context of valuing technical provisions
Level 3 - Guidelines on valuation of technical provisions	Guideline 5: Consideration of the methodologies to be applied	15.2: Deficiencies in Data
Level 3 - Guidelines on valuation of technical provisions	Guideline 6: Source and use of data	15.4: Internal Processes on Identification, collection and processing of data
Level 3 - Guidelines on valuation of technical provisions	Guideline 7: Application of expert judgment	13.5: Use of Expert Judgement
Level 3 - Guidelines on valuation of technical provisions	Guideline 8: Validation and feedback process	14.2: Requirements for validation 15: Data Implications
Level 3 - Guidelines on valuation of technical provisions	Guideline 9: Identification of the source of material limitations	15.1: Data quality requirements
Level 3 - Guidelines on valuation of technical provisions	Guideline 10: Impact of shortcomings	15.3: Data quality management

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 11: Data adjustments	15.2: Deficiencies in Data
Level 3 - Guidelines on valuation of technical provisions	Guideline 12: Recommendations of the actuarial function	15.2:Deficiencies in Data 15.3:Data quality management 1.17: Actuarial Function
Level 3 - Guidelines on valuation of technical provisions	Guideline 13: Application of expert judgment upon material limitations	15.2: Deficiencies in Data 13.5: Use of Expert Judgement
Level 3 - Guidelines on valuation of technical provisions	Guideline 14: Documentation of data limitations	15.3.3: Resolution of problems identified
Level 3 - Guidelines on valuation of technical provisions	Guideline 15: Use of market data	13.2: Appropriateness of Assumptions
Level 3 - Guidelines on valuation of technical provisions	Guideline 16: Conditions on market data	15.5: Issues of data quality in the context of a provisioning analysis and review
Level 3 - Guidelines on valuation of technical provisions	Guideline 17: Segmentation of insurance or reinsurance obligations stemming from health and other non-life insurance contracts	4.1-4.2: Minimum lines of business (Non-Life and Health) 5.5: Health obligations
Level 3 - Guidelines on valuation of technical provisions	Guideline 19: Determining and assessing appropriateness of a homogeneous risk group	4.6: Homogenous risk groups for calculation of best estimates
Level 3 - Guidelines on valuation of technical provisions	Guideline 20: Calculations at the level of grouped policies	4.6: Homogenous risk groups for calculation of best estimates 4.8.1: Homogenous risk groups

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 21: Unbundling of insurance or reinsurance contracts covering multiple risks	4.5: Contracts covering multiple lines of business and "unbundling"
Level 3 - Guidelines on valuation of technical provisions	Guideline 22: Granularity of segmentation	4.6: Homogenous risk groups for calculation of best estimates
Level 3 - Guidelines on valuation of technical provisions	Guideline 23: Segmentation in respect of premium provisions and claims provisions	4: Segmentation
Level 3 - Guidelines on valuation of technical provisions	Guideline 24: Consistency of assumptions	13.4: Assumptions consistent with financial market information
Level 3 - Guidelines on valuation of technical provisions	Guideline 25: Modelling biometric risk factors	5.4: Life insurance obligations
Level 3 - Guidelines on valuation of technical provisions	Guideline 26: Expenses for hedging	9.1: Inclusion of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 27: Availability of market data	9.1: Inclusion of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 28: Expenses taken into account on contractual terms	9.1: Inclusion of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 29: Granularity of allocation of expenses	9.2: Allocation of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 30: Apportionment of overheads	9.2: Allocation of expense cashflows

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 31: Changing the approach to the split of overhead expenses	9.2: Allocation of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 32: Consistency of expenses with other cash-flows	9.2: Allocation of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 33: Changes in expenses	9.3: Calculation of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 34: Simplifications in respect of expenses	9.3: Calculation of expense cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 35: Charges for embedded options	5.1.6: Policyholder Behaviour
Level 3 - Guidelines on valuation of technical provisions	Guideline 36: Appropriateness of assumptions	5.1: Requirements for cashflow projections
Level 3 - Guidelines on valuation of technical provisions	Guideline 37: Assumptions on policyholder behaviour	5.1.6: Policyholder behaviour
Level 3 - Guidelines on valuation of technical provisions	Guideline 38: Allowance for future management actions	3.4: Future management actions
Level 3 - Guidelines on valuation of technical provisions	Guideline 39: Consistency of management actions with other assumptions	3.4: Future management actions
Level 3 - Guidelines on valuation of technical provisions	Guideline 40: Interrelation with cedant undertaking	3.4: Future management actions

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 41: Allowance for future discretionary benefits	5.1.7: Future Discretionary Benefits
Level 3 - Guidelines on valuation of technical provisions	Guideline 42: Assumptions on future discretionary benefits	5.1.7: Future Discretionary Benefits
Level 3 - Guidelines on valuation of technical provisions	Guideline 43: Assumptions in respect of modelling distribution of future discretionary benefits	5.1.7: Future Discretionary Benefits
Level 3 - Guidelines on valuation of technical provisions	Guideline 44: General principle of proportionality	3.5: Proportionality Throughout the document, with suggested approaches / limitations in all areas.
Level 3 - Guidelines on valuation of technical provisions	Guideline 45: Assessment of nature and complexity of the risks	3.2: Use of Adequate Techniques Throughout the document, with suggested approaches / limitations in all areas.
Level 3 - Guidelines on valuation of technical provisions	Guideline 46: Identification of complex risk structures	3.2: Use of Adequate Techniques Throughout the document, with suggested approaches / limitations in all areas.
Level 3 - Guidelines on valuation of technical provisions	Guideline 47: Assessment of scale of the risks	3.2: Use of Adequate Techniques Throughout the document, with suggested approaches / limitations in all areas.
Level 3 - Guidelines on valuation of technical provisions	Guideline 48: Granularity of materiality assessment	3.2: Use of Adequate Techniques Throughout the document, with suggested approaches / limitations in all areas.
Level 3 - Guidelines on valuation of technical provisions	Guideline 49: Consequences of material error identified in the proportionality assessment	3.5: Proportionality Throughout the document, with suggested approaches / limitations in all areas.
Level 3 - Guidelines on valuation of technical provisions	Guideline 50: Simplified calculation of technical provisions during the year	3.3.1: Use of simplified methods

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 51: Computation of the best estimate for life and non-life quarterly technical provision	3.3.2: Calculation of Technical Provisions on a quarterly basis
Level 3 - Guidelines on valuation of technical provisions	Guideline 52: Computation of the best estimate for life quarterly technical provision	3.3.2: Calculation of Technical Provisions on a quarterly basis
Level 3 - Guidelines on valuation of technical provisions	Guideline 53: Decision on methodology	5.1.5 Options & Guarantees
Level 3 - Guidelines on valuation of technical provisions	Guideline 54: Methodologies for the valuation of contractual options and financial guarantees	5.1.5 Options & Guarantees
Level 3 - Guidelines on valuation of technical provisions	Guideline 55: Documentation of the ESG	5.4: Life insurance obligations
Level 3 - Guidelines on valuation of technical provisions	Guideline 56: General understanding of the ESG	5.4: Life insurance obligations
Level 3 - Guidelines on valuation of technical provisions	Guideline 57: Calibration process: market data and choice of the financial instruments	5.4: Life insurance obligations
Level 3 - Guidelines on valuation of technical provisions	Guideline 58: Tests (accuracy, robustness and market-consistency)	5.4: Life insurance obligations
Level 3 - Guidelines on valuation of technical provisions	Guideline 59: Random and pseudo random number generators	5.4: Life insurance obligations
Level 3 - Guidelines on valuation of technical provisions	Guideline 60: On-going appropriateness of an ESG	5.4: Life insurance obligations

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 61: Methods to calculate the risk margin	12: Risk margin
Level 3 - Guidelines on valuation of technical provisions	Guideline 62: Hierarchy of methods for the calculation of the risk margin	12: Risk margin
Level 3 - Guidelines on valuation of technical provisions	Guideline 63: Allocation of the overall risk margin	12: Risk margin
Level 3 - Guidelines on valuation of technical provisions	Guideline 64: Capturing uncertainty	3.3.1: Use of simplified methods
Level 3 - Guidelines on valuation of technical provisions	Guideline 65: Reliable replication	3.3.1: Use of simplified methods
Level 3 - Guidelines on valuation of technical provisions	Guideline 66: Short term disruptions	3.3.1: Use of simplified methods
Level 3 - Guidelines on valuation of technical provisions	Guideline 67: Unbundling of obligations valued as a whole	3.3.1: Use of simplified methods
Level 3 - Guidelines on valuation of technical provisions	Guideline 68: future premium cash-flows versus premium receivable	7: Gross Premium Provisions
Level 3 - Guidelines on valuation of technical provisions	Guideline 69: Methods to calculate provisions for outstanding reported claims	6.3.1: Possible methodologies (Claims provisions)
Level 3 - Guidelines on valuation of technical provisions	Guideline 70: Methods to calculate provisions for incurred but not reported claims	6.3.1: Possible methodologies (Claims provisions)

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 71: Methods for the valuation of claims settlement expenses: unallocated loss adjustment expenses (ULAE)	9.5.1: Possible methodologies (Expenses)
Level 3 - Guidelines on valuation of technical provisions	Guideline 72: Cover	7: Gross Premium Provisions
Level 3 - Guidelines on valuation of technical provisions	Guideline 73: Considerations for claims costs projections	7.6.3: Cash outflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 74: Uncertainty of policyholder behaviour	5.1.6: Policyholder behaviour
Level 3 - Guidelines on valuation of technical provisions	Guideline 75: Negative premium provision	7.1.3: Items to include (in gross premium provisions)
Level 3 - Guidelines on valuation of technical provisions	Guideline 76: Separation of insurance obligations	7.2:Definition of existing contracts 7.3: Premium receivable
Level 3 - Guidelines on valuation of technical provisions	Guideline 77: Assumptions used to calculate EPIFP	7: Gross Premium Provisions
Level 3 - Guidelines on valuation of technical provisions	Guideline 78: Extent of allowance for future reinsurance purchase	8.1.1: What contracts to include
Level 3 - Guidelines on valuation of technical provisions	Guideline 79: Simplified calculation of recoverables from reinsurance contracts and special purpose vehicles: premium provisions	8.3: Calculation of recoverables
Level 3 - Guidelines on valuation of technical provisions	Guideline 80: Simplified calculation of recoverables from reinsurance contracts and special purpose vehicles: provisions for claims outstanding	8.3.3: Gross to net techniques for calculating recoverables

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on valuation of technical provisions	Guideline 81: Simplified calculation of the counterparty default adjustment	8.4: Allowance for counterparty default
Level 3 - Guidelines on valuation of technical provisions	Guideline 82: The projection period	3.5:Proportionality 1.10:Uncertainty 5.6: Uncertainty in future cashflows
Level 3 - Guidelines on valuation of technical provisions	Guideline 83: Proportionality of technical provisions validation	14.1: Validation
Level 3 - Guidelines on valuation of technical provisions	Guideline 84: Selection of validation approaches and processes	14: Validation and back-testing
Level 3 - Guidelines on valuation of technical provisions	Guideline 85: Qualitative and quantitative approaches	14.1: Validation
Level 3 - Guidelines on valuation of technical provisions	Guideline 86: Regular and dynamic validation process	14.1: Validation
Level 3 - Guidelines on valuation of technical provisions	Guideline 87: Comparison against experience: deviations	14.3: Back-testing or comparison against experience
Level 3 - Guidelines on valuation of technical provisions	Guideline 88: Comparison against market for contracts with options and guarantees	5.1.5 Options & Guarantees
Level 3 - Guidelines on contract boundaries	Guideline 1: Consistent application of the principles	7: Gross Premium Provisions
Level 3 - Guidelines on contract boundaries	Guideline 2: Unilateral right	7.2: Definition of existing contracts
Level 3 - Guidelines on contract boundaries	Guideline 3: Ability to compel	7.2: Definition of existing contracts

Level of directives	Article / Guidance	Reference to Lloyd's SII Guidance sections
Level 3 - Guidelines on contract boundaries	Guideline 4: Full reflection of the risk	7.2: Definition of existing contracts
Level 3 - Guidelines on contract boundaries	Guideline 5: Unbundling of the contract	4.5: Contracts covering multiple lines of business and "unbundling"
Level 3 - Guidelines on contract boundaries	Guideline 6 : Identification of a discernible effect on the economics of a contract	1.9:ENIDs 1.10: Uncertainty,
Level 3 - Guidelines on contract boundaries	Guideline 7: Estimation of obligations	7.2: Definition of existing contracts
Level 3 - Guidelines on contract boundaries	Guideline 8: Reinsurance contracts	8: Reinsurance recoveries