INSURANCE (PRUDENTIAL STANDARDS) (CLASS C, CLASS D and CLASS E SOLVENCY REQUIREMENT) AMENDMENT RULES 2024

(Paragraph 6)

SCHEDULE XXVI

SCHEDULE OF ECONOMIC BALANCE SHEET VALUATION PRINCIPLES

PART 1: ECONOMIC BALANCE SHEET – VALUATION PRINCIPLES

1 The economic balance sheet (EBS) shall be produced on a consolidated basis in line with GAAP principles adopted by the insurer, as notified and agreed by the Authority ("GAAP Principles"). Except where specifically mentioned below, the consolidated assets and liabilities shall be assessed and fair-valued in line with the GAAP principles adopted by the Insurer, as notified to and agreed by the Authority.

2 For cases where the GAAP principles permit both a fair value model and a non-economic valuation model for valuing an asset or liability, the insurer shall apply the fair value model.

3 For cases where the GAAP principles do not require an economic valuation the insurer shall fair value the asset or liability using the following hierarchy of high-level principles of valuation of assets and liabilities:

(a) quoted market prices in active markets for the same or similar assets or liabilities must be used whenever possible;
(b) an active market for the purposes of this Schedule is a market in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis;
(c) where the use of quoted market prices for the same assets or liabilities is not possible, quoted market prices in active markets for similar assets and liabilities with adjustments to reflect differences shall be used;
(d) if there are no quoted market prices in active markets available, mark-to-model techniques, which are alternative valuation techniques that have to be benchmarked, extrapolated or otherwise calculated as far as possible from a market input, should be used; and
(e) maximum use must be made of relevant observable inputs and market inputs and rely as little as possible on undertaking-specific inputs, minimising the use of unobservable inputs.

4 When valuing liabilities, no adjustments shall be made to take account of the own credit standing of the insurer.

5 Insurers shall follow the GAAP principles it has adopted in the treatment of insurance contracts that do not transfer significant insurance risk.

6 The exceptions to these principles are mainly related to line items affecting the valuation of insurance technical provisions.

7 All contractual liabilities or contingent liabilities arising from off-balance sheet arrangements are to be recognised on the EBS. Contractual liabilities should be valued consistently with GAAP principles. In cases where the GAAP principles do not require fair value, the insurer should value the contractual liabilities using the valuation hierarchy in paragraph 3. Contingent liabilities shall be valued based on the expected present value of future cash-flows required to settle the contingent liability over the lifetime of that contingent liability, using the basic risk-free interest rate. Where the present value of contingent obligations cannot be determined, the liability should be valued at its undiscounted value.

PART 2: TECHNICAL PROVISIONS – APPLICATION PRINCIPLES

Proportionality, nature, scale, complexity and simplifications

8 (1) Insurers shall use methods to calculate technical provisions which are proportionate to the nature, scale and complexity of the risks underlying their insurance obligations.

(2) In determining whether a method of calculating technical provisions under subparagraph (1) is proportionate, insurers shall carry out—

(a) an assessment, which includes an assessment of the nature, scale and complexity of the risks underlying their insurance obligations; and

(b) an evaluation 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; and

(ii) the results of the assessment referred to in subparagraph (3).

(3) The assessment referred to in subparagraph (2)(b)(ii) shall include all risks which affect the amount, timing or value of the cash in- and out-flows required to settle the insurance obligations over their lifetime. This shall include the following risk characteristics, where applicable —

(a) the degree of homogeneity of the risks;
(b) the variety of different sub-risks or components of which the risk is comprised;
(c) the manner in which sub-risks referred to in sub-subparagraph (b) are interrelated;
(d) the level of uncertainty of cash flows, including the extent to which future cash flows can be estimated;
(e) the nature of the occurrence or crystallisation of the risk in terms of frequency and severity;
(f) the manner in which claims develop over time;
(g) the extent of potential loss, including the tail of the claims distribution;
(h) the type of business from which risks originate;
(i) the degree of dependency between different risk types, including the tail of the risk distribution; and
(j) risk mitigation instruments applied, if any, and their impact on the underlying risk profile.

(4) The method of calculating technical provisions under subparagraph (1), shall be considered by the Authority to be disproportionate to the nature, scale and complexity of the risks of the insurer's business if the error introduced in accordance with subparagraph (2) (b), leads to a misstatement of technical provisions or their components that could influence the decision-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; and

(b) the method leads to an amount of technical provisions that is higher than an amount that would result from the application of a proportionate method and the method does not lead to an underestimation of the risk inherent in the insurance obligations that it is applied to.

(5) Insurers may make suitable simplifications in the calculation of technical provisions as follows —

(a) simplification methods referred to in subparagraph (5) may include —

(i) scaling, mapping to similar products to gross up;

(ii) using a deterministic model instead of stochastic model;

(iii) performing an aggregate calculation instead of policy by policy calculation;

(b) simplification methods may also apply to the determination of best estimate liabilities and risk margin, including but not limited to expected losses on reinsurance recoverables due to counterparty default, reinstatement premiums on reinsurance recoverables, or application of contract boundaries.

Application of assumptions and expert judgement relating to technical provisions

9 (1) Insurers may utilise expert judgement when applying data used in the calculation of the technical provisions, the assumptions underlying the calculations, and the method applied to derive the technical provisions.

(2) Where expert judgement is utilised by an insurer to calculate the technical provisions in accordance with subparagraph (1), the following additional requirements apply —

(a) the use of expert judgement shall not replace appropriate collection, processing and analysis of data;

(b) expert judgement shall not be used in isolation unless there is no reliable alternative.;

(c) where expert judgement is solely utilised in accordance with subparagraph (2)(b), or results in a material impact on the derived best estimate, reasonable alternative assumptions are required to be tested by the insurer to ensure the selected assumption appropriately reflects the uncertainty in the outcome; and

(d) persons applying expert judgment shall have adequate experience and sufficient relevant knowledge and understanding of the subject.

(3) Insurers shall ensure that internal users, which includes, but is not limited to, external service providers to whom functions or activities have been outsourced, of relevant assumptions are informed about the content, reliability and limitations of such assumptions.

(4) Where an insurer uses a model to produce projections of future financial market parameters, such model shall comply with the following requirements, it shall—

(a) be risk neutral;
(b) generate prices that are consistent with deep, liquid, and transparent financial markets;
(c) assume no arbitrage opportunity; and
(d) ensure that the calibration of the parameters and scenarios used is consistent with the relevant risk-free interest rate term structure used to calculate the best estimate.

(5) Assumptions applied by insurers in the calculation of technical provisions shall meet the following minimum requirements, whereby they are —

(a) clear and justified, whereby insurers have taken into account —

(i) the significance of the assumption;
(ii) any uncertainty in the use of the assumption ; and
(iii) any relevant alternative assumption.

(b) consistent with the characteristics of the portfolio of the insurer's insurance obligations;

(c) applied by the insurer consistently over time and within homogeneous risk groups and lines of business, without arbitrary change;

(d) adequately reflective of any uncertainty underlying the insurer's cash flows.

PART 3: TECHNICAL PROVISIONS – GENERAL CALCULATION PRINCIPLES

General

10 (1) Every insurer shall establish technical provisions under these Rules, with respect to insurance obligations relating to insurance contracts.

(2) The value of technical provisions shall be equal to the sum of a best estimate and a risk margin. The two components shall be calculated separately unless the technical provisions as a whole approach, under paragraph 37, is applied.

(3) Notwithstanding subparagraph (1), where cash flows associated with insurance obligations can be replicated using financial instruments, then insurers may use the market values of those financial instruments as the technical provisions.

(4) The value of technical provisions shall correspond to the current amount insurers would have to pay if they were to transfer their insurance obligations immediately to another insurer in an arm's length transaction.

(5) Insurers shall ensure that the calculation of the technical provisions shall include and be consistent with up-to-date financial market information and generally available data on insurance risks.

Segmentation

11 Insurers shall segment insurance obligations into homogeneous risk groups when calculating the technical provisions.

Insurance obligation recognition and contract boundaries

12 (1) When calculating the technical provisions, insurers shall recognise an insurance obligation at the date a member of the insurer becomes a party to the contract of insurance that gives rise to the obligation or the date the insurance cover begins, whichever date occurs earlier. Insurers shall only recognise the obligations within the boundary of the contract.

(2) An insurer, when determining whether to include a contract of insurance within the technical provisions, shall consider—

(i) whether or not such contract is legally enforceable; or

(ii) on what terms the insurer could avoid the liability associated with the exposure.

(iii) whether or not the insurer is able to materially change the terms or premium associated with the contract of insurance, where an insurer that is legally required under law to provide the insurance cover.

(3) Insurers shall no longer recognise insurance obligations referred to in subparagraph (1), from the date such obligations become extinguished, including but not limited to, where they are discharged, cancelled or upon the date of expiration of the contract of insurance.

(4) All obligations relating to a contract of insurance will be considered by an insurer to be within the boundaries of such contract until any of the following matters arise —

(a) an insurer is no longer required to provide coverage under the contract of insurance;

(b) an insurer has the contractual right or ability to reassess the risk of a policyholder or beneficiary of a contract of insurance and, as a result, can set a price that fully reflects the revised risk; or

(c) where an insurer has the ability to reassess the risk of the portfolio that contains a contract of insurance and, as a result can set a price that fully reflects the risk of that portfolio.

Data

13 (1) Insurers shall implement internal processes and procedures to ensure the appropriateness, completeness and accuracy of the data utilised in the calculation of technical provisions applicable to them.

(2) Where insurers have insufficient quality data to apply a reliable actuarial method to a set or subset of insurance obligations, or amounts recoverable from outwards reinsurance contracts, approximations may be used in the calculation of the best estimate.

Comparison against experience

14 (1) Insurers shall implement processes and procedures to ensure that the best estimate calculation, and the assumptions underlying such calculation, are regularly compared against experience.

(2) Where the review identifies systematic deviation between experience and the best estimate calculations conducted in accordance with the technical provisions Rules, the insurer shall make appropriate adjustments to the actuarial methods being used or the assumptions being made.

PART 4: TECHNICAL PROVISIONS - BEST ESTIMATE

Overview

15 (1) Insurers shall ensure that the best estimate calculation that is applied shall—

(a) correspond to the probability-weighted average of future cash flows discounted, using the relevant interest rate term structure.

(b) take into account the time value of money, using the relevant risk-free interest rate term structure with an appropriate illiquidity adjustment.

(c) allow for uncertainty in future cash flows, and reflect the full potential range of possible outcomes, each weighted to reflect their respective probability of occurrence.

(d) be based upon up-to-date, reliable, and credible information and realistic current assumptions and be performed using adequate, applicable and relevant actuarial and statistical methods. At each valuation date, the insurer shall consider whether the

assumptions and methods applied continue to be appropriate and justify changes or no-changes.

(2) The best estimate gross of any recoverable amounts from outwards reinsurance contracts, and the corresponding best estimate of the recoverable amounts, shall be calculated and shown separately.

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Cashflows and uncertainty in future cashflows

16 (1) The cash flows applied in the calculation of the best estimate shall include all future cash inflows and outflows required to settle insurance obligations that are within the contract boundaries (as defined in paragraph 12) of the existing insurance contracts.

(2) In relation to cash flows used in the calculation of best estimates in subparagraph (1), insurers shall take into account of the following types of cashflows, including but not limited to—

(a) premium payments, including outwards (reinstatement or otherwise) premiums, and any additional cash flows resulting from such premiums;

(b) benefit payments, including discretionary benefits, to cedents, policyholders and beneficiaries;

(c) payments that the insurer will incur in providing contractual benefits in kind;

(d) expenses (including payments to intermediaries, claim costs, servicing costs and profit commissions) incurred in servicing insurance obligations over their lifetime;

(e) investment costs including payments between the insurer and investment firms in relation to contracts with index-linked and unit-linked benefits;

(f) payments between the insurer and intermediaries related to insurance obligations;

(g) payments for salvage and subrogation to the extent that such do not qualify as separate assets or liabilities in accordance with international accounting standards (such as IFRS or GAAP);

(h) taxation payments which are, or are expected to be, charged to policyholders and beneficiaries or are required to settle the insurance obligations;

(i) payments between the insurer and its reinsurers or other providers of risk mitigation, making due allowance for any expected shortfall in amounts to be received due to counterparty default (for whatever reason, including, but not limited to counterparty insolvency or contractual dispute); and

(j) Any other cashflow items which are expected to be charged to policyholders or required to settle the obligations.

(3) cash flow projections applied in the calculation of the best estimate shall, take account of uncertainties in the cash flows, including uncertainties —

(a) in the timing, frequency and severity of insured events;

(b) in claim amounts, including uncertainty in claims inflation, and in the period needed to settle and pay claims;

(c) in the amount of expenses;

(d) in the expected future developments;

(e) in policyholder behaviour;

(f) in the dependency between two or more causes of uncertainty;

(g) in the dependency of cash flows on circumstances prior to the date of the cash flow.

Expenses

17 (1) The best estimate shall reflect all cash-flows arising from expenses that will be incurred in servicing insurance obligations. This shall include but not be limited to the following expenses—

(a) administrative;

(b) claims management;

(c) acquisition;

(d) investment;

(e) overhead.

(2) In relation to subparagraph (1)(e), overhead expenses shall include but are not limited to:

(a) salaries of general managers,

(b) auditing costs;

(c) day-to-day costs;

(d) new business development expenses;

(e) advertising and improvements of internal processes.

(3) Insurers shall consider whether sufficient future new business will be sold to enable existing per policy expenses to be maintained with an appropriate rate of inflation. For closed books or declining business, consideration shall be given to whether additional expense reserves are required to reflect increasing per policy expenses as the business runs off.

(4) In the calculation of the best estimate, insurers may include investment- related expenses as a separate series of cashflows or such may be offset against the discount rate.

(5) The investment expenses in relation to subparagraph (1)(d) may be based on the hypothetical costs relating to a theoretical investment portfolio for business for which the standard approach, as defined in paragraph 27 has been adopted. Where the scenario based approach (as set out in paragraph 28) is applied, then investment expenses shall be based on the costs associated with the insurer's actual investment portfolio.

(6) Current administrative, claims management, investment as defined under subparagraph (1) and overhead expenses as defined in subparagraph (1) shall be projected forward by insurers using appropriate rates of expense inflation.

Different currencies application- best estimate calculation

18 (1) The time value of money of future cash-flows in different currencies shall be calculated by insurers using the relevant interest rate term structure for each relevant currency.

(2) Insurers shall ensure that discounted future cash-flows are converted to the reporting currency at the exchange rates in effect as of the valuation date, to obtain the best estimate.

(3) Best estimates to be calculated by currency shall be produced using material currencies and the insurer's reporting currency.

(4) Insurers shall consider data availability in creating and applying homogeneous risk groups by currency, to ensure that appropriate discount rates are available in the calculation the best estimate.

Allowance for recoveries from outwards (re)insurance contracts

19 (1) The best estimate of inflows and outflows from outwards (re)insurance contracts shall be based on principles consistent with those underlying the gross (of outwards (re)insurance) best estimate.

(2) Relevant cash flows, relating to outwards (re)insurance contracts, to be considered for calculation of the best estimate requirement shall include, where applicable, reinstatement premiums required to be paid to a (re)insurer, and expenses in relation to the management and administration of outwards (re)insurance claims.

(3) Insurers shall include projected outwards reinstatement premiums within the premium provisions. When calculating the best estimate of the reinstatement premiums under subparagraph (2), insurers shall ensure that -

(a) they capture the uncertainty of claims experience, taking into account the likelihood and severity of all outcomes; and

(b) the approach used to assess the level of reinstatement premiums is consistent with the valuation of the best estimate claims costs allowed for in the premium provisions; and

(c) the administrative expenses associated with the cost of handling the reinstatement is also included in the premium provisions.

(4) Where recoveries from outwards (re)insurance contract are not dependent directly on gross claims payments, then the insurer shall take into account any structural mismatch between gross claims payments and amounts recoverable in determining their best estimate.

(5) Insurers shall consider the potential impact of timing differences between payment of gross claims and receiving related recoveries from (re)insurers.

Allowance for counterparty default

20 (1) The best estimate of outwards (re)insurance recoveries shall be adjusted to take account of expected losses due to counterparty default for whatever reason, including (re)insurer insolvency and contractual dispute.

(2) The adjustment shall be calculated separately as the expected present value of the change in cash-flows underlying the amounts recoverable from the counterparty, resulting from a default of the counterparty at a certain point in time. This calculation shall therefore take into account possible default events over the lifetime of the rights arising from the corresponding outwards reinsurance contract and the dependence on time of the probability of default.

(3) Insurers may make allowance for counterparty credit risk mitigation techniques they have adopted as follows—

(a) where such allowance involves the use of collateral assets, then the potential market risk on the relevant assets shall be taken into account; and

(b) where security has been obtained by way of letter of credit, guarantee or similar arrangement, then insurers shall replace the rating of the reinsurer with the rating of the security provider.

Expected future developments

21 (1) An insurer's calculation of the best estimate shall take into account future developments, including trends, that may have a material impact on the cash inflows and outflows required to settle insurance obligations of a contract for insurance for the duration of the contract.

(2) Insurers shall regard future developments for the purposes of calculation of the best estimate requirement in subparagraph (1), to include demographic, legal, medical, technological, social, environmental and economic developments including inflation.

Allowance for management actions

22 (1) Insurers shall ensure that the best estimate calculation reflects potential management actions (that is any action the officers of an insurer may expect to carry out under specific future circumstances) and where and to the extent required, potential changes in policyholder behaviour.

(2) Management actions shall be reflected by insurers in the valuation of the best estimate provided that the management actions:

(a) are clearly documented;
(b) have been approved by the chief executive or senior executive;
(c) are consistent with representations made to policyholders;
(d) are realistic and consistent with the insurer's current business practice and business strategy, including the use of risk-mitigation techniques where there is sufficient evidence that the insurer will change its practices or strategy, the assumed management actions are consistent with the changed practices or strategy;
(e) reflect the time and cost required to implement;
(f) are consistent with past evidence of similar actions in similar circumstances;
(g) are not contrary to any obligations towards policyholders and beneficiaries or to legal requirements applicable to the insurer;
(h) are consistent with each other; and
(i) are defined clearly as to when each would be taken.

(3) Assumptions relating to management actions shall be relevant to the insurers operations and shall take into account all of the following matters —

(a) a comparison of assumed future management actions with management actions taken previously by the insurer;

(b) a comparison of future management actions taken into account in the current and in the past calculations of the best estimate;

(c) an assessment of the impact of changes in the assumptions on future management actions on the value of the technical provisions; and

(d) the time needed to implement the management actions and any expenses relating to them.

(3) Use of management actions shall not apply to reinvestment and disinvestment assumptions in the scenario-based approach. For liabilities valued using the scenario-based approach, insurers shall apply the requirements set out in paragraph 28 in relation to the application of such assumptions.

Policyholder Behaviour

23 (1) When determining the likelihood that policyholders will exercise contractual options, including lapses and surrenders, insurers shall conduct an analysis of past policyholder behaviour and a prospective assessment of expected policyholder behaviour.

(2) The analysis required in subparagraph (1) shall take into account all of the following matters—

(a) analysis of previous data on policyholder actions, if available;

(b) analysis of the degree to which it would be in the policyholder's interest to exercise the available option;

(c) changes in the operating environment;

(d) potential interaction with management actions;

(e) the influence of economic conditions;

(f) any other circumstances that are likely to influence decisions by policyholders on whether to exercise the option; and

(g) possibility of recaptures for reinsurance transactions.

(3) An insurer shall consider whether the insurance liabilities may be materially affected by either management actions or policyholder behaviour across a range of potential future economic scenarios.

(4) In relation to liabilities that may be materially affected by management action and policyholder behaviour, assumptions are required to be taken into account by an insurer across a range of economic scenarios. Where such assumptions already exist, these are required to be reviewed by an insurer to ensure they are appropriate to be taken into account.

(5) The allowance for management action and policyholder behaviour shall be disclosed, together with information indicating the possible materiality on the calculation of the best estimate.

Discretionary benefits

24 Where future discretionary benefits depend on the assets held by the insurer, insurers shall base the calculation of the best estimate on the assets currently held by the insurer and shall assume future changes of their asset allocation in accordance with the requirements relating to management actions. Insurers shall ensure that assumptions applied on the future returns of the assets are consistent with the relevant interest rate term structure utilised.

Valuation of material guarantees and contractual options

25 (1) When calculating the best estimate, insurers shall identify and take into account all material financial guarantees, non-financial guarantees and contractual options included in insurance contracts (whether such are contained in the insurance liabilities or the assets backing the insurance liabilities).

(2) When calculating the best estimate, insurers shall take into account all factors which may affect the likelihood that policy holders will exercise contractual options or realise the value of financial guarantees.

Best estimate calculation method

26 (1) The best estimate shall be calculated in such a way as to ensure that the calculation method and the results that derive from it are capable of review by a competent person.

(2) The selection of actuarial and statistical methods utilised by insurers for the calculation of the best estimate requirement, shall—

(a) reflect the risks affecting the underlying cash flows and the nature of the insurance obligations of insurer's contracts;

(b) 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, insurers shall ensure that the grouping of policies creates homogeneous risk groups that appropriately reflect the risks of the individual policies included in such groups.

(4) Insurers shall analyse the extent to which the present value of cash flows depend both on the—

(a) the expected outcome of future events and developments; and

(b) 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 in accordance with subparagraph (4), insurers shall calculate the best estimate for cash flows applying methods which reflect such dependencies.

Discounting - 'Standard Approach'

27 (1) When calculating the best estimate, insurers shall take into account the time value of money using an applicable risk-free interest rate term structure with an appropriate illiquidity adjustment. The interest rate term structure applied shall take into account a partial reflection of the illiquidity premium existing in underlying assets held and mitigate artificial volatility on its balance sheets.

(2) Risk-free discount curves and illiquidity premium adjusted risk-free discount curves relating to certain currencies shall be prescribed by the Authority on its website at *www.bma.bm/* and shall be applied by the insurers that use the standard approach in determining the best estimate for some or part of their liabilities.

(3) When insurers have liabilities in a currency where discount curves are not available under subparagraph (2), they should apply to the Authority under Section 6D of the Act for determining suitable discount curves for that currency.

(4) Where assumptions on investment returns are required for the purposes of calculating the best estimate, the investment returns shall be consistent with the relevant risk-free term structure applied by the insurer and shall take into account the illiquidity premium adjusted risk-free discount curves (as determined by the Authority) under subparagraph (2).

Discounting – 'Scenario-based approach'

28

(1) When determining the best estimate liabilities, insurers may elect to apply the scenario-based approach or the standard approach to some or all of long-term business written

by members of the insurer, subject to liabilities meeting the requirements of this paragraph and paragraph 29(1).

(2) The Authority may, at its discretion, determine that an insurer must apply either the scenario-based approach or the standard approach to some or all of the long term business written by members of the insurer.

(3) In making a determination under subparagraph (2), the Authority shall consider the following matters which include, but are not limited to—

(a) the degree of asset and liability matching;
(b) degree of optionality in liabilities;
(c) nature, scale and complexity of the insurer's business;
(d) results of any supervisory review process undertaken by the Authority.

(4) Insurers shall not split underlying policyholder contracts to achieve scenario-based approach eligibility.

(5) Insurers shall ensure the asset and liability portfolios for which the scenario-based approach is used, are well-matched.

(6) Insurers shall ensure that for the assets and liabilities for which the scenario-based approach is used, the assets backing the liabilities are denominated in the same currency as the liabilities. To the extent this may not be the case, the currency mismatch must be hedged and effectively managed.

(7) In determining the best estimate liability using the scenario-based approach, insurers shall run the calculation through the following nine interest rate scenarios—(

(a) No adjustment to the rates. This scenario for which no adjustment is made to the rates shall be called the base scenario.

(b) All rates decrease annually to total decrease of 1.5% in tenth year; unchanged thereafter.

(c) All rates increase annually to total increase of 1.5% in tenth year; unchanged thereafter.

(d) All rates decrease annually to total decrease of 1.5% in fifth year, then back up again by tenth year.

(e) All rates increase annually to total increase of 1.5% in fifth year, then back down again by tenth year.

(f) Decrease with positive twist to the following net change after ten years (interpolate for other durations):

(i) Year 1 spot rate -1.5%
(ii) Year 10 spot rate -1.0%
(iii) Year 30 spot rate -0.5%

(g) Decrease with negative twist to the following net change after ten years (interpolate for other durations):

(i) Year 1 spot rate -0.5%
(ii) Year 10 spot rate -1.0%
(iii) Year 30 spot rate -1.5%

(h) Increase with positive twist to the following net change after ten years (interpolate for other durations):

(i) Year 1 spot rate +0.5%
(ii) Year 10 spot rate +1.0%
(iii) Year 30 spot rate +1.5%

(i) Increase with negative twist to the following net change after ten years (interpolate for other durations):

(i) Year 1 spot rate +1.5%
(ii) Year 10 spot rate +1.0%
(iii) Year 30 spot rate +0.5%

(8) For the purpose of calculating best estimate liabilities under the scenario-based approach, insurers shall determine the future yield curves under each scenario as follows—

(a) convert initial spot rates to the corresponding forward rates;

(b) build spot rate curves at future years (years 1, 2,3, etc.) using the forward rates determined in accordance with subparagraph (a);

(c) apply adjustments set out in the previous subparagraph (7) to the spot rate curves in subparagraph (8)(b), to determine the spot rate curve at each future year along each scenario.

(9) Insurers shall ensure that the following requirements are met within the projections used to calculate best estimate liabilities under the scenario-based approach —

(a) spot rate curves determined under paragraph 8(c) shall be applied, together with the assumed spreads for each modelled asset class, to calculate the yields and prices of each asset at the moment it is purchased or sold;

(b) for each scenario, at least annually within the projections, liability cash-flows shall be compared to asset cash-flows to establish net cash-flows as the difference of the asset and liability cash-flows;

(c) in relation to cash-flow shortfalls (i.e., negative net cash-flow) when a comparison is conducted in accordance with subparagraph (b), insurers shall sell assets, at the yields prevailing in the scenario at the applicable timestep, to cover the shortfall;

(d) where there is a cash-flow excess (positive net cash-flow) when a comparison is conducted in accordance with subparagraph (b), insurers shall purchase assets, at the yields prevailing in the scenario at the applicable timestep, in accordance with its investment and reinvestment guidelines.

(10) Insurers shall calculate best estimate liabilities under the scenario-based approach as follows—

(a) use the current asset portfolio and reinvestment requirements determined in line with subparagraph 33, to determine the amount of held assets required to cover liability cash-flows under the base scenario;

(b) determine under each other stress scenario as defined in subparagraph (7), the revised amount of assets required to cover liability cash-flows;

(c) set the best estimate liabilities to be equal to the highest asset requirement across all scenarios.

(11) For sets of liabilities where full fungibility exists, insurers may apply the scenario that produces the highest asset requirement in aggregate (the "biting scenario"). Different blocks of liabilities cannot be assumed to be fungible unless it can be demonstrated they are fungible and prior written approval is obtained from the Authority. Where fungibility between portfolios or blocks of business is restricted, those liabilities should not be aggregated by insurers for the purposes of determining the biting scenario.

(12) The following asset categories may be applied by insurers in the scenario-based approach calculation—

(a) acceptable assets under subparagraph (13);

(b) assets requiring prior approval in accordance with subparagraph (14);

(c) asset classes which may be applied on a limited basis with the approval of the Authority in accordance with subparagraph (15);

(d) asset classes which may be applied with the approval of the Authority as prescribed in accordance with subparagraph (17).

(13) Acceptable assets shall be those that are investment grade assets as follows—

(a) government bonds;

(b) municipal bonds;

(c) public corporate bond

(d) cash and cash equivalents.

(14) An insurer shall obtain prior approval to use other investment grade fixed income assets including but not limited to: private assets, structured securities, residential mortgage loans, commercial mortgage loans and investment grade preferred stock, when calculating the scenario-based approach. Structured securities for the purposes of this paragraph shall include, but are not limited to—

(a) mortgage-backed securities;

(b) asset backed securities;

(c) collateralized loan obligations.

(15) Notwithstanding subparagraphs (13) and (14), insurers may apply to the Authority for approval to utilise other assets on a limited basis within the scenario-based approach calculation. The application shall be supplemented by information and documents prescribed by the Authority. Assets which may be applied for in accordance with this paragraph are as follows—

(a) assets under subparagraph (13) where such are below investment grade;

(b) assets under subparagraph (14) where such are below investment grade;

(c) commercial real estate;

(d) credit funds (containing fixed income instruments).

(16) The assets which may be applied by an insurer in accordance with an approval granted by the Authority pursuant to subparagraph (15)—

(a) shall be limited in aggregate to no more than 10% of the value of the asset portfolio used in the scenario-based approach calculation at the time of the calculation, and at each time step within the projections;

(b) may be subject to a lower limit of the value of the asset portfolio used in the calculation at the time of the calculation and at each time step within the projections, where the Authority deems such appropriate;

(c) shall be required to be reviewed by the approved actuary on an annual basis, in order to demonstrate to the Authority that they remain appropriate to be used in the calculation of the scenario-based approach by an insurer;

(d) shall be limited so that any one asset will not comprise more than 0.5% of the total asset portfolio;

(e) may be subject to other conditions on grant of approval, as determined by the Authority when considering the nature, scale and complexity of an insurer's business;

(f) shall not be sold to meet cashflow shortfalls within the scenario-based approach projections. An exception may exist where, for assets with no contractual maturity date, a different treatment has been approved by the Authority subject to conditions set by the Authority;

(17) When calculating the best estimate liabilities using the scenario-based approach, insurers may make an application to the Authority for approval regarding long term liabilities beyond 30 years, to use certain asset types that would otherwise not be acceptable (such as equities) to derive an adjustment to capital, that is, a long-term investment credit.

(18) The capital adjustment referred to in subparagraph (17) shall be determined as follows—

(a) calculate best estimate liabilities with no allowance for not-acceptable assets i.e., using only existing assets in accordance with paragraph (13) and assets under subparagraphs (14) and (15) where those have been approved by the Authority;

(b) calculate best estimate liabilities with allowance for otherwise not-acceptable assets to back liability cash flows beyond 30 years;

(c) the difference between the calculations in subparagraphs (a) and (b) above may be considered as a positive adjustment to capital subject to limits

(d) imposed by the Authority;

(e) subject to approval by the Authority, certain assets acceptable on a limited basis (not including non-investment grade structured securities) that are not already used in the scenario-based approach calculation under subparagraph (a), may also be used under subparagraph (b) for the purposes of determining the capital adjustment;

(f) the best estimate liabilities with allowance for otherwise not-acceptable assets shall be calculated such that each year, an annual cohort of otherwise not-acceptable assets (including assets referred to in subparagraph (d)) is to be converted into investments that are acceptable in accordance with subparagraph (13) to cover liability cashflows 30 years beyond that year; and

(g) yields on the not-acceptable assets shall be reduced by an amount that approximates one standard deviation of the cumulative return over the investment period for each cohort (ignoring any deviation related to interest rate risk or default risk).

(19) An application made to the Authority by an insurer in accordance with subparagraph (17), shall be accompanied by—

(a) an overview of the characteristics of the underlying liabilities in the calculation;

(b) projected liability cash-flows;

(c) implementation of the calculation demonstrating compliance with these Rules;

(d) detailed information on the asset portfolio used for the alternative calculation and an explanation of why these assets are considered to be appropriate including an assessment of the uncertainty in market prices at which a cohort of such assets can be rotated into acceptable assets each year;

(e) an analysis estimating the non-interest related and non-default related variability of the assets used in the alternative calculation;

(f) an analysis demonstrating the stability and predictability of liability cashflows; and

(g) an analysis demonstrating the robustness and prudence of the yield assumptions. The Authority may further limit the assumed yields.

(20) Insurers shall ensure that assets used in the scenario-based approach provide predictable and stable cash flows with no or limited optionality, unless required to match liability cash flows, where appropriate and allowed in accordance with these Rules. Optionality and all other rate-sensitive assumptions in both assets and liabilities, shall be modelled under all of the scenario-based approach scenarios set out under subparagraph (7).

(21) Where optionality or behavioural components exist in relation to investments (e.g., call options for corporate bonds or prepayments for certain mortgage-backed securities), insurers shall ensure that such are modelled whereby the resulting asset cash flows appropriately differ between the scenario-based approach scenarios under subparagraph (7). Where no sufficient data for a specific asset type is available; or uncertainty around the level of the assumptions exists, prudent assumptions shall be applied by insurers in determining the scenario-based approach projections.

(22) Insurers shall ensure that projected asset cash flows in the scenario-based approach shall be reduced by default and downgrade costs. Default and downgrade costs are prescribed by the Authority for some assets with publicly available data. For all other assets, the methodology for calculating default and downgrade costs shall be applied by insurers in accordance with subparagraphs (24) and (25).

(23) Insurers shall ensure that default and downgrade costs applied in accordance with subparagraph (22) are applied by reducing projected asset cash flows.

(24) Insurers shall apply the following criteria to default and downgrade costs for all other assets as referenced in subparagraph (22)—

(a) realised average default losses from past data shall be applied by insurers as a baseline for default costs;

(b) an uncertainty margin, assessed in addition to the baseline default cost, shall be applied as a downgrade cost estimate.

(25) Insurers seeking to apply assets referenced in subparagraph (22) where the Authority does not prescribe the default and downgrade costs, shall be subject to the requirements of subparagraph (26). An insurer shall obtain written approval from the Authority prior to utilizing such assets in the calculation of the scenario-based approach.

(26) Insurers shall consider the following requirements in estimating default and downgrade costs for assets where such are not prescribed by the Authority—

(a) the ultimate default and downgrade cost estimate assumptions utilised in the scenario-based approach must be no less than those published by the Authority for assets of comparable credit quality;

(b) the ultimate default and downgrade cost estimate assumptions proposed for use in the scenario-based approach shall be no less prudent than those obtained using the approach set out in subparagraph (24);

(c) benchmarking analysis shall be conducted where applicable;

(d) in relation to the consideration of assets acceptable on a limited basis in accordance with subparagraph (15)—

(i) the insurer shall be required to submit an application to the Authority for prior approval to use such assets;

(ii) in its review of any application made to it under subparagraph (i), the Authority shall consider the uncertainty adjustment for the default cost in relation to such assets, which shall correspond to no less than one standard deviation of default costs;

(iii) the Authority may vary the requirement under subparagraph (ii), at the time of reviewing an application for approval under subparagraph (i);

(iv) other measures the Authority may consider in relation to an application made in accordance with subparagraph (i) include, but are not limited to:

A. assessing a higher uncertainty adjustment than proposed by an insurer; and

B. setting limits on the spreads of the assets.

(27) An insurer may also be required to demonstrate that the calculated net investment spread reflected in the best estimate liabilities for each asset class can be earned over the tenor of the asset. An insurer shall provide an assessment of the relevant liability liquidity profile and the extent to which any estimated asset illiquidity and complexity premia could be earned.

(28) The Authority may consider varying the criteria under subparagraph (26) where—

(a) the insurer has obtained approval from the Authority to use its own internal model to calculate the capital requirements for credit default and downgrade risks; or

(b) an internal ratings-based approach application made by the insurer as been approved by the Authority.

(29) The chief actuary and chief investment officer (or other officer approved by the Authority to fulfil such obligations), shall confirm in accordance with subparagraph (25)—

(a) the default and downgrade cost assumptions submitted for approval to the Authority;

(b) the insurer's compliance with applicable regulatory requirements.

(30) The following requirements apply to transaction costs in the scenario-based approach projections—

(a) best estimate transaction costs shall be applied by insurers to all assets sold and bought within the scenario-based approach projections;

(b) where historical transaction costs for an asset type may not be representative of expected future transaction costs, an insurer shall adjust the assumptions accordingly, where that adjustment would lead to an increase in the transaction costs;

(c) where no sufficient data for a specific asset type is available; or uncertainty around the level of the assumptions exists, prudent assumptions shall be applied by insurers in determining the scenario-based approach projections;

(d) applicable fees, commissions and other expenses required to purchase or sell assets shall be included by insurers within the transaction cost assumptions;

(e) transaction cost assumptions shall be independently reviewed by the approved actuary.

(31) For all assets, the full expected price impact of selling or buying the asset shall be reflected within the scenario-based approach projections.

(32) Insurers shall regularly review and back-test the calibration of bid-ask spreads and liquidity and price impacts against (historical) market data and its own experience. The Authority may request the tests conducted by insurers and any information utilised or applied by the insurer in the conduct of such tests, if required in furtherance of its supervisory oversight.

(33) Where an insurer reinvests excess net cash flow, it shall have regard for the following requirements when applying reinvestment assumptions in the scenario-based approach calculations—

(a) unless otherwise approved by the Authority, assumed asset purchases shall be made by insurers from asset classes in line with its current asset allocation and consistent with its asset and liability management policy, investment policy and with any asset allocation targets approved by its board;

(b) simplifications to categorise different alternative assets into one bucket for reinvestment assumption purposes shall not be made, unless it is clearly demonstrated, quantitatively and qualitatively, that such simplification result in a best estimate liability amount that is more prudent than if no simplification had been made;

(c) insurers shall, unless approval has been obtained from the Authority, set reinvestment assumptions in accordance with subparagraph (33)(a) that—

(i) vary by rating and tenor within each asset class;

(ii) are set at the appropriate level of granularity with respect to the tenor and ratings;

(d) the tenor may be simplified into "buckets". Where an insurer seeks to do so, there shall be not less than three buckets created (i.e., short-term, medium-term and long-term maturities) each defined depending on the insurer's liability and asset cash flow profile;

(e) in relation to reinvestment and asset purchase assumptions—

(i) asset prices shall be in line with the market values as projected under each scenario at a given time step for different asset classes for each combination of rating and tenor;

(ii) such shall not materially depart from an insurer's current asset allocation;

(iii) over the projection period, long-term historical market averages shall be applied prudently and in the context of the performance of an insurer's existing asset portfolio;

(iv) the grade-in period for moving from short-term spreads to long-term spreads shall be set prudently, such that it is longer when short-term spreads are lower than long-term spreads and shorter when short-term spreads are higher than long-term spreads. Any departures from this requirement shall be demonstrated to be of immaterial impact; and

(v) any overperformance (compared to the market) on the current portfolio shall not be assumed to continue over the projection period at variance with long-term historical market averages.

Assumptions under subparagraphs (33)(e)(i) through (33)(e)(v) shall be set prudently in line with the nature, scale and complexity of the insurer's assets, subjected to independent challenge and clearly documented as part of the internal governance process;

(f) within the scenario-based approach model projections, an insurer may only purchase assets from an asset category that has already been approved by the Authority;

(g) an insurer shall demonstrate to the Authority, as part of attestations and the review of the approved actuary, that its reinvestment strategy, including any simplifications applied, results in a more prudent best estimate liabilities output than would have been produced had the existing asset allocation been used for reinvestment purposes, with or without similar simplifications;

(h) insurers using the scenario-based approach shall be required to maintain a high degree of asset and liability matching to ensure limited need for reinvestment. Where an insurer is unable to clearly demonstrate that its reinvestment strategy meets the requirements of this paragraph, a more prudent approach shall be taken to ensure compliance;

(i) any material change required by an insurer to its reinvestment strategies, e.g., due to holding cash assets on a reinsured portfolio, shall require written approval from the Authority. Material changes shall be as defined in the model change policy for the scenario-based approach.

(34) An insurer shall have a clearly defined disinvestment strategy aligned with its investment policy and other relevant policies e.g., ALM policy. Within the scenario-based approach—

(a) assets shall only be sold for purposes of meeting excess liability cashflows otherwise not met through cash flows from asset maturities and coupon payments;
(b) notwithstanding subparagraph (34)(a), insurers shall sell assets, where required, to maintain the existing asset allocation within existing duration limits over time;
(c) the cumulative impact of default and downgrade costs shall be reflected in the sale proceeds within the projections;
(d) negative net cashflows shall not be rolled forward in the scenario-based approach model projections;
(e) use of borrowing is not allowed;
(f) modelled disinvestment strategy shall be proportionate to the risk profile of an insurer; aligned with an insurer's disinvestment practices; avoid inappropriate simplifications and comply with other relevant requirements in these Rules e.g., fungibility constraints.
(g) No unsellable assets can be sold within the model projections. Unsellable assets, in the context of scenario-based approach calculations, include —
(i) all assets not publicly traded unless approved by the Authority to be treated as sellable, with appropriate haircuts;
(ii) all assets requiring the Authority's approval under subparagraphs (14) and (15), unless approved by the Authority to be treated as sellable with appropriate haircuts, and;
(iii) all encumbered assets, unless being sold for the purpose for which they are encumbered and where relevant pre-requisite processes (e.g. obtaining consent from involved parties) have been complied with.

(35) Simplifications to the requirements of subparagraph (34) are permitted where these are assessed, quantitatively and qualitatively, to be prudent by the chief investment officer and approved actuary.

(36) The chief investment officer (or other officer of the insurer as may be approved by the Authority for this purpose) shall attest to the appropriateness and prudence of the reinvestment and disinvestment strategies and investment expense and spread assumptions modelled in the scenario-based approach model, confirming alignment with the insurer's practices and declaring compliance with the insurer's policies and the requirements in the previous subparagraphs.

(37) When assigning assets to back best estimate liabilities under the scenario based approach, the following requirements are applicable:

(a) assets assigned shall be separately identifiable and documented. Such assets shall not be used or pledged for any purpose other than meeting the policyholder liabilities for which the assets are assigned;
(b) adequate controls must be established to ensure that assets backing liabilities are only exposed to and used to meet payment of the liabilities being valued;
(c) assigned assets shall not be used to cover losses or needs arising from other activities of an insurer;
(d) different approaches may be used to assign assets to back liabilities valued under the scenario-based approach, and must be in line with an insurer's s Asset and Liability Management (ALM) program;
(e) all approaches used in accordance with subparagraph (37)(d) must ensure a high degree of matching while reflecting all constraints imposed (i.e., legal, regulatory, and operational limitations or encumbrances) that may govern specific portfolios of assets and liabilities, restricting full fungibility (under normal and adverse

scenarios) of cashflows and assets between different blocks of scenario-based approach liabilities. Where constraints exist, the approved actuary shall assess the extent to which such constraints have been appropriately considered and fully reflected in the valuation of best estimate liabilities under the scenario-based approach;

(f) assumption of fungibility of asset cashflows between blocks of business is not allowed in the scenario-based approach calculation, except to the extent that it is transparent, practical, and allowed by the relevant applicable laws and contractual arrangements. Where fungibility of asset cashflows between blocks of business can be demonstrated and is determined to be appropriate by an insurer to be applied in calculating the scenario based approach, it should be documented, tested, taken through the appropriate governance, reviewed, and limited to the legal-entity level. Where fungibility is demonstrated to exist under normal circumstances, insurers shall also test and evidence fungibility across a range of unexpected and potentially severe scenarios, such as counterparty default and market dislocations. Where assets are held in separate collateral accounts or back different blocks of liabilities, fungibility is not allowed without prior written approval of the Authority. No fungibility can be assumed to occur between legal entities in an insurer.

(38) A scenario-based approach model shall be documented by an insurer, and shall have regard to the following—

(a) documentation shall allow a knowledgeable third party to understand the design and details of the model;
(b) confirmation of the materiality of assumptions;
(c) identification of limitations;
(d) confirmation of the manner in which the model complies with regulatory requirements;
(e) a detailed description of the structure, scope, theory, data, assumptions, expert judgment, parameterisation, results, validation, model changes, model governance and model policies; all of which shall be proportionate to the scale and complexity of the insurance business risks of the insurer;
(f) detail of all key software, external models (including their customisation), data and the reasons for their use;
(g) a model documentation standard (e.g., as part of supporting standards to the model risk management policy) defining the approach to document various aspects of the model, such as roles, development, sign-off, update and review processes, and sets out mechanisms that ensure that the standard is adequately implemented;
(h) the documentation shall include an inventory of all the documents forming the model documentation;
(i) identification of the main limitations, simplifications and weaknesses of the model and conditions under which the model may not adequately determine the insurer's best-estimate liability and technical provisions;
(j) that all model risk management activities have been documented accordingly (i.e., include the level of detail required in line with the nature, scale and complexity of the insurer); including but not limited to model development, implementation, testing, ongoing monitoring, review, validation and management deliberation on model risk reports with escalation to board committees, as necessary;
(k) confirmation that the models in relation to best estimate liabilities and technical provisions calculation interacts with other models (upstream and downstream models) and the end-to-end calculation process;
(l) that the level and detail of documentation is proportionate to the materiality of each model area and that independent control functions are required to review and challenge how the proportionality principle is applied to avoid risk leakages.

(39) Insurers using the scenario-based approach shall have a data policy in place which shall include but is not limited to the following—

(a) documentation of internal processes and procedures to ensure data used in the calculation of technical provisions is complete, accurate and appropriate,;

(b) to satisfy that data is complete (as per subparagraph (39)(a)), data used in the calculation of technical provisions shall meet the following conditions—;

(i) there is sufficient historical data to enable assessment of the characteristics of the underlying risks and their trends;

(ii) data is available for each of the relevant homogeneous risk groups used in the calculation of the technical provisions.

(c) to satisfy the accuracy requirement (as per subparagraph (39)(a)), data used in the calculation of technical provisions shall meet the following conditions;—

(i) must be free from material errors;

(ii) data from different time periods that is used for the same estimation is consistent;

(iii) data is recorded in a timely manner and consistently over time in keeping with the insurer's nature, scale and complexity;

(iv) data extensions, capping or modifications shall be documented and justified. The process to address outliers and data-smoothing shall be performed prudently to ensure no material underestimation of the technical provisions.

(d) to satisfy the appropriateness requirement (as per subparagraph (39)(a)), data used in the calculation of technical provisions shall, at a minimum, meet the following conditions;

(i) be consistent with the purposes for which it will be used;

(ii) the amount and nature of the data utilised should ensure that the estimations made in the calculation of the technical provisions do not include material estimation errors;

(iii) be consistent with the assumptions underlying the actuarial and statistical techniques that are applied in the calculation of technical provisions;

(iv) appropriately reflect the risks to which an insurer is exposed in relation to the technical provisions calculation;

(v) be used consistently over time in calculating the technical provisions. Where data is not used consistently over time, a description of the inconsistent use and its justification shall be documented and disclosed in the approved actuary's opinion and report.

(e) insurers may use data from external sources provided that, in addition to fulfilling the requirements set out above in subparagraphs (39)(a) to (39)(d), the following requirements are met—

(i) insurers shall demonstrate that the use of such data is more suitable than the use of data that is exclusively available from an internal source;

(ii) insurers confirm the origin of the data and the assumptions or methodologies used to process it;

(iii) insurers identify any trends in the data and the variation, over time or across data, of the assumptions or methodologies in the use of such data;

(iv) insurers shall demonstrate that the assumptions and methodologies referred to in sub-subparagraphs (ii) and (iii) reflect the characteristics of an insurer's portfolio of insurance and reinsurance obligations;

(v) insurers reasonably demonstrate any other data that could have been applied, the impact of not using the data, and why it was not utilised instead. Such requirements also apply to choices within the same data where a different choice of data could have been made.

(vi) Where an insurer is unable to satisfy the requirements of subparagraphs (i)-(v) due to other considerations, (e.g., where the external data is proprietary,) an assessment shall be carried out by the independent control functions to assess the materiality of use of such data and such assessment shall be subjected to annual review by the approved actuary and disclosed as part of regulatory reporting.

(f) an insurer shall document the data controls in place and checks carried out on data used to calculate technical provisions and include an assessment of why the checks are considered adequate and appropriate.

(40) The following requirements on governance and internal control apply on the use of the scenario-based approach—

(a) the board shall approve the initial use of the scenario-based approach and any major changes thereafter. Major changes shall be defined in advance within the scenario-based approach model change policy, or where a change occurs that is not already set out in such policy, the board (or any committee constituted by it) shall subsequently approve such matters;

(b) the board shall be responsible for ensuring the ongoing appropriateness of the design and operations of the scenario-based approach model to ensure that it continues to be appropriate for the insurer's business;

(c) the establishment of appropriate and suitably constituted committee(s) that shall effectively challenge new and ongoing model use, model and assumption change approval, and use and reporting of model output. Model validation reports shall also be discussed at the committees' level;

(d) guidance regarding model risk management activities as part of the insurer's overall risk management framework. At a minimum, an insurer shall have a model risk management policy, a model change policy and a data quality policy.

(e) classification of material changes by minor and major changes in the model change policy, including changes triggered by the expansion of the scope of the scenario-based approach model (e.g., to cover new types of businesses, products or assets that require materially different model specifications). Where the scope of the scenario-based approach is extended to cover blocks of business for which the standard approach has been used and the changes are classified as minor, a no objection from the Authority shall be required before the changes are adopted for regulatory reporting. All material changes classified as major shall require the Authority's prior written approval;

(f) roles of the control functions which shall be clearly defined concerning the development, use, ongoing maintenance, monitoring and review, validation and reporting risks and results of the scenario-based approach model;

(g) the identification of conflicts of interest shall be in place and addressed in the model's governance framework, including clear guidance on reporting lines, allocation of responsibilities and escalation paths within an insurer and to the Authority, as necessary. Where conflicts of interest cannot be avoided, e.g., due to proportionality considerations such as the size of an insurer, the potential for conflict shall be taken into account and the requirement applied in an appropriate but proportionate manner. Remaining gaps shall be assessed and reported on by the approved actuary as part of their opinion on scenario-based approach calculations.;

(h) an insurer shall ensure the systems, infrastructure and resources in place are adequate;

(i) there shall be adequate and effective controls in place regarding the scenario-based approach model's operation and maintenance;

(j) an insurer can use third-party actuarial and investment software as part of their scenario-based approach model suite, including scenario-based approach feeder models. However, outsourcing of the process for running, maintaining and managing the scenario-based approach model and its feeder models is not allowed. Where outsourcing is already used either externally to third parties or internally to other affiliated parties, an insurer shall demonstrate oversight and clear accountability for all outsourced activities as if these were performed internally and subject to the insurer's own standards on governance and internal controls. Such outsourcing shall be discussed with the Authority before implementation or, where already in place, will be subject to the Authority's onsite review process.

(41) Every insurer shall implement a model risk management policy which includes but is not limited to the following requirements when adopting the scenario-based approach—

(a) a materiality definition specific to the use of the scenario-based approach model shall be included, which shall be developed in consultation with the control functions. An insurer's definition of materiality shall determine whether model and assumption changes, enhancements, findings and other relevant considerations are material. Material changes shall be further classified as either minor or major in the scenario-based approach model change policy. Those material changes classified as major shall require the Authority's approval;

(b) the roles of the first and second-line functions shall collaborate and ensure a clear definition and ownership for model risk management activities. This shall be performed by considering the need for independence for some activities (e.g., validation);

(c) an attestation of the adequacy of the model risk management practices employed by an insurer, including compliance with the regulatory requirements outlined herein shall be obtained from the chief risk officer and the chief executive officer; the maintenance of a comprehensive set of information as part of the model inventory in line with best-practice model risk management. This applies to the scenario-based approach models implemented for use, under development or recently retired and any associated downstream and upstream models (e.g., liability models, asset models or stress testing models);

(d) the following requirements on Model Development, Testing, Implementation and Use shall be met—

(i) the model development and implementation processes shall be structured and executed in a manner that is aligned with regulatory guidance;

(ii) software, computer code, algorithms, mathematical formulas and other information technology systems used to implement the model shall undergo rigorous quality control and change control procedures. Such systems shall only be edited by authorised parties and changes shall be recorded and auditable;

(iii) testing shall be conducted as part of the scenario-based approach model's lifecycle. All the aspects of the model and its overall functionality shall be required to be assessed to confirm if it is functioning as intended. This shall comprise determining the model's accuracy, proving its stability and robustness, identifying potential flaws, and analysing how the model responds to various inputs and scenarios;

(iv) testing activities shall include the goal, design, and execution of test plans and the summary results with commentary and evaluation, including a detailed analysis of samples. The documentation of test activities shall be fit for purpose

(v) adequate processes shall be put in place to collect and address user feedback. This shall apply to the scenario-based approach model and relevant feeder models e.g., asset and liability models.

(e) measures relating to the limitations and uncertainties of the scenario-based approach model and its feeder models, including how such are mitigated or accounted for shall be provided for in the model risk management policy as follows—

(i) to the extent possible, the impact of such uncertainties shall be quantified. The quantification shall avoid spurious accuracy (e.g., using ranges instead of single-point estimates);

(ii) where only a qualitative assessment is possible, insurers shall implement procedures to ensure an explicit assessment of the impact of model limitations and inaccuracies is carried out;

(iii) the quantitative and qualitative assessment results shall be reported as part of the model risk reporting and a determination shall be made on whether adjustments to the best estimate liabilities are required.

(f) the circumstances under which pre-model and post-model adjustments may or may not be used shall be addressed by insurers, including outlining processes regarding review, approval, continued use, removal and back-testing of such adjustments. Pre-model adjustments mean an insurer overrides a data input or assumption to a

model. In-model adjustments refer to when an insurer overrides (e.g., through a cap or floor) a calculated value in a model. Post-model adjustments refer where an insurer overrides a model's output by applying a model overlay. In addition to the foregoing requirements—

(i) Processes to monitor and analyze such adjustments and overlays shall be implemented to address underlying limitations and issues e.g., through data enhancements, model recalibration or redevelopment;

(ii) All model adjustments and overlays shall be well-documented in line with an insurer's documentation standards and subject to a transparent process that links appropriate justification to specific model issues and limitations. As part of the process, model adjustments shall be clearly outlined, and model results shall be reported through an insurer's internal governance processes with and without adjustments to enable decision-makers to understand the extent and impact of such adjustments

(g) conduct model validation i.e., the set of processes and activities intended to verify that models perform as expected, in line with their design objectives, existing regulation and business uses. An insurer shall ensure its model validation is effective in reducing model risk through identifying and assessing the impact of model limitations and errors, corrective actions and appropriate use and shall be required to demonstrate the reliability of its models and understanding of the source and extent of model risk. In demonstrating the foregoing, the following requirements on validation of the scenario-based approach model shall also be implemented by the adoption of appropriate policies and processes by an insurer—

(i) model validation shall be performed by staff with appropriate incentives, competence, influence and authority so that there is an effective challenge mechanism. An insurer shall demonstrate that the scenario-based approach model has been validated independently (externally or internally) from those who develop, change, update, run and use the model. Independence shall be demonstrated not just by the separation of lines but also by process, actions and outcomes as well as the degree and way in which models are subject to critical examination;

(ii) all scenario-based approach models shall be validated before being used for regulatory reporting and at fixed intervals of at least three years thereafter or such other higher frequency considered appropriate by an insurer in line with its model risk management policy requirements. The initial model validation shall be in-depth and detailed in line with these Rules. Subsequent model validation activities shall be holistic and proportionate to the use and materiality of the scenario-based approach model to an insurer and the extent of model changes since the last validation;

(iii) the model validation process shall, among other items, specify the scope of validation, processes, methods and tools to be used, frequency of validation, treatment of model changes, persons involved, outputs and reporting;

(iv) the model validation process shall apply to all scenario-based approach model components and cover all requirements. It shall also encompass models developed in-house and those purchased from or developed by vendors or consultants. Material model changes, for example, in terms of scope, structure, methodologies, assumptions and governance, and all model redevelopment—shall be subject to validation activities of appropriate range and rigor before implementation for regulatory reporting;

(v) the model validation process shall include validation of any feeder model utilised (i.e., a model which produces outputs that are used as inputs for another model(s)) in the scenario-based approach model

that is undergoing validation, validators shall confirm that an effective validation programme is in place for such feeder models and consider the extent to which the feeder model should be included in the current validation.

(vi) downstream models shall also be validated as part of the model validation process, where the scenario-based approach model undergoing validation is used within other existing models. Where there is limited access to feeder or downstream models (e.g., code, formulas), the requirements specified in the paragraph below on 'Use of and Reliance on Third Party Models' shall apply;

(vii) an insurer shall have regard for the following including but not limited to— review of conceptual soundness elements, including developmental evidence; sensitivity, stress and scenario testing; dynamic and static validation; roll-forward analysis; nit/cell testing; reconciliation against the input source or ledger; Outcome analysis, including back-testing; trend analysis and stability testing; movement or profit and loss attribution; independent full model replications, sample recalculations and formula inspection, as appropriate; process and controls verification; and benchmarking or alternative design methods/models;

(viii) the items in sub-subparagraph (vii) above shall also be considered as part of the first-line actuarial activities, such as a model review;

(ix) the scenario-based approach model validation shall require an insurer to produce detailed model validation reports. The reports shall document the validation process and conclude on the adequacy of the model component or model being validated and the appropriateness of the resulting technical provisions for regulatory reporting purposes;

(x) there shall be a clearly defined reporting structure to senior management and the board, a remediation and follow-up process for model validation findings, an action plan and implementation monitoring. If material deficiencies classified as major are noted as an outcome of the validation process, the model's use shall not be allowed or shall only be permitted under very tight constraints, including escalation to, and approval by, the Authority. The definition of major shall be in line with the definitions in an insurer's model risk management and model change policies. Where some uncertainty still remains on whether a material finding should be classified as major, an insurer shall consult with the model validators and the internal control functions.

(h) the scenario-based approach model is subject to requirements on model review, ongoing development and monitoring:

(i) periodic review of the scenario-based approach models must occur as part of its model risk management programme. The model review shall be carried out by any party as determined by an insurer e.g., model developers, users, external party etc. The model review shall highlight changes since the last validation or reporting cycle, determine the sufficiency of the latest validation activities, highlight areas needing a deeper dive, model performance monitoring and reverify the technical aspects of the model. Such reviews shall be carried out regularly but no less frequently than annually. An insurer shall consider whether feeder models, such as asset and liability models, shall be considered in the model review process and what reliance is placed on work already done on those models. The model review shall not be as detailed as model validation, but the level and scope of review shall be assessed to be proportionate and fit for purpose in line with the model tier, frequency of review and depth of the most recent review;

(ii) the model's performance shall be regularly monitored, and key metrics observed and reported. As part of the monitoring process, an assessment shall be carried out to determine if the model's

performance in production is in line with model development and testing stage expectations/results. An insurer should have mechanisms in place to gather insights about the models' performance. This could include applying key controls, such as best estimate liabilities and/or spread movement analysis, where the current-period best estimate liabilities and/or spread is reconciled with that from the prior period; and

(iii) the work carried out by first-line actuarial teams as part of ongoing reporting (e.g., regular model and control updates as part of quarterly or half-yearly reporting) does qualify as a model review to the extent that such work also covers a proportionate review of the technical aspects of the model, including model performance. Setting up a separate and dedicated model review team is not required. The requirements in these Rules can be fulfilled by ensuring model review is embedded in the work by first-line actuarial teams. A log shall be kept listing all model and control updates and changes. Updates considered material shall be subject to testing, and the testing results also captured in the log. The decision and rationale to include or exclude feeder models from the model review process shall also be logged. Material changes and the decision to include or exclude feeder models shall also be subject to the challenge of an appropriate management committee. An insurer shall have mechanisms to monitor the aggregate impact of a combination of individually immaterial changes to the extent they become material. The minimum documentation requirement for model review is maintenance of the model review log. The model review log shall be subject to annual review by the Approved Actuary.

(i) the scenario-based approach model is subject to requirements on model risk reporting and deliberation:

(i) an insurer shall ensure model risk is captured promptly and reported to a management committee regularly. This could take the form of standalone model risk management reports or dedicated sections within the existing wider risk and actuarial functions reporting. An insurer's risk, investment and actuarial functions shall collaborate and ensure there is clarity within the firm on ownership for model risk reporting for both the scenario-based approach and its feeder models to avoid leakages in reporting. Management shall be able to demonstrate (e.g., through management committee minutes, report improvements and ultimate decisions taken) that the level of deliberation on model risk reports offers appropriate challenge and is adequate considering an insurer's nature, scale and complexity. While no explicit deliberation by the board on model risk reports is mandated, it is important that the board recognises it is the ultimate owner of the use of the scenario-based approach model and is, therefore, expected to have and be able to demonstrate an overall understanding of the application of the scenario-based approach and its importance for an insurer's business;

(ii) model risk management reports shall be of the appropriate detail, covering all relevant key information proportionately. Information submitted to management committees on the use and application of the scenario-based approach shall include at least a reasoned analysis of the reliability and adequacy of the calculation and the sources and degree of uncertainty of the output. The reasoned analysis shall be supported by a sensitivity analysis that includes an investigation of the sensitivity of the output to each of the major risks underlying the obligations covered in the technical provisions, including an assessment of the impact of identified limitations. The risk and/or actuarial function shall clearly state and explain any concerns they may have regarding the adequacy of the best estimate liabilities and technical provisions;

(iii) tolerance levels shall be in place and reviewed periodically to ensure they are not set too low or too high in line with an insurer's definition of materiality. Other items to be considered for reporting, including how they measure against tolerances, may include but shall not be limited to:

a. the volume of models considered high-risk;
b. models with temporary exemptions or provisional approvals;
c. status of model issues (e.g., past due, work in progress, partially completed);
d. summary of model performance metrics, including a list of underperforming models and actions being taken;
e. lists and trends by the tier of the number of models: with past-due validations; in use without validation; used outside of approved purpose; and used despite rejection outcome from review/validation;
f. model risk events/incidents reported for the period;
g. quantification and treatment of material and/or aggregate model uncertainties;
h. model development and enhancement efforts in progress and allocated resources;
i. resource-related indicators (e.g., budget, people, infrastructure) and an assessment of the impact on other areas (e.g., impact on model testing, documentation, ongoing monitoring); and
j. summary of key model outputs plus the outputs of key model risk management activities for the period under review.

(j) the scenario-based approach model is subject to requirements on the use of and reliance on third-party models ('vendor models') and external experts:

(i) vendor models shall be included in an insurer's broader model risk management framework following the same principles as applied to in-house models, with any modifications appropriately justified and documented. An insurer shall, for both scenario-based approach model and its feeder models, obtain the following:

a. developmental evidence explaining the model's components, design and intended use to determine whether the model is appropriate for an insurer's products and risk exposures;
b. information regarding the data used to develop the model, including the use and effect of alternative data;
c. sufficiently detailed testing results that show the third party's model works as expected;
d. documentation of the model's limitations and assumptions about when the model's use may be unsuitable or problematic; clear instructions for model implementation, including any decisions that shall be made regarding parameters or thresholds;
e. an insurer shall require vendors to conduct ongoing performance monitoring and outcomes analysis, with disclosure to the insurer, and to make appropriate modifications and updates over time;
f. an insurer is expected to validate their use of vendor products;
g. an insurer shall obtain information regarding the data used in the development of the model and assess the extent to which that data is representative of their circumstances;
h. an insurer shall conduct ongoing monitoring and an outcomes analysis of vendor model performance using an insurer's outcomes;
i. additionally, where third-party/vendor models do not provide complete access to development codes, an insurer shall be able to demonstrate how they obtain confidence from using third-party models (e.g., through using in-house models for benchmarking and or building challenger models); and

j. an insurer shall have contingency plans for instances when the vendor model is no longer available or cannot be supported by the vendor.

(ii) where reliance was placed on outside experts and third-party models (e.g., on asset assumptions) in developing the scenario-based approach models, systems and processes shall be in place to determine the appropriate level of reliance. The following shall be considered at a minimum:

a. whether the individual or individuals upon whom reliance has been placed are experts in the applicable field;

b. the extent to which the model has been reviewed or validated by experts in the applicable field, including known material differences of opinion among experts concerning aspects of the model that could be material to the insurer's use of the model;

c. whether there are industry or regulatory standards that apply to the model or the testing or validation of the model, and whether the model has been certified as having met such standards; and

d. whether the science underlying the expertise is likely to produce useful models for the intended purpose.

(iii) where it is practically not possible for an insurer to comply with some of the requirements above, an insurer shall make reasonable efforts to meet the intended outcomes of the requirement and any remaining gaps shall be subject to internal challenge by the control functions and reported to the Authority as part of the model validation report.

(k) internal audit shall review all use of the scenario-based approach including model risk management to ensure there is an effective challenge provided by second-line and model validators to the model owner, developers, users and implementers and that the model risk management policy and procedures are kept current, in keeping with regulatory requirements and best practices. Internal audit shall provide assurance on the level of critical review and challenge provided by the validation and model review activities, adequacy and frequency of model risk reporting and the manner of challenge (and decisions thereof) by management and board to such reporting. Overall, internal audit shall form its own independent opinion and provide assurance or otherwise on the adequacy of the model risk management activities performed by both the first-line and second-line functions in line with the scenario-based approach regulatory requirements.

Lapse risk in scenario-based approach

29 For eligibility, an insurer shall satisfy one of the two conditions below, in order to use the scenario-based approach —

(1) the contracts underlying the insurance or reinsurance obligations include no options for the policyholder and the cashflows thereof are well-matched with the assets; or

(2) where policyholder options exist, the residual risk arising from asset and liability portfolios with such options shall be demonstrated to be insignificant through adequate modelling, robust ALM, stress testing and liquidity risk management. To satisfy this condition, an insurer shall demonstrate that the asset-liability portfolios are well-matched and meet the following requirements—

(i) hold a Lapse Cost (LapC) as part of the scenario-based approach best estimate liabilities. This shall apply to all business written post these Rules coming into force including any new business on flow business written under existing contracts. The LapC required to meet scenario-based approach eligibility conditions shall be calculated as outlined below—

A. calculate the difference between the historical actual and expected lapse rates expressed as a percentage of expected lapse rates;

B. calculate the 1 standard deviation of lapse rate differences obtained from i) above. Round up the

result to the nearest 1% to obtain the 1 standard deviation, i.e., lapse rate sigma. An insurer can use other approaches to calculate the lapse rate sigma provided they are shown to be prudent e.g., where there is limited or no historical lapse experience data. The approved actuary shall review these as part of forming his opinion and report;

C. calculate the capital charge for lapse up or down using the lapse up or down BSCR shock prescribed under paragraph 44A of Schedule I, i.e., lapse up down capital requirement;

D. the LapC shall be determined by the following formula—

(Lapse Rate Sigma ÷BSCR lapse up down shock)×Lapse up down capital requirement

(ii) pass a 100% Enhanced Capital Ratio (ECR) under the BSCR lapse up and lapse down stresses, as prescribed under paragraph 44A of Schedule I, representing a permanent increase or decrease in base lapse rates;

(iii) pass a liquidity stress test with a minimum 105% Liquidity Coverage Ratio (LCR). The LCR shall be defined by the formula— (Eligible Liquidity Sources ÷Liability Outflows) expressed as a percentage;

(iv) the eligible liquidity sources and shocks to determine the liability outflows shall be prescribed by the Authority;

(v) through the Commercial Insurer Solvency Self-Assessment (CISSA) process and reporting, an insurer shall demonstrate robust—

a. ALM, capital and liquidity management;

b. lapse risk management through diligent underwriting, experience analysis and risk monitoring; and

c. insurer-specific solvency and liquidity stress testing;

(vi) provide the lapse, liquidity and scenario-based approach Return reporting as prescribed by the Authority under paragraph 32 on lapse, liquidity and scenario-based approach reporting.

Scenario-based approach application package

30 Before the scenario-based approach can be used to determine the best estimate liabilities, an insurer shall send an application to the Authority for approval.

(1) The following requirements apply depending on the date of approval of using the scenario-based approach for any (sub-)portfolio—

(i) insurers registered on or after 1 January 2024 that propose to use the scenario-based approach will require approval by the Authority;

(ii) insurers registered before 1 January 2024 and not using the scenario-based approach will be required to obtain approval from the Authority before using the scenario-based approach;

(iii) insurers already currently applying the scenario-based approach shall obtain prior approval from the Authority before making material changes to their scenario-based approach model that are classified as "major" in the scenario-based approach model change policy.

(2) An application shall include all the information and documentation required to enable the Authority to assess if relevant requirements are met. An insurer shall comply with any additional approval requirements determined by the Authority.

Liquidity risk management

31 Insurers using the standard approach which have exposure to liquidity and/or lapse risk; and insurers using the scenario-based approach shall implement a liquidity risk management programme that is approved by its board. The liquidity risk management programme shall meet the following minimum requirements—

(i) confirmation of clear ownership in the organisation of key elements of the liquidity risk management framework;

(ii) a review to be undertaken annually or more frequently as circumstances require;

(iii) provision for the roles of the first and second-line functions in liquidity risk management to be clearly defined, including mechanisms to identify and mitigate conflicts of interest;

(iv) confirmation that the insurer has identified and understood the sources of demand and supply of cash and how the dynamics of supply and demand could change under different scenarios;

(v) confirmation that the level of liquidity risk appetite that the insurer seeks or accepts is informed by stress and scenario testing, set and approved by the board-. The liquidity risk appetite shall be documented and make provision for the types, horizons and severity of liquidity stress scenarios an insurer targets to withstand;

(vi) the manner in which the liquidity risk management framework shall be integrated into wider risk management framework and how it informs day-to-day operations and key business decisions;

(vii) clearly define liquidity metrics (e.g., liquidity coverage ratios or excess liquidity measures) and target thresholds in operationalising its risk appetite.. An insurer shall consider setting prudent risk limits for each source of liquidity risk. Where this is not the case, the rationale shall be clear, documented and subjected to independent challenge;

(viii) provision and maintenance of a cash needs and sources register, which systematically documents each need and a potential source of liquidity. This register shall also critically assess the key characteristics associated with each need and source and the relevant uncertainties and risks. Such assessment shall feed into how the different liquidity needs and sources are used and categorised (e.g., in terms of liquidity quality, within an insurers' liquidity risk management framework);

(ix) provision for the holding of a liquidity buffer. This refers to a pool of highly liquid assets that an insurer shall specifically set aside to address any deficiencies in cash inflow that may arise to meet cash outflow requirements over a specified scenario horizon. Insurers shall clearly demonstrate the process and criteria used to determine the appropriate size of the liquidity buffer and how it aligns with an insurer's' approved risk appetite;

(x) an insurer shall consider varying degrees of stressed conditions in various stressed scenarios, where a balance shall be struck between severity and plausibility. An insurer shall assess liquidity risk over different time horizons with a focus on those horizons over which particular risks are expected to arise. Consideration shall be given to insurer-specific and market-wide scenarios, including their combinations. The scenarios shall cover both fast-moving (i.e., scenarios where the insurer's liquidity deteriorates rapidly) and more sustained scenarios where an insurer's liquidity position deteriorates slowly. An insurer shall perform tests of its liquidity breaking point (i.e., liquidity reverse stress tests) the frequency of which shall be defined as part of the liquidity risk management framework;

(xi) the creation and implementation of a liquidity contingency plan to serve as a playbook to meet potential liquidity deficits. Clear triggers shall be identified within the plan, and regularly reviewed. The plan shall further require for an assessment to be made on how such matters interact with stress and scenario testing. The liquidity contingency plan shall be regularly tested and enhanced through dry-run simulation exercises. The results of such testing shall be reported to the board;

(xii) provisions for identifying liquidity sources which are encumbered or whose fungibility is restricted and confirmation such constraints are reflected within the liquidity stress testing and other liquidity risk management activities as outlined in these Rules;

(xiii) the production of liquidity reporting which shall be of the appropriate detail while capturing the key liquidity risk areas. The reporting shall be proportionate, forward-looking (e.g.,

through early warning indicators) and able to facilitate informed decision-making. An insurer shall implement appropriate infrastructure and systems to access relevant data and, thus, assess and monitor its liquidity exposures.

Lapse, liquidity and scenario-based approach reporting

32

(1) Insurers shall provide on at least an annual basis the completed 'Lapse, Liquidity and Scenario-based approach reporting' template as shall be prescribed by the Authority.

(2) This reporting shall apply to all insurers that use the scenario-based approach, and to those insurers not using the scenario-based approach but having exposure to lapse and/or liquidity risk.

Affiliate, related party or connected party

33

Every insurer applying either the scenario-based approach or the standard approach shall obtain prior written approval from the Authority of all assets with counterparty credit exposure to an affiliate, related party or connected party of the insurer. For the purposes of this paragraph, "affiliate", "related party" and "connected party" have the following meaning—

(a) "affiliate" means a company that is affiliated with another company where one of them is the subsidiary of the other or both are subsidiaries of the same company; or each of them is controlled by the same person;

(b) "related party" means related party as defined under the respective insurer's accounting standards, namely the: International Financial Reporting Standards (IFRS); Generally Accepted Accounting Principles (GAAP) that apply in Bermuda, Canada, the United Kingdom or the United States of America; or such other GAAP as the Authority may recognise;

(c) "connected party" means a party other than a related or affiliated party associated with the insurer and whereby such association, however defined, may result in a conflict of interest in relation to an investment between the connected party and the insurer.

Calculation principles specific to general business

34 (1) This paragraph is applicable to business that is managed and valued using general business techniques.

(2) The best estimate for general business shall be calculated by insurers and shown separately for premium provisions, as defined in subparagraph (3), and for outstanding claims provisions as defined under subparagraph (4)

(3) Premium provisions shall relate to future claim events relating to insurance obligations falling within the contract boundary (as defined in paragraph 12).

(4) Outstanding claims provisions shall relate to claim events that have already occurred, regardless of whether the claims arising from those events have been reported or not.

(5) Insurers shall produce best estimate outstanding claims by BSCR line of business for the purposes of calculating the BSCR.

(6) Where a member of an insurer has settled a claim and is making a series of payments over the lifetime of a policyholder or beneficiary, and is managing the claim using techniques similar to those usually employed by long-term business insurers for pay-out annuity business, then the insurer may elect to establish best estimate provisions for the outstanding claims for this business in a similar manner to the requirements imposed on long-term business under paragraph 35.

(7) In relation to general business, insurers shall ensure that the risk margin shall not be split between premium provisions and loss and loss expense provisions.

(8) In relation to cashflows for insurance contracts with inception date after the valuation date, and the terms of the insurance contract cannot be changed unilaterally by an insurer, then such cashflows shall be included by insurers in the best estimate premium provisions as "bound but not incepted" or BBNI business.

(9) Premiums that relate to unincepted exposure (i.e. policies which incept after the valuation date) may include:

(a) premiums written before the valuation date but incepting afterwards;

(b) "tacit" renewals, which are renewals relating to offers that were made several months prior to the valuation date, but advice has not yet been received from the customer(s) that they wish to take them up.

(10) The insurer, when determining whether to include such business within the premium provisions, shall consider paragraph 12 subparagraph (2).

(11) Allowance shall be made by insurers for events that are not adequately reflected in the data used to derive the best estimate. The expected present value of future cash-flows relating to such events is referred to as "Events Not in Data Set" (ENIDS).

(12) Insurers shall ensure that approaches to arriving at estimates of ENIDS in accordance with subparagraph (10), shall be governed by well-informed assessments of the tail risks that apply to the portfolio being reviewed.

Calculation principles specific to long-term business

35 (1) This paragraph is applicable to business that is managed and valued using long-term business techniques.

(2) Cash-flow projections used in the calculation of best estimates for long-term business insurer obligations shall be undertaken separately for each contract of insurance, unless the requirements of subparagraph (3) are appropriate to be applied instead.

(3) Where the separate calculation for each contract of insurance in accordance with the requirements of subparagraph (2) would be a burden, an insurer may perform the projection by grouping contracts of insurance, provided that: —

(a) there are no significant differences in the nature and complexity of the risks underlying the contracts of insurance in the same group;

(b) the grouping of contracts of insurance does not misrepresent the risk underlying the contracts of insurance and does not misrepresent their expenses;

(c) the grouping of contracts of insurance is likely to give approximately the same results for the best estimate calculation as a calculation on a per contract of insurance basis, in particular in relation to financial guarantees and contractual options included in the contracts of insurance.

(4) Insurers shall ensure that no implicit or explicit surrender value floor shall be assumed for the amount of the market consistent value of liabilities for a contract of insurance.

PART 5: TECHNICAL PROVISIONS - RISK MARGIN AND TECHNICAL PROVISIONS AS A WHOLE

Risk margin

36 (1) The risk margin of every insurer shall be calculated to ensure that the value of its technical provisions is equivalent to the amount that third party insurers would be expected to require in order to assume and fulfil their insurance obligations.

(2) Where insurers value the best estimate and the risk margin separately, the risk margin shall be calculated by determining the cost of providing an amount of available statutory economic capital and surplus equal to the ECR necessary to support the existing insurance obligations over their lifetime.

(3) An insurer shall calculate its risk margin using the cost of capital approach as set out in paragraph 36.

(4) The risk margin for an insurer's entire portfolio of insurance obligations shall be calculated using the following formula:

$RM = CoC \sum_{t \geq 0} \frac{ModECR_t}{(1+r_{t+1})^{t+1}}$

Where:

CoC = the Cost-of-Capital rate as prescribed by the Authority on its *website at* www.bma.bm*;*

$ModECR_t$ = the projected ECR at time t, for the insurance, credit, operational and material, non-hedgeable market risks only. It shall be calculated at the valuation date (t=0), and annually thereafter until all insurance obligations have been settled.

r_t= the risk-free discount rate, prescribed by the Authority, for maturity at time t, for the currency in which the EBS has been prepared in.

(5) Insurers shall further ensure that the calculation of the risk margin under subparagraph (4), covers the full period required to run-off insurance liabilities and be discounted, applying the relevant risk-free discount curve (without the illiquidity adjustment) prescribed by the Authority;

(6) The calculation of the $ModECR_t$ component of the risk margin shall be calculated using the same principles as the insurer's ECR.

(7) The risk margin shall be calculated net of outwards reinsurance, at an aggregate level, separately by insurers relating to any general business or long-term business.

Technical provisions 'as a whole'

37 (1) Where future cash flows associated with insurance 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 by insurers based on the market value of those financial instruments.

(2) Insurers are not required to provide separate calculations of the best estimate and the risk margin in connection with cash flows under subparagraph (1).

(3) For the purpose of determining the circumstances where some or all future cash flows associated with insurance obligations can be replicated reliably using financial instruments for which a reliable market value is observable under subparagraph (1), insurers shall —

(a) assess whether obligations arising under subparagraphs (b) and (c) are met;

(b) ensure that the value of technical provisions relating to such future cash flows, shall be equal to the market price of the financial instruments used in the replication;

(c) further separate a policy into two or more components as appropriate ('unbundling') in order to satisfactorily identify liabilities for this purpose with some parts valued 'as a whole' and others where a best estimate is calculated.

(4) Insurers are required to ensure that —

(a) cash flows of financial instruments replicate the uncertainty, in amount and timing, of its cash flows and any risks related to such cash flows, associated with its insurance obligations, in all possible scenarios;

(b) cash flows of the financial instruments must, provide the same expected amount as the cash flows associated with the insurance obligations and the same pattern of variability.

(5) The following cash flows associated with insurance obligations of insurers will not be regarded by the Authority as replicable in a reliable manner by an insurer—

(a) cash flows associated with insurance obligations that depend on the likelihood that policyholders will exercise contractual options, including lapses and surrenders;

(b) cash flows associated with insurance obligations that depend on the level, trend, or volatility of mortality, disability, sickness and morbidity rates;

(c) all expenses incurred in servicing insurance obligations.

(6) For insurers to use financial instruments in replications, these shall be traded in active, deep, liquid and transparent markets.

INSTRUCTIONS AFFECTING SCHEDULE XXVI

Sixteen (16) year transitional arrangements for long-term business

(1) This applies only for long-term business written by members of an insurer on or before 31 December 2015 for which the standard approach has been applied.

(2) The transitional arrangements allow an insurer to phase in the new valuation arrangements over 16 years. Using a linear interpolation between the reserves determined under the 2015 reserve valuation principles and the reserves determined under the Economic Balance Sheet Valuation Principles.

(3) The technical provisions under the transitional arrangements (TP_y) shall be calculated by applying the following formula:

$$TP_y = \frac{Min(y-2015,1)}{16} EBSTP_y + \left(1 - \frac{Min(y-2015,1)}{16}\right) CurrentRes_y$$

Where:

y ∈ {2016, 2017, 2018…, 2023} – year of yearend submission;

$EBSTP_y$= technical provision, for the business within the scope of the transitional arrangements, at end of year y as determined under these Rules;

$CurrentRes_y$ = Reserves, for the business within the scope of the transitional arrangements, at end of year y as determined by the reserve valuation methodology that was in force in 2015.

(4) Due to the manner in which an insurer's risk margin is determined, and where insurers are unable to directly attribute the risk margin to business written pre and post an insurer's 2015 financial year-end, insurers shall allocate a process to determine the risk margin. An application under Section 6D(7) of the Act may be made for the application of transitional adjustments. An insurer shall provide details of the business subject to the transition adjustments and any allocations or approximations to be used.