

# **GUIDELINE ON VALUATION AND CAPITAL REQUIREMENTS**

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## **1. Introduction**

- 1.1 This Guideline is published pursuant to section 133 of the Insurance Ordinance (Cap. 41) (“the Ordinance”) to assist authorized insurers in interpreting and applying the provisions of the Insurance (Valuation and Capital) Rules (Cap. 41R) (“RBC Rules”) for applicable insurers, the Insurance (Marine Insurers and Captive Insurers) Rules (Cap. 41U) (“Marine and Captive Rules”) for marine and captive insurers, and the Insurance (Lloyd’s) Rules (Cap. 41V) (“Lloyd’s Rules”) for Lloyd’s. It provides guidance on valuing assets and liabilities and determining capital requirements of insurers under the Ordinance, and sets out prudent practices that insurers are expected to follow.
- 1.2 This Guideline also provides guidance in relation to requirements to maintain separate accounts and funds in respect of long term business and general business under Part IV and Part IVA of the Ordinance, as well as the requirements to maintain assets in Hong Kong under Part IVA of the Ordinance and the Insurance (Maintenance of Assets in Hong Kong) Rules (Cap. 41T) (“Local Assets Rules”).
- 1.3 This Guideline does not have the force of law, in that it is not subsidiary legislation, and should not be interpreted in a way that would override the provision of any law. Non-compliance with the provisions of this Guideline would not itself constitute a breach of the law or render authorized insurers liable to judicial or other proceedings. However, since this Guideline provides guidance on how the Insurance Authority (“IA”) interprets the relevant Rules, non-compliance may lead the IA to conclude that the Rules have been breached and that an offence has been committed.
- 1.4 The IA may from time to time elaborate upon or amend the whole or any part of this Guideline.

## **2. Interpretation**

- 2.1 In this Guideline, unless the context otherwise specifies—

*Appointed Actuary* refers to the actuary appointed under section 15AAA(1)(a) or (b) of the Ordinance;

*long term business fund(s)* refers to the separate fund(s) required to be maintained under section 21B of the Ordinance;

- 2.2 Unless otherwise specified, words and expressions used in this Guideline have the same meaning as given to them in the RBC Rules, the Marine and Captive Rules, the Lloyd’s Rules and the Local Assets Rules, or in the Ordinance if such words and expressions are not in those Rules.
- 2.3 Unless otherwise specified, references to rules and schedules in this Guideline refer to the RBC Rules.

- 2.4 Words and expressions in the singular in this Guideline include the plural, and words and expressions in the plural include the singular.

### **3. Background of the Risk-based Capital (“RBC”) Regime**

- 3.1 The valuation of assets and liabilities and risk-based capital requirements under the RBC Rules take into account *ICP 14 Valuation* and *ICP 17 Capital Adequacy* of the Insurance Core Principles (“ICP”) issued by the International Association of Insurance Supervisors (“IAIS”).
- 3.2 Under the RBC Rules, the valuation of assets and liabilities takes a total balance sheet approach on an economic basis that reflects the prospective valuation of the future cash flows of the asset or liability, after accounting for the associated risks and the time value of money<sup>1</sup>. Additionally, market value (i.e. the amount at which knowledgeable willing parties would exchange a balance sheet item in an arm’s length transaction) can also reflect the prospective valuation of future cash flows.
- 3.3 The RBC Rules primarily use a standardized approach in determining the prescribed capital amount (“PCA”). However, a more tailored approach in specific areas (for example, involving the use of own assessment under the natural catastrophe risk module) can be adopted upon the IA’s approval. In general, the IA has calibrated the PCA at a target 99.5% probability of adequacy over a one-year horizon.

### **4. Scope of Application**

- 4.1 Sections 7 to 9 of this Guideline which relate to the capital base and the determination of the value of assets and liabilities apply to all authorized insurers (i.e. including marine insurers, captive insurers and Lloyd’s), except—
- (a) special purpose insurers; and
  - (b) where any of the RBC Rules have been varied or relaxed in their application to such insurers.
- 4.2 Section 10 of this Guideline which relates to the determination of the PCA applies to all applicable insurers, except where any of the RBC Rules have been varied or relaxed in their application to such insurers.

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<sup>1</sup> Reference from ICP 14.5.1.

- 4.3 The table below summarizes the basis of application for the capital requirements for all authorized insurers—

Type of insurer	Basis of application
HK insurer	<ul style="list-style-type: none"> <li>Entire entity level</li> <li>All businesses written by the entire entity, including branches operating overseas</li> <li>Consolidation basis, except for subsidiaries which are regulated financial entities</li> </ul>
Designated insurer	
Non-HK insurer (other than designated insurer)	<ul style="list-style-type: none"> <li>Hong Kong branch level</li> <li>All businesses written by the non-HK insurer via its Hong Kong branch (covering both onshore risk and offshore risk) and/or pertaining to assets, liabilities and capital resources related to business carried on in Hong Kong</li> <li>Any separate fund of reinsurance business with offshore risk is excluded in calculating the PCA</li> </ul>
Lloyd's	<ul style="list-style-type: none"> <li>Hong Kong operation level</li> <li>All businesses written by the Hong Kong operation (covering both onshore risk and offshore risk) and/or pertaining to assets, liabilities and capital resources related to business carried on in Hong Kong</li> <li>Reinsurance business with offshore risk is excluded in calculating the PCA</li> </ul>

- 4.4 Where the RBC Rules or guidance in this Guideline relevant to the RBC Rules refer to credit rating bands, authorized insurers should refer to Schedule 6 and **Appendix B** of this Guideline for the mapping of credit rating bands. The mapping of credit rating bands is relevant to the determination of various items under the RBC Rules, including calculation of—

- the matching adjustment (“MA”);
- the risk capital amount (“RCA”) for credit spread risk;
- the RCA for counterparty default and other risk under Division 5 of Part 5; and
- the RCA for counterparty default and other risk for the reinsurance recoverables made through the net-down procedures under Division 4 of Part 5.

- 4.5 To avoid doubt, rule 8 of the Local Assets Rules must be followed for the purpose of mapping the determining factor applicable to authorized insurers subject to the Local Assets Rules, and Appendix B of this Guideline does not apply to such purpose.

## 5. Approach in Supervising Capital Adequacy

- 5.1 Under section 8 of the Ordinance, the IA must be satisfied that a company applying for authorization to carry on long term or general business complies and will continue to

comply with capital requirements having regard to the nature and scale of the company's proposed operations, both at the time of the application and after authorization.

- 5.2 The relevant capital requirements are that an authorized insurer's capital base (as determined based on Part 3 of the RBC Rules for applicable insurers, rule 6 of the Marine and Captive Rules for marine insurers and captive insurers, and rule 6 of the Lloyd's Rules for Lloyd's) is not less than each of the following (except where and to the extent to which the RBC Rules have been varied or relaxed in their application to such insurers)—
- (a) the PCA;
  - (b) the minimum capital amount ("MCA"); and
  - (c) \$20,000,000 for applicable insurers and Lloyd's, or \$2,000,000 for marine insurers and captive insurers.
- 5.3 An authorized insurer should establish mechanisms and procedures to identify and keep track of deteriorating situations that may lead to non-compliance with capital requirements. Under section 13AA(2) of the Ordinance and rule 6 of the RBC Rules, rule 5 of the Marine and Captive Rules and rule 5 of the Lloyd's Rules, an insurer must immediately notify the IA when any of its directors, controllers, key persons in control function or, in the case of Lloyd's, authorized representative reaches a view that the insurer is at risk of non-compliance with capital requirements, or knows or has reason to believe that such non-compliance has occurred. Otherwise, an offence is committed by the insurer and potentially, in an appropriate case involving consent, connivance or neglect, by a director, controller (including authorized representative) or key person in control function to whom the failure to notify the IA may be attributed.
- 5.4 Failure by an authorized insurer to meet the conditions of authorization set out in section 8(3) of the Ordinance, including the requirement to comply with capital requirements, provides grounds for the IA to revoke the insurer's authorization. However, in practice, non-compliance with capital requirements does not automatically lead to the withdrawal of the insurer's authorization. Instead, the IA will first discuss remediation plans with the insurer and serve a written notice on the insurer under section 35AA(2) or (4) of the Ordinance requiring the insurer to submit—
- (a) a restoration plan in accordance with section 35AA(2) of the Ordinance upon its capital base failing, or being at risk of failing, to meet the PCA; or
  - (b) a short term financial scheme in accordance with section 35AA(4) of the Ordinance upon its capital base failing, or being at risk of failing, to meet the MCA.
- 5.5 If the restoration plan or short term financial scheme submitted by the authorized insurer concerned meets the objective of restoring its capital adequacy and seems to be sufficient, reasonable and practically achievable, the IA may accept such plan or scheme as adequate, and serve a written notice on the insurer under section 35AA(2) or (4) of the Ordinance requiring the insurer to give effect to the plan or scheme.

- 5.6 A restoration plan or short term financial scheme shall be submitted by the authorized insurer under paragraph 5.4, accepted by the IA under paragraph 5.5, and implemented by the insurer: (a) in the case of a restoration plan, within up to 30 days (or within such other period as the IA may instruct) after the insurer's capital base first becomes, or is at risk of becoming, less than the PCA; or (b) in the case of a short term financial scheme, within up to 7 days (or within such other period as the IA may instruct) after the insurer's capital base first becomes, or is at risk of becoming, less than the MCA.
- 5.7 If the authorized insurer fails to comply with any requirement imposed on it in a notice served under section 35AA of the Ordinance, then the person making default in compliance, including both the insurer and potentially any individual to whom the insurer's default is attributable, commits an offence under section 41(1) of the Ordinance.
- 5.8 In cases where the approach taken under the RBC Rules, the Marine and Captive Rules, or the Lloyd's Rules (as the case may be) is not able to fully and appropriately reflect the risks associated with a particular insurer, section 10 of the Ordinance empowers the IA to vary capital requirements prescribed under the respective Rules if the IA is satisfied, on reasonable grounds, that it is prudent to make the variation, taking into account the risks associated with the insurer. The criteria and considerations that the IA may apply in determining such variations are set out in Appendix A.
- 5.9 Before deciding whether to vary the capital requirements of an authorized insurer, the IA will first discuss with the insurer the issues identified by the IA which suggest, in the IA's opinion, that a variation of the insurer's capital base, PCA, MCA or specific items within the RBC Rules, the Marine and Captive Rules or the Lloyd's Rules (as the case may be) may be needed. By reference to these issues, the IA will set out in writing why in its opinion a determination to vary any part of the insurer's capital requirements is needed and indicate the variation that it is considering based on the issues and information identified. The insurer will then have the opportunity to provide its input and views on these matters to the IA both in writing and orally. The IA will take into account the input and views of the insurer before making any final determination to vary any part of the insurer's capital requirements.
- 5.10 If the IA makes a final determination to vary any part of an authorized insurer's capital requirements, the variation will be effected by the IA giving notice in writing to the subject insurer under section 10(3) of the Ordinance. This notice will set out—
- (a) the reasons for the variation;
  - (b) the details of the variation;
  - (c) the period over which such variation will apply; and
  - (d) if appropriate, the actions that must be taken by the insurer in order for the IA to consider removing such variation.
- 5.11 Any decision by the IA to vary capital requirements under section 10(3) of the Ordinance is a specified decision which is subject to review by the Insurance Appeals Tribunal ("IAT"). Thus, an affected insurer who wishes to do so may apply to the IAT for review of this decision under section 100 of the Ordinance.



- 5.12 The IA will review any variation to capital requirements regularly to ascertain whether the grounds and considerations on which the variation is based remain current.
- 5.13 In addition to the capital requirements under the RBC Rules, an authorized insurer should also adhere to the Guideline on Enterprise Risk Management (“GL21”) which implements Pillar 2 of the RBC regime. This includes the requirements to perform an own risk and solvency assessment (“ORSA”), establish Target Capital (with a view to ensuring that the insurer has sufficient capital to meet its needs factoring in all risks to which it is exposed, including risks not covered under the RBC Rules, under both normal and stressed conditions), and formulate management actions to restore capital adequacy.

## **6. Data, Process and Control**

- 6.1 Data referred to in determining the valuation and capital requirements should be based on up-to-date and credible information. Authorized insurers should ensure that data relating to different time periods is used consistently. Additionally, insurers should perform checks to ensure the completeness and accuracy of data.
- 6.2 Authorized insurers should establish policies and procedures for the valuation of assets and liabilities, and determination of the PCA. These policies should cover adequate documentation of the processes and the accompanying controls, calculation approaches (including, if applicable, design, implementation, data, parameters, model and assumptions), and the process for independent review<sup>2</sup> and verification of the calculation approaches.
- 6.3 Authorized insurers should have adequate internal control systems to enable the reporting of reliable information in returns submitted to the IA.
- 6.4 When a material misstatement is identified in the returns, the IA may require the authorized insurer concerned to provide an explanation and propose actions for rectification. The materiality of misstatement is assessed based on both quantitative and qualitative aspects. For example, a misstatement which results in a breach of capital requirements is considered material even if the quantitative amount is immaterial.

## **7. Capital Base (Part 3, Schedules 1, 2 and 3 of the RBC Rules)**

- 7.1 In relation to the capital resources qualifying as Unlimited Tier 1 capital under rule 8(1)—
- (a) equity-settled employee stock options under rule 8(1)(e) refer to contracts under which employees of the authorized insurer are granted rights to purchase shares of the insurer at pre-determined strike prices, but exclude employee stock options that

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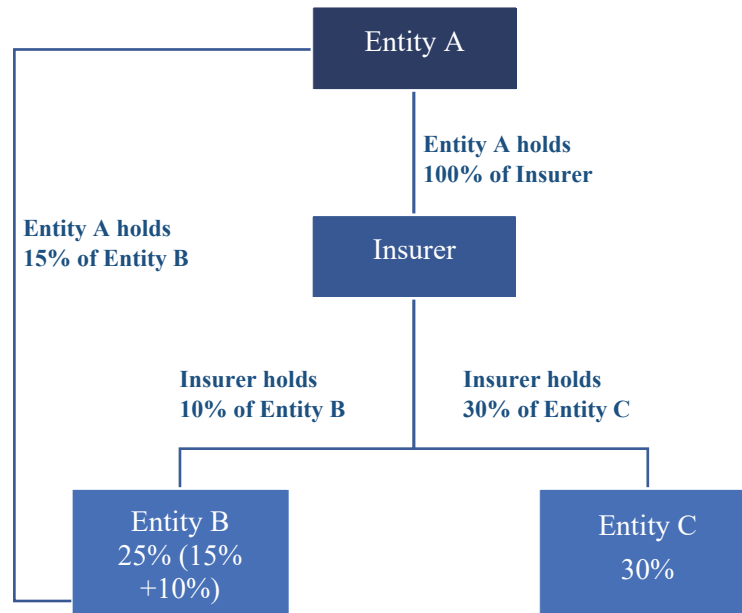
<sup>2</sup> Independent review may be carried out by an internal or external party (e.g. internal audit department, external auditor, etc.) as long as the reviewer is independent, is not responsible for, and has not been actively involved in the part of the subject matter.

- can be settled in cash (including employee stock options settled in cash by an insurer to its parent company); and
- (b) unrestricted and restricted reserves under rule 8(1)(f) include any contingency reserve of an authorized insurer's mortgage insurance business.
- 7.2 In determining the amount of Unlimited Tier 1 capital, Limited Tier 1 capital and Tier 2 capital, regulatory adjustments must be made under rules 8 to 10. For clarity, the amount of each deduction under rules 8(3), 9(2) and 10(2) should not be negative and should not result in an increase in Unlimited Tier 1 capital, Limited Tier 1 capital and Tier 2 capital. Paragraphs 7.3 to 7.7 provide clarifications on the regulatory adjustments relating to fair value gains or losses on liabilities, encumbered assets, holdings in regulated financial entities, negative reserves and restricted capital.
- 7.3 Regulatory adjustment relating to cumulative fair value gains or losses on liabilities valued at fair value
- The adjustment for cumulative fair value gains or losses on liabilities deducted from Unlimited Tier 1 capital under rule 8(3)(e) reflects the difference between the value of the liabilities assuming the authorized insurer is default-risk free and the value reflecting the default risk of the insurer. Any such deduction arising from derivative contracts should not be offset by accounting valuation adjustments arising from the insurer's counterparty credit risk on those contracts (such as the loss allowance for expected credit losses outlined in *International Financial Reporting Standard 9/Hong Kong Financial Reporting Standard 9 Financial Instruments* ("IFRS/HKFRS 9")).
- 7.4 Regulatory adjustment relating to encumbered assets
- For the purpose of determining the amount of adjustment relating to encumbered assets deducted from Unlimited Tier 1 capital under rule 8(3)(k) and included as Tier 2 capital under rule 10(1)(d), an authorized insurer should—
- (a) identify the encumbered assets and the "relevant on-balance sheet liabilities" relating to those assets based on the relevant agreement (such as contractual terms, regulatory requirements, or agreement with a regulator);
  - (b) value the encumbered assets and "relevant on-balance sheet liabilities" in accordance with the RBC Rules; and
  - (c) determine the incremental capital requirement relating to encumbered assets and relevant liabilities by identifying any increase in the PCA from capturing the encumbered assets and relevant liabilities within the PCA calculation, as compared to the PCA calculation if the encumbered assets and relevant liabilities were excluded from the economic balance sheet. An example of this calculation is provided in **Appendix C** for illustration purposes. If needed, an authorized insurer may estimate the incremental capital requirement relating to encumbered assets and relevant liabilities using prudent alternative methodology. If it is determined that there is no increase in the PCA and thus no incremental capital requirement, then

the amount of adjustment would simply be the value of encumbered assets less the relevant on-balance sheet liabilities.

## 7.5 Regulatory adjustment for holdings relating to regulated financial entities

- (a) For the purpose of determining the amount of deduction for the authorized insurer's holdings in relation to a regulated financial entity under rules 8(3)(f), 8(3)(h), 8(3)(j), 9(2)(a), 9(2)(b), 9(2)(d), 10(2)(a), 10(2)(b) and 10(2)(d), "regulated financial entity" does not include any entity which is subject solely to the regulatory requirement that the company's assets must exceed its liabilities.
- (b) For the purpose of determining the amount of deduction for the authorized insurer's holdings in relation to an affiliate (being a regulated financial entity) under rules 8(3)(h), 9(2)(b), and 10(2)(b), insurers should refer to rule 2 for the definition of affiliate<sup>3</sup>, which is further illustrated in the diagram below, in which entities A, B and C are all considered to be affiliates of the insurer.



<sup>3</sup> "Affiliate" has the meaning defined in rule 2 of the RBC Rules, which is reproduced for easy reference.

Pursuant to rule 2, affiliate, in relation to an applicable insurer, means

- (a) an entity that—
  - (i) has a beneficial interest in, or controls, 20% or more of the total number of ordinary shares in the insurer; or
  - (ii) is entitled to exercise, or control the exercise of, 20% or more of the voting power at a general meeting of the insurer; or
- (b) an entity of which—
  - (i) the insurer or an entity mentioned in paragraph (a) has beneficial interest in, or controls, 20% or more of the total number of ordinary shares; or
  - (ii) the insurer or an entity mentioned in paragraph (a) is entitled to exercise, or control the exercise of, 20% or more of the voting power at a general meeting.

- (c) For the purpose of determining the amount of deduction for the authorized insurer's holdings in relation to either a non-consolidated subsidiary or an affiliate which is a regulated financial entity under rules 8(5), 9(3) and 10(3), reinsurance assets and/or receivables arising from insurance or service contracts, which do not relate to such holdings or provision of financial support by the insurer, are not considered to be a credit exposure of the insurer to such non-consolidated subsidiary or affiliate and the amount should not be deducted from the capital base. However, where such assets or receivables arise from non-qualifying reinsurance, the relevant amount should be deducted from the capital base.
- (d) In respect of the amount of deduction for the relevant capital shortfall relating to an authorized insurer's non-consolidated subsidiary under rule 8(3)(g), the relevant capital shortfall should be determined with reference to the capital requirements prescribed by the regulator to whose jurisdiction the subsidiary is subject above which the regulator will not intervene in the subsidiary on capital adequacy grounds.

#### 7.6 Regulatory adjustment relating to negative reserves

To illustrate the amount of negative reserves to be deducted from Unlimited Tier 1 capital under rule 8(3)(l) and added to Tier 2 capital under rule 10(1)(e), an example of the calculation is set out below—

	<u>\$'000</u>
<u>Long term business</u>	
(1) Negative reserves at the total level of long term business	100
(2) Notional PCA based on the assets and liabilities in respect of long term business	<u>70</u>
(3) Excess of negative reserves over notional PCA	30
<u>General business</u>	
(4) Negative reserves at the total level of general business	15
(5) Notional PCA based on the assets and liabilities in respect of general business	<u>20</u>
(6) Excess of negative reserves over notional PCA	0
<i>Total amount to be adjusted from Unlimited Tier 1 capital to Tier 2 capital (i.e. (3) + (6))</i>	<i>30</i>

#### 7.7 Regulatory adjustment relating to restricted capital

- (a) For the purpose of determining the amount to be deducted from Unlimited Tier 1 Capital under rule 8(3)(m) and added back to Tier 2 Capital under rule 10(1)(f), the authorized insurer's restricted capital component for participating fund(s) does not include the value of future transfers (relating to bonuses which have been declared but not yet transferred out of the participating fund(s), or future discretionary benefits allowed for in the current estimate of insurance liabilities) or other amounts that are attributable to shareholders under the insurer's corporate policy on the governance of participating business.

- (b) An applicable insurer is required to determine the composition of capital resources within its participating fund(s) to identify any restricted capital components. For example, restricted capital may arise where an inherited estate (which has been built up over the years to provide working capital) is dedicated to supporting the participating business on a going concern basis, and the distribution of excess surplus from the inherited estate between policy holders and shareholders has yet to be determined.

***Schedule 3 of the RBC Rules – Qualifying criteria for Tier 2 capital instruments relating to incentive to redeem***

- 7.8 For the purpose of determining effective maturity under Schedule 3 section 1(c) and 1(d), for an instrument with callable features, effective maturity is determined based on the first call date, which is derived after taking into account any step-up or other incentive to redeem the instrument. For example, in the case of a fixed-to-float instrument<sup>4</sup>, if the contractual spread over the benchmark rate on the first callable date (which is also the interest reset date) is higher than the implied spread under the fixed rate after considering the corresponding swap rate, the issuer may have an incentive to redeem the instrument.

***Capital base (rule 6 of the Lloyd's Rules)***

- 7.9 A recognized letter of credit should satisfy the following criteria in order to qualify and be approved by the IA as Unlimited Tier 1 capital of Lloyd's under rule 6(2)(a) of the Lloyd's Rules—
- (a) it is issued by a bank as defined in the Banking Ordinance (Cap. 155);
  - (b) it is issued in favour of the IA and readily enforceable by it in Hong Kong;
  - (c) it is irrevocable, clean and unconditional (except for conditions that do not impede the IA's ability to obtain payment on demand);
  - (d) it provides for automatic renewal and specifies the notice period required for non-renewal;
  - (e) it stipulates that the issuing bank is required to immediately notify the IA if it decides not to renew the letter of credit; and
  - (f) it is duly signed by the issuing bank.

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<sup>4</sup> When such instruments pay fixed rate coupons for a certain period and then switch to a floating rate (which commonly makes reference to a benchmark rate), the issuer may call the instrument to avoid paying the higher floating rate.

- 7.10 Only the portion of the recognized letter of credit that exceeds Lloyd's total insurance liabilities (net of reinsurance) is regarded as Unlimited Tier 1 capital, which is subject to further deduction as required under rule 8(3) and (4) of the RBC Rules. Below is a simplified example for illustration—

	<u>\$'000</u>
Amount of recognized letter of credit	100
Less: Total insurance liabilities (net of reinsurance)	(20)
Less: Regulatory adjustment under rule 8(3) and (4) of the RBC Rules	(5)
<i>Amount of recognized letter of credit qualified as Unlimited Tier 1 capital</i>	<u>75</u>

## **8. Valuation of Insurance Liabilities (Divisions 1 and 2 of Part 4 of the RBC Rules)**

### ***Rules 11 and 12 of the RBC Rules – Recognition and derecognition of assets and liabilities***

- 8.1 Authorized insurers should not inflate assets and liabilities. For any balances between funds held by an insurer, the IA expects that these interfund balances are eliminated at the level of the insurer's total business.
- 8.2 For the purpose of valuing insurance liabilities, no future new business should be taken into account by authorized insurers.

### ***Rule 13 of the RBC Rules – Insurance contracts covering different types of risk***

- 8.3 Pursuant to rule 13(1), distinguishable sets of insurance obligations may refer to obligations under riders (or other supplementary contracts) or a component of the contract. For long term business, in particular, supplementary contracts are generally unbundled from base contracts for the purpose of valuing insurance liabilities.
- 8.4 For contracts covering different general insurance lines of business—
- (a) for the purpose of valuing liabilities under such contracts, authorized insurers should follow the principles underlying the methodology for grouping lines of business and sub-division of risks and types of claim set out in the Guideline on Actuarial Review of Insurance Liabilities in respect of General Business (GL9) when considering suitable data groupings (grouping up data when it is insufficient) and sub-segments (breaking data into smaller segments when the characteristics are different);
  - (b) for the purpose of determining the PCA<sup>5</sup>, authorized insurers must apply rule 13(5) and (6) and unbundle and separately value contracts which cover different general insurance lines of businesses<sup>6</sup> unless unbundling is not practicable and failing to unbundle would not result in a material misstatement in the valuation of liabilities or

<sup>5</sup> The relevant calculation of PCA is incorporated in quarterly and annual returns with respect to the authorized insurer's financial position and capital adequacy, as required under rule 4 of Insurance (Submission of Statements, Reports and Information) Rules (Cap. 41S).

<sup>6</sup> Pursuant to rule 13(5) of the RBC Rules.

the PCA<sup>7</sup> at the total business level. Direct motor and direct employees' compensation lines of businesses should not be bundled and should be valued separately.

- (c) in submitting returns with respect to their business related information<sup>8</sup>, authorized insurers should ensure consistency with the information reported under "financial position and capital adequacy" as described in paragraph (b) above. Where the "business related information" requires a more granular breakdown than that under paragraph (b), insurers may apply reasonable allocation approaches to the relevant estimates. Statutory lines of business should be reported separately and not bundled.

- 8.5 Under rule 13(8)(b), if an authorized insurer has not unbundled the insurance liabilities for additional business from its other long term business because it is not reasonably practicable to do so, and the key risk driver for the liabilities which are not unbundled is of the nature of class 1 or 2 specified in Part 3 of Schedule 1 to the Ordinance, the insurer must determine how to value such liabilities in accordance with rule 13(9). This means for example that, in the case of a packaged insurance policy which primarily provides accident and health coverage with only a small life protection element, whether such liabilities are to be valued and the RCA are to be determined in accordance with the rules for long term insurance or general insurance<sup>9</sup> depends on the contract boundary as determined in accordance with rule 14 for those liabilities, taking into account the expert judgment of the insurer's Appointed Actuary. If such a policy is determined to be bounded at the next renewal date and a long boundary is not applied, the insurer must value the liabilities based on the valuation rules for general insurance liabilities and determine the RCA for general insurance risk accordingly.

#### ***Rule 14 of the RBC Rules – Boundary of insurance liabilities***

- 8.6 Where an insurance contract can be unbundled into two or more sets of distinguishable obligations, it should be unbundled first. Then each unbundled part should be treated as if it were a separate contract for the purpose of setting the contract boundary. Authorized insurers should make reference to *International Financial Reporting Standard 17* or *Hong Kong Financial Reporting Standard 17 Insurance Contracts* ("IFRS/HKFRS 17") and relevant guidance of IFRS/HKFRS 17 in applying the principle of determining the contract boundary for each unbundled part.
- 8.7 An authorized insurer should establish policies for determining the boundary of insurance liabilities and is expected to document the rationale, including the underlying quantitative and/or qualitative analysis.

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<sup>7</sup> Pursuant to rule 13(6) of the RBC Rules.

<sup>8</sup> As required under rule 4 of Insurance (Submission of Statements, Reports and Information) Rules (Cap 41S).

<sup>9</sup> To avoid doubt, regardless of the valuation approach adopted for the accident and health business, such business continues to be long term business and maintained under long term business funds.

## **Valuation of Long Term Insurance Liabilities**

### ***Rule 15 of the RBC Rules – Determination of long term insurance liabilities***

- 8.8 Pursuant to rule 15(4), for long term business of the nature specified as Class C in Part 2 of Schedule 1 to the Ordinance, unit reserves should be valued as the value of the assets backing the units relating to the contracts of insurance. Where, however, an authorized insurer has agreed with the IA, pursuant to paragraph 11.1 of the Guideline on Underwriting Class C Business (GL15), to deviate from policy holders' investment instructions in allocating premiums based on sound actuarial principles, unit reserves should be valued at the policy account value minus the agreed deviation amount. A specific example of such deviation agreed with the IA is adoption of actuarial funding for unit-linked businesses, in which case unit reserves should be valued at the actuarially funded value.
- 8.9 Non-unit reserves represent the present value of expected outgoes that are not covered by the unit reserves (e.g. expenses and benefit payments in excess of the policy account value), less any expected income that does not accrue to the unit reserves (e.g. fees and charges), associated with the Class C business. Non-unit reserves should be kept separate from unit reserves, and neither should be used to offset the other. Therefore, the amount of assets held for policy holders' accounts in respect of Class C business (i.e. item I.I in the form [F.1 Regulatory balance sheet]) should be sufficient to cover the corresponding unit reserves even if the amount of non-unit reserves is negative.

### ***Rule 16 of the RBC Rules – Calculation of current estimate for long term insurance liabilities***

- 8.10 The calculation of the current estimate for long term insurance liabilities should allow for uncertainty and variability in cash flows, such that the current estimate represents the central estimate of the distribution of cash flows which considers the probability of different outcomes without the need to add extra margins for prudence.
- 8.11 In cases where the distribution of outcomes is symmetrical around the central estimate, the current estimate may be determined using a single scenario that reflects the average expected outcome.
- 8.12 The projection horizon used to calculate the current estimate of long term insurance liabilities should cover the full lifetime of all cash inflows and outflows required to settle all obligations within the contract boundary of all contracts recognized on the valuation date. Simplifications with shorter time horizons may be applied if a materially accurate valuation can be achieved.
- 8.13 Authorized insurers should use actuarial and statistical techniques for the calculation of the current estimate for long term insurance liabilities which appropriately reflect the risks that affect related cash flows. This may include simulation methods, deterministic techniques and analytical techniques.



***Rule 17 of the RBC Rules – Cash flows projection for long term insurance liabilities***

- 8.14 The best estimate assumptions used in projecting future cash flows should be based on up-to-date and credible information. The determination of the best estimate is required to be comprehensive and objective, based on observable input data.
- 8.15 In setting the best estimate assumptions, the Appointed Actuary should have regard to Actuarial Guidance Note 9: Best Estimate Assumptions (AGN 9) issued by The Actuarial Society of Hong Kong.
- 8.16 When selecting data to use in setting assumptions for the best estimate calculation, authorized insurers should consider—
- (a) the quality of the data based on accuracy, completeness and appropriateness;
  - (b) whether the data used covers a sufficiently long period with a sufficiently large number of observations that reflects the reality being measured;
  - (c) any assumptions made in the collection, processing and application of the data; and
  - (d) how frequently the data is regularly updated and any circumstances triggering additional updates.
- 8.17 An example of the application of rule 17(1)(b) would be for an authorized insurer to set its best estimate assumptions for claims inflation and premium adjustment so as to reflect expected realistic future economic developments.
- 8.18 In calculating cash outflows for expenses<sup>10</sup>, both maintenance expenses (including overhead expenses) and expenses directly allocated to individual claims, policies or transactions should be included. The allocation of overhead expenses to contracts or groups of contracts should follow realistic and objective principles. The share of overheads should be assessed on the basis that the authorized insurer continues to write future new business.
- 8.19 Best estimate assumptions relating to expenses should—
- (a) allow for the expected increase in costs over time, taking into account the nature of the underlying expense drivers;
  - (b) allow for any material current expense overrun that is expected to continue into the future. This allowance may need to be varied under different stress scenarios when determining the relevant RCA. In other words, an authorized insurer should reassess the likelihood of a material current expense overrun and its expected magnitude under different stress scenarios, and consider adjusting its best estimate assumptions relating to such overruns; and
  - (c) if related to any expected cost reductions, be realistic, objective and based on verifiable data and information.

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<sup>10</sup> Including, but not limited to, administrative expenses, investment management expenses, overhead expenses, claims management/handling expenses and acquisition expenses (for example, commissions) which are expected to be incurred in the future.

***Rule 18 of the RBC Rules – Allowance for future discretionary benefits***

- 8.20 Future discretionary benefits which are expected to be paid under the insurance contract should be taken into account regardless of whether those payments were illustrated to policy holders before.
- 8.21 The allowance for future discretionary benefits should be aligned to the corporate policies of authorized insurers and guidelines issued by the IA that relate to the management of participating business, universal life business, and any other business having discretionary benefits.<sup>11</sup>
- 8.22 The Appointed Actuary should be able to justify that the allowance for future discretionary benefits in the valuation of insurance liabilities is consistent with the authorized insurer's actual management practices, having regard to policy holders' reasonable expectations, and the insurer's assumptions about future investment returns which should be consistent with the discount rate used in the valuation of the underlying insurance liabilities (i.e. based on the relevant specified risk-free yield curve, adjusted by the MA (if applicable), in accordance with Schedules 4 and 5).
- 8.23 For clarity—
- (a) The value of financial and other guarantees (including the expected value of soft guarantees) should be included in the current estimate of long term insurance liabilities as guaranteed benefits and not as discretionary benefits;
  - (b) Future discretionary benefits include the non-vested portion of claim bonuses or non-vested portion of dividends which have been declared as at the valuation date, as well as dividends assumed to be declared in the calculation of the current estimate; and
  - (c) Index-linked and unit-linked benefits should not be considered as discretionary benefits.

***Rule 19 of the RBC Rules – Valuation of contractual options and financial guarantees***

- 8.24 Authorized insurers should calculate the time value of options and guarantees ("TVOG") particularly for their participating business, universal life business and Class G business, as these lines of business offer material contractual options and financial guarantees to policy holders. Insurers should also calculate the TVOG for other business lines that include material contractual options and financial guarantees, such as indexed universal life products, that provide variable benefits depending on the market conditions, with a minimum guarantee on the benefit amount.
- 8.25 Expected cash flows for these options and guarantees should be included in the cash flows to determine the current estimate of long term insurance liabilities. These expected cash flows should reflect expected policy holder behavior, and capture the uncertainty of future

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<sup>11</sup> Including Guideline on Underwriting Long Term Insurance Business (Other than Class C Business) (GL16) and Guideline on Participating Business ("GL34").

cash flows, taking into account the likelihood and severity of outcomes under multiple scenarios combining the relevant risk drivers.

- 8.26 For the purposes of valuing the TVOG, a stochastic simulation approach would consist of an appropriate market-consistent asset model for projections of asset prices and returns (such as equity prices, fixed income returns and property returns), together with a dynamic liability model incorporating the corresponding value of liabilities under different market scenarios and reflecting the stochastic nature of any relevant non-financial risk drivers and the impact of any foreseeable actions to be taken by management.
- 8.27 Under a market-consistent stochastic model, both the earn rate and discount rate should refer to specified risk-free yield curves with portfolio-specific MA (if applicable) as determined based on rule 24.
- 8.28 Using a stochastic simulation approach, the TVOG is determined as the difference between the average liabilities calculated from multiple stochastic scenarios and the deterministic current estimate of liabilities under a certainty-equivalent basis.
- 8.29 Authorized insurers with immaterial options and guarantees could adopt simplified approaches such as deterministic approaches or factor-based approaches, if they are able to demonstrate that the results are not materially different from those produced by the stochastic simulation approach. For a deterministic or factor-based approach to be applied, detailed analysis is required to determine the scenarios or factors for valuing options and guarantee. Insurers are required to update this analysis (and thus the scenarios or factors) at least annually in order to reflect changes in the moneyness and remaining term of the underlying options and guarantees.
- 8.30 The model used for valuing the TVOG should be verifiable in terms of data, testing, processes, documentation and reasonableness of results, and the results should be reasonably reproducible.
- 8.31 Pursuant to rule 19(4), authorized insurers who have not previously applied a stochastic simulation approach to a particular group of insurance contracts with options and guarantees may determine the TVOG at the product group level using either the stochastic simulation approach or a proxy of 20% of the current estimate (before considering the TVOG). The TVOG should be determined at the most granular product group level available, without any aggregation by broader categories (such as by line of business when the product level data is available) or any approximations (such as allocating TVOG among product groups based on the size of their deterministic current estimates of long term insurance liabilities).
- 8.32 If an authorized insurer has previously used a stochastic simulation approach to calculate the TVOG for any group or class of insurance contracts, it cannot subsequently use the 20% proxy for the same group or class of insurance contracts.

- 8.33 The stochastic model adopted, while fulfilling the requirements under rule 19(3), should—
- (a) allow for sufficient variability to adequately reflect the whole range of potential future scenarios that may impact the value of the financial option or guarantee;
  - (b) reflect any significant correlation between both economic and non-economic variables;
  - (c) include investment returns based on relevant and reliable historical data for predicting future volatility;
  - (d) reflect all significant product features;
  - (e) consider characteristics of policy holder demographics as at the valuation date;
  - (f) reflect policy holder behavior; and
  - (g) be adequately tested to ensure it produces acceptable results.
- 8.34 The economic scenario generator (“ESG”) adopted to produce the potential future scenarios for the calculation of the TVOG should meet the minimum requirements of—
- (a) having at least 1000 economic scenarios;
  - (b) having at least annual time steps, with more frequent time steps if product features are sensitive to cash flow timing;
  - (c) considering all material financial risks;
  - (d) considering an interest rate model which factors in movement of at least short, medium and long tenors;
  - (e) considering a fixed income asset return model for returns and dividend income of fixed income assets, such as sovereign bonds and corporate bonds. At a minimum, the model should account for the following factors: the current level of interest rates and credit spreads, changes in these levels, the risk of credit defaults, and a random component to capture any unpredictability;
  - (f) considering an inflation model where relevant and material;
  - (g) considering an equity asset return model;
  - (h) considering the correlation between assets;
  - (i) performing a martingale test and a market consistency test;
  - (j) performing implied volatility tests to ensure that the implied volatilities of asset classes are consistent with market data;
  - (k) testing the correlation between asset types to ensure that simulated correlations are reasonable compared with historical correlations;
  - (l) being calibrated based on specified risk-free yield curves with MA (if applicable) determined in accordance with Schedules 4 and 5 under base and RCA calculations; and
  - (m) being re-calibrated at least annually.
- 8.35 Investments with similar volatility and risk characteristics may be grouped together if this can be justified under materiality and proportionality principles.
- 8.36 To avoid doubt, while the TVOG must not be negative for the authorized insurer as a whole, it may be positive or negative at the product group or fund level.

### ***Rule 20 of the RBC Rules – Allowance for policy holder behavior***

- 8.37 When assessing the likelihood that policy holders will exercise contractual options, including lapses and surrenders, authorized insurers should analyze both past policy holder behavior and expected prospective policy holder behavior. The analysis should take into account—
- (a) how beneficial the exercise of options has been in the past and will be in the future for policy holders given the circumstances (e.g. economic environment) at the time of exercising the option,
  - (b) past and future economic conditions,
  - (c) past and future management actions, and
  - (d) any other circumstance that is likely to influence decisions by policy holders on whether to exercise the options.
- 8.38 Where the options or guarantees allow policy holders to take actions to change the amount, timing or nature of the benefits they will receive, authorized insurers may consider dynamic policy holder behavior in projecting future cashflows. The impact of both this dynamic policy holder behavior (due to the exercise of options by policy holders) and other non-symmetric cash flows on the current estimate for long term insurance liabilities can be quantified using a stochastic simulation approach across the entire range of economic scenarios.

### ***Rule 21 of the RBC Rules – Management actions***

- 8.39 The allowance for future management actions under rule 21 should be properly approved at the Board level or senior management level, as appropriate.
- 8.40 Examples of management actions allowed for in valuing long term insurance liabilities are changes in asset allocation, changes in future discretionary benefits, changes in policy charges and premium adjustments. To avoid doubt, adjustments to policy benefits and/or premiums that are executed automatically in accordance with predetermined contractual provisions (without any exercise of discretion by the authorized insurer) are, by their nature, not regarded as management actions.
- 8.41 The future management actions allowed for in the valuation of insurance liabilities should be consistent with the authorized insurer's assessment of its practical ability to reprice insurance contracts for the purpose of determining the boundary of insurance liabilities. Thus, for example, if an insurer determines that it faces practical difficulty in repricing insurance contracts, making the contracts unbounded, the projected cash flows should reflect this limitation on the insurer's ability to adjust future premium rates or benefits.

### ***Rule 23 of the RBC Rules – Discount rate for long term insurance liabilities***

- 8.42 If the cash flows do not correspond to an exact point on the applicable specified risk-free yield curve, they can be discounted using the next available term (i.e. rounding up to the nearest term). For example, a cash flow expected to occur in month 34 can be discounted

using the 3-year point in the base yield curve. Similarly, a cash flow expected to occur in month 37 can be discounted using the 4-year point in the base yield curve. Alternatively, cash flows not corresponding to a given point on the base yield curve can be discounted using an interpolated value between the last available term and the next available term that corresponds to the exact time point of the cash flow.

- 8.43 Under rule 23(3), if the currency for the underlying insurance obligations is not a currency specified in Schedule 4, an authorized insurer may use a specified risk-free yield curve that it considers most representative of the characteristics of the currency for the underlying insurance liabilities to determine the discount rate for such liabilities.

#### ***Rule 24 and Schedule 5 of RBC Rules – Matching Adjustment***

- 8.44 Authorized insurers should identify MA portfolios based on their asset and liability management practices.
- 8.45 MA portfolios can be formed at the long term business fund level (for Class C, Class G, Class H, participating business and other long term business), or at a more granular level, according to the authorized insurer's asset and liability management practices, product features, dividend or crediting rate policies, etc.
- 8.46 For details of the criteria for including qualified long term adjustment ("LTA") under rule 24(3)(a), please refer to **Appendix D.1** for the physical segregation requirements<sup>12</sup>. For clarity, an MA portfolio consisting of either several physically segregated participating business funds or several physically segregated universal life business funds is eligible for inclusion of qualified LTA.
- 8.47 The supporting assets of those long term portfolios subject to MA and those not subject to MA, together with the authorized insurer's assets in the shareholder surplus, should add up to the total assets of the insurer. Similarly, the insurance liabilities of those long term portfolios subject to MA and those not subject to MA should add up to the total long-term insurance liabilities of the insurer. A long term portfolio can cover more than one line of long term business including liabilities in different currencies.
- 8.48 For each MA portfolio, authorized insurers should ensure that the amount of assets supporting the liabilities that are subject to MA is no less than the amount of the corresponding liabilities. Similarly, insurers should ensure that the amount of assets supporting the liabilities that are not subject to MA is no less than the amount of the corresponding liabilities. To clarify, the account balances of prepaid premiums are liabilities that are not subject to MA.

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<sup>12</sup> Per the Guideline on Participating Business (GL34), authorized insurers whose total participating business liabilities are below the HKD 1 billion threshold are exempted from the requirement to physically segregate their participating funds. However, for such insurers, their participating business is only eligible to include qualified LTA in the MA calculation if participating business funds are physically segregated as required under rule 24(3)(a), effective from 1 July 2024. Similarly, universal life business is only eligible to include qualified LTA in the MA calculation if universal life business funds are physically segregated as required under rule 24(3)(a), effective from 1 July 2024.

- 8.49 If the underlying fixed income component of a portfolio investment or the assets held for retirement schemes account balances can be looked through with sufficient granularity to determine MA in accordance with the RBC Rules, these assets can be recognized as eligible assets. Otherwise, they are classified as non-eligible assets.
- 8.50 For an eligible asset where a portion of the issuer's obligations is guaranteed by an eligible guarantee and where, in determining the RCA for credit spread risk, the guaranteed portion of the asset uses the credit rating band of the guarantee provider (rather than the issuer) under rule 48(3)(d), the same credit rating band should be used to calculate the MA for this guaranteed portion under the credit spread risk stress scenario.
- 8.51 While the predictability factor calculation for each MA portfolio does not cover liabilities in the MA portfolio that are not subject to MA and their supporting assets, authorized insurers should also consider the appropriateness and suitability of assets used to support these liabilities not subject to MA based on their asset and liability management practice. For example, the cash flow timing of the supporting assets should largely align with that of the liabilities not subject to MA.
- 8.52 To avoid doubt, for non-eligible assets and non-invested assets included in an MA portfolio, their market value, asset duration, cash flows and asset spread are excluded from MA calculation.
- 8.53 The asset spread for eligible assets in an MA portfolio can be derived by goal-seeking a constant spread that, when added to the specified risk-free yield curve, makes the discounted present value of cash flows equal to the market value of the assets concerned.
- 8.54 For the purpose of determining the constant prescribed spread component under section 9 of Schedule 5, the ratio of asset dollar duration of eligible assets and liability dollar duration of long term insurance liabilities that are subject to MA is expected to be non-negative, as in the case of the duration factor determining the application ratio, to ensure proper recognition of the constant prescribed spread component in the MA calculation.

For the calculation of the asset duration of eligible assets in the MA portfolio (used to determine the duration factor under section 8 of Schedule 5), authorized insurers may

choose to use modified duration<sup>13</sup> or effective spread duration<sup>14</sup>. The IA expects insurers to apply their chosen method of calculating asset duration consistently across all assets, MA portfolios and scenarios.

- 8.55 The cost of hedging insurance liabilities backed by assets in different currencies should be considered in the MA calculation. One approach would be to deduct the cost of currency swaps for hedging explicitly from the asset spread. Another approach would be to consider the cost of hedging in an implicit manner, by considering the difference between the risk-free yield curves of the asset and liability currencies in the asset spread calculation (i.e. deriving the asset spread based on the specified risk-free yield curve of the asset currency instead of the liability currency).
- 8.56 In calculating the accumulated cash flow shortfall (“ACS”) for the purpose of determining the predictability factor under section 7 of Schedule 5, premium cash flows may include contractually fixed premiums, premiums subject to premium holiday feature (with the consideration of premium holiday assumptions), and premiums from adjustable premium products that are highly predictable. Cash flows are considered highly predictable where the contractual terms of the insurance contract provide for a bounded range of variability in the timing and amount of the cash flows. Authorized insurers should be able to justify the reasonableness of the assumed premium levels for adjustable premium products with supporting evidence if requested by the IA. For clarity, discretionary top-up premiums by policy holders should not be included in premium cash flows.
- 8.57 To avoid double counting, for prepaid premiums that are already included in the assets of an MA portfolio, the related premium cash flows should not be considered in the ACS calculation.
- 8.58 Authorized insurers who have practical difficulty in performing the full MA calculation (for example, because they lack computing resources or technical knowledge to perform

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<sup>13</sup> Modified duration should be calculated as follow:

$$\text{Modified duration} = \frac{\text{Macaulay duration}}{1 + \frac{\text{Yield to maturity}}{\text{Annual coupon frequency}}}$$

where –

$$\text{Macaulay duration} = \frac{\sum_t (\text{Present value of cash flows at time } t \text{ discounted at asset yield} * t)}{\text{Market value}}$$

*Yield to Maturity* refers to the internal rate of return of an eligible asset if the investor holds the eligible asset until maturity and if all payments are made as scheduled. It is the discount rate that makes the price of an eligible asset equal to the present value of its cash flows.

<sup>14</sup> Effective spread duration should be calculated as follow:

$$\begin{aligned} &\text{Effective spread duration} \\ &= \frac{\left( \frac{\text{Present value of cash flows discounted at specified risk free yield curve}}{\text{Market value}} - 1 \right)}{\text{Asset spread}} \end{aligned}$$



the full calculation) may consider taking one or more of the following simplified approaches allowed by the IA—

(a) Proxy application ratio of 15% at the entire insurer level

Instead of calculating the application ratio for each MA portfolio, the authorized insurer may adopt a proxy application ratio of 15% at the entire insurer level for all of its MA portfolios and across all RCA scenarios. For clarity, the insurer may choose to use the proxy application ratio of 15% to calculate the MA for only some of its long term portfolios, and at the same time adopt applicable specified risk-free yield curves without MA for its remaining portfolios. Insurers who adopt the proxy application ratio of 15% at the entire insurer level are not eligible to include the constant prescribed spread component (as set out in section 9 of Schedule 5) in its MA calculation.

(b) Use of additive proxy to determine the ACS percentage under lapse up and mass lapse scenarios, for the predictability factor calculation

For determination of the largest ACS percentage under section 7(2) of Schedule 5, the authorized insurer may calculate the ACS percentage for each of the lapse up and mass lapse scenarios by adding an additive proxy of 25% to the ACS percentage under the base scenario, as follows—

$$\begin{aligned} ACS\%_{lapse\ up} &= ACS\%_{base} + 25\% \\ ACS\%_{mass\ lapse} &= ACS\%_{base} + 25\% \end{aligned}$$

(c) Prescribed haircuts to base (Asset dollar duration) / (Liability dollar duration) for the calculation of duration factor under interest rate stress, credit spread stress and equity risks stress

For the purpose of recalculating MA under rule 46, (Asset dollar duration)/(Liability dollar duration) under different stress scenarios is calculated by deducting prescribed haircuts from the base (Asset dollar duration)/(Liability dollar duration), as follows—

**Prescribed haircuts (%)**

<b>Stress scenario</b>	<b>Haircut (%)</b>
Credit spread risk	25
Interest rate up risk	0
Interest rate down risk	35
Equity risk	25

$$\frac{\text{Asset dollar duration}}{\text{Liability dollar duration}_{\text{stress scenario}}} = \frac{\text{Asset dollar duration}}{\text{Liability dollar duration}_{\text{base}}} - \text{haircut}$$

When using this simplified approach, applicable insurers should apply the prescribed haircuts for all credit spread risk, interest rate up risk, interest rate down

risk and equity risk across all MA portfolios. If there is no equity investment in an MA portfolio, the prescribed haircut for equity risk is not applied.

- (d) Use of data within one month before the valuation date for the predictability factor calculation under section 7 of Schedule 5

Authorized insurers may use data within one month before the valuation date for the predictability factor calculation provided they can demonstrate, upon request by the IA, that there is no material difference in the liability cash flows valued using the earlier data as compared to data as at the valuation date.

- (e) Use of data within one month before the valuation date for the duration factor calculation under section 8 of Schedule 5

Authorized insurers may use data within one month before the valuation date for the duration factor calculation provided there is evidence that market conditions at the valuation date are similar to those assumed in the calculation. Insurers will also need to demonstrate, upon request by the IA, that there is no material difference in the liability cash flows valued using the earlier data as compared to data as at the valuation date.

- (f) Interpolation of the TVOG in the calculation of the duration factor under section 8 of Schedule 5

Authorized insurers may use interpolation, but not extrapolation, to calculate the TVOG when calculating the duration factor. Where interpolation is used, the reference points of interpolation should be within a range of 50 basis points or less. However, if the TVOG at the reference points is calculated using the stochastic simulation approach, the final TVOG used in valuing long term insurance liabilities should also be calculated using the stochastic simulation approach, and not by interpolation or extrapolation of other TVOG values.

- (g) Using a final MA which is rounded down to the nearest 10 basis points for calculation of the current estimate under the base case and stressed scenarios

Authorized insurers may round down the final MA to the nearest 10 basis points for calculating current estimates under base scenario and stressed scenarios. This simplification allows the insurers to directly adopt liability cash flows and valuation results based on the rounded MA.

- 8.59 When applying any of the simplified approaches, authorized insurers should be able to demonstrate prudence and to show that there is no major impact to their financial and solvency positions. The level of prudence is left to the insurers' professional judgment but evidence should be provided if requested by the IA. Insurers can use estimation techniques to demonstrate prudence or no major impact to their financial and solvency positions. Where there has been no material change to the insurer's MA portfolio components or market conditions, it may be considered appropriate to rely on conclusions from the previous reporting quarter.

However, it is good practice for insurers to conduct an assessment of the impact of any simplified approaches on their financial and solvency positions at least annually.

- 8.60 Simplified approaches adopted should be applied consistently. Thus, an authorized insurer should apply the same simplified approach(es) to all of its MA portfolios. The same simplified approach(es) should also be applied to calculate MA under base case and stress scenarios for credit spread risk, interest rate up risk, interest rate down risk and equity risk under rule 46.

***Rule 25 of the RBC Rules – Margin over current estimate for long term insurance liabilities***

- 8.61 Pursuant to rule 25(4), diversification benefits between an authorized insurer's different long term business funds are allocated back to the funds proportionately, based on the margin over current estimate ("MOCE") calculated on a standalone basis for each fund, in order to determine the allocated MOCE at the fund level.
- 8.62 The allocation of diversification benefits does not apply to those parts of an authorized insurer's business where diversification benefits with the rest of its business are not recognized, such as assets and liabilities attributable to any restricted capital component in each separate sub-fund of participating business, or any separate fund maintained for reinsurance business with offshore risk. The notional allocation of diversification benefits to each long term business fund described in paragraph 8.61 is also incorporated into the relevant regulatory form.

***Rule 26 of the RBC Rules – Prepaid premiums***

- 8.63 To avoid doubt, the account balance of prepaid premiums should include the accrued interest.

**Valuation of General Insurance Liabilities**

***Rule 29 of the RBC Rules – Cash flows projection***

- 8.64 In projecting all future cash flow items under rule 29(4)(d) for determining general insurance liabilities, cash flows for investment expenses should be limited to those incurred in servicing the insurance contract. General investment expenses which are not directly related to a particular insurance contract are not included in the projection of cash flows under rule 29(4)(d).

***Rule 30 of the RBC Rules – Outstanding claims liabilities and premium liabilities***

- 8.65 Rule 30(2) requires the separation of outstanding claims liabilities and premium liabilities. For this purpose, any material future commissions or premium outgoes relating to earned exposures which are not recognized elsewhere on the authorized insurer's economic balance sheet could be treated as outstanding claims liabilities and reported as incurred but not reported claims under a simplified approach. Examples of such future commission or premium outgoes are—

- exposure related commissions or premium adjustments

- profit related or loss related commissions or premium adjustments
- 8.66 Reinsurance recoverables under rule 33 in relation to general business should similarly be separated into those associated with outstanding claims liabilities and those associated with premium liabilities.

***Rule 32 of the RBC Rules – Margin over current estimate for general insurance liabilities***

- 8.67 As stated in rule 32(1), authorized insurers should calculate MOCE on a net of reinsurance basis. Insurers are not required to report MOCE on a gross of reinsurance basis or separately for reinsurance recoverables.
- 8.68 Under rule 32(2), authorized insurers may choose to account for the diversification of MOCE across different lines of business. If diversification is considered, the certifying actuary<sup>15</sup> or the responsible actuary can use their professional judgement to determine the diversification approach. For regulatory returns, the diversification benefit should be allocated to each line of business, and the MOCE net of diversification should be reported in the relevant regulatory form.

**Valuation of Reinsurance Recoverables**

***Rule 33 of the RBC Rules – Valuation of reinsurance recoverables***

- 8.69 All cash inflows and outflows associated with reinsurance contracts should be included in the valuation of reinsurance recoverables under rule 33, including but not limited to reinsurance premiums, claim recoveries from reinsurers and reinsurance commissions.
- 8.70 In order to value reinsurance recoverables consistently with the current estimates of the underlying insurance liabilities under rule 33(1)(a), cash flows on reinsurance recoveries should be included to the extent they correspond to gross insurance liabilities. If the term of a reinsurance contract is due to expire before the end of the contract boundary of the underlying insurance obligations, an authorized insurer should include in its valuation any future reinsurance contract(s) purchased to replace the expiring reinsurance arrangement, provided that conditions analogous to those set out under rule 41(4) (which apply to contracts expiring within 365 days from the valuation date) are fulfilled by the insurer. For example, in the context of general insurance—
- For risk attaching during (“RAD”) reinsurance contracts already purchased for the forthcoming year: cash flows (both reinsurance costs and recoveries) associated with the cover should be included only up to the extent of gross insurance liabilities;
  - For loss occurring during (“LOD”) reinsurance contracts to be purchased in the following year for which renewal on expiry is assumed in accordance with rule 41(4): cash flows (both reinsurance costs and recoveries) associated with the cover should be included only up to the extent of gross insurance liabilities.

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<sup>15</sup> Certifying actuary refers to actuary appointed under section 15AAA(1)(c) or (d) of the Ordinance in respect of the general business.

- 8.71 MOCE does not need to be calculated for reinsurance recoverables under rule 33 since MOCE is calculated net of reinsurance.

## 9. Valuation of Assets and Other Items (Division 3 of Part 4 of the RBC Rules)

- 9.1 When determining the market value (or fair value) of assets, authorized insurers should follow the valuation techniques outlined in *International Financial Reporting Standard 13/Hong Kong Financial Reporting Standard 13 Fair Value Measurement* (“IFRS/HKFRS 13”). Similarly, financial liabilities should be valued at market value using the guidance provided in IFRS/HKFRS 13. Where the fair value measurement of financial liabilities incorporates the insurer’s own credit standing, this should be adjusted to exclude the valuation impact of the insurer’s probability of default.
- 9.2 For clarity, the market value of bonds should be reported using the dirty price (i.e. including any accrued interest). The same basis should also be used when calculating the MA for the purpose of valuing long term insurance liabilities.
- 9.3 Also, policy loans for the long term insurance policies should be reported in gross, rather than being netted against the long term insurance liabilities.
- 9.4 The table below summarizes the valuation basis for investments in regulated financial entities, subsidiaries, and affiliates:

Investment in regulated financial entities	Un-consolidate and measure at cost less impairment
Investment in subsidiaries other than regulated financial entities	Consolidate each balance sheet item (after consolidation eliminations) according to accounting basis under <i>International Financial Reporting Standard 10/Hong Kong Financial Reporting Standard 10 Consolidated Financial Statements</i> (“IFRS/HKFRS 10”)
Investment in affiliates	(Applicable to associate) Apply equity method according to accounting basis under <i>International Accounting Standard 28/Hong Kong Accounting Standard 28 Investments in Associates and Joint Ventures</i> (“IAS/HKAS 28”)
Investment in affiliates	(Applicable to joint arrangements) Apply accounting basis under <i>International Financial Reporting Standard 11/Hong Kong Financial Reporting Standard 11 Joint Arrangements</i> (“IFRS/HKFRS 11”)

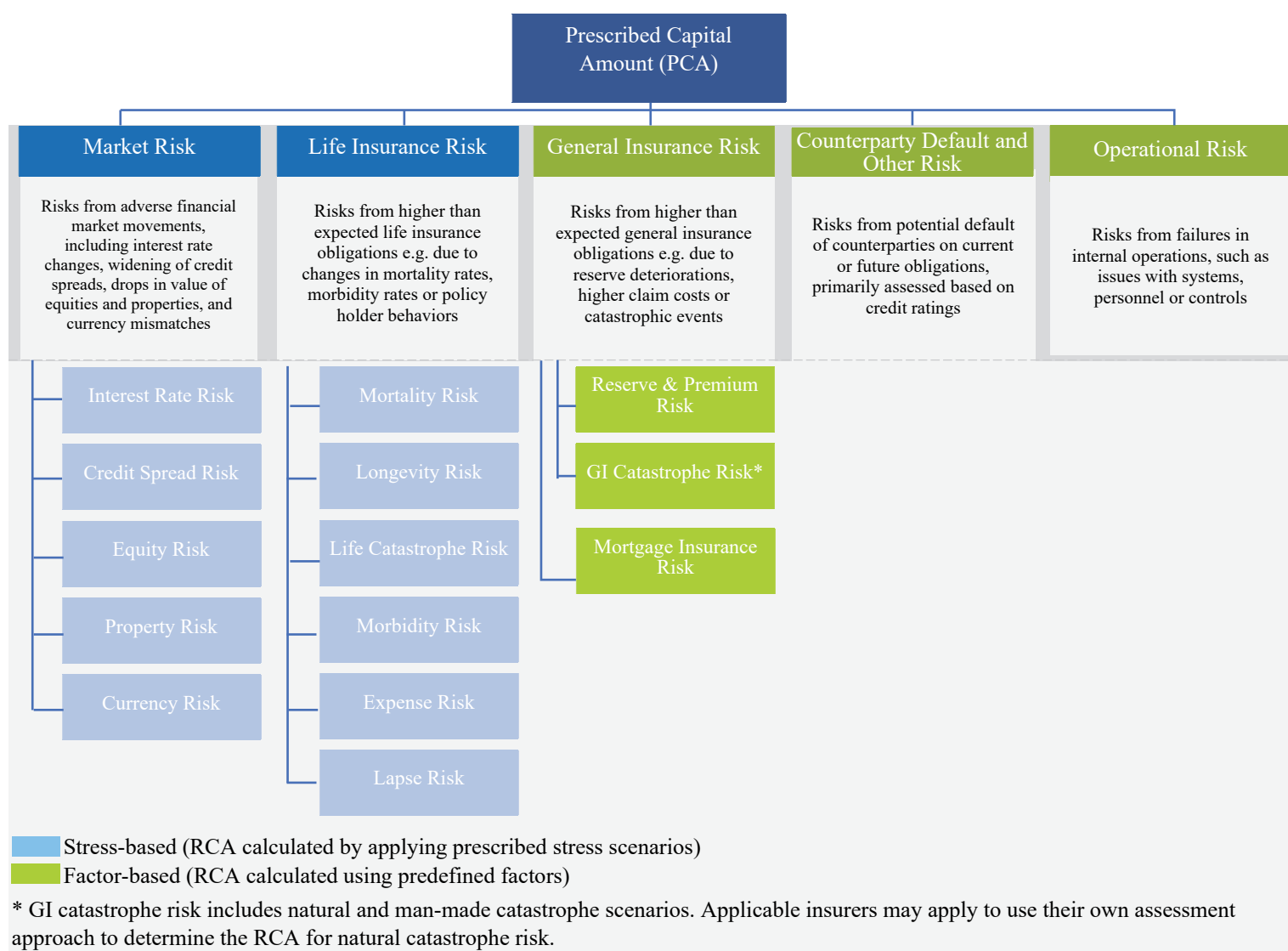
- 9.5 When calculating deferred tax assets and liabilities under the economic balance sheet, the tax rate used should be based on the principles outlined in *International Accounting Standard 12/Hong Kong Accounting Standard 12 Income Taxes* (“IAS/HKAS 12”). The tax rate used to

calculate deferred tax assets and liabilities can differ from the effective tax rate used under rule 44 to calculate the adjustment to the PCA to reflect the loss absorbing capacity of deferred tax.

## 10. Determination of Prescribed Capital Amount for Applicable Insurers (Part 5 of the RBC Rules)

### *Rule 37 of the RBC Rules – Determination of the prescribed capital amount*

10.1 The PCA is determined using a modular approach, by aggregating RCAs (with diversification benefit reflecting the correlation between different risks) from five main risk modules and using either a stress-based approach or a factor-based approach, as shown in the diagram below—



10.2 In accordance with rule 37(2)(a), the MOCE must remain unchanged when applying prescribed scenarios to determine the RCAs. MOCE is neither deducted from the PCA, nor

added to the capital base. Similarly, deferred tax assets and liabilities must also remain unchanged when applying the prescribed scenarios. Instead, the deferred tax impact is calculated at the final step for determining the PCA, separately for restricted capital components and for the remaining part of the applicable insurer's business.

- 10.3 For the purposes of rule 37(5), the separate PCA mentioned in rule 37(5)(a) and (b) (i.e. (a) for each restricted capital component and (b) for the remaining part of the business excluding restricted capital components) must be calculated using the scenario that most negatively affects the applicable insurer as a whole under each sub-risk module (e.g. for interest rate risk, currency risk or lapse risk). For example, if interest rate downward stress is the biting scenario that has the most negative impact on the insurer as a whole, this scenario should be used to determine the RCA for interest rate risk for the restricted capital components and the remaining part of the business. When determining the RCA for operational risk for each part of its business as required under rule 37(5)(a) and (b), the insurer should ensure that the basis used (either annual gross premiums or current estimates of insurance liabilities, as the case may be) is consistent with that determined under rule 86(4) for specified long term business<sup>16</sup> and rule 86(5) for general business. To avoid doubt, no diversification benefits should be recognized among the restricted capital component(s) of each participating fund or between these component(s) and the rest of the insurer's business. Below is a simplified example to illustrate how to identify the biting interest rate risk scenario, calculate the RCA for operational risk, and aggregate the RCAs for each restricted capital component and the remaining part of the insurer's business.

\$'000	Restricted capital component 1	Restricted capital component 2	Remaining part of the insurer's business		Total
			Specified long term business	Class C & Class H	
<u>Interest rate risk</u>					
Δ Net asset value ("NAV") under interest rate upward stress	-50	48	400		398
ΔNAV under interest rate downward stress	45	-60	-500		-515
RCA for interest rate risk†	-45	60	500		515
<u>Operational risk</u>					
4% of annual gross premiums	20	8	30		

<sup>16</sup> Pursuant to rule 86(6), "specified long term business" is defined as long term business other than Class C business and Class H business.

\$'000	Restricted capital component 1	Restricted capital component 2	Remaining part of the insurer's business		Total
x%	0.45%	0.45%	0.45%	0.4%	
x% of the simple average of the current estimates of insurance liabilities (gross of reinsurance)	15	10	20	5	
RCA for operational risk#	20	8	30	5	63
<u>RCA aggregation</u>					
RCA for interest rate risk‡	0	60	500		515
RCA for mortality risk	100	24	200		324
<b>Total diversified PCA* before operational risk</b>	<b>100</b>	<b>70</b>	<b>583</b>		<b>753</b>
RCA for operational risk	20	8	35		63
<b>Total diversified PCA</b>	<b>120</b>	<b>78</b>	<b>618</b>		<b>816</b>

† RCA for interest rate risk being determined based on the biting scenario for the insurer as a whole

# With the use of premiums or current estimates of insurance liabilities being determined at the total level of specified long term business

‡ Any negative RCA must be set to zero before being aggregated with other risks/sub-risks.

\* Assume a correlation of 25% between interest rate risk and mortality risk

### **Rules 38 and 39 of the RBC Rules – Look-through approach**

- 10.4 Rule 38 outlines the general use of the look-through approach for all types of assets and liabilities, including derivatives and structured products<sup>17</sup>. This approach requires applicable insurers to identify the indirect exposures embedded in such assets and liabilities, ensuring that the underlying risk exposures are properly accounted for when determining the relevant RCAs.
- 10.5 Some structured products, such as securitized products, involve repackaging cash flows of underlying exposures into tranches with different layers of risks. In such cases, applicable insurers may apply the look-through approach to evaluate the underlying risks of the tranche. Alternatively, insurers may use a proxy approach, measuring the risks of the

<sup>17</sup> Structured products generally provide exposures to reference single asset or risk, or portfolio of assets or risks, where risk can be in terms of, for example, index or currency.



tranche itself to determine the relevant RCAs, but only where the look-through approach is impractical. For instance—

- mortgage-backed securities (“MBS”) – applicable insurers should determine valuation changes of MBS’ underlying assets under property stress scenarios (look-through approach), or if this approach is impractical, they may apply credit spread stress to the tranche itself based on tranche characteristics (proxy approach). To avoid doubt, under either approach, insurers should also consider interest rate risk (given their fixed income nature) and currency risk for the MBS;
- insurance linked securities (“ILS”) – fixed income securities (e.g. catastrophe bonds) – applicable insurers should determine the valuation changes of fixed income securities under life or general insurance catastrophe risk by applying catastrophe risk scenarios to the underlying exposures (look-through approach), or if this approach is impractical, they may apply credit spread stress to the tranche itself based on tranche characteristics (proxy approach). To avoid doubt, under either approach, insurers should also consider interest rate risk (given their fixed income nature) and currency risk for the fixed income securities; and
- ILS – equity investments (e.g. side-cars) – applicable insurers should determine the valuation changes of equity investments under life or general insurance catastrophe risk by applying catastrophe risk scenarios to the underlying exposures (look-through approach), or if this approach is impractical, they may apply equity stress to the tranche itself based on its equity-like nature (proxy approach). To avoid doubt, under either approach, insurers should also consider currency risk for equity investments.

10.6 When considering whether to use the proxy approach for securitized products, applicable insurers should also assess whether this approach would lead to any material misstatements in the information included in the returns required to be submitted to the IA. If the proxy approach is used, insurers are reminded to consider and make appropriate allowance for any risks not captured under the proxy approach in the ORSA Report. For example, insurers should holistically assess any underlying catastrophe risk of the ILS together with the insurer’s underwritten insurance risk portfolio.

10.7 Apart from securitized products, for structured products where an applicable insurer is unable to apply the look-through approach to measure the indirect risks, those products should be treated as other equities and subjected to equity risk stress.

10.8 Rule 39(2) specifies the priority order for applying the look-through approach to portfolio investments as follows—

1. full look-through approach
2. actual allocation-based look-through approach (if 1 is not feasible)
3. mandate-based look-through approach (if 1 and 2 are not feasible)
4. no look-through as the fallback option (if 1, 2 and 3 are not feasible).

In accordance with this rule, where if it is not feasible to adopt a single look-through approach, a combination of look-through approaches may be used. For example, for a mutual fund with both equity and fixed income exposures, if sufficient information is available for equities but insufficient information for fixed income, then full look-through approach should be used for the equity portion and the actual allocation-based look-through approach or mandate-based look-through approach can be used for the fixed income portion. The IA expects the choice of look-through approach or combination of look-through approaches to remain stable across valuation dates unless additional data on the portfolio investments becomes available to the applicable insurer.

- 10.9 Rule 39(2)(a), (b) and (3) specify the use of the full look-through approach or actual allocation-based look-through approach. While information as at the valuation date is most accurate and should generally be used – particularly for the annual return which has a longer submission timeline – if timely information is not available as at the valuation date for determining the PCA in reporting, applicable insurers are permitted to use data from up to 3 months before the valuation date to perform the look-through, provided there is no material deviation. However, regardless of the data used for the look-through approach, the reported value of a portfolio investment should still be its value as at the valuation date.
- 10.10 Additionally, when using the actual allocation-based look-through approach, only debt securities denominated in the same currency can be combined as a single debt security. This ensures that the choice of yield curve for interest rate risk and currency risk calculations remains unaffected.
- 10.11 Rule 39(2)(c) and (4) outline the mandate look-through approach. Under this approach, the maximum possible allocation to the higher risk asset class applies. For example, if a portfolio’s mandate specifies that 30% to 40% of the investment is allocated to developed market listed equity and 60% to 70% to emerging market listed equity, since emerging market listed equity is subject to the higher risk factor, it should be assumed that 70% is invested in emerging market listed equity and the remaining 30% in developed market listed equity.
- 10.12 The look-through approach should be applied to the level at which RCA can be accurately determined. For exchange-traded funds (“ETF”), applicable insurers are generally required to break down the underlying components to meet this requirement. However, subject to paragraph 10.13, where the underlying exposure is either entirely developed market listed equities or entirely emerging market listed equities, the ETF can be considered collectively for risk measurement. For example—
  - The Tracker Fund of Hong Kong (Hong Kong Stock Exchange (“SEHK”): 2800) is listed in Hong Kong with nearly all of its underlying exposure being equities also listed in Hong Kong, such that the equity risk charge can be deemed to be similar with or without look-through.
  - Similarly, the A50 China Index ETF (SEHK: 2823), though listed in Hong Kong, has nearly all of its underlying exposure in companies listed on the Shanghai and

- Shenzhen Stock Exchanges, such that the RCA for equity risk can also be determined collectively due to the nature of the underlying exposure.
    - In the case of an ETF with underlying exposure in both developed market and emerging market listed equities, the RCA for equity risk cannot be determined collectively but should be determined based on the underlying equity exposures using the look-through approach.
- 10.13 If an ETF involves the use of derivatives aiming to replicate the reference assets of listed equities, but the value of ETF does not change linearly with the value of reference assets, applicable insurers should look through the ETF in determining the RCA.
- 10.14 For purposes of applying the look-through approach, real estate investment trust (“REIT”) investments should be classified as property investments and thus subject to property risk instead of equity risk.
- 10.15 It should be noted that any liabilities associated with a portfolio investment (e.g. loans under REIT) are also required to be looked through for the purpose of applying the relevant stress scenarios to determine the relevant RCAs.

***Rule 41 of the RBC Rules – Recognition of insurance risk mitigation effect***

- 10.16 Rule 41(2)(a) specifies that for a contract of reinsurance to be recognized as an insurance risk mitigation arrangement, there must be a transfer of insurance risk from the applicable insurer to the reinsurer. To avoid doubt, the term “reinsurer” mentioned in this subrule includes special purpose insurers.
- 10.17 Rule 41(2)(d) requires applicable insurers to take “appropriate steps” to ensure the effectiveness of reinsurance arrangements and address associated risks, including the potential risk of discontinuation of risk transfer. To demonstrate compliance, insurers should follow the requirements outlined in the “systems and controls” section in Guideline on Reinsurance (“GL17”).
- 10.18 Rule 41(2)(f) specifies that there must be no double counting of the insurance risk mitigation effect. Where an insurance risk mitigation arrangement covers multiple risk/sub-risk modules, the total reduction in the RCA of each risk module from that arrangement should not exceed the arrangement’s risk mitigation limit (after deducting any outward reinstatement premium).
- 10.19 Under rule 41(2)(g), applicable insurers that are materially exposed to basis risk (due to potential mismatch between the coverage under a reinsurance contract and the insurance risk to which the insurer is exposed) must allow for such basis risk in deriving the risk mitigation effect. Such mismatch can occur in the case of parametric coverage<sup>18</sup> or where

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<sup>18</sup> Parametric coverage means a type of insurance contract that insures a policy holder against the occurrence of a specific triggering event by paying a set amount based on the magnitude of the event, as opposed to the magnitude of the losses in a traditional indemnity policy.

reinsurance arrangements exclude coverage that the insurer does not exclude in its own insurance contracts.

- 10.20 Under rule 41(2)(h), for a reinsurance contract to be recognized as providing risk mitigation, it should not create other new risks or add material basis risk, unless such risks are well addressed. A risk is considered to be “well addressed” where it has been quantified and allowed for within the applicable insurer’s PCA. For example, if the counterparty default risk of a reinsurance contract has been captured under the counterparty default and other risk module, it is considered well addressed. If the risk lies outside the risk modules contributing to the PCA (e.g. liquidity risk or concentration risk), it should be addressed under the insurer’s overall liquidity or solvency needs and reflected in its ORSA Report, with suitable stress testing where the risk is material.
- 10.21 Under rule 41(2)(i), for a reinsurance contract to be recognized as providing risk mitigation, an applicable insurer must be able to demonstrate that the reinsurance contract “adequately mitigates its insurance risk under a range of gross loss scenarios”. The purpose of this subrule is to ensure that the risk transferred under the reinsurance contract is commensurate with the reduction in PCA due to the risk mitigation effect. Reinsurance contracts with an imbalance between risk reduction and solvency improvement (either through a reduction in the PCA or an increase in assets) should not be recognized. If the IA identifies a possible imbalance, it may request the insurer to provide evidence of compliance with rule 41(2)(i). Traditional ‘plain vanilla’ (e.g. quota share or excess of loss) reinsurance contracts would not normally be subject to such requests. For the purpose of demonstrating compliance, the insurer should take into account all cash flows associated with the reinsurance contract, as well as any associated contracts, such as loans, implemented through side letters or appendices. The insurer should show that the risk transferred is commensurate with the PCA reduction by modelling how the cash flows would change under different plausible 1-in-200 year gross loss scenarios. This can be done using simulation approaches or a broad range of deterministic scenarios that reflect the insurer’s risk profile. These scenarios include but are not limited to those used for determining the PCA, both before and after application of risk mitigation and consideration of associated contracts. Some examples of contractual features that may cause an imbalance between risk and capital reduction are—
- proportional reinsurance with features such as deep sliding scale commissions, wide loss corridors, heavy loss participation, low loss ratio caps, or abnormally high commissions compared to the cedant’s acquisition costs. These features may change the dynamics of the reinsurance contract so as to reduce the risk transferred, resulting in a larger reduction in the RCA for premium risk than is justified.
  - retrospective reinsurance programs where the current estimate of reserves is transferred with only limited or no cover for reserve deterioration. Under such programs, the reserve risk exposure may be reduced disproportionately more than the reserve risk transferred, resulting in a larger reduction in the RCA for reserve risk than is justified.
  - mass lapse solutions that provide non-proportional protection covering a range of losses, defined by an attachment point and an exhaustion point, where only lapse losses between these points are transferred to the reinsurer, with coverage triggers

narrowly defined to cover only limited mass lapse scenarios. Such solutions may significantly reduce the RCA for lapse risk and increase the MA, potentially creating a material solvency improvement that is disproportionate to the actual amount of risk mitigated. Further, any mass lapse solutions that create a sharp cliff-edge effect around the attachment point may leave insurers with insufficient RCA for lapse risk to cover losses arising from lapses below the attachment point.

- 10.22 Under rule 41(2)(j), the applicable insurer must demonstrate that the reinsurer under the reinsurance contract has “adequate credit quality”. “Adequate credit quality” can be demonstrated by a satisfactory rating from a rating agency, capital level of the counterparty or the collateralization levels under the reinsurance arrangement, with reference to GL17.

***Rule 42 of the RBC Rules – Recognition of financial risk mitigation effect***

- 10.23 In order to effectively transfer risk to a counterparty under rule 42(2)(b), the counterparty of the contractual arrangement should have no recourse to the applicable insurer for any losses it incurs as a result of fulfilling any payment obligation to the insurer under the arrangement.

Effectiveness of the risk mitigation arrangement

- 10.24 When reviewing the effectiveness of a risk mitigation arrangement under rule 42(2)(d), applicable insurers should note the following—
- For purposes of this rule, mitigation effectiveness measures the extent to which changes in the fair value of the mitigation instruments or tools offset changes in the fair value of the risk exposure as measured under the RBC Rules;
  - The existence of a statistical correlation between two variables does not, by itself, prove the existence of an economic relationship;
  - The time value of money should be considered in the assessment;
  - The impact on future discretionary benefits should be considered in the assessment;
  - When assessing expected mitigation effectiveness, stress testing should be performed based on the risk characteristics of the exposure; and
  - Any factors that may result in a discontinuation of the transfer of risk under the arrangement should be considered, such as unilateral cancellation rights of the counterparty under the contract or insufficient liquidity.
- 10.25 Upon request, the applicable insurer should be able to provide the IA with the following to support the effectiveness of the risk mitigation arrangement taking into account the considerations set out in paragraph 10.24—
- (a) documentation for the risk mitigation arrangement, covering key elements including—
- the risk management objective and strategy behind the risk mitigation arrangement;
  - the risk exposure and nature of the risk being mitigated;

- identification of the risk mitigation instrument or tool;
  - target mitigation effectiveness and related indicators/limits;
  - target time horizon; and
  - governance and procedures for setting target mitigation effectiveness and ongoing assessment of mitigation effectiveness, which includes determination of the mitigation effectiveness indicator<sup>19</sup> and specification of the level of granularity needed for the assessment (e.g. at portfolio level or specific pool of assets level).
- (b) evidence of management review and approval of the risk mitigation arrangement's target and actual effectiveness, based on qualitative and quantitative analysis conducted at inception, and assessed regularly throughout the term of the arrangement (at least annually) or when assumptions change. The term of the arrangement should take into consideration the period after it rolls over, subject to paragraphs 10.31 to 10.33.

10.26 Where a financial risk mitigation arrangement is found to be ineffective based either on testing under the range of loss scenarios pursuant to rule 42(2)(h) and paragraph 10.30, or regular review of the arrangement based on actual performance, the financial risk mitigation effect of that arrangement should no longer be recognized. For example, if the mitigation effectiveness indicator of a hedge programme under risk scenarios is 50%, but the target mitigation effectiveness range is 90% – 110%, the applicable insurer should reassess whether the arrangement remains capable of achieving its intended risk mitigation objectives. Insurers are expected to investigate and understand the underlying reasons for any ineffectiveness and consider corrective measures based on the investigation results. Corrective actions may include adjusting the quantity or type of mitigation instruments to restore the mitigation effectiveness indicator to within the target mitigation effectiveness range.

10.27 Applicable insurers could be materially exposed to basis risk under rule 42(2)(g) as a result of a potential mismatch between the mitigation instrument or tool and the risk exposure. For example, basis risk could arise if the risk characteristics of a derivative's underlying reference asset do not align closely with those of the hedged exposure, such that change in the values of the derivative and the hedged risk exposure are not perfectly correlated. Basis risk generally also impacts the effectiveness of a risk mitigation arrangement. Financial risk mitigation arrangements may also inevitably introduce other risks, such as counterparty default risk. Under rule 42(2)(g), for the financial risk mitigation effect of a contractual arrangement to be recognized, it should not create other new risks, unless those risks are well addressed. A risk is considered to be "well addressed" if it has been quantified or allowed for in deriving the insurer's PCA, such as counterparty default and other risk covered under the RBC Rules. However, if the arrangement introduces risks outside the risk modules contributing to the PCA (e.g. liquidity risk or concentration risk), insurers

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<sup>19</sup> For example, the mitigation effectiveness indicator can be a ratio that measures the change in the value of mitigation instruments relative to the change in the exposure being mitigated, assuming the same notional amount. Where a target mitigation effectiveness range is used, authorized insurers should assess the appropriateness of the range used e.g. a wide target range may indicate that the arrangement lacks sufficient precision to be effective.

should address and document these other risks in the ORSA report, with suitable stress test scenarios included where the risk is material.

- 10.28 Rule 42(2)(f) requires that there must be no double counting of a financial risk mitigation arrangement's market risk mitigation effect. Where an arrangement applies to multiple risk/sub-risk modules, the total reduction in the RCA from that arrangement, across all affected risk modules, should not exceed the amount of the risk exposure being mitigated, or any lower threshold or limit specified for the arrangement in internal corporate policies, contracts or other relevant risk management documentation. This rule also applies to the mitigation of counterparty default and other risk, where relevant. For example, if a cross-currency swap simultaneously mitigates both currency risk and interest rate risk, the swap's effect on each risk should be considered separately in the value of the mitigation instrument or tool when deriving the respective RCAs, and the total mitigation effect recognized across both risks should not exceed the amount of the risk exposure being mitigated. For clarity, in all cases, regardless of whether one or more arrangements are used to mitigate the same exposure, the total mitigation effect recognized is limited to the amount of the risk exposure being mitigated.
- 10.29 Further, rule 42(2)(i) requires the counterparty of the contractual arrangement to have "adequate credit quality". This can be demonstrated by a satisfactory rating from a rating agency, the capitalization of the counterparty, or the collateralization levels under the arrangement. For clarity, the counterparty's credit default risk should continue to be captured by the RCA for counterparty default and other risk.
- 10.30 Under rule 42(2)(h), an arrangement is recognized as providing risk mitigation only if it "adequately mitigates its financial risk under a range of loss scenarios". In this context, the range of loss scenarios includes any probable loss scenarios that the arrangement may address. For example, such scenarios may include changes in interest rates within a range, covering both upward and downward movements. This subrule ensures that the risk reduction achieved under the contractual arrangement is commensurate with any solvency improvement due to the risk mitigation effect.

#### Assumption of roll over

- 10.31 Under rule 42(4), when an applicable insurer assumes that the financial risk mitigation arrangement will renew on expiry and that the risk mitigating effect will thus continue after expiry, the insurer must provide credible evidence to justify this assumption, including evidence (amongst others) that the arrangements were rolled over regularly even in different stressed times. Examples of relevant evidence which may be considered by the IA include—
- (a) documentation of the arrangement's roll over strategy and policy, including frequency of and mechanism for roll over;
  - (b) relevant contractual provisions with counterparties or other legal obligations that enforce the roll over;

- (c) a sufficient historical trading record of instruments, by contract level, with the same mitigation effect, or if the risk mitigation arrangement is new, a record of another similar arrangement (e.g. with similar hedging strategies);
- (d) an assessment of the relevant instrument costs and the potential for margin calls during stressed times, when high instrument costs or insufficient liquidity may indicate that the assumption of roll over is unsustainable; and
- (e) historical margin call records and instances of margin call failures, which may suggest that the assumption of roll over is not sustainable.

10.32 If there is no credible evidence to support the roll over assumption, the applicable insurer should only recognize the financial risk mitigation effect up to the instrument's or tool's expiry date in accordance with rule 42(3). If the insurer has previously reported a roll over assumption but the roll over did not occur, the insurer should assess whether the roll over assumption is sustainable for the entire mitigation arrangement or for the same type of mitigation instruments or tools in other arrangements under similar circumstances. If the roll over assumption is no longer sustainable, the risk mitigation effect should be limited to the expiry date for the entire arrangement or for the same type of mitigation instruments or tools in other similar arrangements, without assuming any roll over.

10.33 Mitigation instruments may generally cost more to roll over under relevant RCA scenarios than under the base scenario. Therefore, when assuming a roll over, the applicable insurer should also factor in any anticipated increase in instrument costs in determining the relevant RCA in accordance with rule 42(4)(a).

***Rule 43 of the RBC Rules – Adjustment to prescribed capital amount to reflect the loss absorbing capacity of future discretionary benefits***

10.34 Under rule 43(1), additional management actions taken into account in the calculation of RCAs are limited to those that have an impact on future discretionary benefits in relation to an applicable insurer's long term business. These actions may include changes to future policy holder dividends/bonuses under the insurer's defined profit sharing mechanism<sup>20</sup> for participating business, changes to future crediting rates under the insurer's defined determination mechanism for universal life business, or changes in the insurer's investment policy (e.g. adjusting the equity backing ratio) that impact future discretionary benefits.

10.35 For clarity, future premium adjustments or changes to policy charges are not considered to be additional management actions recognized under the RCA scenarios.

10.36 Under rule 43(3) and 43(4), the amount of usage of the loss absorbing capacity of future discretionary benefits under each sub-risk module is calculated based on the difference in the present value of future discretionary benefits before and after additional management actions using the same stressed assumptions. For clarity, the amount of usage can be

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<sup>20</sup> The defined profit sharing mechanism established should fulfil the requirements of guideline(s) relating to participating business issued by the IA, including Guideline on Underwriting Long Term Insurance Business (other than Class C Business) (GL16) and Guideline on Participating Business (GL34).



negative if the additional management actions are expected to increase the present value of future discretionary benefits under a given sub-risk module.

***Rule 44 of the RBC Rules – Adjustment to prescribed capital amount to reflect loss absorbing capacity of deferred tax***

- 10.37 For the purpose of determining the effective tax rate under rule 44(3), an applicable insurer should use the latest available tax assessment from the relevant tax authority, if such an assessment is available. If the tax authority's assessment is not yet available, the insurer may use an internal assessment for the relevant specified period instead.
- 10.38 Applicable insurers should follow rule 44(4) in determining the specified period for calculating the deduction to the PCA to reflect the loss absorbing capacity of any deferred tax impact. An illustrative example of determining the specified period is provided in **Appendix E**.

***Division 2 of Part 5 of the RBC Rules – Market risk***

- 10.39 For bonds with embedded optionality, such as callable bonds, the expected cash flows should be considered when calculating the RCA for market risk, particularly for the sub-risks of interest rate risk and credit spread risk. Callable bonds give the issuer the right to redeem the bond (returning the investor's principal and stopping interest payments) before its maturity date. Early redemption may occur if market interest rates fall below the interest rates offered by the bond. When determining the duration for cash flow projections, the callable feature should be considered in the RCA calculation for interest rate risk and credit spread risk—
- For interest rate downward risk, callable bonds can be projected up to the first callable date if the assessment is made that early redemption is likely under stressed interest rate conditions.
  - For interest rate upward risk and credit spread risk, callable bonds should be projected to their final maturity, except in the case of callable bonds with coupon rates which will increase after the callable date, for which early redemption should be assessed on a case-by-case basis.
- 10.40 Convertible bonds are treated in the same manner as plain vanilla bonds and are subject to interest rate risk and credit spread risk where the option is held by the bondholder (i.e. the applicable insurer). In contrast, convertible bonds where the option is held by the issuer or a third party, including contingent convertible bonds, are treated as equities and subject to equity risk.
- 10.41 Mortgage loans are treated as investments and are subject to interest rate risk and credit spread risk, instead of property risk.

- 10.42 For the purpose of calculating the RCA for derivative contracts, the relevant risk factor is applied to notional positions in the relevant underlying reference assets or cash flows of such contracts to obtain the stressed market value<sup>21</sup>.
- 10.43 For market risks, revaluation may be required for liabilities which are sensitive to market shocks. Any MA applied to long term insurance liabilities should also be recalculated in accordance with rule 46 to reflect the revaluation of those liabilities under interest rate risk, credit spread risk and equity risk. It is important to consider that changes in asset values can have a secondary impact on liabilities. For example, a drop in the initial value of assets may affect the non-unit reserve for unit-linked products, requiring a revaluation of the corresponding current estimate of those liabilities.

***Rule 47 of the RBC Rules – Risk capital amount for interest rate risk***

- 10.44 On the asset side, for the purpose of determining the RCA for interest rate risk, an applicable insurer should revalue its assets using the applicable stressed risk-free yield curve generated in accordance with rule 47(2). The stressed yield curve should be added to the spread of the assets, where the spread is calculated as the difference that equates the discounted present value of the assets' cash flows to their market value under the base scenario. Alternatively, for assets with simple cash flow structures, the insurer may calculate the change in asset value based on the absolute change in the interest rate derived from the applicable base and stressed risk-free yield curves, using the following modified duration formula—

$$\text{Stressed asset value} = \text{base asset value} \times (1 - \text{modified duration} \times \text{stress}),$$

where stress is the difference between the specified risk-free yield curves under the base and stressed scenarios at the remaining term to maturity. To avoid doubt, reinsurance recoverables should also be revalued using the applicable stressed risk-free yield curve.

- 10.45 On the liability side, an applicable insurer should revalue liabilities that are sensitive to interest rate risk using the applicable stressed risk-free yield curve generated in accordance with rule 47(2) and, if applicable, the stressed prime rate determined in accordance with rule 47(5) for onshore reverse mortgage insurance.

***Rule 48 of the RBC Rules – Risk capital amount for credit spread risk***

- 10.46 On the asset side, for the purpose of determining the RCA for credit spread risk, an applicable insurer should revalue its assets by applying the credit spread stress factors set out in Table 4 of rule 48(2). In the case of bonds, these stress factors based on the bond's remaining term to maturity should be added to the spread of the bond. For bonds with embedded options (e.g. callable bonds), the callable feature should be considered as provided in paragraph 10.39, and subject to paragraph 10.39, the option-adjusted spread should be used for applying the credit spread stress factor.

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<sup>21</sup> Where derivative contracts are used for hedging purposes, the resulting reduction in RCA cannot exceed the value of the underlying risk exposure being hedged.

10.47 For the purpose of mapping the credit spread stress factor under Table 4 of rule 48(2)—

- Perpetual bonds should be treated as having a “remaining term to maturity” of “more than 30 years”;
- For bonds with embedded options (such as callable bonds, and convertible bonds with option held by the bondholder described in paragraph 10.40), when the probability of the embedded option being exercised is high under stress, the first callable date of the option should be used as the “remaining term to maturity”. Otherwise, for bonds without embedded options or bonds where the probability of exercising an embedded option is low, the bond’s given maturity date should be used to identify the “remaining term to maturity”.

10.48 A recognized green bond under rule 48(4) is required to meet all of the following criteria—

- (a) The bond aligns with at least one of the Principles or Standards listed by the IA in a notice published in the Gazette<sup>22</sup>;
- (b) As part of the green criteria or principles in the notice published by the IA in the Gazette, the issuer is required to commit to using the total proceeds of the bond, after deducting any issuance-related expenses, exclusively for green economic activities before the bond reaches maturity<sup>23</sup>. Green economic activities refer to activities permitted under the recognized green criterion or principle to which the green bond aligns;
- (c) A pre-issuance external report must be obtained, which provides a third party opinion, verification or certification that assesses the alignment of the bond with the recognized green criterion or principle under paragraph (a); and
- (d) The pre-issuance external report required by paragraph (c) is required to be prepared by an independent and qualified third party whose legal name matches exactly the name included in at least one of the following lists, as updated or supplemented from time to time (“Recognized Lists of External Reviewers”):
  - (i) the list of Approved Verifiers under the Climate Bonds Standard, approved by the Climate Bonds Standard Board<sup>24</sup>;
  - (ii) the List of Registered Green Bond Review and Certification Organizations from Market-driven Evaluations (the translation of 绿色债券评估认证机构市场化评议注册名单), published by China Green Bond Standard Committee<sup>25</sup>;

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<sup>22</sup> Also available on the IA’s website.

<sup>23</sup> Such commitment can be evidenced from the issuer’s green bond framework, pre-issuance external reports, or bond issuance documents.

<sup>24</sup> Applicable insurers should refer to the latest version of this list provided by the Climate Bonds Standard Board. As of the date of this Guideline, the current list is available at <https://www.climatebonds.net/certification/approved-verifiers>.

<sup>25</sup> Applicable insurers should refer to the latest version of this list provided by the China Green Bond Standard Committee. As of the date of this Guideline, the current list is available at <https://www.nafmii.org.cn/ztbd/lzsqbzwyh/tzgg/>.

- (iii) the Recognized External Reviewer List of Green and Sustainable Finance Grant Scheme, published by Hong Kong Monetary Authority<sup>26</sup>; or
- (iv) the list of External Reviewers of European Green Bonds, registered by the European Securities and Markets Authority<sup>27</sup>.

- 10.49 To clarify, the third party preparing the pre-issuance external report (“External Reviewer”) is required to qualify as an independent and qualified third party within the meaning of paragraph 10.48(d) at the time the report is issued. If the External Reviewer subsequently ceases to be included in any of the Recognized Lists of External Reviewers, this will not affect the bond’s status as a recognized green bond. Any External Reviewer included in the Recognized Lists of External Reviewers is eligible to review compliance with any of the recognized green criteria or principles referred to in paragraph 10.48(a). The IA may request applicable insurers to submit the relevant pre-issuance external report to substantiate the recognized green bond classification under rule 48(3)(c).
- 10.50 Applicable insurers are reminded to maintain a sound risk management framework covering climate risk, based on its effective risk appetite, and the risk assessments and risk management processes set out in GL21. As a best practice, to minimize green-washing risk, insurers are recommended to obtain relevant post-issuance allocation reports for recognized green bonds.

***Rule 49 of the RBC Rules – Risk capital amount for equity risk***

- 10.51 For the purpose of determining the RCA for equity risk, revaluation is required for assets and liabilities which are sensitive to equity risk. Where assets or financial liabilities do not respond linearly to changes in equity risk (such as in the case of derivatives), the equity downward stress factors should be applied to the underlying equity exposures of those assets or liabilities. On the insurance liability side, in revaluing long term insurance liabilities to which MA is applied, the applicable insurer should recalculate the MA in accordance with rule 46.
- 10.52 Where equities are listed on more than one stock exchange, rule 49(4) specifies that the primary listing location of the exchange (i.e. home exchange) should be used to determine the equity downward stress factor, even if the equity was bought on the stock exchange of the secondary listing (i.e. host exchange). Primary listing refers to the exchange where the equity is first or primarily listed and subject to more stringent listing requirements from the stock exchange. Secondary listings are usually subject to fewer requirements since they are ancillary to the primary listing. However, if the equity is dual primary listed (i.e. listed as the primary listing on more than one exchange), the stress factor is determined based on the stock exchange on which the equity was bought.

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<sup>26</sup> Applicable insurers should refer to the latest version of this list provided by the Hong Kong Monetary Authority. As of the date of this Guideline, the current list is available at <https://www.hkma.gov.hk/eng/key-functions/international-financial-centre/bond-market-development/tax-concessions-and-incentive-schemes/>.

<sup>27</sup> Applicable insurers should refer to the latest version of this list provided by the European Securities and Markets Authority. As of the date of this Guideline, this list has not yet been published.

- 10.53 Before an equity exposure can be classified as a strategic investment, approval by the IA is required under rule 49(9). **Appendix F** sets out the criteria and the process for an equity exposure to be approved as a strategic investment.

***Rule 50 of the RBC Rules – Risk capital amount for property risk***

- 10.54 For the purpose of determining the RCA for property risk, revaluation is required for assets and liabilities which are sensitive to property risk. Where assets or financial liabilities do not respond linearly to changes in property risk, the property downward stress factor should be applied to the underlying property exposures of those assets or liabilities.
- 10.55 On the insurance liabilities side, pursuant to rule 50(2), even though an applicable insurer offering onshore reverse mortgage insurance may not hold any property investments, the insurance liabilities of the onshore reverse mortgage business are still subject to the 25% property downward stress factor. Insurers should therefore recalculate the insurance liabilities of their onshore reverse mortgage insurance business under stress to reflect an instantaneous 25% drop in the property price.

***Rule 51 of the RBC Rules – Risk capital amount for currency risk***

- 10.56 To recognize the impact of financial risk mitigation, the notional amounts of the long leg and short leg of each mitigation instrument are allocated to the exposure in the respective currency. Below is a simplified illustration of the calculation of the RCA for currency risk for USD, which is determined based on the value of the resulting net short position in USD for the applicable insurer as a whole.

USD exposure:

HK\$'000	Long term business	General business	Shareholder's surplus + non-insurance operations	Total business
Asset exposure	1,000	600	100	1,700
Liability exposure (excl. MOCE)	800	700	300	1,800
Net long/(short) position	200	(100)	(200)	(100)
Impact of financial risk mitigation on net position	(100)	0	0	(100)
Net position after financial risk mitigation	100	(100)	(200)	(200)

- 10.57 In determining the currency risk, applicable insurers should apply a look-through approach to both unit assets and unit reserves which takes into account the impact of shocks. For example, for a policy with unit assets denominated in HKD and unit reserves denominated in USD, the currency fluctuation of the underlying HKD unit assets is borne by the policy holders. As a result, the currency exposure of the unit reserves should be considered as HKD when applying the look-through approach.

- 10.58 Exposure to gold should be included in calculating the RCA for currency risk. For this purpose, gold is treated as an “other” currency and the 60% currency risk factor corresponding to “others” under Table 6 in rule 51(2) is applied.
- 10.59 For determining the currency risk of a portfolio investment, applicable insurers should apply a look-through approach to identify the currencies of the underlying assets or liabilities, as set out in rule 39. For example, if the exact currency of the underlying assets or liabilities is unknown but the mandate of the portfolio investment has confined the possible currencies of the underlying assets or liabilities, the currency risk exposure should be based on the currency that results in derivation of the highest RCA for currency risk for that portfolio investment. If such information is not available, then the denominated currency of the portfolio investment may be used.
- 10.60 For practical purposes, applicable insurers may group their asset and liability exposures denominated in currencies that are not individually specified under Table 6 in rule 51(2) – i.e. currencies falling within the “Others” category – when determining the RCA for currency risk. This grouping is permitted provided that the grouped exposures share the same net position (either all net long or all net short). Insurers should apply the currency risk factor of 60% from column 2 of Table 6 to the combined net exposure resulting from this grouping.

### ***Division 3 of Part 5 of the RBC Rules – Life insurance risk***

- 10.61 Pursuant to rule 52(1)(a), an applicable insurer should revalue assets that are sensitive to life insurance risk, such as reinsurance recoverables and investments whose values depend on mortality parameters<sup>28</sup>, to determine the RCAs for each relevant life insurance sub-risk. For example, assets whose values are dependent on mortality parameters should be revalued under the stress scenarios prescribed by rules 54, 55 and 56, respectively, to determine the RCAs for mortality risk, longevity risk and life catastrophe risk.
- 10.62 Rule 53 requires grouping insurance liabilities into homogenous risk groups. In deciding the appropriateness of these groups, applicable insurers should take into account factors such as underwriting policy, risk profiles of policy holders, product features (in particular guarantees), and future management actions. For clarity, onshore reverse mortgage insurance liabilities should be considered as one homogeneous risk group. Homogeneous risk groups are expected to remain reasonably stable over time.
- 10.63 For the purpose of applying the stress factors under rule 54(2)(a) (for mortality risk); rule 55(2) (for longevity risk); rule 57(3)(a)(i), (3)(b), (4)(a) and (4)(c) (for morbidity risk); and rule 59(3)(b)(i) and (ii) (for the level and trend lapse component of lapse risk), the permanent increase or decrease in the best estimate rates applies to all future years.
- 10.64 For the purpose of determining the mass lapse component under rule 59(4), the best estimates for the exercise rates of legal or contractual options for the remaining contracts

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<sup>28</sup> Such as mortality bonds. Please also refer to paragraph 10.5 for the treatment of structured products.

of insurance (i.e. those not lapsed or surrendered) should remain unchanged after the immediate lapse or surrender of the relevant contracts.

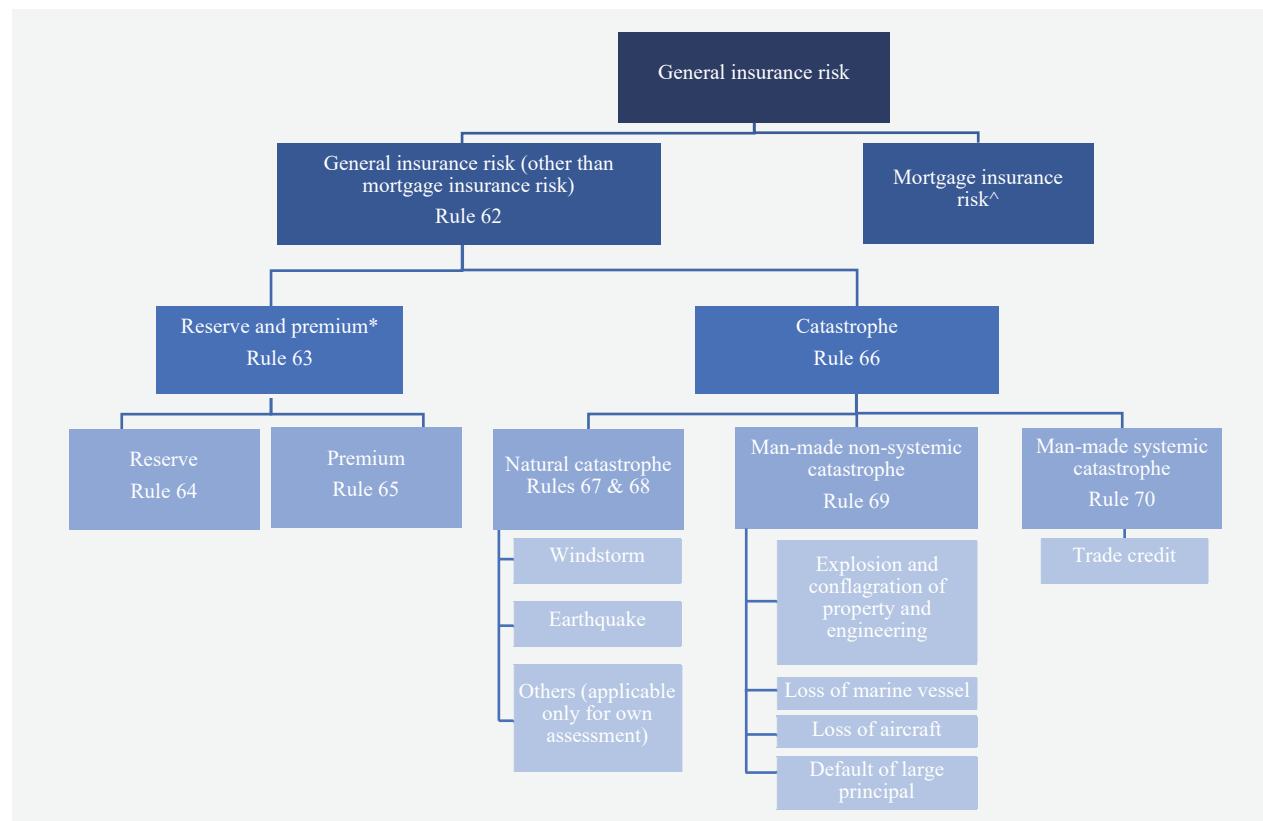
- 10.65 For the purpose of determining the RCA for morbidity risk under rule 57, applicable insurers are not allowed to make assumptions about additional management actions relating to adjustment of future premiums.
- 10.66 Typical examples of disability or morbidity benefits falling under each benefit category set out in rule 57(2) are—
- (a) Category 1: benefits under medical expense or supplemental medical contracts that provide benefits for practitioner fees, medication fees, vision and dental expenses.
  - (b) Category 2: benefits under accident, critical illness, and permanent disability policies that provide a lump sum payment on occurrence of a claim. This category also generally includes accidental death and dismemberment policies.
  - (c) Category 3: benefits under hospital indemnity, personal accident or loss of income policies, and short-term disability income protection (generally in the context of group insurance).
  - (d) Category 4: benefits under personal or group policies for permanent disability and long-term care.
- 10.67 For the purpose of rule 57(1)(a), when assigning disability and morbidity benefits to the appropriate benefit categories, an insurance contract may include components that belong to more than one benefit category. In such cases, each of the different components of the contract should be stressed concurrently according to the relevant benefit category. However, if it is not feasible to apply individual stress factors to each component of the contract separately, stress should be applied to the contract as a whole based on its dominant benefit component.
- 10.68 For the purpose of determining the RCA for expense risk under rule 58, the expense stress does not apply to commissions.<sup>29</sup>

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<sup>29</sup> It is because commissions are expected to be contractually determined and are not subject to estimation uncertainty.

#### ***Division 4 of Part 5 of the RBC Rules – General insurance risk***

10.69 The RCA for general insurance risk is determined using a modular approach which divides the components of general insurance risk into two categories: general insurance risk (other than mortgage insurance risk) and mortgage insurance risk. In turn, general insurance risk (other than mortgage insurance risk) comprises reserve and premium risk and catastrophe risk, with further sub-risk modules for each of them. This modular structure is illustrated in the diagram below—



*\*In addition to diversification between reserve risk and premium risk, there is also geographical diversification (rule 63(1)(c)) and line of business diversification (rule 63(1)(d))*

*^ Please refer to the illustration of the components of the RCA for mortgage insurance risk (rule 72) set out in paragraph 10.95*

10.70 Under rule 60(2)(b), reinsurance recoveries from per risk excess of loss reinsurance contracts must not be recognized under any prescribed loss scenario that does not specify how losses arising from the scenario are to be attributed to specific individual risks (including natural catastrophe risk, man-made systemic catastrophe risk, and catastrophe and premium risk for onshore standard mortgage insurance).



***Subdivision 2 of Division 4 of Part 5 of the RBC Rules – General insurance risk (other than mortgage insurance risk)***

***Rule 63 of the RBC Rules – Risk capital amount for reserve and premium risk***

- 10.71 Geographical diversification for reserve and premium risk is optional.
- 10.72 For the purpose of rules 63(5), the applicable insurer should follow the application process set out in **Appendix G** when seeking the IA's approval for additional risk mitigation measures.

***Rule 64 of the RBC Rules – Risk capital amount for reserve risk***

- 10.73 Under rule 64(4), an applicable insurer may exclude from its exposure base for reserve risk outstanding claims liabilities arising from an unexpected and extreme loss event which form a significant portion of the insurer's total net outstanding claim liabilities. For this purpose, an "unexpected and extreme loss event" means any loss event that is unforeseen and causes loss or damage far exceeding the range expected under normal circumstances.
- 10.74 Reserves for such events may be deducted from the net best estimate claims liability to derive the reserve risk exposure measure. This adjustment is expected to be applied rarely, and only when the reserve risk associated with the extreme loss event would otherwise materially impact the applicable insurer's solvency. The insurer is expected to declare and explain how the criteria under rule 64(3) and (4) are satisfied in the relevant form [CA.P.G.1 Reserve risk for general insurance (other than mortgage insurance)] (forming part of the insurer's annual return), and the IA may request further supporting documents if needed.

***Rule 65 of the RBC Rules – Risk capital amount for premium risk***

- 10.75 "Estimated net earned premium" is one of the components of an applicable insurer's premium risk exposure base under rule 65(2)(a)(ii). This premium should be estimated on a realistic basis, considering all available information up to the valuation date, and should reflect business already written as well as expected new business in line with the insurer's business plan.
- 10.76 Rule 65(2)(b) sets out the method for calculating the multi-year insurance contract component of the RCA for premium risk. To avoid doubt, only multi-year insurance contracts that are recognized and in-force as at the valuation date should be included in the calculation.

***Rules 67 and 68 of the RBC Rules – Risk capital amount for natural catastrophe risk***

- 10.77 Pursuant to rule 67, applicable insurers wishing to apply for use of their own assessment approach to determine their RCA for natural catastrophe risk should follow the process set out in **Appendix H**.

- 10.78 For applicable insurers using the factor-based approach to determine the RCA for natural catastrophe risk, the reported exposure base should be representative of the expected exposure (i.e. coverage for losses incurred for property damage) in the next 12 months, as outlined in rule 68(4). For direct insurers, it may be reasonable to apply a growth rate assumption based on their in-force portfolio. For reinsurers, it may be appropriate to start with a snapshot of exposure as of 1 January following the renewal date but adjust the exposure base if the reinsurer expects material business growth at other key renewal points (e.g. 1 April or 1 July) during the next 12 months.
- 10.79 Rule 68(4)(b) specifies that a gross 1-in-200 annual aggregate loss is to be used as the exposure base for inward reinsurance treaties without peril-specific event limits. This 1-in-200 annual aggregate loss should be estimated according to the applicable insurer's own view. Where this type of business forms a material portion of the insurer's natural catastrophe risk, the IA may require the insurer's quantification to be reviewed by an appropriate expert, and may request additional information on underwriting controls and risk monitoring.
- 10.80 For the purpose of assessing 1-in-200 annual aggregate losses for inward reinsurance treaties without peril-specific event limits, applicable insurers should—
- (a) define and implement clear approaches that are consistent with the applicable insurer's internal risk monitoring and quantify the risk of a 1-in-200 annual aggregate loss over a 1-year time horizon;
  - (b) consider the appropriateness of the chosen approach in relation to the type of contract, underlying risk and available data; and
  - (c) document the chosen approach and obtain approval by appropriate personnel with suitable experience, ensuring that the results are properly validated once a year (for example, by comparison with alternative methods or past experience).
- 10.81 For the purpose of determining natural catastrophe risk exposure under rule 68(6) and 68(7), applicable insurers should prioritize substance (i.e. the nature of the risk underlying the insurance contract or the type of the contract) over form (i.e. regulatory classifications or the name of the contract). Thus, risks which are classified under the property line of business but are not exposed to property-related natural catastrophe damage (such as risks with earthquake exclusions in the earthquake scenario) should not be included. Conversely, risks which are not classified under the property line of business but are exposed to property-related natural catastrophe damage (such as property-related business interruption risks classified under pecuniary loss) should be included.
- 10.82 For the purpose of classifying regions for windstorm or earthquake under Table 11, "any other region or jurisdiction" refers to those regions not specifically defined in Table 11 but which account for more than 10% of the 1-in 200 total net annual aggregate loss based on the applicable insurer's own risk management framework under rule 68(5). Diversification benefits would then depend on the granularity of the classification of unnamed regions. For clarity, premium and exposure information for any unnamed region contributing less than 10% of the insurer's 1-in 200 total net annual aggregate loss should still be reported for

monitoring purposes. The IA may request further technical justification in relation to the definition and materiality of these unnamed regions.

10.83 The reinsurance recoverable from each reinsurer must be calculated for the purpose of determining the RCA for counterparty default and other risk within the RCA for natural catastrophe risk under rule 68(9)(a)(i). The applicable insurer may estimate the reinsurance recoverables from different reinsurers using one of the following methods—

- estimating the split of reinsurance recoverables by reinsurer based on the difference between the “total natural catastrophe gross annual aggregate losses” and the “total natural catastrophe net annual aggregate losses”; or
- estimating the split of reinsurance recoverables by reinsurer based on the difference between the gross annual aggregate losses and the net annual aggregate losses for the peak zone – i.e. the region/peril combinations with the highest RCA for natural catastrophe.

10.84 Rule 68(9)(b) allows applicable insurers to take into account any collateral held in calculating the RCA for counterparty default and other risk within the RCA for natural catastrophe risk. Where collateral is recognized across multiple risk modules (e.g. both under natural catastrophe risk and counterparty default and other risk), insurers should ensure there is no double counting in the general insurance risk modules.

***Rule 69 of the RBC Rules – Risk capital amount for man-made non-systemic catastrophe risk***

Explosion and conflagration of property and engineering

10.85 For purposes of determining the RCA for explosion and conflagration of property and engineering under rule 69(3) and (4)—

- “block of buildings” means a block of one or more interconnected residential or commercial buildings, an engineering project, public infrastructure, an industrial site, or a combination of these building types; and
- “coverage” encompasses all types of fire damage coverage, including, but not limited to, coverage for property all risks, construction or erection all risks, machinery breakdown, business interruption, delay in start-up and advance loss of profit.

10.86 Under rule 69(4), maximum foreseeable loss (“MFL”) refers to the highest potential loss in the worst scenario where all protective measures (such as fire alarms, limited-supply fire protective systems, and public fire suppression services) fail or are unavailable. MFL estimates should only reflect very resilient physical barriers, and should not be lower than the probable maximum loss (“PML”), which usually represents a less severe scenario. For exposures which vary by time (e.g. engineering project), the MFL should be assessed at the point in time in the next 12 months when the exposure is expected to be the greatest.

- 10.87 Applicable insurers should select the unit of exposure with the highest RCA, which may or may not correspond to the largest unit of exposure in the portfolio. The MFL, outward reinsurance protection, and the counterparty default risk charge should be considered collectively. If it is unclear which unit of exposure has the highest RCA, an acceptable simplified practice would be to select from the top 3 largest units of exposure gross of reinsurance and the top 3 largest units of exposure net of reinsurance.
- 10.88 If the MFL is lower than the total loss of the selected unit of exposure, the MFL assumptions should be approved by appropriate personnel with supporting documentation (including quantitative justification). Examples of supporting documentation include external engineering reports for mega risks, or internal underwriting reports for smaller risks. The IA may request to review such documents where necessary.

#### Loss of marine vessel

- 10.89 For purposes of determining the RCA for loss of marine vessel under rule 69(5) and (6)—
- “Unit of exposure” refers to a marine vessel, which may be a tanker, a pleasure craft or a cruise ship; and
  - “coverage” means cargo, hull and machinery, and protection and indemnity insurance.
- 10.90 Applicable insurers should select the unit of exposure with the highest RCA, which may or may not correspond to the largest unit of exposure in the portfolio. The outward reinsurance protection and the counterparty default risk charge should be considered together. If it is unclear which unit of exposure has the highest RCA, an acceptable simplified practice would be to select from the top 3 largest units of exposure (by gross agreed value) gross of reinsurance and the top 3 largest units of exposure net of reinsurance.

#### Loss of aircraft

- 10.91 For purposes of determining the RCA for loss of aircraft under rule 69(7) and (8), an applicable insurer should select the unit of exposure with the highest RCA, which may or may not correspond to the largest unit of exposure in the portfolio. The outward reinsurance protection and the counterparty default risk charge should be considered together. If it is unclear which unit of exposure has the highest RCA, an acceptable simplified practice would be to select from top 3 largest units of exposure gross of reinsurance and the top 3 largest units of exposure net of reinsurance.

#### Default of large principal

- 10.92 For purposes of determining the RCA for default of large principal under rule 69(9), (10) and (11), “unit of exposure” refers to a principal or group of principals within the same group of companies. An applicable insurer is required to aggregate the gross penal sums for the principals within the same group of companies in order to determine the gross loss for a unit of exposure.

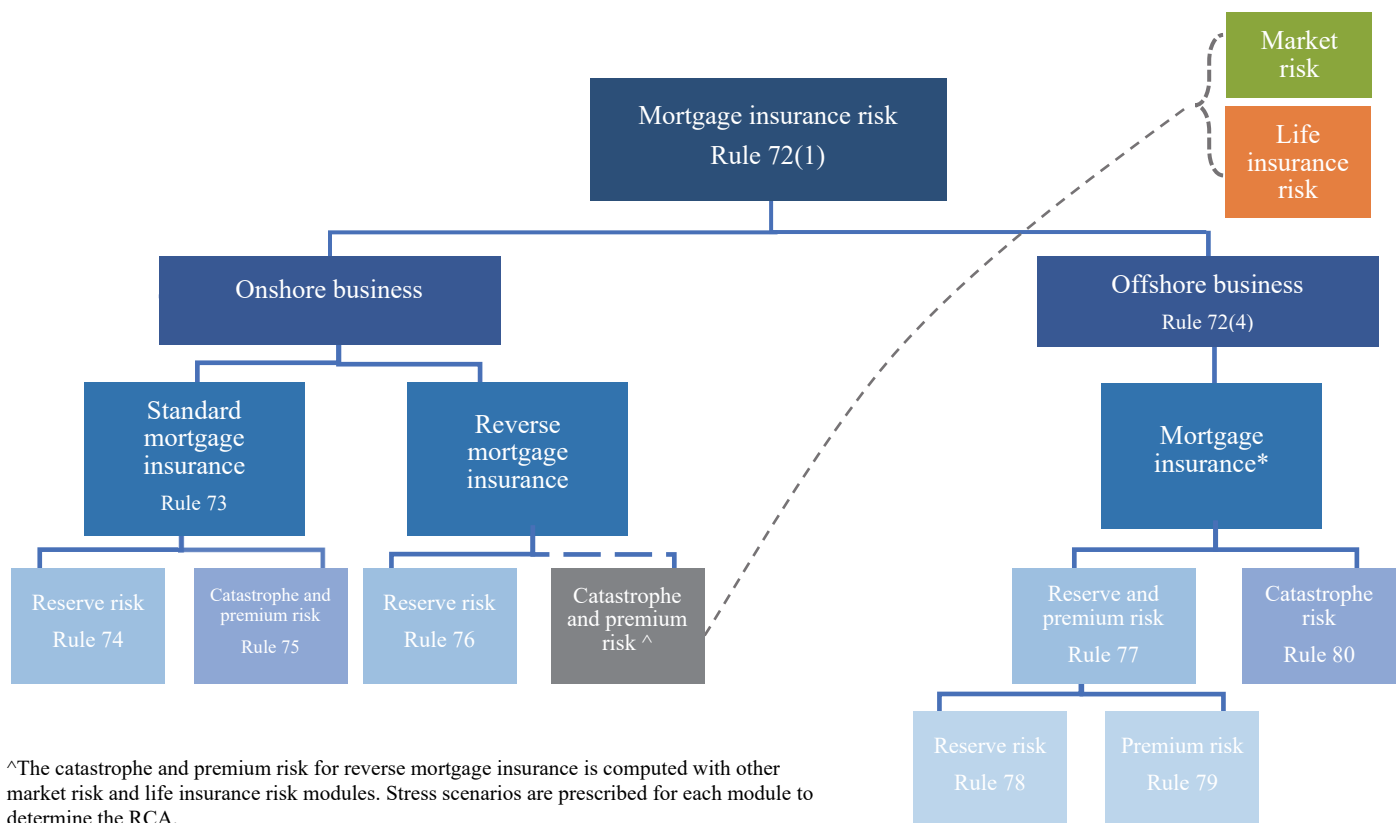
- 10.93 An applicable insurer should select the two units of exposure with the highest RCA, which may or may not correspond to the two largest principals or groups of principals in the portfolio. The outward reinsurance protection and the counterparty default risk charge should be considered together. If it is unclear which two units of exposure have the highest RCA, an acceptable simplified practice would be to select these two units from the top 3 largest principals or groups of principals gross of reinsurance and the top 3 largest principals or groups of principals net of reinsurance.

***Rule 70 of the RBC Rules - Risk capital amount for man-made systemic catastrophe risk***

- 10.94 For purpose of determining the RCA for man-made systemic catastrophe risk, the expected gross earned premium under rule 70(2) should be estimated on a realistic basis, considering all available information up to the valuation date, and should reflect business already written as well as expected new business in line with the applicable insurer's business plan.

### ***Rule 72 of the RBC Rules – Risk capital amount for mortgage insurance risk***

10.95 The RCA for mortgage insurance risk is determined using a modular approach which divides the components of mortgage insurance risk into two categories: onshore business and offshore business. Onshore business comprises standard mortgage insurance and reverse mortgage insurance, with further sub-risk modules (reserve risk and catastrophe and premium risk) for each of them. Offshore business comprises reserve and premium risk and catastrophe risk (without distinguishing between standard mortgage business and reverse mortgage insurance), with further sub-risk modules for reserve and premium risk. This modular structure is illustrated in the diagram below—



^The catastrophe and premium risk for reverse mortgage insurance is computed with other market risk and life insurance risk modules. Stress scenarios are prescribed for each module to determine the RCA.

\*For non-HK insurers who have established a separate fund for general reinsurance business with offshore risks, offshore reinsurance business is not subject to the determination of RCA under the RBC framework.

### ***Rules 74, 76 and 78 of the RBC Rules - Risk capital amount for reserve risk for onshore standard mortgage insurance, for onshore reverse mortgage insurance and for offshore mortgage insurance***

10.96 Under rules 74(1)(a)(i) and 76(a), the amount of expected recovery from property disposal which has not yet been settled should align with the amount used to estimate the net best estimate for claims liabilities. If no property recovery is assumed for purposes of net claims liabilities, the expected recovery amount should be set to zero. If partial recovery from

property disposal has been received, then this recovered amount should be deducted from the amount of expected recovery from property disposal.

- 10.97 In determining the exposure base for reserve risk for onshore standard mortgage insurance under rule 74(1)(b)(i) and for offshore mortgage insurance rule 78(1)(a), an applicable insurer may exclude outstanding claims liabilities arising from an unexpected and extreme loss event which form a significant portion of the insurer's total net outstanding claim liabilities. For this purpose, an "unexpected and extreme loss event" means any loss event that is unforeseen and causes loss or damage far exceeding the range expected under normal circumstances.
- 10.98 Reserves for such events may be deducted from the net best estimate claims liability to derive the reserve risk exposure measure. This adjustment is expected to be applied rarely, and only when the reserve risk associated with the extreme loss event would otherwise materially impact the applicable insurer's solvency. The insurer is expected to declare and explain how the criteria under rules 74(2) and (3), and 78(2) and (3), respectively are satisfied in the relevant form [CA.P.G.1A Reserve risk for mortgage insurance] (forming part of the insurer's annual return), and the IA may request further supporting documents if needed.

***Division 5 of Part 5 of the RBC Rules – Counterparty default and other risks***

- 10.99 As stated in paragraph 10.84, where reinsurance collateral is recognized under both the counterparty default and other risk module and the catastrophe risk module, the collateral should not be double counted. In particular, the total adjustment for such collateral in the calculation of the relevant RCA should not exceed the maximum reduction in risk from the collateral, which is calculated as follows—

$$\text{risk adjusted collateral} \times \text{rating risk charge factor}$$

where rating risk charge factor is the risk factor corresponding to the credit rating band of the reinsurance arrangement that the collateral relates to in Table 19 in rule 81(3).

- 10.100 For clarity, with reference to rule 37(3), the amount of any direct holdings, indirect holdings and synthetic holdings by the applicable insurer in relation to a non-consolidated subsidiary or an affiliate which is a regulated financial entity under rules 8(3)(f) and (h), 9(2)(a) and (b), 10(2)(a) and (b) is not subject to counterparty default and other risk since such exposure is deducted from the capital base.
- 10.101 For clarity, policy loans which are fully collateralized (after adjustment per rule 83) by the cash value of the relevant insurance contracts are not subject to counterparty default and other risk.
- 10.102 For clarity, deposits with a bank or deposit taking institution referred to in rule 81(2)(a) mean deposits that have not already been included in the determination of RCA under the

credit spread risk module. Deposits already accounted for under this module should not be included again under counterparty default and other risk to avoid double counting.

- 10.103 For clarity, “reinsurance receivables” as referred to in rule 81(11) mean amounts due from an applicable insurer’s reinsurers arising from payment requests issued by the insurer (e.g. relating to claims settled by the insurer) that remain outstanding. Receivables arising from reinsurance contracts issued by the insurer itself (i.e. where the insurer acts as reinsurer) should be classified as “loans for non-investment purpose and receivables” when determining the RCA for counterparty default and other risk.

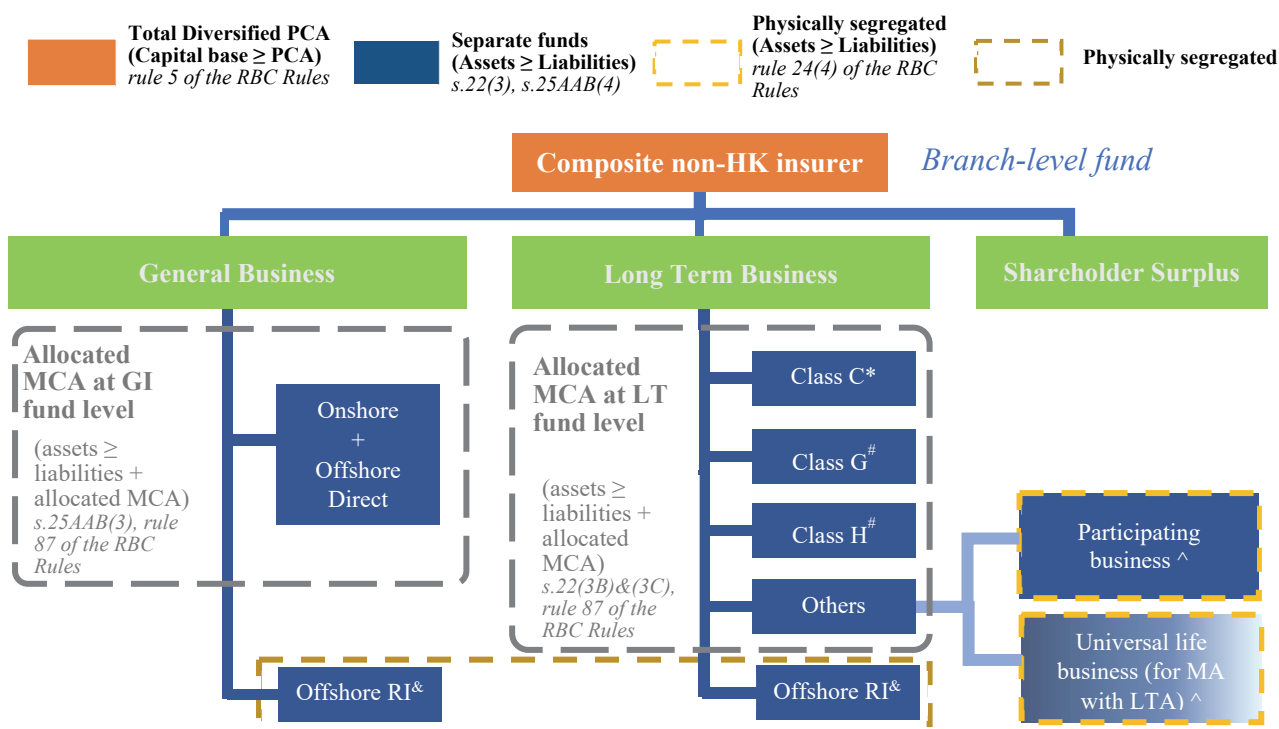
***Division 6 of Part 5 of the RBC Rules – Operational risk***

- 10.104 For clarity, when determining the RCA for operational risk for specified long term business, an applicable insurer should apply rule 86(4) to any accident and health business classified under long term business.



## 11. Fund Requirements and Segregation

- 11.1 Parts IV and IVA of the Ordinance set out the requirements for authorized insurers to maintain separate accounts and funds in respect of long term business and general business respectively. The diagram below illustrates the separate funds held by the Hong Kong branch of a non-HK insurer (other than a designated insurer) carrying on both general and long term business, and related fund and physical segregation requirements—



\* For Class C business, unit reserves must be held for the value of the underlying assets backing the units (if any) relating to the Class C policies (rule 15(4) of the RBC Rules);

<sup>#</sup> For Class G and Class H business, sufficient assets must be held to cover at least the value of policy holder account balances (section 22(3A) of the Ordinance);

<sup>^</sup> Participating business funds must be separately maintained by insurers carrying on long term business (section 21B of the Ordinance), and insurers must physically segregate any participating business or universal life business within their MA portfolio in order to include a qualified LTA in their MA calculation (rule 24(3) of the RBC Rules);

<sup>&</sup> Unless there is opt-out of establishing offshore reinsurance fund(s).

- 11.2 Non-HK insurers (other than designated insurers) with offshore reinsurance fund(s) established should allocate assets supporting the PCA to funds which are not an offshore reinsurance fund, since assets and liabilities attributable to an offshore reinsurance fund are eligible for exclusion from the PCA calculation under rule 37(4) of the RBC Rules.
- 11.3 Non-HK insurers (excluding designated insurers, marine insurers or insurers with in-force permissions under section 22A and/or section 25AAC of the Ordinance), should physically segregate all assets of its Hong Kong branch from the assets at its head office or other branches. However, non-HK insurers with unit-linked portfolio(s) which have ceased to accept any such new insurance business in Hong Kong may apply to the IA to exempt those

unit-linked portfolio(s) from the physical segregation requirements<sup>30</sup>, subject to any conditions the IA may impose. In applying for this exemption, the non-HK insurer should be able to demonstrate alternative measures to safeguard the assets of its Hong Kong branch and submit relevant supporting documents. To avoid doubt, regardless of any exemption from physical segregation requirements obtained, the requirements on establishing and maintaining fund(s) in respect of the Hong Kong branch under sections 21B to 23 of the Ordinance, together with any requirements which do not relate to physical segregation under this Guideline, continue to apply to funds maintained by the Hong Kong branch of such non-HK insurers.

- 11.4 In addition to complying with fund maintenance requirements under sections 21B and 25AA of the Ordinance and physical segregation requirements at the Hong Kong branch level, assets in any fund(s) maintained by the Hong Kong branch of a non-HK insurer (excluding designated insurers, marine insurers or insurers with in-force permissions under section 22A and/or section 25AAC of the Ordinance) in respect of reinsurance business with offshore risk should also be physically segregated from other assets of the Hong Kong branch. However, where the Hong Kong branch carries on both long term business and general business, any funds it maintains for general reinsurance business with offshore risk and long term reinsurance business with offshore risk can be combined for physical segregation (as illustrated in the above diagram).
- 11.5 As indicated in the diagram above, authorized insurers carrying on long term business are required to physically segregate their participating business or universal life business to be eligible to include qualified LTA in the MA calculation under rule 24(3)(a).<sup>31</sup>
- 11.6 Please refer to **Appendix D** for the requirements on segregation. For the requirements on segregation of participating funds, please also refer to the GL34.
- 11.7 Allocated minimum capital amounts are required to be held for general business and long term business funds maintained by authorized insurers. As illustrated in the above diagram, for the fund maintained by an insurer for its general business under section 25AA of the Ordinance, and for all of the funds maintained by an insurer for its long term business under section 21B of the Ordinance (excluding, in both cases, funds in respect of reinsurance business with offshore risk), the aggregate value of assets in each of the two aforementioned cases must not be less than the aggregate of—
- (a) the liabilities attributable to the business for which the relevant fund(s) is/are maintained; and

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<sup>30</sup> In such cases, where the assets associated with the unit-linked products in Hong Kong are unitized with other unit-linked products of the insurer at company level, the cost and effort required for physical segregation may not be proportionate. However, in seeking the exemption from physical segregation, the non-HK insurer should be able to demonstrate that the assets associated with its unit-linked products in Hong Kong can be clearly identified, and that it has robust controls for the handling and safeguarding of these assets.

<sup>31</sup> Per the Guideline on Participating Business (GL34), insurers with total participating business liabilities below the HKD 1 billion threshold are exempted from the requirement to physically segregate their participating funds. However, physical segregation of this participating business is still required for it to be eligible to include qualified LTA in the MA calculation.

- (b) the minimum capital amount allocated to the fund(s) (i.e. allocated MCA) determined in accordance with rule 87 of the RBC Rules.

## **12. Maintenance of Assets in Hong Kong**

- 12.1 Section 25A of the Ordinance requires authorized insurers to maintain assets in Hong Kong in respect of their general business with onshore risk. The assets that qualify are listed in Schedule 8 to the Ordinance, while the required amount of assets is detailed in the Local Assets Rules. This Guideline provides guidance on the types of assets which qualify as assets in Hong Kong and the calculation of required assets in Hong Kong, including illustrations of this calculation and how the determining factor is determined and applied.
- 12.2 While section 25A(12) of the Ordinance provides the definition of general business with onshore risk, for direct business or facultative reinsurance policies insuring risks located in more than one location, authorized insurers should unbundle each policy (including related premiums and claims) and apply this definition according to the underlying risks<sup>32</sup>. Where it is practically difficult to unbundle a policy, insurers may adopt a simplified approach: if less than 25% of the total risk (as determined by gross premium) is located in Hong Kong, the entire policy may be categorized as not constituting general business with onshore risk; and conversely, if 25% or more of the total risk (as determined by gross premium) is in Hong Kong, the entire policy may be categorized as general business with onshore risk. Insurers adopting this simplified approach may be required by the IA to demonstrate that it does not materially understate the required amount of assets to be maintained in Hong Kong.

### ***Section 25C of the Ordinance***

- 12.3 A letter of credit should satisfy the following criteria in order to qualify and be approved by the IA under section 25C of the Ordinance as an alternative to maintaining assets in Hong Kong as required by section 25A (or as modified by section 25B)—
  - (a) it is issued by a bank as defined in the Banking Ordinance (Cap. 155);
  - (b) it is issued in favour of the IA and readily enforceable by it in Hong Kong;
  - (c) it is irrevocable, clean and unconditional (except for conditions that do not impede the IA's ability to obtain payment on demand);
  - (d) it provides for automatic renewal and specifies the notice period required for non-renewal;
  - (e) it stipulates that the issuing bank is required to immediately notify the IA if it decides not to renew the letter of credit; and
  - (f) it is duly signed by the issuing bank.

### ***Schedule 8 to the Ordinance***

- 12.4 Receivables, including reinsurance receivables and premiums due, may qualify as assets in Hong Kong if they fulfil the definition in Schedule 8 to the Ordinance, which includes

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<sup>32</sup> For facultative reinsurance policies, reinsurers should apply the definition based on the underlying direct policy.

*“debts that may be enforced only by legal proceedings in a Hong Kong court, other than amounts recoverable in respect of claims outstanding under reinsurance contracts ceded”* under paragraph 1(h) of Schedule 8.

- 12.5 For authorized insurers with offshore reinsurance funds, assets within those funds should be maintained to support offshore reinsurance business, not onshore insurance business. Thus, insurers should identify any assets in Hong Kong from the fund for onshore general insurance business (i.e. fund maintained under section 25AA(2), (4)(b) or (6) of the Ordinance (as the case may be)) in order to meet the requirement under section 25A of the Ordinance.

***Rules 5 to 7 of the Local Assets Rules – Determination of amount of assets to be maintained in Hong Kong***

Non-HK insurers (other than marine insurers)

- 12.6 Rule 5 of the Local Assets Rules specifies the amount of assets that non-HK insurers (other than marine insurers) must maintain in Hong Kong, using the following formula—

Amount of assets in Hong Kong  
 $\geq$  onshore direct insurance liabilities +  
determining factor  $\times$  onshore reinsurance liabilities +  
ratio in rule 5(2)(c)  $\times$  onshore PCA,

where—

ratio in rule 5(2)(c) =  
$$\frac{\text{net onshore direct premium} + \text{determining factor} \times \text{net onshore reinsurance premium}}{\text{net onshore premium}}$$

- 12.7 In respect of the formula in paragraph 12.6—

- the amount of assets in Hong Kong means the value of the assets within a fund maintained under section 25AA(2), (4)(b) or (6) of the Ordinance (as the case may be) that satisfies the definition in Schedule 8 to the Ordinance. Where a non-HK insurer (other than a marine insurer) uses a letter of credit or other commitment from bank(s) as approved by the IA under section 25C of the Ordinance, the amount of assets in Hong Kong includes such letter of credit or other commitment from bank(s).
- onshore direct insurance liabilities and onshore reinsurance liabilities are valued in accordance with the RBC Rules as at the end of the insurer's last preceding financial year.
- the ratio in rule 5(2)(c) of the Local Assets Rules is to apportion the PCA attributable to the onshore general insurance business (“onshore PCA”) according to net written premiums, on the basis that if the determining factor of the insurer is 0% or 50%, then onshore general reinsurance liabilities requiring maintenance of assets in Hong Kong are reduced, and the amount of onshore PCA requiring maintenance of assets in Hong Kong is also reduced accordingly.

12.8 The method to determine onshore PCA is prescribed in rules 5(3) and (4) of the Local Assets Rules, using only assets in Hong Kong within the appropriate fund (as discussed in paragraph 12.5) and all onshore general business liabilities (regardless of the value of determining factor). Simplifications are included to minimize additional input in forms. For example, only Hong Kong windstorm is included for natural catastrophe risk, and the insurance risk mitigation effect for Hong Kong windstorm is deemed to be proportional to the total insurance risk mitigation effect. In addition, under rule 5(4)(a) of the Local Assets Rules, letters of credit or other commitments from banks approved under section 25C of the Ordinance (if used) are included under counterparty default and other risk.

12.9 To illustrate, for an authorized insurer with—

onshore direct insurance liabilities = \$80,000,000

onshore reinsurance liabilities = \$70,000,000

net onshore direct premium = \$300,000,000

net onshore reinsurance premium = \$200,000,000

determining factor = 50%

onshore PCA = \$30,000,000

Amount of assets in Hong Kong  $\geq$

$\geq \$80,000,000 + 50\% \times \$70,000,000$

$+ \frac{\$300,000,000 + 50\% \times \$200,000,000}{\$300,000,000 + \$200,000,000} \times \$30,000,000 =$

$\geq \$80,000,000 + \$35,000,000 + 80\% \times \$30,000,000 =$

$\geq \$139,000,000$

Thus, the insurer must maintain no less than \$139,000,000 of assets in Hong Kong.

#### Marine insurers

12.10 Rule 6 of the Local Assets Rules specifies the amount of assets that marine insurers must maintain in Hong Kong, using the formula below—

Amount of assets in Hong Kong

$\geq$  onshore direct insurance liabilities +

determining factor  $\times$  onshore reinsurance liabilities +

onshore PCA

12.11 The formula is similar to that in rule 5 of the Local Assets Rules for other authorized insurers, except that it does not include the “ratio in rule 5(2)(c)” (referred to in paragraph 12.6) to apportion onshore PCA. This is because the onshore PCA for marine insurers in

rule 6(3) already takes into account the determining factor, as shown in the formula below—

$$\text{Onshore PCA} = \begin{cases} \$2,000,000 & , \text{ where } A \leq \$10,000,000 \\ 20\% \times A & , \text{ where } \$10,000,000 < A \leq \$200,000,000, \\ \$40,000,000 + 10\% \times (A - \$200,000,000) & , \text{ where } A > \$200,000,000 \end{cases}$$

where—

$A = \text{Max}(\text{net onshore direct premium} + \text{determining factor} \times \text{net onshore reinsurance premium}, \text{net onshore direct outstanding claims} + \text{determining factor} \times \text{net onshore reinsurance outstanding claims})$

### Lloyd's

- 12.12 Rule 7 of the Local Assets Rules specifies the amount of assets that Lloyd's must maintain in Hong Kong, using the following formula—

Amount of assets in Hong Kong  
 $\geq \text{onshore insurance liabilities} + \text{onshore PCA}$

- 12.13 The onshore PCA calculation for Lloyd's follows the same approach as the overall PCA, except that net premiums and relevant claims outstanding are confined to onshore business, as shown in the formula below—

$$\text{Onshore PCA} = \begin{cases} \$10,000,000 & , \text{ where } B \leq \$50,000,000 \\ 20\% \times B & , \text{ where } \$50,000,000 < B \leq \$200,000,000, \\ \$40,000,000 + 10\% \times (B - \$200,000,000) & , \text{ where } B > \$200,000,000 \end{cases}$$

where—

$B = \text{Max}(\text{net onshore premium}, \text{net onshore outstanding claims})$

### ***Rule 8 of the Local Assets Rules – Determining factor***

- 12.14 The determining factor is determined based on the financial strength rating assigned by a prescribed rating agency<sup>33</sup> to the authorized insurer at legal entity level, instead of Hong Kong branch level. The lowest rating is used if more than one rating is assigned to the insurer. If no rating is assigned to an insurer, then its determining factor is 100%. The IA may assign a determining factor to an insurer which is lower than that determined in accordance with its financial strength rating.
- 12.15 For example, if an authorized insurer is assigned an “A2” financial strength rating from Moody's Investors Service, an “A” rating from Fitch Ratings, and an “A” rating from A.M. Best Company, Inc., since all of these ratings are in category 1, the insurer's determining factor is 0%.

<sup>33</sup> S&P Global Ratings, Moody's Investors Service, Fitch Ratings or A.M. Best Company, Inc.

- 12.16 In another example, an authorized insurer with an “A3” financial strength rating from Moody’s Investors Service, an “A” rating from Fitch Ratings, and an “A” rating from A.M. Best Company, Inc. has two ratings in category 1 (from Fitch Ratings and A.M. Best Company, Inc.) but one rating in category 2 (from Moody’s Investors Service). Thus, the insurer’s determining factor is 50% based on category 2, as the financial strength category of the lowest rating.

***Rule 9 of the Local Assets Rules – Notification, filing and maintenance of assets in Hong Kong after change of determining factor***

- 12.17 Pursuant to rule 9 of the Local Assets Rules, an authorized insurer must notify the IA in writing within 1 month of any change to its determining factor due to a change in its financial strength rating – for example, due to assignment of a new rating, a rating upgrade or downgrade or a rating withdrawal.
- 12.18 In addition, in the case of a change to its determining factor, within 3 months of this change, the authorized insurer must—
- (a) file a statement<sup>34</sup> reflecting the updated required amount of assets in Hong Kong (regardless of whether this amount has increased or decreased since the last such statement filed); and
  - (b) increase its amount of assets in Hong Kong to the updated required amount where the change results in the insurer having to increase its assets in Hong Kong.
- 12.19 Continuing with the example in paragraph 12.16, if the authorized insurer’s rating from Moody’s Investors Service is downgraded from “A3” to “Baa1” on 1 August, the insurer’s determining factor will increase from 50% to 100%. The insurer must then notify the IA of the change to its determining factor by 1 September, and report and maintain the increased required amount of assets in Hong Kong by 1 November.

**13. Commencement**

- 13.1 This Guideline shall come into effect on 1 July 2025, except that paragraphs 11.3 and 11.4 in relation to the physical segregation of the funds established for Hong Kong branches of non-HK insurers shall come into effect on 31 December 2025.
- 13.2 Authorized insurers are encouraged to adopt the requirements under this Guideline in advance of the effective date where possible.

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<sup>34</sup> Notification return available from the Insurance Regulatory Information Connect is relevant for this notification requirement.

## Abbreviation

<b>Item</b>	<b>Definition</b>
ACS	Accumulated cash flow shortfall
ADC	Adverse development cover
ESG	Economic scenario generator
ETF	Exchange-traded funds
HKAS	Hong Kong Accounting Standard
HKFRS	Hong Kong Financial Reporting Standard
IA	Insurance Authority
IAIS	International Association of Insurance Supervisors
IAS	International Accounting Standard
IAT	Insurance Appeals Tribunal
ICP	Insurance Core Principles
IFRS	International Financial Reporting Standard
ILS	insurance linked securities
Lloyd's Rules	Insurance (Lloyd's) Rules (Cap. 41V)
Local Assets Rules	Insurance (Maintenance of Assets in Hong Kong) Rules (Cap. 41T)
LOD	Loss occurring during
LTA	Long term adjustment
MA	Matching adjustment
Marine and Captive Rules	Insurance (Marine Insurers and Captive Insurers) Rules (Cap. 41U)
MBS	Mortgage-backed securities
MCA	Minimum capital amount
MFL	Maximum foreseeable loss
MOCE	Margin over current estimate
NAV	Net asset value
OA	Own assessment
ORSA	Own risk and solvency assessment
PCA	Prescribed capital amount
PML	Probable maximum loss
RAD	Risk attaching during
RBC	Risk-based Capital
RBC Rules	Insurance (Valuation and Capital) Rules (Cap. 41R)
RCA	Risk capital amount
REIT	Real estate investment trust
SEHK	Hong Kong Stock Exchange
the Ordinance	the Insurance Ordinance (Cap. 41)
TVOG	Time value of options and guarantees



### Criteria for Varying Capital Requirements under Section 10 of the Ordinance

In determining whether and how to vary capital requirements under section 10(3) of the Ordinance, the IA may consider the following factors—

- the extent to which the authorized insurer's risk profile deviates from the assumptions underlying the parameters used to determine the PCA;
- the extent to which risks<sup>35</sup> associated with the authorized insurer's business or transactions are not captured within the PCA;
- the quality of the capital base and its underlying determination methodology and assumptions to the extent these are not reflected in determining the capital requirements (covering valuation, PCA and capital base);
- any unsatisfactory enterprise risk management and governance practices which potentially affect the authorized insurer's ability to identify, measure, monitor, report and manage risk effectively; and
- any other matters affecting the authorized insurer's risk profile or capital adequacy that may impact on policy holders' interests.

The IA may consider these factors in terms of, including but not limited to, their nature and scale, and the persistency of the risks identified, as well as the likelihood and severity of the potential impact on policy holders.

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<sup>35</sup> For example, risks arising from transactions and exposures within the group to which the authorized insurer belongs.

## Mapping of Credit Ratings of a Rating Agency to Credit Rating Bands

### B.1 General Principles

B.1.1 An applicable insurer must determine the credit rating band for an instrument or party, as required by the RBC Rules, in accordance with Schedule 6. The following are used in the determination of the credit rating band—

- credit ratings assigned by specified rating agencies in accordance with section 3(1) and (2) of Schedule 6, with the details of the mapping as set forth in section B.2; and
- if the instrument or party does not have credit ratings from any of the specified rating agencies, credit ratings assigned by other rating agencies (*“non-specified rating agency”*) in accordance with section 3(3) and (4) of Schedule 6, with the details of the mapping as set forth in section B.3.

B.1.2 An applicable insurer should establish policies and procedures for obtaining credit ratings assigned by rating agencies and performing the mapping of credit rating bands. The insurer is expected to obtain credit ratings assigned by more than one credit rating agency on a best-efforts basis<sup>36</sup>. Also, credit ratings from any particular credit rating agency (whether specified or non-specified) should be mapped to credit rating bands and used continuously and consistently across different instruments or parties over time.

### B.2 Credit Ratings Assigned by a Specified Rating Agency

B.2.1 Table 1 of Schedule 6 sets out the credit rating band mapping for credit ratings assigned by a specified rating agency.

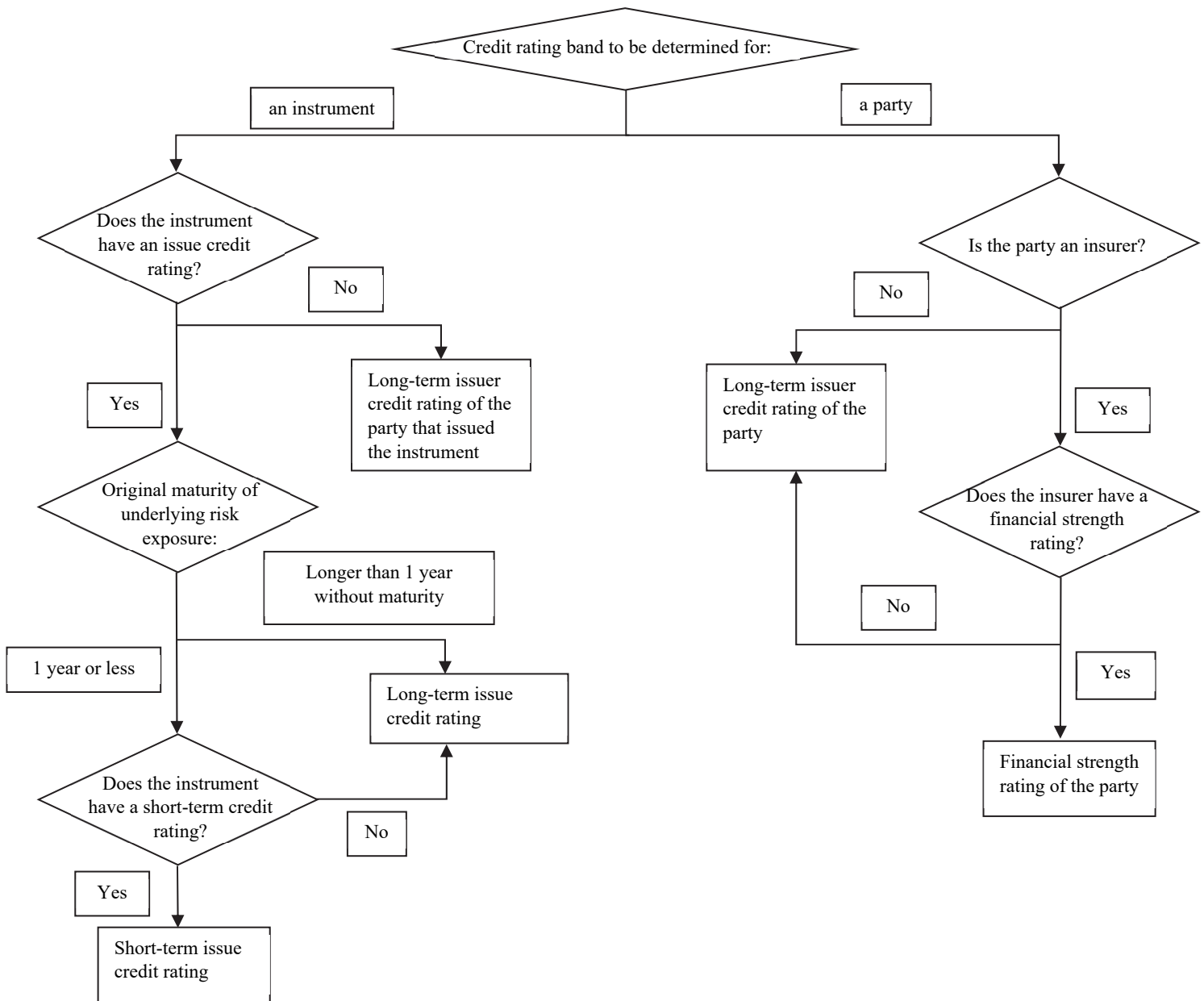
B.2.2 The flow chart below shows the application of section 3(5) and (6) of Schedule 6. In considering whether to use a short-term credit rating or long-term credit rating for an instrument—

- (a) for an instrument with an original maturity of 1 year or less, a short-term credit rating should be used to map the credit rating band for the instrument. If there is no short-term credit rating, a long-term credit rating should be used instead;
- (b) for an instrument with an original maturity of longer than 1 year, a long-term credit rating should be used to map the credit rating band.

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<sup>36</sup> For example, steps are taken to obtain the credit ratings from those tools, subscriptions, or other resources that are available to the authorized insurer.

### Flow Chart for Using Credit Rating under Section 3 of Schedule 6



### **B.3 Credit Ratings Assigned by a Non-specified Rating Agency**

- B.3.1 When a credit rating from a specified rating agency is not available, an applicable insurer may determine the credit rating band for an instrument or party using a credit rating assigned by a non-specified rating agency in accordance with section 3(3) of Schedule 6.
- B.3.2 The flow chart in paragraph B.2.2 also applies to the use of a credit rating assigned by a non-specified rating agency.
- B.3.3 In mapping the average 3-year cumulative default rate to a credit rating band based on credit ratings from non-specified rating agencies as set out in section 3(3) of Schedule 6, an applicable insurer should only consider ratings from non-specified rating agencies that meet the following qualitative criteria—
- (a) Objectivity:
    - i. The rating agency’s methodology for assigning credit assessments is based on historical experience and is applied consistently.
    - ii. The rating agency regularly conducts statistical studies covering default and transition matrices.
    - iii. The rating agency reviews and updates its credit assessments regularly.
  - (b) Independence:
    - i. The rating agency has established a credit assessment committee (or similar function) to approve credit assessments.
    - ii. The rating agency has established an independent internal audit, compliance function or other similar function to assess its compliance with internal policies and procedures.
  - (c) Transparency and disclosure:
    - i. The assessment methodologies, including the rating agency’s definition of default, the time horizon, and the meaning of each credit rating category are made publicly available.
    - ii. The actual default rates experienced in each credit rating category, as well as the transition studies of credit rating assigned, are made publicly available at least annually.
  - (d) Governance: The rating agency is a regulated entity, licensed in its place of incorporation, establishment, formation or domiciliation, which complies with all applicable legal and regulatory requirements.
- B.3.4 An applicable insurer who has mapped credit ratings of a non-specified rating agency (based on the relevant average 3-year cumulative default rate) under section 3(3) of Schedule 6 for the first time should provide the relevant particulars of the non-specified rating agency to the IA in the forms [F.A.3A Approach of credit ratings] and [F.A.3B Qualitative assessment of credit ratings] in the first annual returns under the Insurance (Submission of Statements, Reports and Information) Rules (Cap. 41S) filed by the insurer

following such mapping. The information required for each non-specified rating agency includes but is not limited to, the following—

- Key particulars of instruments and parties for which credit ratings assigned by a non-specified rating agency were used for mapping;
- Key particulars of the relevant non-specified rating agency;
- Full mapping of all credit ratings (based on the average 3-year cumulative default rate) to credit rating bands; and
- Result of qualitative assessment under paragraph B.3.3.

B.3.5 In subsequent filings, an applicable insurer should review and update its mapping based on credit ratings assigned by a non-specified rating agency at least annually by submitting the form [F.A.3A Approach of credit ratings] in its annual returns, which includes, but is not limited to, the following information—

- Key particulars of instruments and parties for which credit ratings assigned by a non-specified rating agency were used for mapping;
- Key particulars of the relevant non-specified rating agency;
- In case of any change in the credit rating bands being mapped, full mapping of all credit ratings (based on the average 3-year cumulative default rate) to credit rating bands; and

If there is any change in the results of the applicable insurer's qualitative assessment under paragraph B.3.3, the insurer is also required to update these details in the form [F.A.3B Qualitative assessment of credit ratings] in its annual returns.

B.3.6 Upon receipt of the forms [F.A.3A Approach of credit ratings] and/or [F.A.3B Qualitative assessment of credit ratings], the IA may—

- require supplementary information;
- object to the applicable insurer's use of credit ratings from any non-specified rating agency for purposes of any part or all of the RBC Rules; and
- instruct the applicable insurer to amend the mapping of credit ratings to credit rating bands before applying such credit rating bands for purposes of any part or all of the RBC Rules.

**Illustrative Example of Determining the Amount of the Adjustment Relating to  
Encumbered Assets under Rules 8(3)(k) and 10(1)(d) of the RBC Rules**

Illustrative example: Assets designated for guaranteeing the technical reserve of the authorized insurer's Macau branch under the Macau Insurance Ordinance should be adjusted from Unlimited Tier 1 capital to Tier 2 capital under rules 8(3)(k) and 10(1)(d) of the RBC Rules.

Calculation of the adjustment is illustrated below—

Example 1:

	<u>\$'000</u>
(1) Value of assets (valued under RBC basis) designated for guaranteeing the technical reserve of Macau branch	100
<i>Less: (2) Corresponding technical reserve of Macau branch (valued under RBC basis) secured by the encumbered assets</i>	<i>(80)</i>
<i>Less: (3) Incremental capital requirement (*)</i>	<i><u>(10)</u></i>
Amount to be adjusted (deducted from Unlimited Tier 1 capital resources and included in Tier 2 capital resources) (floored by zero)	10
<i>* (3) Incremental capital requirement</i>	<u>\$'000</u>
PCA of the authorized insurer where the encumbered assets and relevant liabilities are reported in the economic balance sheet	100
PCA of the authorized insurer as if the encumbered assets and relevant liabilities were not reported in the economic balance sheet	<u>(90)</u>
	10

## Segregation

### D.1 Physical Segregation

D.1.1 An authorized insurer should maintain separate custodian/bank account(s) to hold the assets for each of its relevant funds for physical segregation purposes. Where more than one custodian/bank account is established, the insurer should establish policies and mechanisms to clearly distinguish the accounts for each fund. For non-HK insurers (other than designated insurers), custodian/bank accounts should be specifically identified as belonging to its Hong Kong branches, though they may take the form of sub-accounts of custodian/bank accounts maintained at the insurer's head office. The following assets<sup>37</sup> exempt from being held in such custodian/bank accounts but should still be earmarked<sup>38</sup> in the name of relevant fund(s) and properly recorded in the insurer's books and accounts—

- (a) land and buildings directly held by the authorized insurer;
- (b) loans and receivables;
- (c) bonds under Northbound Bond Connect;
- (d) right-of-use assets; and
- (e) deferred tax assets.

D.1.2 Assets held by an authorized insurer through a third party<sup>39</sup> and over-the-counter derivatives entered into by the insurer with a third party are considered to be physically segregated if the third party establishes a separate fund account for each relevant fund. If this is not feasible, as an alternative, the third party's statements should demonstrate the separation of the amounts or units identified for each fund. There should also be sound governance procedures for the exchange of assets between different funds, which take into account the controls within the insurer's operation and those between the insurer and the third party.

D.1.3 When allocating assets that are exempt from the requirement to maintain separate custodian/bank accounts as specified in paragraph D.1.1, the basis and justification for the allocation should be set out clearly in the authorized insurer's corporate policy on governance of funds or relevant fund management policies and procedures, and the allocation should be applied consistently.

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<sup>37</sup> These assets are generally considered as unable to be held under custodian/bank accounts or unable to be split into separate custodian/bank accounts from other parts of the business due to regulatory or legal restrictions.

<sup>38</sup> "Earmark" refers to assigning or designating an asset for a specific purpose. Once the asset is earmarked for the purpose of supporting the business of relevant fund(s), it should remain designated for such purpose unless changes arise from transactions.

<sup>39</sup> "Third party" refers to financial institution, fund house, asset management company, or investment vehicle.

## **D.2 Approving Authority for Transfer of Assets**

- D.2.1 An authorized insurer is required to designate an approving authority within its organization for the transfer of assets out of a physically segregated fund. For a non-HK insurer (other than a designated insurer), personnel of the Hong Kong branch should be involved in approving the transfer. Transfer of assets includes any withdrawal of assets from the fund and the exchange of assets with businesses outside the fund<sup>40</sup>. The approving authority for the transfer should be established based on factors such as the nature of assets or threshold amounts, considering the insurer's controls and governance policy. In general, the larger the amount<sup>41</sup> of assets transferred or the more complex the transaction, the higher the level of the approving authority<sup>42</sup> should be. The insurer should have necessary controls in place to ensure a check and balance between the signatories of the relevant custodian/bank accounts and the approving authority for the transfer of assets out of these accounts for physically segregated funds. The insurer should be able to justify its designation of the approving authority to the IA upon request.
- D.2.2 If there is any interfund balance due to an operational time gap (for example, premiums collected in a common bank account before being transferred to corresponding funds' accounts), the authorized insurer should settle the interfund balance with financial assets swiftly, and within 3 months at the latest to ensure that the physical segregation of funds is maintained. The shorter the operational time gap the better.
- D.2.3 An authorized insurer should have clear operational policies and procedures for the settlement of interfund balances, including proper controls and frequency for the settlements, in order to ensure that interfund balances are settled swiftly and accurately and that the integrity of physical segregation is maintained.

## **D.3 Selection of Custodian**

- D.3.1 The authorized insurer should ensure that prospective custodians are authorized, licensed or otherwise regulated in their place of operation. Also, the insurer should be satisfied that prospective custodians will only engage sub-custodians<sup>43</sup> that are authorized, licensed or otherwise regulated in sub-custodian's place of operation. The insurer should also maintain a list of all of its custodians and sub-custodians, which is updated regularly for any changes.
- D.3.2 In selecting a custodian to safeguard assets on its behalf, the authorized insurer should exercise due skill, care and diligence, considering factors such as the prospective custodian's capabilities, experience, skills, financial standing, size of operations and internal controls.

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<sup>40</sup> Sections 23 and 25AAE of the Ordinance state that an authorized insurer must only exchange assets at fair market value.

<sup>41</sup> Authorized insurers may consider the threshold on an accumulated (instead of individual) basis where it is considered that individual amounts should be treated as a whole in substance.

<sup>42</sup> For example, the Appointed Actuary (for funds within long term business), senior management or Board.

<sup>43</sup> Also known as delegates or agents.



- D.3.3 The authorized insurer should take into account the prospective custodian's capabilities, including capability for business continuity planning and whether the insurer will be notified if the custodian's business continuity plan is activated.

#### **D.4 Contents of Custodian Agreement**

- D.4.1 There should be a custodian agreement between the authorized insurer and the custodian. The agreement should cover the custodian's responsibilities and liability, as well as selection of sub-custodians. The insurer should exercise due care in preparing or reviewing the agreement and understand the scope of any exclusions of liability for the custodian or sub-custodian.
- D.4.2 The custodian agreement should require the custodian to safeguard the authorized insurer's assets and to keep accurate records of these assets, and prohibit the custodian from creating encumbrances on assets entrusted to it, unless such encumbrances arise from an outstanding obligation of the insurer (e.g. unpaid fees). The agreement should also ensure that the insurer's assets are separated from those of the custodian.
- D.4.3 The custodian agreement should hold the custodian liable for loss caused by fraud, wilful misconduct or negligent acts or omissions of the custodian or its sub-custodian(s). Where losses involve a sub-custodian, the authorized insurer's right to recover from the custodian should not depend on whether the custodian recovers the loss from the sub-custodian.
- D.4.4 The custodian agreement should require the custodian to exercise due skill, care and diligence in selecting sub-custodian(s) for the safeguarding of assets, with consideration given to the prospective sub-custodian's capabilities, experience, skills, financial standing, size of operations and internal controls. The agreement should also require the custodian to properly monitor its sub-custodian(s).
- D.4.5 The custodian agreement should document the circumstances and procedures for terminating the agreement, which among other things should cover the transfer of assets and related timeline.
- D.4.6 The custodian agreement should preferably be governed by the laws of Hong Kong, especially if the custodian operates in Hong Kong.

#### **D.5 Monitoring of and Reporting by Custodian to Authorized Insurers**

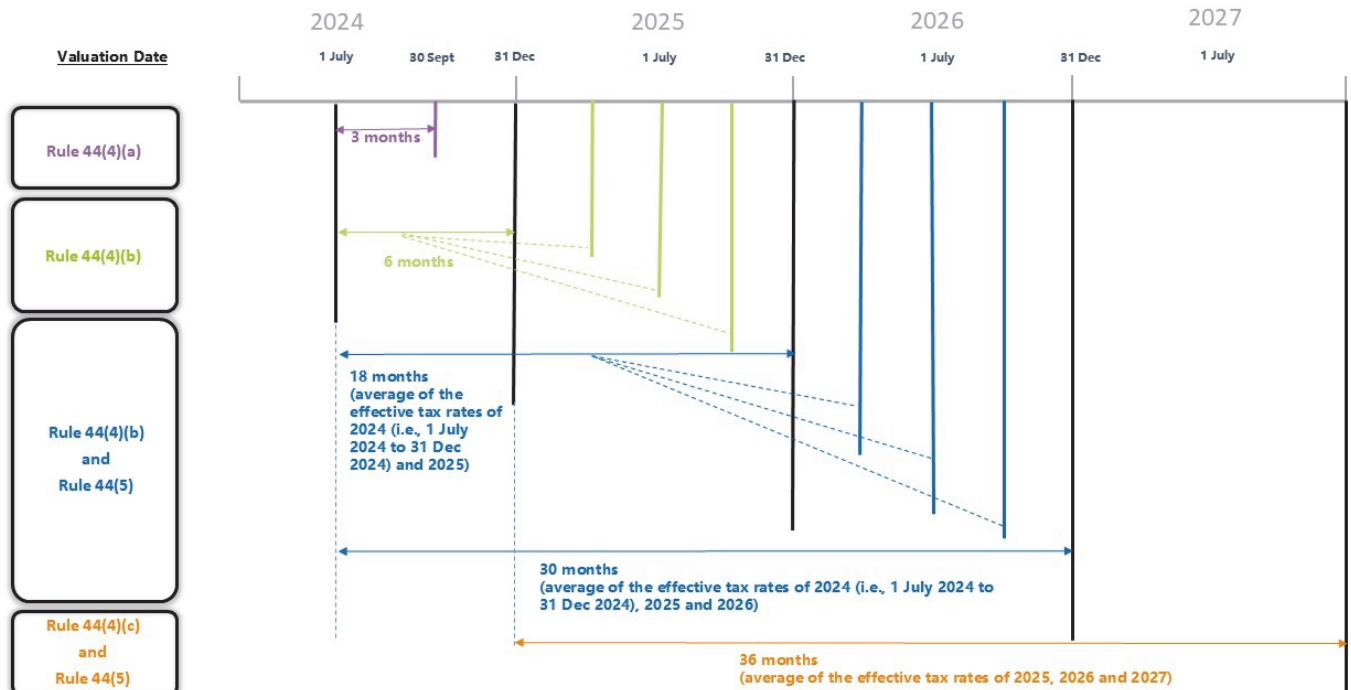
- D.5.1 The authorized insurer should regularly review the custodian's suitability for continued engagement.
- D.5.2 The authorized insurer should ensure effective communication from the custodian, including receiving periodic reports, and timely notification of any material breach of the custodian agreement or material issues affecting the custodian's suitability.

## Illustrative Example of Determining the Specified Period under Rule 44(4) of the RBC Rules

The diagram below illustrates how the specified period under rule 44(4) is determined for an applicable insurer with a financial year end date of 31 December—

←→ Represents specified period under Rule 44(4) as at the valuation date

(The financial year end date for the insurer in the illustrative example is assumed to be 31 Dec.)



## Strategic Investment

### F.1. Introduction

- F.1.1 Under rule 49 of the RBC Rules, strategic investments are subject to a 20% stress factor, which is the same stress factor applied to non-regulated investment in non-consolidated affiliates and is lower than the stress factor applying to other types of equities.
- F.1.2 The IA recognizes that some equity investments have strategic value, including strategic benefits (such as enhanced value to policy holders) which go beyond financial returns in the form of dividends or capital appreciation. Strategic investors typically play a more active role than purely financial investors in the business of their investee, for example, by appointing a representative to serve as a director on the strategic partner's board.
- F.1.3 Before an equity exposure can be classified as a strategic investment, approval by the IA is required under rule 49(9). This Appendix sets out the requirements for an application to the IA under rule 49(7) for such approval, including the information to be submitted and the criteria evaluated by the IA, as well as ongoing requirements applicable insurers should comply with after receiving an approval.

### F.2. Approval Process, Principles and Ongoing Requirements

- F.2.1 To apply under rule 49(7) for an investment to be classified as a strategic investment, an applicable insurer should submit the information specified in rule 49(8)(b) and detailed in sections F.3 and F.4 of this Appendix. The application, together with the prescribed fee<sup>44</sup>, should be submitted at least 6 months before the valuation date.
- F.2.2 The IA will review the application to determine whether the investment qualifies as a strategic investment, and may request further information or explanation as needed. If the application is approved, the IA will issue a written approval for the applicable insurer to classify the investment as a strategic investment.
- F.2.3 The IA may impose conditions on any approval under rule 49(9), including specifying the effective period of the approval and any limits on the amount or value of the investment classified as a strategic investment for the purpose of calculating the RCA for equity risk.
- F.2.4 For subsequent years in which the approval remains in effect, the applicable insurer should confirm to the IA, at least 3 months before its financial year end, that it continues to hold the strategic investment and that no material changes have occurred affecting its application. If a material change has occurred, such as a change in the nature of the strategic partnership or the insurer's strategic objectives, the insurer should submit updated

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<sup>44</sup> Item 1 of Part 2 of Schedule to the Insurance (Prescribed Fees) Regulation (Cap. 41B)

information in accordance with section F.3.

### **F.3. Information Required**

- F.3.1 For the application and in the event of any material change while the approval remains in effect, the applicable insurer should provide the IA with a full description of the strategic partner, including;
- (a) the partner's name and place of incorporation/domiciliation;
  - (b) details of the insurer's holding in the strategic partner;
  - (c) the nature of the partner's business;
  - (d) an explanation of how the investment in the partner aligns with the insurer's strategic objectives;
  - (e) a description of any existing operational or financial links with the partner;
  - (f) any plans to enhance synergy between the insurer and the partner, and
  - (g) evidence demonstrating how the criteria set out in section F.4 are met.
- F.3.2 In addition, the applicable insurer should submit a copy of the following documents with the application and whenever a material change occurs while the approval remains in effect—
- (a) share certificate or extract of register of members showing the amount of shares and class of shares held;
  - (b) articles of association or similar constitutional document of the strategic partner;
  - (c) any shareholders' agreement to which the applicable insurer or its subsidiary is a party;
  - (d) the strategic partner's latest annual returns or equivalent document submitted to the Companies Registry or equivalent authority;
  - (e) the strategic partner's latest audited financial statements; and
  - (f) other documents as requested by the IA.

### **F.4. Criteria**

- F.4.1 The IA will have regard to the following criteria when considering an application under rule 49(7)—

#### Strategic nature of the investment

- The applicable insurer is able to demonstrate quantitatively and qualitatively how the investment provides benefits or synergy to the insurer. Depending on the circumstances of an individual insurer (bearing in mind that the same investment may be a strategic investment to one insurer but not to another), this could include—
  - vertical synergy (e.g. enhancing distribution channels);

- improved customer experience (e.g. enhancing services for policy holders or potential policy holders); and
- operational efficiency enhancements.
- The business relationship between the applicable insurer and its potential strategic partner in which it holds the investment is close, stable and on-going (not only anticipated), with a proven track record of sharing risks and benefits.
- Due to the strategic nature of the investment and the influence exercised by the applicable insurer on the potential strategic partner, the potential strategic partner's equity is expected to be of materially lower risk compared to other equity investments.
- The potential strategic partner is sizable and financially sound in its own right.

#### Intention of the applicable insurer

- The applicable insurer is committed to holding the investment for 5 years or longer, or until an appropriate exit opportunity arises (such as the listing of the potential strategic partner).
- The investment is not intended solely for generating investment returns.

#### Form of investment

- The equity investment is in the form of ordinary shares or equivalent instruments (i.e. not hybrid equities or preference shares).
- The equity investment is held, directly or indirectly, by the applicable insurer. For clarity, investments in portfolio investments related to the potential strategic partner are not eligible.
- The equity is not an investment in project finance.
- The equity is not listed.
- The percentage of shareholding and voting power in the potential strategic partner is not negligible (i.e. not less than 10% at the time of the application to the IA).
- The potential strategic partner is not a subsidiary or affiliate of the applicable insurer<sup>45</sup>.
- There is a proper approval process by the applicable insurer's board<sup>46</sup> for the investment, and a regular review mechanism to assess whether the investment continues to align with the insurer's strategy.

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<sup>45</sup> For regulated subsidiaries and affiliates, they are excluded from both the PCA and the capital base. For other subsidiaries, they must be consolidated and subject to the PCA. For other associates, such investments are subject to a 20% stress factor under the equity risk module.

<sup>46</sup> In approving the investment, the board should be provided with relevant and accurate information.

### Approval of Additional Risk Mitigation Effect on Reserve and Premium Risk

#### G.1 Introduction

- G.1.1 The insurance risk mitigation effect of certain contracts of reinsurance recognized under rule 41, typically taking the form of adverse development cover (“ADC”) or stop loss reinsurance<sup>47</sup>, may not be fully taken into account in the RCA for reserve and premium risk. Rule 63(5) allows the applicable insurer to take into account the additional risk mitigation effect from such contracts (hereinafter referred to as “the RI Arrangement” for the purpose of this Appendix) by adjusting the RCA for reserve and premium risk after obtaining an approval from the IA. Such approval can be obtained via an application to the IA under rule 63(6), and is subject to any conditions the IA may impose under rule 63(8).
- G.1.2 This Appendix sets out the application requirements, including the information to be submitted and technical considerations evaluated by the IA, as well as ongoing requirements applicable insurers should comply with after receiving an approval.

#### G.2 Approval Process, Principles and Ongoing Requirements

- G.2.1 For an application under rule 63(6) to adjust the RCA for reserve and premium risk for the additional risk mitigation effect, an applicable insurer should submit the information specified in rule 63(7)(b) and detailed in sections G.3 and G.4 of this Appendix. The application, together with the prescribed fee<sup>48</sup>, should be submitted at least 6 months before the valuation date.
- G.2.2 The IA will review the application to determine whether the risk transferred under the relevant RI Arrangement is commensurate with proposed adjustment to the RCA for reserve and premium risk. In doing so, the IA may request further information or explanation as needed. If the application is approved, the IA will issue a written approval for the applicable insurer to use the adjusted calculations for the RCA for reserve and premium risk.
- G.2.3 In approving the application, the IA may impose conditions of approval under rule 63(8), including but not limited to specifying the calculation approach (“Approved Approach”) to be used for the adjustment of the RCA for reserve and premium risk.

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<sup>47</sup> ADC refers a form of an excess of loss reinsurance contract that provides coverage for adverse development on the reserve of runoff portfolio up to a pre-agreed level. Stop loss reinsurance refers a form of reinsurance that protects the ceding insurer against an aggregate amount of claims over a period, in excess of either a stated amount or a specified percentage of estimated benefit costs.

<sup>48</sup> Item 2 of Part 2 of Schedule to the Insurance (Prescribed Fees) Regulation (Cap. 41B)

- G.2.4 Following approval, the applicable insurer should calculate the adjustment of the RCA for reserve and premium risk in accordance with the Approved Approach. If the approval date is before the effective date of the RI Arrangement, the adjustment of the RCA for reserve and premium risk cannot be applied until the RI Arrangement becomes effective.
- G.2.5 At the first financial year end following approval, the applicable insurer should submit its documents for the adjustment of the RCA for reserve and premium risk calculation to the IA, together with its annual returns, to demonstrate that the adjustment has been applied according to the Approved Approach.
- G.2.6 For subsequent years in which the approval remains in effect, the applicable insurer should confirm to the IA, at least 3 months before its financial year end, that the Approved Approach remains valid and that no material changes have occurred affecting its application, such as changes in risk exposures, volatility or reinsurance coverage. If a material change has occurred, the insurer should submit updated relevant information in accordance with section G.3.

### **G.3 Information Required**

- G.3.1 The following information is required to be submitted for the application and whenever a material change occurs while the approval remains in effect—
- (a) a full description of the RI Arrangement, including the subject reinsurance contracts and all relevant details such as the scope, exclusions, attachment points, limits, cessions, premiums, reinsurer(s) and any contingent features. Any associated contracts (such as loan agreements) implemented through side letters, appendices etc., should also be included;
  - (b) a calculation document that clearly sets out the calculation of the proposed adjustment, explaining any parameters or assumptions used. The calculation document should provide sufficient detail (including input, calculation steps and output) for a knowledgeable reviewer to understand and assess the calculations performed;
  - (c) an illustration of the impact of the adjustment of the RCA for reserve and premium risk by calculating the following capital amounts both before and after applying the adjustment—
    - RCA for reserve risk and RCA for premium risk at undiversified and intermediate diversification levels (i.e. diversified up to the reserve and premium risk combined level),
    - RCA for reserve and premium risk (after other diversifications at the reserve and premium risk combined level),
    - RCA for general insurance risk (other than mortgage insurance risk) (diversified up to the reserve, premium and catastrophe combined level), and
    - PCA at total insurer basis (on a fully diversified basis);

- (d) a breakdown of reserve risk and premium risk exposure measures, identifying those in scope and out of scope of the RI Arrangement;
- (e) a detailed explanation of how each technical consideration in section G.4 below has been addressed, or a justification for deeming any consideration not relevant;
- (f) the applicable insurer's assessment of reserve risk and premium risk volatility relative to standard factors for the relevant lines of business, together with sensitivity tests to validate that the RI Arrangement adequately mitigates the risk. The insurer should also validate that the RCA and PCA after adjustment remain appropriate under a range of volatility estimates; and
- (g) identification of the responsible parties or committees involved in the calculation process and its sign-off.

G.3.2 For the purpose of the application, the applicable insurer may select the most appropriate valuation date for the information set out in paragraph G.3.1 for purposes of demonstrating the proposed calculation approach. For example, forecasted figures at the upcoming year end or data from the previous year end may be acceptable.

#### **G.4 Technical Considerations Relating to the Adjustments of the RCA**

G.4.1 The applicable insurer's analysis of technical considerations relating to the adjustments of the RCA for reserve and premium risk should be performed by an appropriate person, with detailed knowledge of the operations affected by the risk mitigation cover as well as the underlying business. When calculating the expected recovery from RI Arrangements for purposes of adjustments of the RCA, insurers need to consider how specific features of the cover under RI Arrangements affect capital requirements. More specifically, the following considerations should be taken into account when calculating the adjustments of the RCA—

- (a) Volatility consideration: In assessing the volatility of the exposure covered by the RI Arrangement, the applicable insurer should consider both its own volatility assessment and the volatility implied by the prescribed risk factors to ensure that the risk is not understated. If the insurer's own volatility estimate is higher than the level implied by the prescribed risk factors, the insurer should use its own 1-in-200 volatility estimate as the starting point, and then adjust it to reflect the risk mitigation effect of the RI Arrangement. Conversely, if the insurer's own volatility estimate is equal to or lower than the level implied by the prescribed risk factors, the insurer should start with the prescribed risk factors and then adjust for the risk mitigation effect of the RI Arrangement. In assessing its own volatility, the insurer should give proper consideration to the credibility and representativeness of data, ensuring that it covers sufficient consecutive years and reasonably reflects the risk exposure over the next 12 months. The calculation of RCA adjustments should be further supported by sensitivity testing of a range of the insurer's own volatility estimates.



- (b) Reinsurer default risk: The adjusted RCA for reserve and premium risk should account for counterparty default and other risk relating to the risk mitigation impact of the RI Arrangements, using parameters consistent with rule 81 of the RBC Rules.
- (c) Additional costs: Any additional costs (e.g. additional premium) that need to be paid to reinsurers relating to RI Arrangements should be factored in to reduce the expected recovery amount. For clarity, the benefits recognized under RI Arrangements should strictly be in the form of claim recoveries. Any additional financial adjustments, such as return premiums or profit commissions, should not be considered as risk mitigation benefits.
- (d) Reinsurer's share of the RI Arrangement: If losses between the attachment point and the limit of the RI Arrangement are not fully (100%) covered by the reinsurer, the expected recoveries should be reduced to reflect only the proportion of losses that are ceded to the reinsurer.
- (e) Attachment of cover: If the reinsurance cover of the RI Arrangement only begins to attach above the applicable insurer's current estimate of expected losses, the insurer is required to fully recognize any losses it will retain between the current estimate and the attachment point. Such losses should be fully recognized in the estimated loss, net of reinsurance.
- (f) Limit of cover: If the RI Arrangement provides coverage which extends beyond the 1-in-200 loss scenario (based either on standard prescribed risk factors or the applicable insurer's own volatility assessment), the insurer should not recognize any reinsurance benefit for coverage exceeding this 1-in-200 level. Conversely, if the insurer's 1-in-200 loss estimate exceeds the limit of its RI Arrangement, the insurer should account for any losses that exceed this limit as they will be retained by the insurer.
- (g) Payments: Any payments made on the business covered by the RI Arrangement (e.g. ADC) since the inception of the RI Arrangement should be taken into account to ensure that the attachment points and remaining coverage limits are accurately calculated and updated.
- (h) Scope of cover (multiple lines of business): Where the RI Arrangement covers multiple lines of business in aggregate, the applicable insurer should apply the attachment point and the coverage limit to the total diversified 1-in-200 loss estimate across all these lines. If certain lines of business are not included in the RI Arrangement, the insurer should account for correlations with these "out-of-scope" lines in a prudent manner. Specifically, where correlation factors differ for in-scope (covered) and out-of-scope (uncovered) business, the insurer should apply the more prudent factor when diversifying the adjusted loss with the other lines of business.
- (i) Scope of cover (within a line of business): Where the RI Arrangement does not cover all exposures within a line of business, the applicable insurer should continue to apply the original risk charges for the exposures that are not covered. No diversification is allowed between exposures that are covered and those that are not.
- (j) Related catastrophe risks within PCA: Where the RI Arrangement (e.g. stop loss cover) covers exposures subject to catastrophe risk, the applicable insurer should validate the total reinsurance recoveries recognized across the PCA calculation to ensure that the benefit of the RI Arrangement is not overstated. In particular, as a reasonableness check, the insurer should confirm that, for exposures covered by the

stop loss cover, the diversified PCA after adjustment for the RI Arrangement is at least equal to the net loss the insurer would have retained if the stop loss were applied directly to the diversified PCA before above adjustment for the RI Arrangement.

### Own Assessment of Risk Capital Amount for Natural Catastrophe Risk

#### H.1. Introduction

H.1.1 Pursuant to rule 67, an applicable insurer must determine its RCA for natural catastrophe risk using the factor-based approach in rule 68, unless it has obtained approval from the IA to use its own assessment (“OA”) to determine such RCA. Insurers seeking to use their OA approach for this purpose must apply to the IA for approval, and while any approval remains in effect, submit information to the IA on an ongoing basis to enable the IA to monitor the continued effectiveness of the OA approach being used. This Appendix provides guidance on the application process for obtaining approval to use an OA approach and, if approval is given, the information, format and requirements for submitting details of the approved OA approach to the IA for ongoing monitoring.

H.1.2 In summary—

- (a) the IA will approve an application by an applicable insurer to use an OA approach to determine its RCA for natural catastrophe risk only if the insurer can demonstrate to the IA’s satisfaction that its proposed OA approach satisfies the principles in section H.2;
- (b) to apply, the insurer should follow the procedure set out in section H.3, complete the OA application form, and submit to the IA the information and documents set out in section H.3 together with the prescribed fee<sup>49</sup>; and
- (c) once the application to use the OA approach is approved, the insurer is required to notify the IA of any proposed changes to its OA approach and to submit a change declaration form (and other information) to the IA annually as set out in section H.4, together with the prescribed fee<sup>50</sup>. The IA will take this information into account in considering whether it has any objection to the insurer’s continued use of the OA approach.

H.1.3 Consistent with the determination of the PCA, the RCA for natural catastrophe risk determined under an OA approach should represent a value at risk subject to a 99.5% confidence interval over a 1-year period, i.e. a 1-in-200 annual aggregate loss.

#### H.2. Requirements for Approval

H.2.1 This section sets out the principles which an applicable insurer’s OA approach should meet in order to obtain the IA’s approval. The insurer should be able to demonstrate how these principles are met during the application process.

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<sup>49</sup> Item 3 of Part 2 of Schedule of Insurance (Prescribed Fees) Regulation (Cap. 41B)

<sup>50</sup> Item 4 of Part 2 of Schedule of Insurance (Prescribed Fees) Regulation (Cap. 41B)

### ***Scope Completeness***

- H.2.2 The applicable insurer's risk management framework should cover all natural catastrophe risk to which it is exposed. Information submitted during the application process should fully disclose this risk and clearly describe the OA's scope. Any natural catastrophe risk (perils, regions or specific exposures) not included in the modelling should also be identified and described.
- H.2.3 The applicable insurer should monitor changes in its risk exposures regularly and assess their impact on its OA results.
- H.2.4 Any limitations due to time-lag in the risk exposure monitoring process should be understood and minimized by the applicable insurer. The insurer should also have a feedback process in place to assess the continued validity of OA results despite any significant changes in risk exposures.

### ***Own Assessment Process***

- H.2.5 The applicable insurer should have in place a clear and sound process for generating its OA results. This process should be clearly documented, including but not limited to, identifying the persons involved in the OA and defining their responsibilities (for example, operating tasks, expert judgements, approvals, peer reviews), and setting out the controls in place to manage subjective decisions and to minimize human error (which controls should be adequate).
- H.2.6 The applicable insurer should regularly review the adequacy and effectiveness of its OA process so as to be able to identify and address any weaknesses, with adjustments made as needed.

### ***Governance and Usage***

- H.2.7 The applicable insurer should ensure that key decisions relating to its OA (such as model selection, data usage, model assumptions and approval of OA results) are subject to a robust governance process. The seniority of those making key decisions should be commensurate with the materiality of the underlying assumptions. All governance processes and key decisions should be documented, with key decisions made and validated, and results approved, by persons or committees with suitable knowledge, expertise and experience.
- H.2.8 The applicable insurer should demonstrate that its OA for natural catastrophe risk is used by the insurer and forms part of its risk management and business decision-making.
- H.2.9 Any limitations in the OA (for example, due to risks not covered, model limitations, uncertainty and sensitivity of assumptions, or deficiency or lack of data) should be communicated to and understood by users and senior management at the applicable insurer. These limitations and their implications on the reliability of OA results should be addressed within the insurer's internal risk management framework.

H.2.10 If any part of the OA process is outsourced to a third party service provider, the applicable insurer should identify and manage outsourcing risks in line with the Guideline on Outsourcing (GL14) issued by the IA. Any outsourcing does not relieve the insurer of its responsibility to comply with the requirements of this Appendix.

### ***Data Quality, Model Quality and Assumptions Quality***

#### Data representativeness

H.2.11 Data used in the applicable insurer's OA should be current, credible, accurate, complete, appropriate and representative of the exposure period being assessed. For example, exposure data should include an allowance for growth to be representative of the coming year. Exposure data should also be validated by assessing year-on-year changes. In addition, data granularity approximations should be well understood and their sensitivities tested. Any weaknesses in data should be addressed in accordance with paragraph H.2.9 of this Appendix.

H.2.12 If external data is used, the applicable insurer should assess its appropriateness and make adjustments to allow for any differences between characteristics of the insurer's exposures and those represented by the external data source.

#### Assumptions

H.2.13 All assumptions within the modelling process should be identified, justified and documented. The applicable insurer should regularly review these assumptions and understand their sensitivities. A feedback process should be in place to allow users of the results to provide input to those setting the underlying assumptions, helping to ensure their continued appropriateness.

#### Model evaluation

H.2.14 Any models used are expected to be probabilistic event-based, covering exposure, hazard, vulnerability and financial modules. A timely model evaluation process should be conducted for new or changed models, with the findings documented. The complexity of the model evaluation should be commensurate with the materiality of the region(s) or peril(s) for which the model is used. A detailed model evaluation may include assessing model appropriateness, scientific review of components, sensitivity analysis on key assumptions, validation against historical losses, and recommendations for adjustments, as needed.

#### Model validation with actual experience

H.2.15 The applicable insurer should have a feedback loop in place for timely assessment of the reasonableness of its OA following a significant event that materially impacts the insurer.

#### Validation

H.2.16 The applicable insurer should have a validation process in place which covers all aspects

of the OA. Validation should be performed by a person who is independent<sup>51</sup> from those who develop or operate the model. The scale of the independent review function<sup>52</sup> should be proportional to the complexity of the modelling. The IA may where it deems necessary, request an external review by qualified specialists as part of the approval process.

H.2.17 The applicable insurer should validate year-on-year changes in OA results to understand and be in a position to explain the drivers of change, and assess if any change to the OA process is required.

### Documentation

H.2.18 Documentation of the OA should be up-to-date, detailed and complete enough for a knowledgeable person in the field to understand it. The applicable insurer should be able to produce documentation that demonstrates compliance with the principles set out in section H.2.

## **H.3. Application Procedure**

H.3.1 An applicable insurer seeking approval to use its OA to determine the RCA for natural catastrophe risk should make an application to the IA by completing and submitting an OA application form, together with any supporting evidence, information and documents required to demonstrate that the OA sufficiently meets the principles set out in section H.2. Insurers should contact their case officer to obtain the latest version of the OA application form. During the application process, the IA may request additional information regarding the OA application as it deems appropriate.

H.3.2 Before submitting a draft application, applicable insurers are encouraged, as a first step in the process, to have a preliminary meeting with the IA to discuss its proposed application. Prior to the meeting, the insurer should provide the IA with sufficient documentation and information explaining the proposed OA. The objective of the preliminary meeting is to allow the IA to provide initial feedback based on the information provided, and to give the insurer an opportunity to discuss the overall OA process, address the principles stated in section H.2, clarify application form requirements, and ask any questions it may have.

H.3.3 Following the preliminary meeting, the IA may indicate for the applicable insurer to proceed with a draft application. The draft application should include supporting documentation to demonstrate compliance with the principles stated in section H.2. The purpose of the draft application is to allow the IA to holistically assess the application and provide feedback on issues that need to be further addressed. There is no fee for submitting a draft application. The prescribed fee is only payable upon submission of the formal application.

H.3.4 As part of the application process, the IA may invite the applicable insurer to an interview

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<sup>51</sup> Independent validation may be carried out by an internal or external body as long as the reviewer is independent, is not responsible for, and has not been actively involved in, the part of the OA that it validates.

<sup>52</sup> A full independent model and assumptions validation team may or may not be appropriate subject to the level of complexity of model, the extent of the customization of the model and whether it is a vendor or own model.

to gain a holistic understanding of the OA, particularly regarding the OA process and governance. The IA will consider the interview outcome, together with the information submitted throughout the application process in making a decision on whether to approve the OA application. The OA application process is illustrated in a flowchart in section H.5.

#### **H.4. Ongoing Requirements for Approved Insurers**

##### ***Ongoing Compliance***

H.4.1 An applicable insurer that has received the IA’s approval for its OA application (“approved insurer”) is expected to adhere at all times to all of the principles set out in section H.2 as they relate to the approved OA.

H.4.2 In accordance with rule 67(5) of the RBC Rules, approved insurers must submit the following annually—

- (a) OA specific annual returns as listed in paragraph H.4.3; and
- (b) OA change declaration forms (form [CA.P.G.7F Own assessment change declaration under general insurance natural catastrophe risk]) (together with the prescribed fee<sup>53</sup>) and any supplementary information required by the IA, as specified and within the time periods stated in paragraphs H.4.6 to H.4.11.

H.4.3 For the purpose of paragraph H.4.2(a), the approved insurer should submit to the IA all of the following forms regarding natural catastrophe risk to meet relevant annual return requirements under the Insurance (Submission of Statements, Reports and Information) Rules (Cap. 41S)—

- [CA.P.G.5 Reinsurance protection under natural catastrophe risk]
- [CA.P.G.6 Risk exposure details under natural catastrophe risk]
- [CA.P.G.7A Natural catastrophe scope of own assessment under general insurance natural catastrophe risk]
- [CA.P.G.7B Own assessment result on windstorm and earthquake under natural catastrophe risk]
- [CA.P.G.7C Own assessment result on other perils under general insurance natural catastrophe risk]
- [CA.P.G.7D Own assessment details under general insurance natural catastrophe risk]
- [CA.P.G.7E Own Assessment year-to-year change under general insurance natural catastrophe risk]

As an exception, the approved insurer is not required to submit the form [CA.P.G.7E Own Assessment year-to-year change under general insurance natural catastrophe risk] with respect to the valuation date for the first financial year-end in which the approved OA approach is used.

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<sup>53</sup> Item 4 of Part 2 of Schedule of Insurance (Prescribed Fees) Regulation (Cap. 41B)

- H.4.4 For the purpose of paragraph H.4.2(b), the approved insurer should provide details of any changes to the OA since the previous change declaration (or since the initial application, if it is the first renewal).
- H.4.5 Based on the information submitted, the IA will consider whether to serve written notice pursuant to rule 67(6) of the RBC Rules to object to the approved insurer's continued adoption of the RCA for natural catastrophe risk based on the approved OA.

***Change Declaration Process – Applicable annually after the approval of OA***

- H.4.6 Each year, the approved insurer is required to declare to the IA any changes to the approved OA and indicate whether these changes are material by completing the OA change declaration form (form [CA.P.G.7F Own assessment change declaration under general insurance natural catastrophe risk]), and submitting it to the IA together with the prescribed fee<sup>54</sup> However, as an exception, the insurer is not required to submit this form until the financial year after the year in which the approved OA approach has been used for the first time to determine the RCA for natural catastrophe risk
- H.4.7 If the approved insurer expects to implement material changes to its OA approach for the purposes of its next valuation, it should submit the OA change declaration form (form [CA.P.G.7F Own assessment change declaration under general insurance natural catastrophe risk]) with the relevant parts completed and including the relevant documents stated therein (together with the prescribed fee<sup>55</sup>), at least 5 months before the next financial year-end (e.g. by 31 July for a 31 December year-end). The insurer will also be required to quantify the impact of the proposed changes by comparing the previous year-end results with the estimated results for the coming year-end using the form [CA.P.G.7E Own Assessment year-to-year change under general insurance natural catastrophe risk]. This form serves dual purposes, fulfilling both annual return requirements (under paragraph H.4.3) and change declaration requirements (under this paragraph).
- H.4.8 If there are no material changes to the OA approach for the purposes of its next valuation, the approved insurer should submit the OA change declaration form (form [CA.P.G.7F Own assessment change declaration under general insurance natural catastrophe risk]), with the relevant parts completed, 3 months before the next financial year-end (e.g. by 30 September for a 31 December year-end).
- H.4.9 In order for the IA not to object to the approved insurer's continued use of the OA to determine its RCA for natural catastrophe risk under rule 67(6), the IA should be satisfied that any changes proposed to the insurer's OA (whether material or not) do not jeopardize the OA's continued compliance with the principles set out in section H.2. In assessing proposed changes, the IA may require the insurer to submit any information deemed necessary by the IA to demonstrate the OA's continued compliance with the principles stated in section H.2. The IA may also require representatives from the insurer to attend an interview. If the IA is satisfied that the OA to be applied at the forthcoming valuation date

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<sup>54</sup> Item 4 of Part 2 of Schedule of Insurance (Prescribed Fees) Regulation (Cap. 41B)

<sup>55</sup> Item 4 of Part 2 of Schedule of Insurance (Prescribed Fees) Regulation (Cap. 41B)



continues to satisfy the principles in section H.2, it will notify the insurer that it has no objection to continued use of the OA such that the insurer may continue to use the OA to determine its RCA for natural catastrophe risk, i.e. the IA will not serve a notice under rule 67(6) based on the information submitted.

H.4.10 The change declaration form (form [CA.P.G.7F Own assessment change declaration under general insurance natural catastrophe risk]) and the year-to-year change form (form [CA.P.G.7E Own Assessment year-to-year change under general insurance natural catastrophe risk]) categorize changes as follows—

(a) Quantitative

- Scope
- Exposure (e.g. increase/decrease in sum insured or limit, changes in top 5 peak regions or perils, etc.)
- Model change (e.g. relating to model vendor or versions, model options, sub-perils, data granularity assumptions)
- Parameters (e.g. adjustments for over/under estimation, loading for unmodelled exposure, etc.)
- Outward reinsurance (e.g. changes in deductible, limit, etc.)
- Others

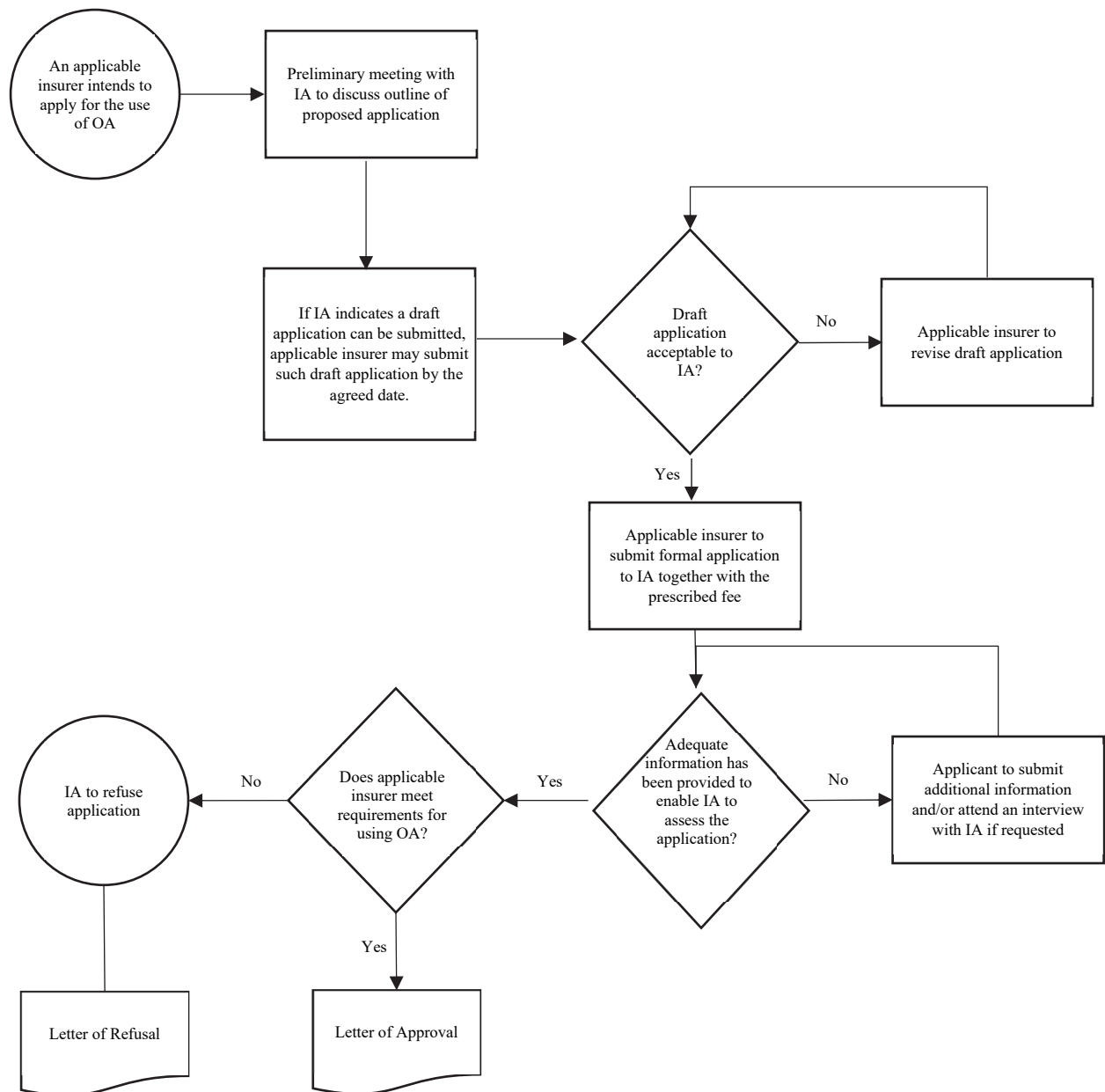
Approved insurers should provide details of any approximations used to derive these quantitative breakdowns in the year-on-year change form (form [CA.P.G.7E Own Assessment year-to-year change under general insurance natural catastrophe risk]) submitted to the IA under paragraph H.4.7.

(b) Qualitative

- OA Process
- Governance and use
- Data, model and assumptions quality

H.4.11 Quantitative changes such as model change and adjustments are generally considered material if they have an impact of more than 10% (or any lower threshold determined by the approved insurer) on its 1-in-200 total net annual aggregate loss, or the 1-in-200 gross annual aggregate loss for any of its top 5 peak zones as reported in form [CA.P.G.7D Own assessment details under general insurance natural catastrophe risk]. For changes to risk exposures, only significant changes, such as adding new regions(s) or peril(s) to the top 5 peak zones, would typically be considered material. For outward reinsurance, a change is not material if it does not affect any subjective assumptions. For qualitative changes, the applicable insurer should use its judgement to determine whether the change is material (for example, significant structural or key personnel changes in the OA process should be considered material).

## H.5. Flow Chart for Processing an Application for the use of OA



## H.6. Flow Chart for the Change Declaration Process in OA

