MAS Notice No. : FHC-N133

Issue Date: 15 NOVEMBER 2023

NOTICE ON VALUATION AND CAPITAL FRAMEWORK FOR DESIGNATED FINANCIAL HOLDING COMPANIES (LICENSED INSURER)

Contents

1 INTRODUCTION

1.1 This Notice is issued pursuant to section 36(1) of the Financial Holding Companies Act 2013 [“the FHC Act”] and applies to all designated financial holding companies that have a subsidiary that is a licensed insurer incorporated, formed or established in Singapore (“DFHC (Licensed Insurer)”). This Notice comprises both mandatory requirements and guidelines on the capital adequacy requirement, valuation of assets and policy liabilities in respect of life business and general business, and the calculation of the total risk requirements and financial resources for an FHC group (as defined under the FHC Act).

1.2 This Notice shall take effect on **1 January 2024**.

1.3 While any deviation from the guidelines set out in this Notice does not of itself amount to an offence under the FHC Act, the Authority may consider such deviation as one of the factors in determining whether the DFHC (Licensed Insurer) should be subject to additional supervisory requirements as a result of the increased risk in the operations of the FHC group, including a capital adequacy requirement which is higher than those set out in the FHC Act or specified in this Notice.

Definitions

1.4 For the purposes of this Notice:

"affiliate" means –

(a) an entity that has a beneficial interest in 20% or more of the total number of ordinary shares or controls 20% or more of the voting power in the DFHC (Licensed Insurer), or

(b) an entity in which the DFHC (Licensed Insurer) has a beneficial interest in 20% or more of the total number of ordinary shares or controls 20% or more of the voting power in the entity, or

(c) an entity in which a related corporation of the DFHC (Licensed Insurer) has a beneficial interest in 20% or more of the number of ordinary shares or controls 20% or more of the voting power in the entity;

"appointed actuary" means, in the case of an insurer licensed in Singapore, a person appointed under section 35(1)(b) of the Insurance Act 1966, or in the case of an FIE, a person in an equivalent role as an appointed actuary of an insurer licensed in Singapore;

"associate" has the same meaning as "associate" under the Accounting Standards;

"Banking Act" means Banking Act 1970;

"banking institution" means –

(a) any bank licensed under the Banking Act 1970;

(b) any finance company licensed under the Finance Companies Act 1967; or

(c) any entity which is approved, licensed, registered or otherwise regulated by a bank regulatory agency in a foreign jurisdiction to carry on banking business as defined in the Banking Act 1970;

"Best estimate of claim liabilities" or "BE of CL" means the part of claim liabilities that relates to the value of the expected future payments in relation to all claims incurred prior to or on the valuation date (including any expense expected to be incurred in settling the claims) and that fall due for payment after the valuation date, whether or not the claims have been reported to the FHC group;

“Best estimate of unexpired risk reserves” or “BE of URR” means the part of unexpired risk reserves that relates to the value of the expected future payments arising from future events insured under policies in force as at the valuation date (including any expense expected to be incurred in administering the policies and settling claims against those policies);

“certifying actuary” means, in the case of an insurer licensed in Singapore, a person appointed under section 35(1)(c) of the Insurance Act 1966, or in the case of an FIE, a person in an equivalent role as a certifying actuary of an insurer licensed in Singapore;

“charged asset” means any asset which is subjected to a charge under which a third party has a right of retention or sale of the asset upon default of the insurance group entity that pledges that asset;

“collective investment scheme” or "CIS" has the same meaning as in section 2(1) of the Securities and Futures Act 2001;

“commodity”, in relation to a forward contract or futures contract, means —

(a) a financial instrument; or

(b) gold, any class of oil or any other physical commodity;

“counterparty” means any person who is under a financial obligation to an insurance group entity and in itself is not an insurance group entity;

“credit facility” means —

(a) the granting by a financial institution of advances, loans and other facilities whereby an insurance group entity has access to funds or financial guarantees; or

(b) the incurring by a financial institution of other liabilities on behalf of an insurance group entity;

“debt security” includes any debenture, bond or note;

“derivative” includes any warrant, convertible security, forward contract, futures contract, swap, contract for differences or option;

"ECAI" means an external credit assessment institution, and includes all entities trading under the trade name of that external credit assessment institution;

"equity security" includes any stock, share, depository receipt or unit in a collective investment scheme;

"expected future payments", in relation to amounts payable in the future, includes guaranteed and non-guaranteed benefits, management and distribution expenses, and reinsurance premiums;

"expected future receipts", in relation to amounts receivable in the future, includes premiums, charges and fee income, and reinsurance recoverables;

"financial resources" means financial resources determined in accordance with Section 5 of this Notice;

"Foreign Insurance Entity" or "FIE" means a subsidiary of a DFHC (Licensed Insurer) that is an insurer incorporated, formed or established outside Singapore;

"forward contract" means a contract the effect of which is that one party to the contract agrees to deliver a specified commodity, or a specified quantity of a specified commodity, to another party to the contract at a specified future time and at a specified price payable at that time, and includes an option on a forward contract but does not include a futures contract;

"futures contract" means a contract the effect of which is that —

(a) one party to the contract agrees to deliver a specified commodity, or a specified quantity of a specified commodity, to another party to the contract at a specified future time and at a specified price payable at that time under the terms and conditions set out in the business rules and practices of the futures exchange, recognised trading system provider or overseas futures exchange at which the contract is made; or

(b) the parties to the contract will discharge their obligations under the contract by settling the difference between the value of a specified quantity of a specified commodity agreed at the time of the making of the contract and at a specified future time, such difference being determined in accordance with the business rules and practices of the futures exchange, recognised trading system provider or overseas futures exchange at which the contract is made,

and includes an option on a futures contract;

"general business" means:

(a) in the case of a licensed insurer in Singapore, business arising from an insurance fund established and maintained by a licensed insurer under section 16(1) of the Insurance Act 1966 for general business; and

(b) in the case of an FIE, business related to general business where general business has the same meaning as that defined under the Insurance Act 1966.

"Homogeneous risk group" or "HRG" refers to a group of policies with similar risk characteristics, determined in accordance with paragraphs 4.2.6 to 4.2.15, where the risks refer to the risks covered under C1 requirement for life business in paragraph 4.2.16;

"insurance group entity" means the DFHC (Licensed Insurer), any subsidiary or any other entity which is treated as part of the FHC group according to the Accounting Standards;

"investment grade" means Credit Quality Class of D or better under **Appendix 4K** or Counterparty Risk Class of D or better under **Appendix 4L**;

"investment-linked business" means:

(a) in the case of a licensed insurer in Singapore, business arising from an insurance fund for investment-linked policies established and maintained under section 16(2) of the Insurance Act 1966; and

(b) in the case of an FIE, business related to investment-linked policies.

"life business" has the same meaning as section 3(1)(a) of the insurance Act 1966;

"life insurer" means an entity within the FHC group that is licensed to carry on life business;

"LLP" means last liquid point, as specified in **Appendix 3C;**

"long-term medical policies" means long-term accident and health policies where the main purpose of the policies is to provide policy moneys with respect to health services;

"MA portfolio" means products where the Matching Adjustment as described in sub-section 3.4 of this Notice is applied, and assets assigned to back the liabilities for the guaranteed benefits of these products;

"MAS Notice FHC-N129" means the notice commonly known as MAS Notice FHC-N129 issued by the Authority under sections 3(1), 3(3) and 60(1) of the FHC Act, as amended from time to time, and includes any notice that replaces it;

"MAS Notice 133" means the notice commonly known as MAS Notice 133 issued by the Authority under sections 17 and 154(4) of the Insurance Act 1966, as amended from time to time, and includes any notice that replaces it;

"minimum condition liability", in relation to:

(a) a participating business in the case of a licensed insurer in Singapore, means the sum of —

(i) the liability (net of reinsurance) in respect of each non-participating policy of the business determined in the manner provided in regulation 20(1) of the Insurance (Valuation and Capital) Regulations 2004; and

(ii) the liability (net of reinsurance) in respect of each participating policy of the business determined in accordance with the manner provided in regulation 20(1) of the Insurance (Valuation and Capital) Regulations 2004 for determining the liability (net of reinsurance) in respect of a non-participating policy, but does not include any provision for non-guaranteed benefits; and

(b) a participating business in the case of an FIE, means the sum of —

(i) the liability (net of reinsurance) in respect of each non-participating policy of the business determined in the manner provided in paragraph 1(1) of **Appendix 3A-1** of this Notice; and

(ii) the liability (net of reinsurance) in respect of each participating policy of the business determined in accordance with the manner provided in paragraph 1(1) of **Appendix 3A-1** of this Notice for determining the liability (net of reinsurance) in respect of a non-participating policy, but does not include any provision for non-guaranteed benefits.

"mortgage insurance policy" means a policy that protects against losses on mortgage loans arising from default by borrowers;

"mortgage insurer" means:

(a) in the case of an insurer licensed in Singapore, an insurer licensed under the Insurance Act 1966 which has liabilities in respect of mortgage insurance policies; and

(b) in the case of an FIE, an insurance entity licensed in the jurisdiction which it operates in and has liabilities in respect of mortgage insurance policies;

"net premiums written" means the net amount of premiums written by an insurance group entity after deduction of return premiums and payments in respect of reinsurance business ceded;

"non-participating business" means:

(a) in the case of a licensed insurer in Singapore, business arising from an insurance fund established and maintained under section 16(3) of the Insurance Act 1966 which comprises wholly of non-participating policies; and

(b) in the case of an FIE, a business which comprises wholly of non-participating policies.

"participating business" means:

(a) in the case of a licensed insurer in Singapore, business arising from an insurance fund established and maintained under section 16(3) of the Insurance Act 1966 which comprises wholly or partly of participating policies; and

(b) in the case of an FIE, a business which comprises wholly of participating policies or partly of participating policies where a non-participating policy may form part of the participating business if this is consistent with the requirements imposed upon the FIE under the laws where the FIE operates in;

"PSE" or public sector entity means –

(a) a regional government or local authority that is able to exercise one or more functions of the central government at the regional or local level;

(b) an administrative body or non-commercial undertaking responsible to, or owned by, a central government, regional government or local authority, which performs regulatory or non-commercial functions;

(c) a statutory board in Singapore (other than the Authority); or

(d) a town council in Singapore established pursuant to the Town Councils Act (Cap. 392A);

"recognised ECAI" means an ECAI recognised by the Authority pursuant to **Appendix 4I** and listed in **Appendix 4J**;

"reinsurance recoverables" means any amount that an insurance group entity is entitled to recover, but has yet to recover, from its reinsurance counterparty in respect of claims that have been paid by the insurance group entity;

"risk-free discount rate" means the interest rate determined in the manner described in **Appendix 3C** of this Notice;

"share", in relation to a DFHC (Licensed Insurer), has the same meaning as in section 4(1) of the Companies Act 1967;

"short-term policy" means —

(a) a short-term accident and health policy; or

(b) a policy issued by an insurance group entity as part of the FHC group's life business that has a remaining term of not more than one year in the determination of its liabilities in accordance with sub-section 3.1 of this Notice;

"total risk requirement" means the total risk requirement determined in accordance with Section 4 of this Notice;

"trade credit insurer" means:

(a) in the case of an insurer licensed in Singapore, an insurer licensed under the Insurance Act 1966 which has liabilities in respect of trade credit insurance policies, and

(b) in the case of an FIE, an insurance entity licensed in the jurisdiction which it operates in and has liabilities in respect of trade credit insurance policies;

"trade credit insurance policy" means a policy that protects against the risks of loss of an insured arising from —

(a) the insolvency or default (otherwise than through insolvency) of the debtor of the insured; and

(b) the debtor failing to pay for goods or services as a result of the insolvency or default;

“UFR” means ultimate forward rate, as specified in **Appendix 3C**;

“unit”, in relation to a collective investment scheme, has the same meaning as in section 2(1) of the Securities and Futures Act 2001;

“valuation date” means the date on which the assets and liabilities of an FHC group are valued.

1.5 The expressions used in this Notice, except where expressly defined in this Notice or where the context otherwise requires, have the same respective meanings as in the FHC Act, the Insurance Act 1966, the Insurance (Valuation and Capital) Regulations 2004, MAS Notice 133 and MAS Notice FHC-N129, as applicable.

1.6 In this Notice —

(a) Any reference to a policy of a participating, non-participating or investment-linked business shall be construed as:

(i) in the case of a licensed insurer in Singapore, a reference to a policy in respect of which the participating, non-participating or investment-linked fund, as the case may be, is established or maintained by an insurer under the Insurance Act 1966; and

(ii) in the case of an FIE, a reference to a policy in respect of the participating, non-participating or investment-linked business, as the case may be, that belongs to the FIE.

(b) any reference to a licensed insurer incorporated in Singapore includes a licensed insurer which is a society registered under the Co-operative Societies Act 1979.

2 CAPITAL ADEQUACY REQUIREMENT

2.1 Assessment of Solvency Position

2.1.1 The DFHC (Licensed Insurer) must at all times maintain the capital adequacy requirement referred to in paragraph 2.2.1.

2.1.2 The DFHC (Licensed Insurer) must calculate its Group Capital Adequacy Ratio (“Group CAR”) as follows:

$$\text{Group CAR} = \frac{\text{Group Financial Resources ("Group FR")}}{\text{Group Total Risk Requirement ("Group TRR")}}$$

where

Group FR is determined in accordance with Section 5 of this Notice; and must not be lower than a minimum amount of $5 million; and

Group TRR, also referred to as the FHC group prescribed capital requirements, which is calibrated at 99.5% Value-at-Risk (“VaR”) over a one year period, and is determined in accordance with Section 4 of this Notice.

2.1.3 For the purpose of calculating the Group FR and Group TRR, the DFHC (Licensed Insurer) must use the consolidated financial statements of the FHC group prepared in accordance with the Accounting Standards except that the DFHC (Licensed Insurer) must determine the valuation of assets and liabilities of any insurance group entity that is a licensed insurer in Singapore or an FIE in accordance with Section 3 of this Notice.

Guidelines:

2.1 The use of the consolidated financial statements of the FHC group should have eliminated any effect of intra-group transactions (i.e. transactions that are entered into between two or more entities within the same FHC group), such as an intra-group reinsurance arrangement where an entity enters into a reinsurance contract with another entity of the same FHC group, in calculating Group FR and Group TRR.

2.1.4 The DFHC (Licensed Insurer) may use the Aggregation Method (“AM”) specified in **Appendix 6** to calculate its Group CAR. The DFHC (Licensed Insurer) must consult the Authority prior to the use of such a method. The DFHC (Licensed Insurer) may use the AM only after the written approval from the Authority has been obtained.

2.2 Supervisory Intervention Level

2.2.1 For the purpose of paragraph 2.1.1, a DFHC (Licensed Insurer) meets the capital adequacy requirement if—

a) the Group CAR is not less than 100%; and

b) the DFHC (Licensed Insurer) satisfies paragraph 5.6 of this Notice.

2.2.2 The DFHC (Licensed Insurer) must notify the Authority if any of its insurance group entities breaches any of the supervisory requirements including the capital adequacy requirements imposed upon it under the laws where the entity operates in.

2.2.3 A DFHC (Licensed Insurer) must immediately give written notice to the Authority when the DFHC (Licensed Insurer) becomes aware that the capital adequacy requirement mentioned in paragraph 2.1.1 is not satisfied or is not likely to be satisfied.

2.2.4 A DFHC (Licensed Insurer) is not excused from giving written notice to the Authority under paragraph 2.2.3 on the ground that the disclosure of any information in the written notice may tend to incriminate the DFHC (Licensed Insurer).

2.2.5 Where a DFHC (Licensed Insurer) claims, before giving written notice to the Authority under paragraph 2.2.3, that any information in the notice may tend to incriminate the DFHC (Licensed Insurer), that information is not admissible in evidence against the DFHC (Licensed Insurer) in criminal proceedings, except for proceedings for an offence under section 36(4) of the FHC Act.

2.2.6 Where the Authority is notified by a DFHC (Licensed Insurer) or becomes aware that the capital adequacy requirement mentioned in paragraph 2.1.1 is not satisfied or is not likely to be satisfied , the Authority may issue a direction to the DFHC (Licensed Insurer) for all or any of the following purposes:

a) requiring the DFHC (Licensed Insurer)—

i) to satisfy the capital adequacy requirement by the end of the period determined by the Authority;

ii) to submit to the Authority a plan on how the DFHC (Licensed Insurer) intends to satisfy that requirement; and

iii) to submit to the Authority the financial statements of the FHC group on a monthly basis or at other interval required by the Authority, until the DFHC (Licensed Insurer) has continuously satisfied that requirement for a period determined by the Authority;

b) directing the DFHC (Licensed Insurer) to carry on its business in any manner and in accordance with any condition imposed by the Authority.

2.2.7 Where the Authority has issued a direction to a DFHC (Licensed Insurer) under paragraph 2.2.6, the capital adequacy requirement mentioned in paragraph 2.1.1 does not apply in relation to the DFHC (Licensed Insurer) during the period of validity of the direction.

2.3 Other Financial Requirements

<u>Redemption of preference shares</u>

2.3.1 A DFHC (Licensed Insurer) shall not redeem any preference share without the prior written approval of the Authority.

2.4 Scope of the FHC Group for Solvency Assessment

2.4.1 A DFHC (Licensed Insurer) must include all insurance group entities within the FHC group in its calculation in determining whether it satisfies the capital adequacy requirement in paragraph 2.1.1.

2.4.2 If the DFHC (Licensed Insurer) wishes to exclude any insurance group entity in the calculation of the capital adequacy requirement, it must apply in writing to the Authority for approval including the reasons supporting the application. The Authority may grant approval to the DFHC (Licensed Insurer) with or without conditions, or refuse to grant approval.

2.4.3 Without affecting any other criteria that the Authority may consider relevant, the Authority may in determining whether to grant its approval under paragraph 2.4.2, have regard to the following criteria:

a) The insurance group entity is not considered material because:

(i) the assets, including reinsurers' share of policy liabilities, held by the entity is not more than 1% of the FHC group's total assets calculated in accordance with the Accounting Standards; or

(ii) the aggregate of the assets held by all the entities that meet the requirement in sub-paragraph a)(i) does not exceed 5% of the FHC group's total assets calculated in accordance with the Accounting Standards.

b) the insurance group entity is already accounted for in the calculation of the capital requirement of the DFHC (Licensed Insurer)'s parent company and the parent company is regulated by the Authority;

c) the insurance group entity is not subject to any sector-specific capital requirements under the laws where it operates in;

d) the insurance group entity's risks are more appropriately managed in other ways besides imposing capital; or

e) the FHC group's business strategy, business plan and other matters which the Authority considers relevant to the insurance group entity.

2.4.4 Where the Authority has granted approval under paragraph 2.4.2, the DFHC (Licensed Insurer) must immediately notify the Authority when it becomes aware that it is unable to satisfy any condition imposed by the Authority under paragraph 2.4.2.

Guidelines:

2.2 For instance, the Authority may impose a condition that the exclusion of an insurance group entity from the calculation of the capital adequacy requirement is subject to the entity being considered immaterial under paragraph 2.4.3. The DFHC (Licensed Insurer) should thus continue to monitor the materiality of this insurance group entity. If it becomes aware that the entity has exceeded any of the materiality thresholds set out in paragraph 2.4.3 of this Notice, the DFHC (Licensed Insurer) must immediately notify the Authority.

2.3 “parent company”, in relation to a DFHC (Licensed Insurer), means a financial institution which is able to exercise a significant influence over the direction and management of the DFHC (Licensed Insurer) or which has a controlling interest in the DFHC (Licensed Insurer).

3 VALUATION OF ASSETS AND LIABILITIES

3.1 Recognition and valuation of liabilities

Application of this Part

3.1.1 This Part applies to the recognition and valuation of the liabilities of an insurance business of an insurance group entity.

Recognition and valuation of liabilities generally

3.1.2 In the case of an insurer licensed in Singapore that belongs to an FHC group, a DFHC (Licensed Insurer) in the FHC group must treat the liabilities of the insurer in the manner they would have been treated under the Insurance (Valuation and Capital) Regulations 2004 and Section 3 of MAS Notice 133.

3.1.3 Unless otherwise specified in this paragraph 3.1 or in any direction issued under the FHC Act —

a) a DFHC (Licensed Insurer) must recognise a liability of an insurance business in accordance with the Accounting Standards; and

b) a DFHC (Licensed Insurer) must value a liability of an insurance business in accordance with the Accounting Standards and sound actuarial principles.

3.1.4 The Authority may, by notice in writing to a DFHC (Licensed Insurer), specify the bases, methodologies and other details of a technical nature to be complied with in relation to the determination of liabilities in respect of a policy and in respect of an insurance business.

<u>**Valuation of liabilities for life business**</u>

3.1.5 The DFHC (Licensed Insurer) must calculate the liabilities in respect of policies of a life business belonging to the FHC group, except for the life business that belongs to an insurer licensed in Singapore in the FHC Group, in accordance with **Appendices 3A-1 and 3A-2** of this Notice.

> ***<u>Guidelines:</u>***
>
> *3.1 For guidelines on the valuation of policy liabilities relating to the life business of an FIE, refer to* ***Appendix 3A-3****.*

<u>Valuation of liabilities for general business</u>

3.1.6 The DFHC (Licensed Insurer) must calculate the liabilities in respect of policies of a general business belonging to the FHC group, except for the general business that belongs to an insurer licensed in Singapore in the FHC group, in accordance with **Appendix 3B-1** of this Notice.

<u>Guidelines:</u>

*3.2 For guidelines on the valuation of policy liabilities relating to the general business of an FIE, refer to **Appendix 3B-2**.*

3.2 Recognition and valuation of assets

Application of this Part

3.2.1 This Part applies to the recognition and valuation of the assets of an insurance business that belongs to an FHC group.

Recognition and valuation of assets generally

3.2.2 In the case of an insurer licensed in Singapore that belongs to an FHC group, a DFHC (Licensed Insurer) in the FHC group must treat the assets of the insurer in the manner they would have been treated under the Insurance (Valuation and Capital) Regulations 2004 and Section 3 of MAS Notice 133.

3.2.3 Unless otherwise specified in this section or any direction issued by the Authority, an asset of an insurance business is to be recognised and valued by a DFHC (Licensed Insurer) in accordance with the Accounting Standards.

3.2.4 A DFHC (Licensed Insurer) must determine the valuation of assets of the insurance business belonging to the FHC group, except for the assets that belong to an insurer licensed in Singapore in the FHC Group, in accordance with **Appendix 3D** of this Notice.

3.3 Discount rates

<u>Life business</u>

3.3.1 A DFHC (Licensed Insurer) must use the risk-free discount rate in determining —

a) the liability in respect of a non-participating policy;

b) the liability for guaranteed benefits of a Universal Life ("UL") policy;

c) the non-unit reserves of an investment-linked policy; and

d) the minimum condition liability of a participating business.

3.3.2 A DFHC (Licensed Insurer) must use the best estimate investment return as the discount rate in determining —

a) the liability in respect of a participating policy; and

b) the liability for total benefits in respect of a UL policy.

3.3.3 For the purposes of paragraph 3.3.2,

a) for an insurer licensed in Singapore that belongs to an FHC group, a DFHC (Licensed Insurer) in the FHC Group must derive the best estimate investment return in accordance with paragraph 3.3.3 of MAS Notice 133; and

b) for an FIE that belongs to an FHC group, a DFHC (Licensed Insurer) in the FHC group must derive the best estimate investment return based on the expected investment return of assets backing the participating business in the case of paragraph 3.3.2a), and the expected investment return of assets backing the UL policies in the case of paragraph 3.3.2b).

3.3.4 A DFHC (Licensed Insurer) must determine the risk-free discount rate in the manner specified in **Appendix 3C** of this Notice.

General business

3.3.5 For general insurance business—

a) a DFHC (Licensed Insurer) does not need to carry out any discounting for liability durations of more than one year, if it deems that the impact of discounting is not material; and

b) a DFHC (Licensed Insurer) does not need to carry out any discounting for liability durations of one year or less.

3.3.6 Where a DFHC (Licensed Insurer) carries out discounting for general insurance business, it must use the same discount rates that would have been applicable for life business (except that the adjustments mentioned in sub-section 3.4 shall not apply).

3.4 Adjustments to risk-free discount rates

3.4.1 For the purposes of sub-section 3.3—

a) in the case of an insurer licensed in Singapore that belongs to an FHC Group and that writes direct life business or life reinsurance business, a DFHC (Licensed Insurer) in the FHC group may apply a positive adjustment in the form of a Matching Adjustment ("MA"), and must apply a positive adjustment in the form of an Illiquidity Premium ("IP"), to the spot risk-free discount rates, in accordance with MAS Notice 133;

b) in the case of an FIE that belongs to an FHC group, if a DFHC (Licensed Insurer) in the FHC group wishes to apply a MA or IP to the spot risk-free discount rates, it must apply in writing to the Authority and obtain the Authority's approval.

<u>Applicability of MA and IP</u>

3.4.2 Subject to the approval from the Authority in paragraph 3.4.1b) and paragraph 3.4.3—

a) a DFHC (Licensed Insurer) may apply a MA for an FIE in the FHC group where all the conditions in the first column of Table 3A are satisfied; and

b) a DFHC (Licensed Insurer) may apply an IP for an FIE in the FHC group where all the conditions in the second column of Table 3A are satisfied, unless a MA has been applied.

<u>Table 3A: Applicability of MA and IP</u>

	First column	*Second column*
	MA	**IP**
(a) Applicable Type of Insurers or Business	Life business written by a direct life insurer in the FHC group	Life business written by a direct life insurer and reinsurer in the FHC group
(b) Applicable Currencies	Liabilities denominated in SGD or USD	

	First column	*Second column*
	MA	**IP**
(c) Applicable Products	All products that meet the eligibility criteria specified by the Authority, with the exception of investment-linked policies ("ILPs")	For direct life business, non-ILPs which are whole life, endowment, or annuity products For life reinsurance business, IPs shall only apply for reinsurance arrangements which exhibit similar characteristics as the direct life insurance products eligible for IP
(d) Applicable Insurance Businesses	Participating business and Non-participating business	

Guidelines:

3.3. Eligibility criteria for the application of a MA on a product may include ensuring that the liabilities of the product pass a predictability test in response to insurance shocks, having sufficient eligible assets to meet cash flow matching requirement, and explicitly identifying and separately managing the assets in a MA portfolio.

3.4.3 Where a DFHC (Licensed Insurer) applies a MA or IP to the spot risk-free discount rate used for the purpose of valuing a product written by an FIE in the FHC group, a DFHC (Licensed Insurer) may apply either the MA or IP, but must not apply both a MA and IP at the same time.

4 GROUP TOTAL RISK REQUIREMENT

4.1 Calculation of total risk requirement of the FHC group ("Group TRR")

4.1.1 The total risk requirement of an FHC group arising from assets and liabilities of the FHC group must be calculated in accordance with this Notice and comprise the following components:

a) Component 1 (C1) requirement relating to insurance risks of the FHC group's life and general businesses;

b) Component 2 (C2) requirement relating to market risks, credit risks and risks arising from the mismatch, in terms of interest rate sensitivity and currency exposure, of the assets and liabilities of the FHC group;

c) the risk requirement relating to operational risk of the insurance business as described in this Notice; and

d) the risk requirement relating to that of any non-insurance entity included in the calculation of the capital adequacy requirement (based on section 2.4 of this Notice).

4.1.2 The total risk requirement of an FHC group is the aggregate of the total risk requirement of every entity that belongs to the FHC group and is included in the calculation of the capital adequacy requirement based on section 2.4 of this Notice.

4.1.3 In the case of an insurance group entity that belongs to an FHC group that is a licensed insurer incorporated in Singapore, in determining the total risk requirement arising from assets and liabilities of an insurer that does not belong to any insurance fund established and maintained by the insurer under the Insurance Act, a DFHC (Licensed Insurer) in the FHC group must determine the value of such assets and liabilities (including that arising from insurance business) in accordance with Parts IV and V of the Insurance (Valuation and Capital) Regulations 2004.

4.1.4 In the case of an insurance group entity that belongs to an FHC group that is an FIE, a holding company or a designated financial holding company, in determining the total risk requirement arising from assets and liabilities of these entities that do not belong to any insurance business, a DFHC (Licensed Insurer) in the FHC group must determine the value of such assets and liabilities in accordance with Section 3 of this Notice.

4.1.5 A DFHC (Licensed Insurer) must determine the total risk requirement:

a) for each of its non-diversifiable portfolios; and

b) at the group level of its FHC group.

4.1.6 A DFHC (Licensed Insurer) must calculate its diversified C1 and C2 requirements for:

a) each of its non-diversifiable portfolios; and

b) the rest of the businesses that belongs to its FHC group, except for any entity within the FHC group where the Authority has specified in writing that the risk requirement of the entity is to be determined based on the capital requirement imposed on it under the laws of the jurisdiction which the entity operates in,

as follows:

$$\boxed{Diversified\ C1\ and\ C2\ requirements = \sqrt{C1^2 + C2^2}}$$

where

- C1 denotes C1 Insurance Risk Requirement as set out in sub-section 4.2
- C2 denotes C2 Asset Risk Requirement as set out in sub-section 4.3

4.1.7 For the purposes of paragraphs 4.1.5 and 4.1.6, a DFHC (Licensed Insurer) must treat the following, where applicable, as a non-diversifiable portfolio –

a) each participating business;

b) each MA portfolio; and

c) any other portfolio of businesses where the capital is not fungible beyond that of the portfolio itself.

<u>Guidelines:</u>

4.1 Refer to Guidelines 5.2 for examples of circumstances where capital of a portfolio of businesses may not be fungible (as given in the Insurance Core Principles' guidance).

4.1.8 A DFHC (Licensed Insurer) must calculate the total risk requirement by aggregating the total risk requirement of all non-diversifiable portfolios, the rest of the businesses in its FHC group as stated in sub-paragraph 4.1.6b) and operational risk requirement of the FHC group, as follows:

$$\boxed{TRR = \sum_i \sqrt{C1^2 + C2^2} + ORR}$$

where

- $\sqrt{C1^2 + C2^2}$ is calculated according to paragraph 4.1.6 for each non-diversifiable portfolio i where i = 1, 2, 3...
- ORR denotes Operational Risk Requirement as set out in sub-section 4.4

<u>Guidelines:</u>

4.2 A schematic diagram of all relevant risk requirements under C1, C2 and ORR are summarised in ***Appendix 4-I.***

4.1.9 Subject to paragraph 4.3.1.5, a DFHC (Licensed Insurer) must calculate the Group TRR by aggregating –

a) the total risk requirement calculated in accordance with paragraph 4.1.8; and

b) the risk requirement relating to that of any non-insurance entity included in the calculation of the capital adequacy requirement.

4.1.10 In the calculation of the Group TRR, a DFHC (Licensed Insurer) must not include the following items:

a) Subject to paragraph 4.3.1.8, in the case of an investment-linked business, the part of the business relating to the unit reserves of the policies of the business, except for the determination of the operational risk requirement; and

b) the C2 requirements arising from reinsurers' share of policy liabilities, premium liabilities and claim liabilities respectively.

4.1.11 A DFHC (Licensed Insurer) must value the contribution to the total risk requirement of any asset excluded from the financial resources of its FHC group as zero. To avoid doubt, a DFHC (Licensed Insurer) must exclude from the calculation of C2 requirement, any asset or part of an asset that causes an FHC group's adjustment for asset concentration, as defined in section F of **Appendix 5E**, to increase.

Guidelines:

4.3 For schematic view of how the total risk requirement are calculated for a DFHC (Licensed Insurer)'s FHC group, refer to ***Appendix 4-II****. For schematic views of how the C1 and C2 requirements are aggregated, refer to* ***Appendices 4-III and 4-IV*** *respectively****.***

4.2 C1 Requirement

4.2.1 Subject to paragraph 4.2.35 and 4.2.36, a DFHC (Licensed Insurer) must determine the C1 requirement in paragraph 4.1.6 in the following manner:

a) in respect of the life business belonging to its FHC group, the DFHC (Licensed Insurer) must determine the C1 requirement in the manner as provided in paragraphs 4.2.2 to 4.2.26; and

b) in respect of the general business belonging to its FHC group, the DFHC (Licensed Insurer) must determine the C1 requirement in the manner as provided in paragraphs 4.2.27 to 4.2.32; and

c) where the insurance business of the FHC group comprises both life and general business, the DFHC (Licensed Insurer) must ensure that the C1 requirement takes into account the diversification benefits allowed between the life and general business as provided in paragraphs 4.2.33 to 4.2.34.

C1 Requirement – Life Business

4.2.2 A DFHC (Licensed Insurer) must calculate the C1 requirement in respect of life business as the policy liability risk requirement, and must calculate the policy liability risk requirement in accordance with paragraph 4.2.3.

4.2.3 Subject to paragraph 4.2.4, a DFHC (Licensed Insurer) must calculate the policy liability risk requirement in respect of life business in accordance with paragraph 4.2.5 below.

4.2.4 Where there is a non-diversifiable portfolio, a DFHC (Licensed Insurer) must calculate the policy liability risk requirement for each non-diversifiable portfolio separately, in accordance with paragraph 4.2.5 below.

4.2.5 A DFHC (Licensed Insurer) must calculate the policy liability risk requirement of—

a) the life business of its FHC group (excluding any non-diversifiable portfolio); and

b) a non-diversifiable portfolio—

as the higher of—

c) the difference between –

(i) diversified C1 requirement for life business calculated according to paragraphs 4.2.16 to 4.2.26; and

(ii) any provision made for any adverse deviation ("PAD") from the expected experience in respect of policies of the business, where —

(A) PAD must be determined—

(AA) in the case of an insurance group entity in the FHC group that is a licensed insurer in Singapore, in the same manner in which liability (net of reinsurance) is determined under regulation 20(1) of the Insurance (Valuation and Capital) Regulations 2004, in the case of a non-participating policy, and regulation 20(2) of the Insurance (Valuation and Capital) Regulations 2004, in the case of an investment-linked policy; and

(AB) in the case of an insurance group entity in the FHC group that is an FIE, in the same manner in which liability (net of reinsurance) is determined under paragraph 1(1) of **Appendix 3A-1** of this Notice, in the case of a non-participating policy, and paragraph 1(2) of **Appendix 3A-1** of this Notice, in the case of an investment-linked policy; and

(B) PAD must be determined in the manner consistent with the minimum condition liability of the business, in the case of a participating policy; and

d) zero.

<u>Guidelines:</u>

*4.4 For guidelines on determining PAD, refer to **Appendix 3A-3**.*

Homogeneous Risk Grouping

4.2.6 A DFHC (Licensed Insurer) may group policies into homogeneous risk groups ("HRGs") for the purpose of calculating C1 requirement for life business in accordance with paragraphs 4.2.16 to 4.2.26, instead of performing the calculations at each policy level.

4.2.7 For the purposes of paragraph 4.2.6, a HRG refers to a collection of policies with similar risk characteristics, where the risks refer to the risks covered under C1 requirement for life business.

4.2.8 A DFHC (Licensed Insurer) must consider the appropriate manner to group policies into HRGs and must exercise prudence in respect of the granularity of policy groupings.

<u>Guidelines:</u>

4.5 HRGs are expected to be reasonably stable over time, and not give rise to material change in C1 requirement between reporting periods.

4.6 The more homogeneous the policy groupings, the lesser the extent of offsetting effects between policies for any particular risk. A DFHC (Licensed Insurer) should ensure that the majority of policies within the same HRG is susceptible to the same direction of C1 shocks such that the extent of offsetting effects between policies in the HRG is not material.

4.2.9 In grouping the policies into HRGs, the DFHC (Licensed Insurer) must at the minimum, consider the following factors:

- Underwriting policy
- Risk profile of policyholders
- Product features, in particular guarantees
- Future management actions

4.2.10 A DFHC (Licensed Insurer) must group policies that are more susceptible to mortality risks separately from those which are more prone to longevity risks.

<u>Guidelines:</u>

4.7 Policies with high death benefits that are more susceptible to mortality risks should be grouped separately from policies such as annuities, long-term care policies, policies with high survival benefits that are more susceptible to longevity risks.

4.2.11 A DFHC (Licensed Insurer) must assess the lapse behavior and risks of every policy based on its product features and group policies with similar lapse behavior and risks together.

Guidelines:

4.8 Policies with more guarantees may be at a greater risk of having lower than expected lapse rates, while policies with high surrender benefits may face greater risk when there are higher than expected lapse rates. Policies expected to have different lapse behaviour and risks should be grouped separately.

4.2.12 A DFHC (Licensed Insurer) must not-

a) group policies belonging to different entities within its FHC group into the same HRG; and

b) group policies belonging to different non-diversifiable portfolios into the same HRG.

4.2.13 In the case of an insurance group entity belonging to an FHC group where the insurance group entity is an insurer licensed in Singapore, a DFHC (Licensed Insurer) in the FHC group must group policies in accordance with the methodology the insurer has adopted for purposes of complying with MAS Notice 133.

4.2.14 To avoid doubt, a DFHC (Licensed Insurer) must continue to perform the valuation of liability at each policy level. The DFHC (Licensed Insurer) must only group policies into HRGs for the sole purpose of computation of C1 requirement in paragraphs 4.2.16 to 4.2.26.

Guidelines:

4.9 Below illustrates an example of computing risk requirement for a particular C1 life insurance risk for a HRG:

Assuming there are only 4 policies in a HRG:

A HRG	Liability value before the application of prescribed shock for a life insurance risk	Liability value after the application of prescribed shock for a life insurance risk	Change in liability value
	Column A	Column B	[B] – [A]
Policy 1	100	120	20
Policy 2	80	95	15
Policy 3	120	115	-5
Policy 4	100	120	20
Total	**400**	**450**	**50**

Risk requirement for the particular C1 life insurance risk for the above HRG is 50. If there is no HRG concept, the risk requirement would be 55.

4.2.15 A DFHC (Licensed Insurer) must review the appropriateness of the basis on which policies are grouped into HRGs regularly and at least once a year.

Diversified C1 requirement for life business

4.2.16 To derive the diversified C1 requirement in respect of life business (where the diversified C1 requirement must be determined separately for each non-diversifiable portfolio), a DFHC (Licensed Insurer) must first determine the following for each HRG:

a) the life insurance risk requirements for all of the following life insurance risks:

(i) Mortality

(ii) Longevity

(iii) Disability

(iv) Dread disease

(v) Other insured events (Accident & Health)

(vi) Expense

(vii) Conversion of options,

in accordance with paragraph 4.2.17;

b) the life insurance risk requirement for lapse risk, in accordance with paragraph 4.2.19;

c) the life insurance risk requirement for insurance catastrophe risk, in accordance with paragraph 4.2.22.

Life insurance risks (excluding lapse risk and catastrophe risk)

4.2.17 For each of the life insurance risks mentioned in paragraph 4.2.16a), a DFHC (Licensed Insurer) must calculate the risk requirement for a HRG as –

a) the difference between –

(i) the sum of the liability of the policies within the HRG after applying the prescribed shock in accordance with Table 4A below, net of reinsurance; and

(ii) the sum of the liability of the policies within the HRG before applying the prescribed shock, net of reinsurance; or

b) zero,

whichever is higher.

4.2.18 For the purposes of paragraph 4.2.17a),

a) a DFHC (Licensed Insurer) must determine liability in the following manner:

(i) For a non-participating policy (except for a UL policy) and investment-linked policy,

(A) in the case of a licensed insurer in Singapore belonging to an FHC Group, a DFHC (Licensed Insurer) in the FHC Group must determine liability in the same manner in which liability (net of reinsurance) is determined under regulation 20(1) and 20(2) of the Insurance (Valuation and Capital) Regulations 2004 respectively, but must not include any PAD;

(B) in the case of an FIE belonging to an FHC Group, a DFHC (Licensed Insurer) in the FHC Group must determine liability in the same manner in which liability (net of reinsurance) is determined under paragraph 1(1) and 1(2) of **Appendix 3A-1** of this Notice respectively, but must not include any PAD;

(ii) For an investment-linked policy, a DFHC (Licensed Insurer) must not include the unit reserves;

(iii) For a participating policy, a DFHC (Licensed Insurer) must determine liability in the same manner in which minimum condition liability is determined but must not include any PAD;

(iv) In the case of a UL policy, a DFHC (Licensed Insurer) must determine liability as the liability for guaranteed benefits but must not include any PAD, and must determine liability–

(A) in the case of a licensed insurer in Singapore in the FHC Group, in accordance with regulation 20(4) of the Insurance (Valuation and Capital) Regulations 2004;

(B) in the case of an FIE in the FHC Group, in accordance with paragraph 1(4) of **Appendix 3A-1** of the Notice; and

(v) a DFHC (Licensed Insurer) must determine the risk-free discount rates in accordance with **Appendix 3C** of this Notice and must include any adjustment for IP or MA where applicable.

b) a DFHC (Licensed Insurer) must determine prescribed shock as an increase of x% to the best estimate assumption of the life insurance risk used in deriving the liability in paragraph 4.2.17a),where x% is as follows:

<u>Table 4A: Risk requirements for life insurance risks (excluding lapse risk and catastrophe risk)</u>

Life insurance risks	X%
Mortality	+20% to best estimate mortality rates where the payment of benefits is contingent on mortality risk
Longevity	-25% to best estimate mortality rates where the payment of benefits is contingent on longevity risk
Disability	+20% to best estimate disability rates where the payment of benefits is contingent on disability risk
Dread Disease	+40% to best estimate rates during periods <u>where premium rates are guaranteed</u> and where the payment of benefits is contingent on dread disease risk; +30% to best estimate rates during periods <u>where premium rates are not guaranteed</u>, and where the payment of benefits is contingent on dread disease risk.

	For limited pay policy where premium payment term is shorter than the full term of the policy, a DFHC (Licensed Insurer) must apply the +40% shock where the premium payment term has ended as there are no further premium receipts after that.
Other Insured Events (Accident & Health)	+40% to best estimate rates during periods <u>where premium rates are guaranteed</u> and +30% to best estimate rates during periods <u>where premium rates are not guaranteed</u>
Expense	+20% in first year and +10% thereafter to the insurance group entity's best estimate assumptions for expenses (including expense inflation)
Conversion of Options	+50% on best estimate conversion rates (for options provided to the policy owner) or -50% on best estimate conversion rates, whichever produces a higher liability

Lapse risk

4.2.19 For lapse risk stated in paragraph 4.2.16b), a DFHC (Licensed Insurer) must determine the risk requirement for a HRG as–

a) The highest of the following amounts:

(i) the difference between –

A. the sum of the liability of the policies within the HRG after applying the prescribed shock of an increase of 50% to the best estimate assumption for lapse risk used in deriving the liability, net of reinsurance; and

B. the sum of the liability of the policies within the HRG before applying the prescribed shock, net of reinsurance;

(ii) the difference between –

A. the sum of the liability of the policies within the HRG after applying the prescribed shock of a decrease of 50% to the best estimate assumption for lapse risk used in deriving the liability, net of reinsurance; and

B. the sum of the liability of the policies within the HRG before applying the prescribed shock, net of reinsurance;

(iii) mass lapse risk requirement that is to be calculated for all policies which provide cash value upon surrender in the following manner:

A. for policies belonging to individual life business, the following formula shall apply -

an immediate surrender of 30% of policies such that the mass lapse risk requirement is 30% X Maximum [(aggregate surrender value less policy liability of the policies in the HRG), 0]; and

B. for policies belonging to group life business the following formula shall apply -

an immediate surrender of 50% of policies such that the mass lapse risk requirement is 50% X Maximum [(aggregate surrender value less policy liability of the policies in the HRG), 0]; or

b) zero,

whichever is higher.

4.2.20 For the purposes of paragraph 4.2.19a)(iii), a DFHC (Licensed Insurer) must determine policy liability (net of reinsurance)-

a) in the case of a licensed insurer in Singapore in the FHC Group, in accordance with regulation 20 of the Insurance (Valuation and Capital) Regulations 2004; and

b) in the case of an FIE in the FHC Group, in accordance with paragraph 1 of **Appendix 3A-1** of this Notice.

Guidelines:

4.10 Lapse risk is the risk of loss or change in liabilities due to a change in the expected exercise rates of policyholder options. This risk takes into account all legal and contractual policyholder contractual options which can significantly change the value of future cash flows.

Lapse risk includes options to fully or partly terminate, surrender, renew, extend, reduce or increase insurance coverage as well as reduction or suspension of premium payments and changes in take up options such as annuitisation options.

As such, a DFHC (Licensed Insurer) should consider the type of options for the upward shock or downward shock in paragraphs 4.2.19a)(i) and (ii) appropriately. For example, where the option allows for an increase in insurance cover (e.g. extension of cover), the +50% should be applied to the rate that would apply if the option is not taken up under the upward shock scenario. As a rule of thumb, the +50% shock is meant to be applied in a manner that increases lapses and the -50% is meant to be applied in a manner that decreases lapses.

4.2.21 For the purposes of paragraphs 4.2.19a)(i) and (ii), a DFHC (Licensed Insurer) must determine liability in the following manner:

a) For a non-participating policy and investment-linked policy,

(i) in the case of a licensed insurer in Singapore, a DFHC (Licensed Insurer) must determine liability in the same manner liability (net of reinsurance) is determined under regulation 20(1) and 20(2) of the Insurance (Valuation and Capital) Regulations 2004 respectively, but must not include any PAD;

(ii) in the case of an FIE, a DFHC (Licensed Insurer) must determine liability in the same manner in which liability (net of reinsurance) is determined under paragraph 1(1) and 1(2) of **Appendix 3A-1** of this Notice respectively, but must not include any PAD;

b) For an investment-linked policy, a DFHC (Licensed Insurer) must not include the unit reserves;

c) For a participating policy, a DFHC (Licensed Insurer) must determine liability in the manner minimum condition liability is determined but must not include any PAD;

d) In the case of a UL policy, a DFHC (Licensed Insurer) must determine liability as the liability for guaranteed benefits but must not include any PAD, and must determine liability-

(i) in the case of a licensed insurer in Singapore in the FHC Group, in accordance with regulation 20(4) of the Insurance (Valuation and Capital) Regulations 2004;

(ii) in the case of an FIE in the FHC Group, in accordance with paragraph 1(4) of **Appendix 3A-1** of this Notice; and

e) a DFHC (Licensed Insurer) must determine the risk-free discount rates in accordance with **Appendix 3C** of this Notice and must include any adjustment for IP or MA where applicable.

Life insurance catastrophe risk

4.2.22 For insurance catastrophe risk stated in paragraph 4.2.16c), a DFHC (Licensed Insurer) shall apply this to policies which are contingent on mortality risk and a DFHC (Licensed Insurer) must calculate the risk requirement for a HRG as –

a) the difference between –

(i) the total death benefit payable after applying the prescribed shock of an absolute increase in the rate of policyholders dying over the following year of 1 per 1000; and

(ii) any reduction in policy liability due to lesser number of policies remaining within the HRG after the prescribed shock in sub-paragraph (i) above, or

b) zero,

whichever is higher.

4.2.23 For the purposes of calculating insurance catastrophe risk requirement in paragraph 4.2.22, a DFHC (Licensed Insurer) must take into account the effect of reinsurance where applicable.

<u>Guidelines:</u>

4.11 Where it is appropriate, a DFHC (Licensed Insurer) should account for outstanding incurred claims and incurred but not reported ("IBNR") claims ("claim liabilities") in determining the liability of a policy in its life business. If there is risk of uncertainty in the best estimate value of the claim liabilities, the DFHC (Licensed Insurer) should *include such risks in the calculation of C1 requirement. The prescribed shocks to apply depend on the type of risks involved. For instance, if there is uncertainty in future expenses expected in settling the claims (that form part of the claim liabilities), the DFHC (Licensed Insurer) should apply the prescribed shocks for expense in determining the amount of C1 requirement.*

Other requirements

4.2.24 Subject to paragraph 4.2.25 below, a DFHC (Licensed Insurer) must sum up the risk requirements for each life insurance risk mentioned in paragraph 4.2.16a) to c) across the HRGs.

4.2.25 Where there is a non-diversifiable portfolio such as a MA portfolio or a participating business, a DFHC (Licensed Insurer) must ensure that the benefits of diversification for each non-diversifiable portfolio is limited to diversification within the non-diversifiable portfolio only. Hence, for the purposes of paragraph 4.2.24 above, a DFHC (Licensed Insurer) must sum up the risk requirements for each life insurance risk mentioned in paragraph 4.2.16a) to c) separately for each non-diversifiable portfolio and must not include the risk requirements of the HRGs formed outside the non-diversifiable portfolio.

4.2.26 A DFHC (Licensed Insurer) must calculate the diversified C1 requirement for life business (excluding the non-diversifiable portfolios) and for each non-diversifiable portfolio as follows–

$$\sqrt{\sum CorrLife_{r,c} \times Life_{r} \times Life_{c}}$$

where

$CorrLife_{r,c}$= the entries of the correlation matrix in Table 4B below; and

$Life_r$, $Life_c$= Risk Requirement for each life insurance risk, calculated based on paragraph 4.2.16, according to the rows and columns of correlation matrix in Table 4B below

<u>Table 4B: Correlation matrix to derive the diversified C1 requirement for life business</u>

	Mortality	Longevity	Disability	Morbidity	Other Insured Event	Catastrophe	Expense	Lapse	Conversion of Options
Mortality	1	-0.25	0.25	0.50	0.50	0.25	0.25	0.00	0.00
Longevity	-0.25	1	0.00	0.25	0.25	0.00	0.25	0.25	0.25
Disability	0.25	0.00	1	0.50	0.50	0.25	0.50	0.00	0.00
Morbidity	0.50	0.25	0.50	1	0.50	0.50	0.50	0.00	0.00
Other Insured Event	0.50	0.25	0.50	0.50	1	0.75	0.50	0.00	0.00
Catastrophe	0.25	0.00	0.25	0.50	0.75	1	0.25	0.25	0.25
Expense	0.25	0.25	0.50	0.50	0.50	0.25	1	0.50	0.50
Lapse	0.00	0.25	0.00	0.00	0.00	0.25	0.50	1	0.00
Conversion of Options	0.00	0.25	0.00	0.00	0.00	0.25	0.50	0.00	1

<u>Guidelines:</u>

4.12 Example of calculating diversified C1 requirement for life business:

Assuming there is one non-diversifiable portfolio in the life business of an FHC group, and for simplicity, there are only two insurance risks (mortality and expense). Strictly for illustration purpose, it is assumed there are 2 HRGs within the non-diversifiable portfolio (HRG A and HRG B) and 2 HRGs within the rest of the life business (HRG C and HRG D).

<u>Rest of the life business</u>
HRG C
HRG D

<u>MA portfolio</u>
HRG A
HRG B

<u>For the non-diversifiable portfolio,</u>

$Life_{mortality}$ for HRG A =55, $Life_{mortality}$ for HRG B = 45

Hence, $Life_{mortality}$ for the non-diversifiable portfolio = 55 + 45 = 100, where $Life_{mortality}$ is the mortality risk requirement for life business.

$Life_{expense}$ for HRG A =20, $Life_{expense}$ for HRG B = 15

Hence, $Life_{expense}$ for the non-diversifiable portfolio = 20 + 15 = 35, where $Life_{expense}$ is the expense risk requirement for life business.

Diversified C1 requirement for the non-diversifiable portfolio = $\sqrt{100^2 + 2 \times (0.25 \times 100 \times 35) + 35^2} = 113.91$

<u>For the rest of the life business, excluding the non-diversifiable portfolio:</u>
$Life_{mortality}$ for HRG C =120, $Life_{mortality}$ for HRG D = 60
Hence, $Life_{mortality}$ for the life business excluding the non-diversifiable portfolio = 120 + 60 = 180, where $Life_{mortality}$ is the mortality risk requirement for life business.
$Life_{expense}$ for HRG C =40, $Life_{expense}$ for HRG D = 25
Hence, $Life_{expense}$ for the life business excluding the non-diversifiable portfolio = 40 + 25 = 65, where $Life_{expense}$ is the expense risk requirement for life business.

Diversified C1 requirement for the life business excluding the non-diversifiable portfolio
$= \sqrt{180^2 + 2 \times (0.25 \times 180 \times 65) + 65^2} = 206.09$

<u>C1 Requirement - General Business</u>

4.2.27 A DFHC (Licensed Insurer) must calculate the C1 requirement in respect of general business as the sum of —

a) premium liability risk requirement calculated in accordance with paragraphs 4.2.28 and 4.2.29; and

b) claim liability risk requirement calculated in accordance with paragraphs 4.2.30 and 4.2.31.

<u>Guidelines:</u>

4.13 The general insurance catastrophe risk requirement is currently being calibrated by an industry workgroup and will be incorporated within the computation of the C1 requirement when finalised.

4.2.28 For each volatility category, a DFHC (Licensed Insurer) must calculate the premium liability risk requirement for that category as —

a) the product of —

(i) the premium liability risk factor for that volatility category set out in **Appendix 4A**; and

(ii) the unexpired risk reserves (net of reinsurance) relating to that volatility category determined in the manner provided in –

(A) regulation 19(1)(a)(ii) of the Insurance (Valuation and Capital) Regulations 2004 in the case of a licensed insurer in Singapore, and

(B) paragraph 1(1)a)(ii) of **Appendix 3B-1** of this Notice in the case of an FIE,

less the premium liability (net of reinsurance) relating to that volatility category; or

b) zero,

whichever is higher.

4.2.29 A DFHC (Licensed Insurer) must calculate the premium liability risk requirement of the insurance business as the aggregate of the premium liability risk requirements for each volatility category.

4.2.30 For each volatility category, a DFHC (Licensed Insurer) must calculate the claim liability risk requirement for that category as —

a) the product of —

(i) the claim liability risk factor for that volatility category set out in **Appendix 4A**; and

(ii) the claim liabilities (net of reinsurance) relating to that volatility category determined in the manner provided-

(A) in the case of a licensed insurer in Singapore, in regulation 19(1)(b) of the Insurance (Valuation and Capital) Regulations 2004; and

(B) in the case of an FIE, in paragraph 1(1)b) of **Appendix 3B-1** of this Notice,

excluding such claim liabilities (net of reinsurance) arising from any policy which the maximum loss that may be incurred under the policy is already provided for,

less the claim liabilities (net of reinsurance) relating to that volatility category (excluding such claim liabilities (net of reinsurance) arising from any policy which the maximum loss that may be incurred under the policy is already provided for); or

b) zero,

whichever is higher.

4.2.31 A DFHC (Licensed Insurer) must calculate the claim liability risk requirement of the general business as the aggregate of the claim liability risk requirement for each volatility category.

4.2.32 For the purposes of paragraphs 4.2.28 to 4.2.31, "volatility category" refers to the grouping of business lines in accordance with Tables 2 and 3 of **Appendix 4A**, or any other grouping that the Authority may allow in respect of any entity within the FHC group.

Diversification of C1 Requirement between Life and General Business

4.2.33 Subject to paragraph 4.2.34, a DFHC (Licensed Insurer) must recognise diversification benefits when summing the C1 requirement for life and general (excluding Accident and Health) business where the insurance group entities in its FHC group carry on both life business and general business, whether –

a) the life business is carried on by an insurance group entity while the general business is carried on by another insurance group entity; or

b) both these businesses are carried on by the same insurance group entity.

A DFHC (Licensed Insurer) must calculate the C1 requirement for both life and general business, taking into account of diversification, as follows:

$$\sqrt{C1_{life}^2 + C1_{general\ excluding\ A\&H}^2} + C1_{general\ (A\&H\ only)}$$

where $C1_{life}$ is the C1 requirement for life business determined in the manner provided for in paragraphs 4.2.2 to 4.2.26;

$(C1_{general\ excluding\ A\&H})$ is the C1 requirement for general business excluding accident and health business determined in the manner provided for in paragraphs 4.2.27 to 4.2.32;

$(C1_{general\ (A\&H\ only)})$ is the C1 requirement for general business for accident and health business only determined in the manner provided for in paragraphs 4.2.27 to 4.2.32.

4.2.34 A DFHC (Licensed Insurer) may diversify the C1 requirement for life business with the C1 requirement for general business if capital is fungible between the life and general businesses of the insurance group entities in its FHC group. To avoid doubt, a DFHC (Licensed Insurer) must not diversify the C1 requirement for non-diversifiable portfolios with the C1 requirement of other businesses.

Alternative method of calculating C1

4.2.35 A DFHC (Licensed Insurer) may use any alternative method to calculate the C1 requirement provided that the method results in a C1 requirement which is no less than that determined in the manner provided in the Notice and in such a case, the Authority may require the DFHC (Licensed Insurer) to provide documentary evidence of that fact.

4.2.36 A DFHC (Licensed Insurer) who wishes to replace the factors set out in paragraphs 4.2.18, 4.2.19, 4.2.22, 4.2.28, 4.2.30 of this Notice used for computing one or more of the risk requirements with factors recalibrated by the DFHC (Licensed Insurer) (hereby referred to as the “modified risk factors”), must apply in writing to the Authority for approval of use of modified risk factors in accordance with Annex A of **Appendix 4O**, and must comply with the governance requirements and submission requirements set out in Annex B and Annex C of **Appendix 4O** respectively.

4.3 C2 Requirement

4.3.1 A DFHC (Licensed Insurer) must determine the C2 requirements of the assets and liabilities belonging to the DFHC (Licensed Insurer)'s FHC group in the following manner:

4.3.1.1 A DFHC (Licensed Insurer) must use the following formula to derive the diversified C2 requirements:

$$C2 = C2_{misc} + \sqrt{C2_{market}^2 + C2_{default}^2 + 2 \times Corr_{m,d} \times C2_{market} \times C2_{default}}$$

where

$Corr_{m,d}$ = 0.5

$C2_{market}$ = Market-related C2 requirements (described below)

$C2_{default}$ = C2 Counterparty Default risk requirement

$C2_{misc}$ = C2 Miscellaneous risk requirement

4.3.1.2 For the purposes of paragraph 4.3.1.1, market-related C2 requirements refer to all of the following:

- Equity investment risk requirement
- Interest rate mismatch risk requirement
- Credit spread risk requirement
- Property investment risk
- Foreign currency mismatch risk requirement

4.3.1.3 Subject to paragraph 4.3.1.12 and 4.3.9, a DFHC (Licensed Insurer) must calculate the C2 requirement for the following risk requirements in accordance with the respective sub-sections:

a) the equity investment risk requirement calculated in accordance with sub-section 4.3.2;

b) the interest rate mismatch risk requirement calculated in accordance with sub-section 4.3.3;

c) the credit spread risk requirement calculated in accordance with sub-section 4.3.3;

d) the property investment risk requirement calculated in accordance with sub-section 4.3.4;

e) the foreign currency mismatch risk requirement calculated in accordance with sub-section 4.3.5;

f) the counterparty default risk requirement calculated in accordance with sub-section 4.3.6;

g) the miscellaneous risk requirement calculated in accordance with sub-section 4.3.7.

4.3.1.4 A DFHC (Licensed Insurer) must derive market-related C2 requirements using the following formula:

$$C2_{market} = \sqrt{\sum Corr_{i,j} \times Market_i \times Market_j}$$

where

$Corr_{i,I}$ = the correlation parameter for market risk sub-modules i and j

$Market_i$, $Market_j$ = Risk requirements for market risk sub-modules i and j respectively.

a) Where a DFHC (Licensed Insurer) determines the interest rate mismatch risk requirement using the upward interest rate scenario, the DFHC (Licensed Insurer) must use a value of $Corr_{i,i}$ that is equal to the value set out in row i and in column j of the following correlation matrix in Table 4C-I:

<u>Table 4C-I: Correlation matrix to derive the diversified market-related C2 requirement in an upward interest rate scenario</u>

Row i/ Column j	Equity	Interest Rate	Credit Spread	Property	FX Mismatch
Equity	1	0.1	0.8	0.8	0.1
Interest Rate	0.1	1	0.1	0.1	0.1
Credit Spread	0.8	0.1	1	0.5	0.1
Property	0.8	0.1	0.5	1	0.1
FX Mismatch	0.1	0.1	0.1	0.1	1

b) Where a DFHC (Licensed Insurer) determines the interest rate mismatch risk requirement using the downward interest rate scenario, a DFHC (Licensed Insurer) must use a value of $Corr_{i,i}$ that is equal to the value set out in row i and in column j of the following correlation matrix in Table 4C-II:

Table 4C-II: Correlation matrix to derive the diversified market-related C2 requirement in a downward interest rate scenario

Row i/ Column j	Equity	Interest Rate	Credit Spread	Property	FX Mismatch
Equity	1	0.5	0.8	0.8	0.1
Interest Rate	0.5	1	0.5	0.25	0.1
Credit Spread	0.8	0.5	1	0.5	0.1
Property	0.8	0.25	0.5	1	0.1
FX Mismatch	0.1	0.1	0.1	0.1	1

4.3.1.5 A DFHC (Licensed Insurer) must recognise interest rate mismatch diversification benefits across insurance and other businesses of a DFHC (Licensed Insurer)'s FHC group (other than the non-diversifiable portfolios such as participating business, or MA portfolios) when calculating the interest rate mismatch risk requirement for all insurance group entities in its FHC group which are in the same jurisdiction . That is, a DFHC (Licensed Insurer) must first determine a "dominant scenario" for the entities in the same jurisdiction as a whole, this scenario being either the upward or the downward scenario, which results in the higher aggregated loss across all entities (excluding the non-diversifiable portfolios). For the non-diversifiable portfolios, a DFHC (Licensed Insurer) must determine the dominant interest rate scenario for each non-diversifiable portfolio separately.

4.3.1.5A For the purposes of paragraphs 4.3.1.4a) and 4.3.1.4b), a DFHC (Licensed Insurer) must determine the correlation matrix to derive the diversified market-related C2 requirement for its FHC group (excluding the non-diversifiable portfolios) based on the interest rate scenario (being either the upward or the downward scenario) that results in the highest aggregated interest rate mismatch risk requirement for the DFHC (Licensed Insurer)'s FHC group.

Guidelines:

4.14 Below illustrates an example of computing interest rate mismatch risk requirement for an FHC group.

Assuming there is one Singapore insurer and FIEs in two other jurisdictions.

	Singapore Insurer		FIEs in Jurisdiction A		FIEs in Jurisdiction B	
	Participating Business	Excluding Participating Business	Participating Business	Excluding Participating Business	Participating Business	Excluding Participating Business
Change in Net Assets (Assets less Liabilities)						
Upward interest rate adjustments	1,500	500	1,000	(400)	500	(300)
Downward interest rate adjustments	(2,000)	(600)	(1,100)	300	(450)	200
Dominant interest rate scenario	**Downward**	**Downward**	**Downward**	**Upward**	**Downward**	**Upward**
Interest rate mismatch risk requirement	**2,000**	**600**	**1,100**	**400**	**450**	**300**

Steps:

a. Determine the interest rate mismatch risk requirement for each jurisdiction. The interest rate mismatch risk requirement for participating business and excluding participating business should be determined separately.

b. In the case of businesses excluding participating business, derive the interest rate risk requirement at the FHC group level based on a simple sum of the interest rate risk requirements determined for each jurisdiction: 600+400+300 = 1300.

c. Determine which interest rate scenario results in a higher aggregated interest rate risk requirement:

i. *Upward scenario: 400+300=700*

ii. *Downward scenario: 600*

d. Hence, it is the "<u>upward scenario</u>" in this example.Derive the market-related C2 requirement using the correlation matrix of the dominant interest rate scenario determined based on Step c above (which is "upward scenario"). To avoid doubt, the interest rate risk requirement for businesses excluding participating business is 1300 (not 700), which is to be aggregated using the correlation matrix ("upward scenario") with the other market-related risk requirements.

e. The interest rate risk requirement for each participating business should be determined separately and aggregated using the correlation matrix (based on the dominant interest rate scenario for the participating business) to derive the market-related C2 requirement for the participating business.

4.3.1.6 A DFHC (Licensed Insurer) may only diversify C2 risk requirements for a non-diversifiable portfolio within individual non-diversifiable portfolios and C2 risk requirements for a non-diversifiable portfolio must not be diversified with other parts of the DFHC (Licensed Insurer)'s FHC group's businesses.

4.3.1.7 Where there is a non-diversifiable portfolio, a DFHC (Licensed Insurer) must calculate the C2 risk requirement separately for each non-diversifiable portfolio.

4.3.1.8 A DFHC (Licensed Insurer) must take into account C2 stresses on assets backing unit reserves in the impact to the non-unit reserves.

Swap positions

4.3.1.9 A DFHC (Licensed Insurer) must deem a position in a swap as —

a) a notional long position in a forward contract or an option, on a security or an index; and

b) a notional short position in a forward contract or an option, on a security or an index,

such that the combined payouts arising from the two notional positions match the payouts arising from the swap exactly in terms of timing and amount.

4.3.1.10 Where a DFHC (Licensed Insurer) refers to an interest rate instead of a specific security in the notional position referred to in paragraph 4.3.1.9, the DFHC

(Licensed Insurer) must deem the notional position as a position in a government debt security.

Valuation of notional positions

4.3.1.11 A DFHC (Licensed Insurer) must value a notional position in a security as the current market value of the security, except in the case of a notional position derived from a warrant or a convertible security, in which event the DFHC (Licensed Insurer) must value the notional position as —

a) the sum of the current market value of the underlying share and an amount equal to any loss on conversion; or

b) the current market value of the underlying share less an amount equal to any profit on conversion, subject to a minimum value of zero.

C2 requirement for non-standard instruments

4.3.1.12 Where a DFHC (Licensed Insurer) holds a position in any security, futures contract, forward contract, foreign exchange contract or other financial asset for which no method for computation of a C2 requirement has been specified in this Notice, the DFHC (Licensed Insurer) must —

a) immediately consult the Authority; and

b) until otherwise directed by the Authority —

(i) add 100% of the current market value of the position to the miscellaneous risk requirement calculated in paragraph 4.3.7.1; or

(ii) calculate an appropriate C2 requirement for the position in the manner that the Authority may otherwise direct.

4.3.2 Equity Investment Risk Requirement

4.3.2.1 Equity Investment Risk Requirement Computation—:

a) To calculate the equity investment risk requirement, a DFHC (Licensed Insurer) must—

i) Calculate for such type of equity exposure specified in the first column of Table 4D, the product of the corresponding stress factor specified in the second column of Table 4D and the market value of each equity exposure; and

Table 4D: Stress factors to be applied to equity exposure

First column	***Second column***
Type of equity exposure	**Stress factor**
Equities listed in Developed Markets	35%
Other equities *(include equities listed in other markets, unlisted equities, including private equity and hedge funds, and commodities.)*	50%

ii) Calculate the equity investment risk requirement as the aggregate of the products calculated in sub-paragraph a) for all equities.

b) A DFHC (Licensed Insurer) must characterise debt instruments which are convertible into equity at the option of the issuer or automatically by the terms of the instruments as equity exposures. A DFHC (Licensed Insurer) must convert its equity derivative instruments into notional positions in the relevant underlying equity instruments and use the current market value of the underlying instruments to calculate its market risk capital requirement for equity position risk.

c) A DFHC (Licensed Insurer) must refer to the constituent countries or jurisdictions in MSCI's World Equity Index for countries or jurisdictions that are to be classified as Developed Markets for risk charging purposes. A DFHC (Licensed Insurer) must ensure that it is using the most up-to-date MSCI's World Index information as at the valuation date for the purpose of calculating the equity investment risk requirement.

d) A DFHC (Licensed Insurer) must refer to **Appendix 4B** for the treatment of CIS and must calculate the equity investment risk requirement for CIS in accordance with **Appendix 4B**.

e) A DFHC (Licensed Insurer) must treat investments in commodities as equity investments, and must apply the risk charge for "Other equities".

Guidelines:

4.15 The constituents of the MSCI World Index as of 30 June 2023 are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong SAR, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom and United States.

4.3.2.2 In calculating the equity investment risk requirement, a DFHC (Licensed Insurer) must include:

a) any position in an equity security;

b) any position in an equity derivative; and

c) any position in a convertible security that —

(i) has less than 30 days remaining to the first date on which conversion may take place; and

(ii) is trading at a premium of less than 10%, where "premium" means the excess of the current market value of the convertible security over the current market value of the underlying share, expressed as a percentage of the current market value of the underlying share.

4.3.2.3 In the calculation of the equity investment risk requirement, a DFHC (Licensed Insurer) must derive the position in relation to every depository receipt, warrant, convertible security or other equity derivative included —

a) in relation to a depository receipt, a warrant, a convertible security, futures on a single stock, or a forward on a single stock, as a notional position in the underlying share;

b) in relation to a future or a forward on a basket of shares or share index, as notional positions in the constituent shares of the basket of shares or share index;

c) in relation to a purchased call option or a written put option, as a notional long position in the underlying share; and

d) in relation to a purchased put option or a written call option, as a notional short position in the underlying share.

4.3.2.4 Adjustments for warrant or option

a) A DFHC (Licensed Insurer) must adjust the absolute value of the equity investment risk requirement arising from an option by deducting an amount equal to the extent to which the option is out-of-the-money, which is determined as —

(i) in the case of a call option, any positive excess of the value at which the option will be exercised (exercise value) over the current market value of the underlying share; and

(ii) in the case of a put option, any positive excess of the current market value of the underlying share over the exercise value, but the adjusted absolute value of the equity investment risk requirement arising from the option must not exceed the current market value of the option and in any case no less than zero.

b) A DFHC (Licensed Insurer) must restrict the absolute value of the equity investment risk requirement arising from a warrant to the current market value of the warrant.

4.3.2.5 Interest rate add-on for equity derivatives

a) A DFHC (Licensed Insurer) must calculate a risk requirement to cover any interest rate risk in a position in an equity derivative (whether or not the equity derivative has been treated or included as an equity position or equity derivative position) by including the notional position in a debt security derived in accordance with sub-paragraph b) in the calculation of the interest rate mismatch risk requirement.

b) For the purposes of sub-paragraph a), the DFHC (Licensed Insurer) must derive the notional position in an appropriate debt security as follows:

(i) the notional position must have a maturity equal to the period up to the expiry of the equity derivative contract;

(ii) the notional position must be either —

A. a long position, in a case where the underlying equity position is a short position; or

B. a short position, in a case where the underlying equity position is a long position.

4.3.3 Interest Rate Mismatch Risk Requirement and Credit Spread Risk Requirement

4.3.3.1 For the purpose of calculation of interest rate mismatch risk requirement and credit spread risk requirement in sub-section 4.3.3, “government debt security” means a debt security which is issued or fully guaranteed by a central government or central bank of a country or territory.

4.3.3.2 Interest Rate Mismatch Risk Requirement Computation:

a) For interest rate mismatch risk requirement, a DFHC (Licensed Insurer) must apply the following factors in Table 4E in accordance with sub-paragraph b), to the positions defined in paragraph 4.3.3.6.

Table 4E: Upward and Downward Factors to be applied for calculating interest rate risk requirement

Time of Cash Flow (closest term)	Upward Adjustment (%)	Downward Adjustment (%)
3 months	100	-75
6 months	100	-70
1 year	100	-70
2 years	100	-70
3 years	95	-65
4 years	95	-65
5 years	90	-60
6 years	85	-55
7 years	80	-50
8 years	80	-50
9 years	75	-45
10 years	70	-40
11 years	65	-40
12 years	60	-35
13 years	60	-35
14 years	55	-30
15 years	50	-30
16 years	45	-30
17 years	40	-30
18 years	35	-25
19 years	30	-25
20 years and above	25	-25

b) To calculate the interest rate mismatch risk requirement, a DFHC (Licensed Insurer) must do all of the following:

(i) The DFHC (Licensed Insurer) must recompute the value of interest rate sensitive assets and liabilities under the upward interest rate scenario in sub-paragraph a), by adjusting the relevant yield curve by the absolute upward interest rate adjustment, and calculating the resulting change in net assets.

A. For adjusting the relevant yield curve, in order to derive the absolute upward and downward interest rate adjustments, the DFHC (Licensed Insurer) must multiply the percentage adjustments as specified in Table 4E by:

(AA) the risk-free spot discount rates as specified under the scenario, in the case of policy liabilities. The DFHC (Licensed Insurer) must derive the spot risk-free discount rate from the risk-free discount rate computed in accordance with **Appendix 3C**. The DFHC (Licensed Insurer) must not apply the upward and downward interest rate adjustments to the MA or IP spreads.

(BB) the government yield curve relevant to the asset, in the case of assets.

B. To avoid doubt, the upward and downward percentage interest rate adjustments are to be applied on the relevant base yield curve.

C. A DFHC (Licensed Insurer) must ensure that the calculated absolute interest rate adjustments are subject to a maximum of 200 basis points for both upward and downward scenarios.

D. A DFHC (Licensed Insurer) must value net assets as the value of the assets less liabilities, where liabilities refer to:

(AA) In respect of life business—

i. In the case of an insurer licensed in Singapore belonging to the FHC Group, its non-participating policies (except for UL policies) or investment-linked policies, the liabilities determined under regulation 20(1) and 20(2) of the Insurance (Valuation and Capital) Regulations 2004 respectively;

ii. in the case of an FIE belonging to the FHC Group, its non-participating policies (except for UL policies) or investment-linked policies, the liabilities determined under paragraphs 1(1) and 1(2) of **Appendix 3A-1** of this Notice respectively;

iii. In the case of participating businesses, the minimum condition liability; and

iv. In the case of an insurer licensed in Singapore belonging to the FHC Group, its UL policies, the liability for guaranteed benefits determined in accordance with paragraph 3.1.2a) of MAS Notice 133;

v. in the case of an FIE belonging to the FHC Group, its UL policies, the liability for guaranteed benefits determined in accordance with paragraph 2a) of **Appendix 3A-2** of this Notice; and

(BB) In respect of general business, the policy liabilities. Subject to paragraph 3.3.5, a DFHC (Licensed Insurer) may elect not to recompute the value of liabilities for a general business, in which case the change in value of liabilities under the upward and downward interest rate scenarios is zero.

(ii) The DFHC (Licensed Insurer) must recompute the value of interest rate sensitive assets and liabilities under the downward interest rate scenario in sub-paragraph b), by adjusting the relevant base yield curve by the absolute downward interest rate adjustment, and calculating the resulting change in net assets.

(iii) The DFHC (Licensed Insurer) must take the larger of the reduction in net assets from (i) and (ii) as the interest rate mismatch risk requirement.

(iv) For cash flows that occur between the time periods specified in Table 4E, a DFHC (Licensed Insurer) must apply the upward and downward adjustments of the closest term.

(v) For floating rate instruments, a DFHC (Licensed Insurer) must use the term until the next coupon reset date.

(vi) Where there is a non-diversifiable portfolio such as a MA portfolio, a DFHC (Licensed Insurer) must determine the interest rate mismatch requirement at the non-diversifiable portfolio level.

c) A DFHC (Licensed Insurer) may use the following simplified approaches:

(i) A DFHC (Licensed Insurer) may use the modified duration of the asset to approximate the change in value of each interest rate sensitive security.

(ii) For bonds with optionality, a DFHC (Licensed Insurer) must use the effective duration and may determine the effective duration using:

A. the term to final maturity, in the upward interest rate scenario and

B. the term to first call date, in the downward interest rate scenario,

and the "after shock" market price of the callable bond must not exceed the present value of [call price + all cash flows payable before and on the first call date].

Guidelines:

4.16 A DFHC (Licensed Insurer) which has a significant and/or more complex debt security portfolio is expected to utilise the discounted cash flow approach, which is more appropriate to the nature, scale and complexity of the risks the DFHC (Licensed Insurer)'s FHC group bears.

4.17 An example of a bond with optionality is a callable bond.

4.3.3.3 Credit Spread Risk Requirement Computation:

a) For credit spread risk requirement, a DFHC (Licensed Insurer) must apply the following factors to the positions defined in paragraph 4.3.3.6, in accordance with sub-paragraph b) below.

Table 4F-I: Credit Spread Risk Adjustment Factors (for short-term ratings) to be applied for calculating credit spread risk requirement

Credit Quality Class	Class A1	Class B1	Class C1	Class D1	Class E1
Adjustment	105	120	165	245	540

Table 4F-II: Credit Spread Risk Adjustment Factors (for long-term ratings) to be applied for calculating credit spread risk requirement

Term\ Credit Quality Class	Class A	Class B	Class C	Class D	Class E	Class F and below
Up to 5 years	105	120	165	245	405	540
Between 5 to 10 years	95	115	145	230	365	500
>10 years	90	95	125	215	355	475

Guidelines:

*4.18 The credit quality class is set out in **Appendix 4K**.*

b) To calculate the credit spread risk requirement—

(i) A DFHC (Licensed Insurer) must first identify the relevant constant basis point credit spread adjustment using the tables under sub-paragraph a) for each credit-related security, which is to be determined based on the remaining term and credit rating of the security:

A. In the case of short-term ratings, the DFHC (Licensed Insurer) must for such credit quality class specified in the first row of Table 4F-I, use the constant basis point credit spread adjustment specified in the second row of Table 4F-I.

B. In the case of long-term ratings, the DFHC (Licensed Insurer) must for such credit quality class specified in the first row of Table 4F-II and for such remaining term of the security specified in the first column of Table 4F-II, use the constant basis point credit spread adjustment specified in the corresponding cell in Table 4F-II.

(ii) The DFHC (Licensed Insurer) must then revalue the security by adding this constant basis point credit spread adjustment on the relevant yield curve for the security, and calculate the resulting fall in value of the security.

(iii) The DFHC (Licensed Insurer) must repeat the same calculation for all credit-related securities, and calculate the credit spread risk requirement as the aggregate resulting fall in value of all securities.

c) A DFHC (Licensed Insurer) may use the following simplified approaches:

(i) A DFHC (Licensed Insurer) may use the modified duration of the asset to approximate the change in value of each credit spread sensitive security.

(ii) For bonds with optionality, the DFHC (Licensed Insurer) must use the effective duration and may determine the effective duration using the term to maturity.

Guidelines:

4.19 A DFHC (Licensed Insurer) which has a significant and/or more complex debt security portfolio is expected to utilise the discounted cash flow approach, which is more appropriate to the nature, scale and complexity of the risks the DFHC (Licensed Insurer)'s FHC group bears.

d) A DFHC (Licensed Insurer) must convert its credit-related derivatives into notional positions in the relevant underlying instruments and use the current market value of the principal amount of the underlying instruments to calculate its credit risk capital requirement.

e) For debt securities issued by a Statutory Board in Singapore and recognised multilateral agencies as listed in **Appendix 4C**, a DFHC (Licensed Insurer) must apply credit spread risk adjustments of 50% of that specified for Credit Quality Class A in Tables 4F-I and 4F-II.

f) Subject to sub-paragraph g), for unrated debt securities, for such term specified in the first column of the following table, a DFHC (Licensed Insurer) must adopt the credit spread risk adjustment in between Credit Quality Class D and Class E specified in the second column of the following table:

Table 4F-III: Credit Spread Risk Adjustment Factors (for unrated debt securities) to be applied for calculating credit spread risk requirement

Term	Unrated
Up to 5 years	325
Between 5 to 10 years	298
More than 10 years	285

g) Notwithstanding sub-paragraph f), where unrated bonds exhibit features that are close to junk bonds, a DFHC (Licensed Insurer) must apply a higher risk charge based on Credit Quality Class E in Table 4F-I or Credit Quality Class F and Below in Table 4F-II for short-term rating and long-term rating respectively.

h) A DFHC (Licensed Insurer) which meets MAS' criteria under either of the approaches set out in **Appendices 4D and 4E** must fully (or partially) use the internal credit rating determined by its internal credit rating model (or process) in deciding which credit spread risk adjustment factor to apply in the case of unrated bonds. If the DFHC (Licensed Insurer) wishes to use the internal credit rating process only for specific entities within the DFHC (Licensed Insurer)'s FHC group, the DFHC (Licensed Insurer) must seek prior written approval from the Authority.

i) A DFHC (Licensed Insurer) need not calculate the credit spread risk requirement for debt securities that are issued by central governments or central banks of countries or territories that have a sovereign credit rating of at least Credit Quality Class C or better (based on **Appendix 4K**).

j) A DFHC (Licensed Insurer) must calculate the credit spread risk requirement for debt securities that are issued by central governments or central banks that have a sovereign credit rating lower than Credit Quality Class C (based on **Appendix 4K**) but a DFHC (Licensed Insurer) must use the credit spread risk requirement of the next best credit rating above the sovereign credit rating when deriving the credit spread adjustment that shall be applied under this risk module where the debt securities are in the national currency of the country.

k) In determining the credit spread adjustment that should be applied under this risk module in respect of debt securities that are issued by public sector entities that are fully guaranteed by central governments or central banks, a DFHC (Licensed Insurer) must adopt the relevant sovereign credit rating when deriving the credit spread adjustment.

l) A DFHC (Licensed Insurer) must apply a credit spread shock of between Credit Quality Class D and Class E (based on **Appendix 4K**) , as shown in the table in sub-paragraph f), for unrated debt securities that are issued by public sector entities that are not fully guaranteed by central governments or central banks.

m) A DFHC (Licensed Insurer) must refer to **Appendix 4F** to determine the credit spread risk adjustment when there are guarantees and collaterals in place.

n) A DFHC (Licensed Insurer) must refer to **Appendix 4G** for the treatment of structured products and derivatives and must determine the credit spread risk adjustment in accordance with **Appendix 4G**.

o) A DFHC (Licensed Insurer) must use the final maturity for floating rate instruments.

Guidelines:

4.20 For the purpose of determining the credit spread risk requirement, where the coupons are reset based on the level of credit spreads, a DFHC (Licensed Insurer) may assume a term until the next coupon reset date.

Reduction in credit spread risk requirement from MA

4.3.3.4 For portfolios where the MA is applied, a DFHC (Licensed Insurer) must reduce the C2 credit spread risk requirement by applying a modified MA (i.e. MA'). The DFHC (Licensed Insurer) must calculate the MA' based on a percentage of the credit spread adjustment applicable to the assets within the MA portfolio, in accordance with paragraph 4.3.3.5. The DFHC (Licensed Insurer) must then add MA' to the MA when determining the C2 credit spread risk requirement. The DFHC (Licensed Insurer) must ensure that the recognition of MA' is consistent with the recognition of the MA that is already present before the application of the credit spread adjustment.

Guidelines:

4.21 For example, if MA is recognised in full up to the LLP, and amortised over a period of 10 years immediately after the LLP, then MA' should be recognised in the same manner.

4.3.3.5 A DFHC (Licensed Insurer) must calculate MA' as follows:

$$\mathbf{MA' = \sum W_i * F_i * CS_{adj\ i}}$$

where

- W_i is the weight corresponding to the proportion of bonds in rating and duration band category i;
- F_i is the adjustment factor for rating and duration band category i determined in accordance with Table 4G; and
- $CS_{adj\ i}$ is the credit spread adjustment for credit quality class and duration band category i determined in accordance with Table 4G.

Table 4G: Table of Adjustment Factors to apply for calculating MA' for insurers licensed in Singapore within the FHC group

		Credit Quality Class			
$CS_{adj\ i}$ (bps)		Class A	Class B	Class C	Class D
Maturity (years)	5 years or less	105	120	165	245
	More than 5 years but not more than 10 years	95	115	145	230
	More than 10 years but not more than 15 years	90	95	125	215
	More than 15 years	90	95	125	215
F_i		80%	80%	80%	50%

Guidelines:

4.22 The derivation of the MA' for insurers licensed in Singapore within an FHC group has been built into the MA Workbook.

4.3.3.6 In calculating the interest rate mismatch risk requirement and credit spread risk requirement, a DFHC (Licensed Insurer) must include —

a) any position in a debt security;

b) any position in a debt derivative;

c) any non-convertible preference share;

d) any position in a convertible security that does not meet the conditions in paragraph 4.3.2.2c); and

e) any notional position arising from interest rate add-on for equity derivatives derived in accordance with paragraph 4.3.2.5b).

4.3.3.7 A DFHC (Licensed Insurer) must characterise debt instruments which are convertible into equity at the option of the issuer or automatically by the terms of the instruments as equity exposures. A DFHC (Licensed Insurer) must convert its interest rate-related derivatives into notional positions in the relevant underlying instruments and use the current market value of the principal amount of the underlying instruments to calculate its interest rate risk capital requirement.

4.3.3.8 In the calculation of the interest rate mismatch risk requirement and credit spread risk requirement, a DFHC (Licensed Insurer) must, subject to paragraph 4.3.3.9, derive the position in relation to every debt derivative to be —

a) in relation to a long (or short) futures or forward contract on a debt security, a notional long (or short) position in the underlying debt security and a notional short (or long) position in a zero coupon government debt security with a maturity equal to the time of expiry of the futures or forward contract;

b) in relation to a futures contract on an interest rate or a forward rate agreement —

i. where the DFHC (Licensed Insurer) buys a futures contract on an interest rate or sells a forward rate agreement —

A. a notional short position in a zero-coupon government debt security with a maturity equal to the period to expiry of the futures contract or the settlement date of the forward rate agreement; and

B. a notional long position in a zero-coupon government debt security with a maturity equal to the sum of the period to expiry of the futures contract or the settlement date of the forward rate agreement and the maturity of the deposit period; and

ii. where the DFHC (Licensed Insurer) sells a futures contract on an interest rate or buys a forward rate agreement —

A. a notional short position in a zero-coupon government debt security with a maturity equal to the sum of the period to expiry of the futures contract or the settlement date of the forward rate agreement and the maturity of the borrowing period; and

B. a notional long position in a zero-coupon government debt security with a maturity equal to the period to expiry of the futures contract or the settlement date of the forward rate agreement;

c) in relation to a purchased call option or written put option on a debt security, a notional long position in the underlying debt security;

d) in relation to a purchased put option or written call option on a debt security, a notional short position in the underlying debt security;

e) in relation to an option on an interest rate, a notional position in an appropriate government security —

(i) which is —

A. a long position, in the case of a purchased call option or a written put option; or

B. a short position, in the case of a purchased put option or written call option; and

(ii) which has a maturity equal to the sum of the period until the expiry of the option and the period for which the interest rate is fixed;

f) in relation to an option on a futures contract or forward contract on a debt security, a notional position in the underlying futures contract or forward contract; and

g) in relation to an option on a futures contract on an interest rate or a forward rate agreement, a notional position in the underlying futures contract or forward rate agreement.

4.3.3.9 Where it relates to a forward contract or a futures contract that allows settlement by a range of deliverable debt securities, a DFHC (Licensed Insurer) must ensure that the notional position derived according to paragraph 4.3.3.8 refers to the debt security that is clearly identified as the most profitable for the party having a short position to deliver.

4.3.3.10 A DFHC (Licensed Insurer) may exclude a pair of long and short positions in the same debt security from the calculation of interest rate mismatch risk requirement and credit spread risk requirement to the extent they are matched.

4.3.3.11 For the purposes of paragraph 4.3.3.10, a pair of long and short positions is matched if —

a) the positions are in respect of the same debt security with identical issuer, coupon, currency and residual maturity; or

b) for notional positions with identical issuer, nominal value and currency, but different coupon or residual maturity —

(i) the notional positions arise from futures contracts and mature within 7 days of each other;

(ii) both of the notional positions arise from swaps or forward rate agreements and have identical reference rates (for floating rate positions), and the coupon rates are within 15 basis points of each other; or

(iii) both the notional positions arise from swaps, forward rate agreements or forward contracts and —

A. where the maturity of the positions are no more than 30 days from the valuation date, the maturity of the positions are on the same day;

B. where the maturity of the positions are more than 30 days but no more than 12 months from the valuation date, the maturity of the positions are within 7 days of each other; or

C. where the maturity of the positions are more than a year from the valuation date, the maturity of the positions are within 30 days of each other.

4.3.3.12 Adjustments for option –

A DFHC (Licensed Insurer) must adjust the absolute value of the interest rate mismatch risk requirement and credit spread risk requirement, arising from an option by deducting an amount equal to the extent to which the option is out-of-the-money, which is determined as —

a) in the case of a call option, any positive excess of the exercise value over the current market value of the underlying share; and

b) in the case of a put option, any positive excess of the current market value of the underlying share over the exercise value, but the adjusted absolute value of the debt investment risk requirement arising from the option must not exceed the current market value of the option and, in every case, no less than zero.

4.3.4 **Property Investment Risk Requirement**:

4.3.4.1 To calculate the property investment risk requirement, a DFHC (Licensed Insurer) must do all of the following:

a) the DFHC (Licensed Insurer) must apply a 30% risk charge to the current market value of each property exposure for immovable property, whether or not the immovable property is for investment purposes or self-occupation purposes;

b) the DFHC (Licensed Insurer) must apply a look-through approach (as described for CIS in **Appendix 4B**) for collective real estate investment vehicles. Where the DFHC (Licensed Insurer) chooses not to or is unable to adopt a look-through approach, it must apply a risk charge of 50% on the value of the CIS;

c) the DFHC (Licensed Insurer) must calculate the property investment risk requirement as the aggregate of the calculations for all property exposures obtained from paragraphs a) and b).

4.3.4.2 A DFHC (Licensed Insurer) must treat investments in companies that are engaged in real estate management or real estate project development or similar activities as equity investments.

4.3.5 **Foreign Currency Mismatch Risk Requirement**:

4.3.5.1 A DFHC (Licensed Insurer) must apply this foreign currency mismatch risk requirement to an insurance business carried on by an insurance group entity belonging to the DFHC (Licensed Insurer)'s FHC group.

4.3.5.2 For non-diversifiable portfolios, a DFHC (Licensed Insurer) must compute the foreign currency mismatch risk charge at each non-diversifiable portfolio level.

4.3.5.3 A DFHC (Licensed Insurer) must calculate the foreign currency mismatching risk requirement as —

a) for any insurance business (or non-diversifiable portfolio, where applicable), 12% of the foreign currency risk exposure of the business calculated in paragraphs 4.3.5.6 and 4.3.5.7; and

b) in any other case, zero.

4.3.5.4 A DFHC (Licensed Insurer) must calculate for each currency (other than for the Singapore Dollar) the net open position of the DFHC (Licensed Insurer)'s FHC group in the currency as the absolute value of the aggregate of the following:

a) the amount of all assets less all liabilities denominated in the currency;

b) the aggregate of amounts in the currency to be received by the FHC group less the aggregate of amounts in the currency to be paid by the FHC group in relation to the currency positions arising from any futures contract or forward contract, including a forward contract associated with cross-currency swaps or other derivatives; and

c) net positions in products denominated in the currency in relation to any non-currency futures contract, forward contract and other derivatives, excluding —

(i) any asset or exposure for which the DFHC (Licensed Insurer) has calculated a risk requirement equal to 100% of the value of the asset or the full contract value, as appropriate, under this Notice; and

(ii) any position the FHC group holds to hedge against a foreign currency position referred to in sub-paragraph (i), where the hedging contract is clearly earmarked as a hedge, to the extent that the nominal amount underlying each hedging contract matches the nominal amount of the contract being hedged.

4.3.5.5 A DFHC (Licensed Insurer) must convert its net open position in each currency to the Singapore Dollar (preserving the sign) at the prevailing market spot rate at valuation date.

4.3.5.6 In the case of any insurance business (or non-diversifiable portfolio, where applicable) that an insurance group entity in a DFHC (Licensed Insurer)'s FHC group holds in respect of Singapore policies, the DFHC (Licensed Insurer) must calculate its foreign currency risk exposure as the higher of —

a) the aggregate of net open positions of the DFHC (Licensed Insurer)'s FHC group in currencies in which the net open position is positive; or

b) the absolute value of the aggregate of net open positions of the DFHC (Licensed Insurer)'s FHC group in currencies in which the net open position is negative,

less 10% of the (total value of assets after deducting reinsurers' share of policy liabilities in the insurance business (or non-diversifiable portfolio, where applicable)),

subject to a minimum of zero.

4.3.5.7 In the case of any insurance business (or non-diversifiable portfolio, where applicable) that an insurance group entity in a DFHC (Licensed Insurer)'s FHC group holds in respect of offshore policies, the DFHC (Licensed Insurer) must calculate its foreign currency risk exposure as the higher of —

a) the aggregate of net open positions of the DFHC (Licensed Insurer)'s FHC group in currencies in which the net open position is positive; or

b) the absolute value of the aggregate of net open positions of the DFHC (Licensed Insurer)'s FHC group in currencies in which the net open position is negative,

less 20% of the (total value of assets after deducting reinsurers' share of policy liabilities in the insurance business (or non-diversifiable portfolio, where applicable)),

subject to a minimum of zero.

4.3.5.7A For the purpose of paragraphs 4.3.5.6 and 4.3.5.7, "Singapore policies" and "offshore policies" have the same meanings as that defined under the Insurance Act 1966.

4.3.5.8 In the calculation of the net open positions of a DFHC (Licensed Insurer)'s FHC group in currencies, a DFHC (Licensed Insurer) must derive the position in relation to every derivative to be —

a) in relation to a purchased call option or a written put option, a long position in the commodity currency and a short position in the term currency, each of an amount equivalent to the notional face value of the underlying contract;

b) in relation to a purchased put option or a written call option, a short position in the commodity currency and a long position in the term currency, each of an amount equivalent to the notional face value of the underlying contract; and

c) in relation to a futures contract or forward contract, two notional positions, being —

(i) a long position in the commodity currency of an amount equivalent to the notional value of the underlying contract; and

(ii) a short position in the term currency of an amount equivalent to the notional value of the underlying contract.

4.3.5.9 To avoid doubt, positions in gold must be deemed as positions in a separate foreign currency.

4.3.6 Counterparty Risk Requirement

4.3.6.1 A DFHC (Licensed Insurer) must calculate all of the following sub-risks for the counterparty risk requirement:

a) Loan counterparty risk;

b) Derivative counterparty risk;

c) Reinsurance recoverable counterparty risk;

d) Outstanding premiums counterparty risk;

e) Bank deposit counterparty risk;

f) Letter of credit counterparty risk;

g) Other counterparty risk for exposures that have not been addressed by the credit spread risk requirement, including but not limited to:

(i) intra-group balances not related to a contract of insurance from an insurance group entity not scoped in for capital adequacy requirement;

(ii) any general guarantee of indebtedness and acceptance originating from the DFHC (Licensed Insurer)'s FHC group which has not been accounted for as a liability in respect of policies;

(iii) any contingent liability relating to any specific transaction to the DFHC (Licensed Insurer)'s FHC group, other than any guarantee or acceptance that has been accounted for as a liability in respect of policies,

but excluding balances due from other insurance businesses, shareholders fund, entities and overseas branches within the DFHC (Licensed Insurer)'s FHC group.

4.3.6.2 To calculate the counterparty default risk requirement, a DFHC (Licensed Insurer) must do all of the following:

a) a DFHC (Licensed Insurer) must calculate the risk exposures for each counterparty in paragraph 4.3.6.1 in accordance with **Appendix 3D** and paragraphs 4.3.6.4 to 4.3.6.5 of this Notice;

b) a DFHC (Licensed Insurer) must calculate the risk requirement for each counterparty as the product of the risk exposure to a particular counterparty in sub-paragraph a) and the relevant counterparty default risk charge and the relevant counterparty default risk charge must be determined as follows:

(i) in the case of reinsurance recoverables that are less than or equal to 1 year, a DFHC (Licensed Insurer) must determine the counterparty default risk charge in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty;

(ii) in the case of reinsurance recoverables that are more than 1 year, a DFHC (Licensed Insurer) must apply a 100% risk charge;

(iii) in the case of Outstanding Premiums (Direct/General/Facultative Reinsurance Business) and Agents' Balances that are less than or equal to 1 year, a DFHC (Licensed Insurer) must determine the counterparty default risk charge in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty;

(iv) in the case of Outstanding Premiums (Direct/General/ Facultative Reinsurance Business) and Agents' Balances that are more than 1 year, a DFHC (Licensed Insurer) must apply a 100% risk charge;

(v) in the case of Outstanding Premiums from Treaty Reinsurance Business that are less than or equal to 2 years, a DFHC (Licensed Insurer) must determine the counterparty default risk charge in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty;

(vi) in the case of Outstanding Premiums from Treaty Reinsurance Business that are more than 2 years, a DFHC (Licensed Insurer) must apply a 100% risk charge;

(vii) in the case of deposits with a bank or deposit-taking institution that can be unconditionally withdrawn within 6 months, a DFHC (Licensed Insurer) must determine the counterparty default risk charge in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty and must apply a factor of 50% to the counterparty default risk charge;

(viii) in the case of deposits with a bank or deposit-taking institution that cannot be unconditionally withdrawn within 6 months, a DFHC (Licensed Insurer) must determine the counterparty default risk charge in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty;

(ix) in the case of intra-group balances (arising from any transaction which is not related to a contract of insurance or balances due from head office, overseas branches or related corporations) outstanding less than or equal to 90 days, a DFHC (Licensed Insurer) must determine the counterparty default risk charge in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty;

(x) in the case of intra-group balances (arising from any transaction which is not related to a contract of insurance or balances due from head office, overseas branches or related corporations) outstanding for more than 90 days, a DFHC (Licensed Insurer) must apply a 100% risk charge;

(xi) in the case of any other counterparty exposures, a DFHC (Licensed Insurer) must determine the counterparty default risk charge in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty.

Table 4H: Counterparty default risk charge for various counterparty risk classes

Counterparty Risk Class	Counterparty Default Risk Charge (%)
Class A	0.5
Class B	1.0
Class C	2.0
Class D	5.0
Class E	10.5
Class F	20.0
Class G	48.5

c) a DFHC (Licensed Insurer) must repeat the same calculation mentioned in sub-paragraph b) for all counterparties, and calculate the total counterparty default risk requirement as the aggregate of the values obtained for all counterparties.

d) A DFHC (Licensed Insurer) must treat unrated counterparties as having a rating of between Counterparty Risk Class D and Class E and apply a counterparty default risk charge of 7.75%.

e) A DFHC (Licensed Insurer) must ensure that ageing of outstanding premium for annual and multi-year policies of direct life and general insurance business starts from the billable date and excludes the effects of the delays by the DFHC (Licensed Insurer) in policy issuance and billing.

f) A DFHC (Licensed Insurer) must ensure that ageing of outstanding premiums for reinsurance business starts from accrual date for reinsurers (except for facultative reinsurance where the DFHC (Licensed Insurer) must use the billable date).

4.3.6.3 A DFHC (Licensed Insurer) must refer to **Appendix 4F** to determine the counterparty risk requirement when there are guarantees and collaterals in place.

4.3.6.4 For Derivative Counterparty risk requirement

a) A DFHC (Licensed Insurer) must calculate a counterparty exposure for any over-the-counter derivatives contract (other than an option written by the DFHC (Licensed Insurer)) or derivatives contract traded on an exchange which is dependent on the issuer for performance of the contract as the credit equivalent amount of the contract.

b) A DFHC (Licensed Insurer) must calculate the derivative counterparty risk requirement as the aggregate of the products of —

(i) the counterparty exposure calculated in accordance with sub-paragraph a); and

(ii) the relevant counterparty default risk charge determined in accordance with Table 4H based on the Counterparty Risk Class (as set out in **Appendix 4L**) of the counterparty,

for all contracts where the derivative counterparty risk requirement is applicable.

c) In determining the derivative counterparty risk requirement, a DFHC (Licensed Insurer) may reduce the counterparty exposure calculated by the amount of any acceptable collateral.

d) In this paragraph —

"credit equivalent amount" of a contract means —

(i) in the case of an over-the-counter foreign exchange contract with an original maturity of 14 days or less, zero; or

(ii) in any other case —

A. if the replacement cost of the contract is positive, the sum of the replacement cost of the contract and the potential credit exposure of the contract; or

B. if the replacement cost of the contract is negative, the potential credit exposure;

"potential credit exposure" means the product of —

(i) the nominal or notional principal underlying the contract; and

(ii) the relevant credit exposure factor as specified in **Appendix 4H**; and

"replacement cost of the contract" means the current market value of the contract.

4.3.6.5 Ageing of Outstanding Premium

a) When computing the counterparty default risk requirements for outstanding premium, a DFHC (Licensed Insurer) must use the billable date, and exclude the effects of any delay by the DFHC (Licensed Insurer)'s FHC group in policy issuance and billing, as the start date for ageing of outstanding premium for annual and multi-year policies of direct life and general insurance business.

b) For the purposes of paragraph a), "billable date" refers to the date which part or all of each premium can first be billed without taking into consideration any credit period given.

<u>Guidelines:</u>

4.23 For example, in the case of an annual paying policy with an inception date of 1.1.2018, the premium will be considered billable on 1.1.2018, 1.1.2019 etc. regardless of whether insurance entities belonging to the DFHC (Licensed Insurer)'s FHC group may send the bill to policyholders earlier or later. Similarly, for a monthly paying policy with an inception date of 1.1.2018, the premium will be considered billable on 1.1.2018, 1.2.2018, 1.3.2018 etc.

c) A DFHC (Licensed Insurer) must ensure that ageing of outstanding premium for reinsurance business starts from accrual date for reinsurance business, except for facultative reinsurance business, where the DFHC (Licensed Insurer) must ensure that ageing is on a billable date basis.

4.3.7 Miscellaneous Risk Requirement

4.3.7.1 A DFHC (Licensed Insurer) must calculate, for each asset for which no equity investment risk requirement, interest rate mismatch risk requirement, credit spread risk requirement, property investment risk requirement or counterparty risk requirement has been calculated (other than cash and any financial asset to which paragraph 4.3.1.12 applies), the product of —

a) 8% risk factor; and

b) the value of the asset.

4.3.7.2 A DFHC (Licensed Insurer) must calculate the miscellaneous risk requirement as the aggregate of the amounts obtained for each asset referred to in paragraph 4.3.7.1.

4.3.8 Alternative method of calculating C2 requirement

4.3.8.1 A DFHC (Licensed Insurer) may use any alternative method to calculate the C2 requirement if the method results in a C2 requirement which is no less than that determined in the manner provided in this Notice, and in such a case, the Authority may require the DFHC (Licensed Insurer) to provide documentary evidence of that fact.

4.3.9 A DFHC (Licensed Insurer) who wishes to replace the factors set out in paragraphs 4.3.2 to 4.3.7 of the Notice used for computing one or more of the risk requirements with factors recalibrated by the DFHC (Licensed Insurer) (hereby referred to as the “modified risk factors”), must apply in writing to the Authority for approval for use of modified risk factors in accordance with Annex A of **Appendix 4O**, and must comply with the governance requirements and submission requirements set out in Annex B and Annex C of **Appendix 4O** respectively.

4.4 Operational Risk Requirement

4.4.1 In the case of a licensed insurer incorporated in Singapore belonging to the DFHC (Licensed Insurer)'s FHC Group, a DFHC (Licensed Insurer) must determine the operational risk requirement arising from any insurance business of the insurer that does not belong to any insurance fund established and maintained under the Insurance Act 1966 in the same manner as its insurance business relating to an insurance fund established and maintained under the Insurance Act 1966.

4.4.2 A DFHC (Licensed Insurer) must calculate the operational risk requirement as —

a) the lower of:

(i) the amount calculated according to the formula in paragraph 4.4.3; and

(ii) 10% of the TRR (after diversification benefits and excluding operational risk requirement) of the DFHC (Licensed Insurer)'s FHC group's insurance businesses, or

b) zero

whichever is higher.

4.4.3 For the purposes of paragraph 4.4.2a)(i) above, a DFHC (Licensed Insurer) must calculate the amount of operational risk requirement as the sum of the amount calculated for each entity within the DFHC (Licensed Insurer)'s FHC group where such an amount is calculated for each entity's participating business, non-participating business, investment-linked business and general business based on the following:

a) The higher of:

(i) 4% of GP_1 + Max(0, 4% x ((GP_1 - GP_0) - 20% x GP_0))

(ii) 0.5% of policy liability (gross of reinsurance)

b) For purposes of paragraph 4.4.3a),

(i) GP_1 means the:

A. Gross weighted premium income for the 12 months preceding the valuation date (without deducting premium ceded to reinsurance) for individual direct life business and a DFHC (Licensed Insurer) must:

(AA). in the case of an insurer licensed in Singapore, use the same basis of the submission of business statistics to the Life Insurance Association of Singapore ("LIA") in determining the basis of deriving the weighted premium;

AB. in the case of an FIE, use the same basis as that used by an insurer licensed in Singapore in deriving the weighted premium; and

B. Gross written premium income for the 12 months preceding the valuation date (without deducting premium ceded to reinsurance) for life business (other than individual direct life) and general business.

(ii) GP_0 means:

A. Gross weighted premium income for the 12 months preceding GP_1 for individual direct life business and a DFHC (Licensed Insurer) must:

(AA) in the case of an insurer licensed in Singapore, use the same basis of the submission of business statistics to LIA in determining the basis of deriving the weighted premium;

(AB) in the case of an FIE, use the same basis as that used by an insurer licensed in Singapore in deriving the weighted premium; and

B. Gross written premium income for the 12 months preceding GP_1 for life business (other than individual direct life) and general business.

(iii) Policy liability (gross of reinsurance) —

A. in the case of a participating business, means the minimum condition liability; and

B. in all other cases, means:

(AA) in the case of a licensed insurer in Singapore, policy liability (gross of reinsurance) calculated in accordance with regulations 19A and 20A of the Insurance (Valuation and Capital) Regulations 2004; and

(AB) in the case of an FIE, policy liability (gross of reinsurance) calculated in accordance with sections 1A of **Appendix 3A-1** and 1A of **Appendix 3B-1** of this Notice.

Guidelines:

4.24 In the case of an insurer licensed in Singapore, the basis of deriving the weighted premium should follow the same basis of the submission of business statistics to the LIA.

4.25 The prevailing formula used by the LIA for the calculation of weighted premium is as follows:

a) For single premium, 10% of single premium;

b) For annual premium, 100% of annual premium;

c) Where premium obligation is less than 10 years, weighted premium will be based on the number of years of payment x 10%. For example, an annual premium policy with a 7-year limited premium payment term will calculate its weighted premium as 70% of annual premium.

4.5 Description for Risks

4.5.1 For the purposes of risk requirements covered in Section 4, the type of risks specified in the first column of Table 4I has the description specified in the second column of the same table.

Table 4I: Description of risks

First column	*Second column*
Type of risk	**Description of risk**
Claim liability risk	Claim liability risk is associated with incurred claims and is the risk that the amount set aside for claims that have already occurred will prove inadequate.
Conversion of options risk	Conversion of options risk is the risk associated with the variability in liability cash flows due to the incidence of policyholders exercising available options (for example, convertible term).
Counterparty default risk	Counterparty default risk is the risk of economic loss due to unexpected default of the counterparties and debtors of insurers.
Credit spread risk	Credit spread risk is the risk of change in value due to movements in the market price of credit risk. This includes both the credit default as well as credit spread widening risk.
Disability risk	Disability risk is the risk associated with the variability in liability cash flows due to the incidence of policyholder’s disability claims, as well as recovery or termination rates.
Dread disease risk	Dread disease risk is the risk associated with the variability in liability cash flows due to the incidence of dread disease claims, as well as recovery or termination rates.
Equity investment risk	Equity investment risk is the risk of economic loss due to changes in the price of equity exposures.
Expense risk	Expense risk is the risk associated with the variability in liability cash flows due to the incidence of expenses incurred.
Foreign currency mismatch risk	Foreign currency mismatch risk is the risk of economic loss due to adverse movements in the value of foreign currencies against the Singapore dollar.
General insurance catastrophe risk	General insurance catastrophe risk is the risk associated with extreme or irregular events of which the effects are not

First column	***Second column***
Type of risk	**Description of risk**
	sufficiently captured in requirements for premium liability risk and claim liability risk.
Interest rate mismatch risk	Interest rate mismatch risk is the risk arising from changes in market interest rates, which affect the prices of debt securities and policy liabilities where the valuation of policy liabilities requires discounting of future policy liability cash flows using the market yield of the relevant yield curve.
Lapse risk	Lapse risk is the risk associated with the variability in liability cash flows due to the incidence of lapses (including forfeitures, surrenders etc) by policyholders. Includes consideration of a mass lapse event.
Life insurance catastrophe risk	Life insurance catastrophe risk is the risk associated with extreme or irregular events of which the effects are not sufficiently captured in the other risk requirements under C1 for life business.
Longevity risk	Longevity risk is the risk associated with the variability in liability cash flows due to increasing life expectancy.
Miscellaneous risk	Miscellaneous risk covers risk of loss in value for fixed assets and assets that are non-financial instruments. It excludes: • Risks that have been covered in the other C2 risk requirements • Non-standard instruments as described under paragraph 4.3.1.2.
Mortality risk	Mortality risk is the risk associated with the variability in liability cash flows due to the incidence of death.
Operational risk	Operational risk refers to the risk of loss arising from complex operations, inadequate internal controls, processes and information systems, organisational changes, fraud or human errors, (or unforeseen catastrophes including terrorist attacks).
Other insured events (Accident & Health) risk	Other insured events (Accident & Health) risk is the risk associated with the variability in liability cash flows due to the incidence of accident and health claims as well as recovery or termination rates.

First column	***Second column***
Type of risk	**Description of risk**
Premium liability risk	Premium liability risk is associated with future claims and is the risk that the amount set aside for claims and expenses against unearned premiums will prove inadequate.
Property investment risk	Property risk is the risk of economic loss due to changes in the price of property exposures.

5 GROUP FINANCIAL RESOURCES

5.1 For the purpose of computing the DFHC (Licensed Insurer)'s FHC group financial resources ("Group FR"), a DFHC (Licensed Insurer) must treat the FHC group as a single licensed direct insurer incorporated in Singapore and determine the Group FR as the sum of the following items:

a) Tier 1 Capital calculated in accordance with paragraph 5.2;

b) Tier 2 Capital calculated in accordance with paragraph 5.4; and

c) regulatory adjustment.

Tier 1 Capital

5.2 "Tier 1 Capital" as referred to in sub-paragraph 5.1a) of a DFHC (Licensed Insurer) means the sum of the following items:

a) the net assets in the consolidated statement of financial position of the DFHC (Licensed Insurer)'s FHC group;

b) the DFHC (Licensed Insurer)'s paid-up ordinary share capital which qualify for inclusion as CET1 Capital in accordance with **Appendix 5A**;

c) retained earnings; and

d) any Additional Tier 1 ("AT1") Capital, which means the sum of the capital instruments issued by the DFHC (Licensed Insurer) that qualify for inclusion as AT1 Capital in accordance with **Appendix 5B**,

less the aggregate of the reinsurance adjustments of all insurance businesses that belong to the DFHC (Licensed Insurer)'s FHC group, any financial resource adjustment and any adjustment for asset concentration.

5.3 A DFHC (Licensed Insurer) must determine the regulatory adjustment, reinsurance adjustment, financial resource adjustment and adjustment for asset concentration referred to in paragraphs 5.1 and 5.2 in accordance with **Appendix 5E**.

Tier 2 Capital

5.4 "Tier 2 Capital" as referred to in sub-paragraph 5.1b) means the sum of capital instruments issued by the DFHC (Licensed Insurer) that qualify for inclusion as Tier 2 Capital in accordance with **Appendix 5C.**

Common Equity Tier 1 Capital

5.5 The DFHC (Licensed Insurer) must calculate Common Equity Tier 1 ("CET1") Capital as Tier 1 Capital calculated in accordance with paragraph 5.2 less AT1 Capital as defined in paragraph 5.2(d).

CET1 Capital Ratio and Tier 1 Capital Ratio

5.6 A DFHC (Licensed Insurer) must ensure that at all times:

a) the CET1 Capital ratio which is determined as the ratio of the CET1 Capital over the Group TRR (excluding the risk requirements of participating businesses) is not less than *60%*; and

b) the Tier 1 Capital ratio which is determined as the ratio of the Tier 1 Capital over the Group TRR (excluding the risk requirements of participating businesses) is not less than *80%*.

Submission requirements for CET1 Capital, AT1 Capital and Tier 2 Capital

5.7 Where a DFHC (Licensed Insurer) intends to recognise any paid-up ordinary share, AT1 Capital instrument or Tier 2 Capital instrument to be issued by an insurance group entity in its FHC group for the purpose of inclusion as CET1 Capital, AT1 Capital or as Tier 2 Capital respectively, the DFHC (Licensed Insurer) must comply with the submission requirements stated in **Appendix 5D**.

5.8 Where at any time before 1 January 2024,

a) the Authority has approved a capital instrument as a Tier 1 resource, a DFHC (Licensed Insurer) may recognise such a capital instrument as Tier 1 Capital; and

b) the Authority has approved a capital instrument as a qualifying Tier 2 instrument, a DFHC (Licensed Insurer) may recognise such a capital instrument as Tier 2 Capital.

5.9 A DFHC (Licensed Insurer) must make the following adjustments[1] from the Group FR:

a) exclude equity investments within entities under the DFHC (Licensed Insurer)'s FHC group that are not included for calculation of capital adequacy requirement in accordance with section 2.4 of this Notice[2]; and

b) deduct any deficits arising from entities within the DFHC (Licensed Insurer)'s FHC group other than deficits arising from the entities included for calculation of capital adequacy requirement in accordance with section 2.4 of this Notice and any other entity that the Authority may specify. For the purpose of this paragraph, deficits mean any shortfall of assets to meet liabilities based on the Accounting Standards.

Guidelines:

5.1 For instance, for an entity within a DFHC (Insurer)'s FHC group that has not been included for the calculation of capital adequacy requirement but has been consolidated under a designated financial holding company for reporting to the Authority, such an entity's deficit (if any) need not be deducted from the FHC group's financial resources.

5.2 In assessing the group-wide capital adequacy of a DFHC (Insurer)'s FHC group, the DFHC (Licensed Insurer) should also consider fungibility of capital and transferability of assets among entities within the FHC group. Without considering the lack of fungibility of capital in the assessment of an FHC group's solvency, Group CAR may overstate the capital buffer that an FHC group has because some of these capital buffers may not actually be fungible to make up any capital shortfall in other parts of the FHC group. Circumstances where capital may not be fungible (as given in the Insurance Core Principles' guidance) include:

a) Assets ring-fenced for certain portfolios (for example, participating business or portfolios akin to RBC 2's MA portfolios);

[1] To avoid doubt, equity investments within companies included for calculation of capital adequacy requirement in accordance with section 2.4 of this Notice, and deficits arising from these companies, do not need to be excluded or deducted in this paragraph, because they would already have been excluded or deducted by use of consolidated financial statements.

[2] This is to prevent multiple gearing and leveraging within the FHC group.

b) Capital retained to meet a legal entity's local regulatory capital adequacy requirements;
c) Rights that holders of certain instruments may have over the assets of the legal entity; and
d) Exchange controls in some jurisdictions.

The Authority will collect additional information from a DFHC (Licensed Insurer) to assess the impact of any capital fungibility constraints on Group CAR. Such information may include the specific circumstances where lack of capital fungibility would apply at the DFHC (Licensed Insurer)'s FHC group level, and getting the DFHC (Licensed Insurer) to adjust its financial resources to account for the non-fungible nature of a particular portfolio or asset. Any concerns with the FHC group's solvency after considering the lack of capital fungibility will trigger further supervisory engagements with the Authority.

Appendix 3A-1

VALUATION OF POLICY LIABILITIES OF LIFE BUSINESS (NET AND GROSS OF REINSURANCE) FOR AN FIE IN A DFHC (LICENSED INSURER)'S FHC GROUP

Recognition and valuation of liabilities of life business (net of reinsurance)

1.—(1) Subject to paragraph (4), a DFHC (Licensed Insurer) must value the liability (net of reinsurance) in respect of a non-participating policy as the value of expected future payments arising from the policy, including any expense that the FIE expects to incur in administering the policy and settling any relevant claims and any provision made for any adverse deviation from the expected experience, less expected future receipts arising from the policy.

(2) Subject to paragraph (4), a DFHC (Licensed Insurer) must value the liability (net of reinsurance) in respect of an investment-linked policy as the sum of —

a) the unit reserves, calculated as the value of the underlying assets backing the units relating to the policy; and

b) the non-unit reserves, calculated as the value of expected future payments arising from the policy (other than those relating to the unit reserves), including any expense that the FIE expects to incur in administering the policies and settling the relevant claims and any provision made for any adverse deviation from the expected experience, less expected future receipts arising from the policy (other than those relating to the unit reserves).

(3) Subject to paragraphs (4) and (7), a DFHC (Licensed Insurer) must value the liability (net of reinsurance) in respect of a participating policy as the sum of —

a) the value of expected future payments arising from guaranteed benefits of the policy, including any expense that the FIE expects to incur in administering the policies and settling the relevant claims, less expected future receipts arising from guaranteed benefits of the policy;

b) the value of expected payments arising from non guaranteed benefits of the policy in respect of —

(i) future allocations by way of bonus in accordance with any relevant regulation which the FIE is subject to on the allocation of bonus to policyholders; and

(ii) future allocations to the shareholders in accordance with any relevant regulation which the FIE is subject to on the allocation to shareholders for participating business; and

c) any provision made for any adverse deviation from the expected experience.

(4) A DFHC (Licensed Insurer) must not value the liability (net of reinsurance) in respect of any policy to be less than zero, unless there are moneys due to the FIE when the policy is terminated on the valuation date, in which event the value of the liability (net of reinsurance) in respect of that policy may be negative to the extent of the amount due to the FIE.

(5) A DFHC (Licensed Insurer) must calculate the liability (net of reinsurance) in respect of the policies of a non-participating business or an investment-linked business as the sum of the liability (net of reinsurance) in respect of each policy of that business determined in the manner provided in paragraph (1) or (2), respectively.

(6) A DFHC (Licensed Insurer) must calculate the liability (net of reinsurance) in respect of the policies of a participating business as the highest of the following:

a) the sum of the liability (net of reinsurance) in respect of each policy of the business determined in the manner provided in paragraphs (1) and (3);

b) the minimum condition liability of the business;

c) the value of assets backing the liabilities of the business less the reinsurers' share of policy liabilities determined in the manner provided in paragraph 9(8) of **Appendix 3D**.

(7) Where the liability (net of reinsurance) in respect of the policies of a participating business determined in the manner provided in paragraph (6) is greater than the sum of the liability (net of reinsurance) in respect of each policy of the business as determined in the manner provided in paragraphs (1) and (3), a DFHC (Licensed Insurer) shall make such adjustments as may be necessary to the components for the valuation of the liability (net of reinsurance) in respect of a participating policy referred to in paragraph (3)(b), for all or part of the participating policies of the business such that the sum of the liability (net of reinsurance) in respect of each policy of the business equals the value determined in paragraph (6).

(8) Despite anything in this Appendix, a DFHC (Licensed Insurer) may use the method mentioned in paragraph (11) (called in this Appendix the simplified method) to determine the value of the liabilities (net of reinsurance) in respect of the short-term policies issued as part of the FIE's life business, if —

a) the DFHC (Licensed Insurer) has verified (in accordance with paragraph (9) that using the simplified method results in a value that is not less than the value determined in the manner provided in paragraphs (1) to (7) (as applicable); and

b) the DFHC (Licensed Insurer) has determined that using the simplified method is appropriate, taking into consideration the risks covered by each policy and any other factors that may be relevant.

(9) The verification mentioned in paragraph (8) must be carried out once in the year in which the valuation under paragraphs (1) to (7) is to be carried out, and —

a) in a case where the DFHC (Licensed Insurer) uses the simplified method for the purpose of preparing the "Annual Returns" mentioned in MAS Notice FHC-N129 for that year; or

b) in a case where the DFHC (Licensed Insurer) uses the simplified method for the purpose of preparing any of the "Quarterly Returns" mentioned in MAS Notice FHC-N129 for that year — before the first time in that year it uses that method.

(10) The Authority may require a DFHC (Licensed Insurer) to provide documentary evidence in support of the DFHC (Licensed Insurer)'s verification under paragraph (8).

(11) In this Notice, the simplified method to determine the value of the liabilities (net of reinsurance) in respect of the short-term policies mentioned in paragraph (8) is the totalling of the following:

a) the premium liabilities (net of reinsurance) of the policies, being an amount that is not less than the higher of the following:

(i) the unearned premiums reserves (net of reinsurance) of the policies, being an amount that is the aggregate of the unearned premium reserves (net of reinsurance) for each policy determined in the manner provided in paragraph (14);

(ii) the unexpired risk reserves (net of reinsurance) of the policies, being an amount that is the aggregate of the expected future payments arising from future events insured under each policy in force as at the valuation date (including any expense expected to be incurred in administering the policy and settling claims against the policy) and any provision for any adverse deviation from the expected experience, calculated based on 75 per cent level of sufficiency;

b) the claim liabilities (net of reinsurance) of the policies, being an amount that is not less than the value derived from the formula A + B, where —

(i) A is the aggregate of the expected future payments in relation to claims under each policy incurred before the valuation date (including any expense expected to be incurred in settling the claims) and that fall due for payment after the valuation date, whether or not the claims have been reported to the FIE; and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on 75 per cent level of sufficiency.

(12) In determining the unexpired risk reserves (net of reinsurance) of the policies mentioned in paragraph (11)(a)(ii) and claim liabilities (net of reinsurance) of the policies mentioned in paragraph (11)(b), a DFHC (Licensed Insurer) must —

a) make separate estimates of the gross incurred claims and recoveries from the reinsurance counterparty; and

b) take into account the likelihood of default by the reinsurance counterparty and any non-reinsurance recovery such as salvage and subrogation.

(13) A DFHC (Licensed Insurer) may, instead of determining the unexpired risk reserves (net of reinsurance) of the policies mentioned in paragraph (11)(a)(ii) and claim liabilities (net of reinsurance) of the policies mentioned in paragraph (11)(b) in the manner provided in paragraph (12), determine the same using claims data that is net of reinsurance if there is no material change in —

a) the manner in which liabilities are reinsured during the period to which the data used to determine the unexpired risk reserves (net of reinsurance) and claim liabilities (net of reinsurance) relates; and

b) the manner in which liabilities are reinsured at the valuation date.

(14) For the purposes of paragraph (11)(a)(i), the amount of unearned premium reserves (net of reinsurance) for a short-term policy must be —

a) subject to sub-paragraph (b) and paragraph (15), an amount calculated on a basis not less accurate than the 1/24th method; or

b) in the case of an FIE that carries on the business of reinsurance of liabilities under insurance policies —

  (i) an amount not less than 40% of the net premiums written in the accounting period for the policy; or

  (ii) an amount calculated on a basis not less accurate than the 1/24th method.

(15) Where the simplified method is used, the amount of unearned premium reserves (net of reinsurance) for a short-term policy must be calculated —

a) in a case where the 1/24th method or some other more accurate method is used — using an amount of net premiums written for the policy that is reduced by the actual commissions payable for the policy; or

b) in any other case — using an amount of net premiums written for the policy without any deduction for commissions payable from the net premiums for the policy.

Recognition and valuation of liabilities of life business (gross of reinsurance)

1A.—(1) A DFHC (Licensed Insurer) with an FIE in its FHC group carrying on life business must recognise, as a liability of a participating business, non-participating business or investment-linked business, the liability (gross of reinsurance) in respect of the policies of the business.

(2) Subject to paragraph (5), a DFHC (Licensed Insurer) must calculate the liability (gross of reinsurance) in respect of a participating policy as the value derived from the formula (A + B + C) − D, where —

a) A is the value of the expected future payments arising from the guaranteed benefits of the policy (including any expense that the FIE expects to incur in administering the policy and settling any claim against the policy);

b) B is the value of the expected future payments arising from the non-guaranteed benefits of the policy in respect of —

(i) future allocations by way of bonus in accordance with any relevant regulation which the FIE is subject to on the allocation of bonus to policyholders; and

(ii) future allocations to the shareholders, where relevant, in accordance with any relevant regulation which the FIE is subject to on the allocation to shareholders for participating business;

c) C is any provision made for any adverse deviation from the expected experience; and

d) D is the value of the expected future receipts arising from the guaranteed benefits of the policy.

(3) Subject to paragraph (5), a DFHC (Licensed Insurer) must calculate the liability (gross of reinsurance) in respect of a non-participating policy as the value derived from the formula (A + B) − C, where —

a) A is the value of expected future payments arising from the policy (including any expense that the FIE expects to incur in administering the policy and settling any claim against the policy);

b) B is any provision made for any adverse deviation from the expected experience; and

c) C is the value of the expected future receipts arising from the policy.

(4) Subject to paragraph (5), a DFHC (Licensed Insurer) must calculate the liability (gross of reinsurance) in respect of an investment-linked policy as the sum of —

a) the unit reserves, which is the value of the underlying assets backing the units relating to the policy; and

b) the non-unit reserves, which is the value derived by the formula (A + B) − C, where —

(i) A is the value of the expected future payments arising from the policy (including any expense expected to be incurred in administering the policy and settling any claim against the policy), other than payments relating to the unit reserves;

(ii) B is any provision made for any adverse deviation from the expected experience; and

(iii) C is the value of the expected future receipts arising from the policy, other than receipts relating to the unit reserves.

(5) Subject to paragraph (6), a DFHC (Licensed Insurer) must not value the liability (gross of reinsurance) in respect of any policy mentioned in paragraph (2), (3) or (4) to be less than zero unless there are moneys due to the FIE when the policy is terminated on the valuation date.

(6) Where there are moneys due to the FIE when a policy is terminated on the valuation date, a DFHC (Licensed Insurer) may value the liability (gross of reinsurance) in respect of the policy as negative to the extent of the amount due to the FIE.

(7) A DFHC (Licensed Insurer) must calculate the liability (gross of reinsurance) in respect of the policies of a participating business as the sum of the following:

a) the liability (net of reinsurance) in respect of those policies determined in the manner provided in paragraph 1(6);

b) the reinsurers' share of policy liabilities in respect of those policies determined in the manner provided in paragraph 9(8) of **Appendix 3D**.

(8) A DFHC (Licensed Insurer) must calculate the liability (gross of reinsurance) in respect of the policies of a non-participating business or an investment-linked business as the sum of the liability (gross of reinsurance) in respect of each policy of that business determined in the manner provided in paragraph (3) or (4), respectively.

(9) Despite anything in this Appendix, a DFHC (Licensed Insurer) may use the method mentioned in paragraph (12) (called in this Appendix the simplified method) to determine the value of the liabilities (gross of reinsurance) in respect of the short-term policies issued as part of the FIE's life business, if —

a) the DFHC (Licensed Insurer) has verified (in accordance with paragraph (10)) that using the simplified method results in a value that is not less than the value determined in the manner provided in paragraphs (1) to (8) (as applicable); and

b) the DFHC (Licensed Insurer) has determined that using the simplified method is appropriate, taking into consideration the risks covered by each policy and any other factors that may be relevant.

(10) The verification mentioned in paragraph (9) must be carried out once in the year in which the valuation under paragraphs (1) to (8) is to be carried out, and

a) in a case where the DFHC (Licensed Insurer) uses the simplified method for the purpose of preparing the “Annual Returns” mentioned in MAS Notice FHC-N129 for that year; or

b) in a case where the DFHC (Licensed Insurer) uses the simplified method for the purpose of preparing any of the “Quarterly Returns” mentioned in MAS Notice FHC-N129 for that year before the first time in that year it uses that method.

(11) The Authority may require the DFHC (Licensed Insurer) to provide documentary evidence in support of the DFHC (Licensed Insurer)’s verification under paragraph (9).

(12) In this Notice, the simplified method to determine the value of the liabilities (gross of reinsurance) in respect of the short-term policies mentioned in paragraph (9) is the totalling of the following:

a) the premium liabilities (gross of reinsurance) of the policies, being an amount that is not less than the higher of the following:

(i) the unearned premiums reserves (gross of reinsurance) of the policies, being an amount that is the aggregate of the unearned premium reserves (gross of reinsurance) for each policy determined in the manner provided in paragraph (14);

(ii) the unexpired risk reserves (gross of reinsurance) of the policies, being an amount that is the aggregate of the expected future payments arising from future events insured under each policy in force as at the valuation date (including any expense expected to be incurred in administering the policy and settling claims against the policy) and any provision for any adverse deviation from the expected experience, calculated based on 75 per cent level of sufficiency;

b) the claim liabilities (gross of reinsurance) of the policies, being an amount that is not less than the value derived from the formula A + B, where —

(i) A is the aggregate of the expected future payments in relation to claims under each policy incurred before the valuation date (including any expense expected to be incurred in settling the claims) and that fall due for payment after the valuation date, whether or not the claims have been reported to the FIE; and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on 75 per cent level of sufficiency.

(13) In determining the unexpired risk reserves (gross of reinsurance) of the policies mentioned in paragraph (12)(a)(ii) and claim liabilities (gross of reinsurance) of the policies mentioned in paragraph (12)(b), a DFHC (Licensed Insurer) must take into account any non reinsurance recovery such as salvage and subrogation.

(14) For the purposes of paragraph (12)(a)(i), the amount of unearned premium reserves (gross of reinsurance) for a short-term policy must be —

a) in the case of an FIE that carries on the business of reinsurance of liabilities under insurance policies —

  (i) an amount not less than 40% of the gross premiums written in the accounting period for the policy; or

  (ii) an amount calculated on a basis not less accurate than the 1/24th method; or

b) in any other case — subject to paragraph (15), an amount calculated on a basis not less accurate than the 1/24th method.

(15) Where the simplified method is used, the amount of unearned premium reserves (gross of reinsurance) for a short-term policy must be calculated —

a) where the 1/24th method or some other more accurate method is used — using an amount of gross premiums written for the policy that is reduced by the actual commissions payable for the policy; or

b) in any other case — using an amount of gross premiums written for the policy without any deduction for commissions payable from the gross premiums for the policy.

Appendix 3A-2

FURTHER REQUIREMENTS ON VALUATION OF POLICY LIABILITIES OF LIFE BUSINESS FOR AN FIE IN A DFHC (LICENSED INSURER)'S FHC GROUP

Valuation of Participating Policies

1. For the purposes of **Appendix 3A-1** of this Notice, when calculating the value of expected future payments arising from "non-guaranteed benefits" of policies of a participating business, a DFHC (Licensed Insurer) must —

   a) include projected future allocations to participating policies by way of bonuses, including dividends;

   b) include projected future allocations to the shareholders arising from the participating business where relevant; and

   c) take into account any relevant regulation and internal policy which an FIE is subject to on the allocation of bonus to policyholders.

Valuation of Universal Life (UL) Policies

2. A DFHC (Licensed Insurer) must value the policy liability of a UL policy as the higher of the following amounts:

   a) the value obtained by projecting the liability cash flows under the policy (including any provision for adverse deviation ("PAD") from the expected experience) at the minimum guaranteed crediting rate and discounted at the risk-free discount rate determined in accordance with paragraphs 3.3.4, and 3.4.1 of this Notice (which represents the liability for guaranteed benefits); and

   b) the value obtained by projecting the liability cash flows under the policy (including any PAD from the expected experience) at the current crediting rate and discounted at the best estimate investment return determined in accordance with paragraph 3.3.3 of this Notice (which represents the liability for total benefits).

Valuation of Long-term Medical Policies

3. A DFHC (Licensed Insurer) must value the liabilities in respect of a portfolio of long-term medical policies that belong to an FIE as the sum of the following components:

a) an amount which is adequate to cover the value of expected future payments less expected future receipts, and any PAD from the expected experience. A DFHC (Licensed Insurer) must determine the term of projection of future cash flows based on contract boundary considerations set out at paragraphs 4 to 5 below; and

b) the value of expected payments arising from claims which has already been incurred prior to the valuation date which must comprise reported but not settled ("RBNS") claims and IBNR claims, including any PAD from the expected experience.

Contract Boundary Considerations

4. A DFHC (Licensed Insurer) must consider the boundary of an insurance contract when valuing a long-term medical policy, and must determine the boundary of the insurance contract as follows:

a) A DFHC (Licensed Insurer) must treat cash flows as being within the boundary of the insurance contract if they arise from rights and obligations that exist during the period in which an FIE has a substantive obligation to provide the policyholder with the contracted insurance coverage or other services.

b) For the purposes of sub-paragraph a), a substantive obligation ends when all of the following criteria are satisfied:

(i) the FIE has the unconstrained practical ability to reassess the risks of the contract or a portfolio of contracts to which the contract that is being valued belongs, and, as a result, can set a price or level of benefits that fully reflects the reassessed risk of that contract or portfolio; and

(ii) the pricing of premiums for the coverage up to the date when risks are reassessed, do not reflect risks related to periods beyond the reassessment date.

c) In assessing whether the criteria in sub-paragraph b)(i) has been satisfied, a DFHC (Licensed Insurer) must consider all the risks that it would normally consider when underwriting equivalent contracts on the renewal date for the remaining coverage.

d) A DFHC (Licensed Insurer) must regularly assess if there is any change in circumstances that may affect the FIE's practical ability to reprice (per sub-paragraph b)(i)). Where there has been a change in circumstances, the DFHC (Licensed Insurer) must revalue the portfolio based on the new boundary arising from the change in circumstances, from the next valuation date after such change.

Example:
For instance, if the FIE foresees restrictions to such practical ability to reassess the risk and to set a price or level of benefits accordingly, it should then value the liabilities of the portfolio based on a longer term of projection (i.e. up to the natural expiry of the policies within the portfolio).

5. For medical riders attached to long-term medical policies, a DFHC (Licensed Insurer) must determine the contract boundary in accordance with paragraph 4, save that the contract boundary of a rider must not be longer than that of the long-term medical policy the rider is attached to.

6. A DFHC (Licensed Insurer) must compute the C1 requirement for long-term medical policies using the same contract boundary used by the FIE for the valuation of the liability of a long-term medical policy determined in accordance with paragraphs 4 and 5.

Valuation of Investment-Linked Policies

7. For the purpose of valuing the liability of an investment-linked policy, a DFHC (Licensed Insurer) must project the unit reserves and value the non-unit reserves at the risk-free discount rate determined in accordance with paragraph 3.3.4 of the Notice. A DFHC (Licensed Insurer) must also project the unit reserves and value the non-unit-reserves at the risk-free discount rate when providing the negative reserves for regulatory adjustment that is to be determined in accordance with sub-section C of **Appendix 5E**.

Appendix 3A-3

GUIDELINES ON THE VALUATION OF POLICY LIABILITIES RELATING TO THE LIFE BUSINESS OF AN FIE IN A DFHC (LICENSED INSURER)'S FHC GROUP

DATA AND VALUATION SYSTEM

1. The data used in the valuation should be appropriate. A DFHC (Licensed Insurer) should take the necessary steps to verify the consistency, completeness and accuracy of the data collated.

2. The data used in the investigation should be consistent with the data collated to the audited accounts. Any weaknesses in the data should be adjusted for.

3. The valuation system used in the calculation of policy liabilities should apply the methods and assumptions correctly.

VALUATION METHODOLOGY

General approach to be taken by the DFHC (Licensed Insurer) with respect to life business

4. In determining the liability in respect of a policy relating to the life business of an FIE (other than the unit reserves of the investment-linked policy), a DFHC (Licensed Insurer) should derive the value of expected future payments less expected future receipts using a discounted prospective cash-flow method.

5. The discounted prospective cash flow method requires explicit projection of expected future payments and receipts over the durations of the policy. This should include, where applicable, the following parameters:
    a) mortality and morbidity benefits;
    b) survival and maturity benefits;
    c) surrender benefits;
    d) distribution costs;
    e) management expenses;
    f) claims expenses if not already included as part of management expenses;
    g) premiums payment to and claims recoveries from reinsurance counterparty;
    h) cost of options.

6. Parameters that are immaterial to the valuation of policy liabilities may be excluded from being included explicitly in the projection.

7. The assumptions used in the projection should be based on the best estimate assumptions and in accordance with paragraphs 17 to 2928 of this Appendix.

8. Further allowance for the uncertainty of the best estimate value derived above will be provided through the PAD. The PAD should be derived using the same method outlined above but with more conservative assumptions containing a buffer against fluctuations of the best estimate experience.

9. The PAD should be derived in accordance with paragraphs 30 to 33 of this Appendix.

10. A DFHC (Licensed Insurer) should account for the outstanding incurred claims and IBNR claims in determining the liability of a policy in its life business.

Term of Liabilities

11. The starting point to derive the term of a policy's liabilities is the contractual term of the policy. A DFHC (Licensed Insurer) should then take account of any options in the contract when deciding whether the term of a policy's liabilities should be extended beyond the contract term.

12. The term of a policy's liabilities takes account of all adjustments made to the policy on renewal before the valuation date, and future adjustments if appropriate.

13. In determining the term of liabilities, regard should be had to the contract boundary considerations in this Notice and any relevant professional standard, where applicable.

Approximations and simplified methods

14. Where model points representing groups of homogeneous insurance policies are used in determining policy liabilities, goodness of fit tests should be conducted to ensure the appropriateness of approximations used and the approximations do not lead to any understating of policy liabilities.

15. Simplified methods may be used for products that are immaterial, products that are not of a long term guaranteed nature or yearly renewable term products. Where simplified methods are used in determining policy liabilities, the appointed actuary should ensure that the use of such methods are appropriate and do not lead to any understating of policy liabilities.

16. For the purpose of determining whether the use of the simplified method, in particular the unearned premium reserves (“UPR”), mentioned in paragraph 1(8) or paragraph 1A(9) of **Appendix 3A-1** of this Notice is appropriate, the DFHC (Licensed Insurer) should first assess if such a method is appropriate based on the nature of the risks covered under the policies. Consideration should be given to the timing that the risks are expected to occur over the remaining term of the coverage. For example, if the risks are not expected to be broadly evenly spread, it may not be appropriate to use a portion of premiums (corresponding to the remaining term of the coverage) to approximate the liability.

VALUATION ASSUMPTIONS

Best Estimate

17. The expected future payments and receipts should be determined using best estimate assumptions for all relevant parameters.

18. The best estimate assumptions made should have regard to the experience of the FIE, with particular reference to significant aspects of recent experience.

Expenses

19. Separate assumptions should be identified for the distribution expenses and management expenses. Management expenses should include maintenance and claims handling expenses, based on the FIE’s actual recent experience.

20. If the future experience is likely to be different from actual experience, allowance should be made for any potential deterioration or improvement in the future experience relating to management expenses. However, any allowance for the improvement in the projected management expenses should be supported by strong justification and should be based on projections not extending beyond 3 years from the valuation date.

Inflation Rate

21. The inflation rate should be factored into the projection of the management expenses.

22. Standard inflation is not specific to an FIE’s portfolio. It is an external factor operating in the economy at large. It is appropriate to refer to publicly available information on historic wage and price inflation and economists’ forecasts to estimate the future wage and price inflation rates.

Mortality and Morbidity

23. There may be an insufficient amount of claim experience data on which to reliably derive the best estimate assumptions. Partial or full weight may be given to assumptions drawn from industry data, if satisfied that such an approach is appropriate.

24. The mortality and morbidity assumptions should be broken down into appropriate grouping by sex and smoking status according to the way the premium rates are differentiated.

25. Where there are selective lapses by healthy lives for certain types of guaranteed renewable products, the deterioration of mortality and morbidity experience after the renewal of these policies should be factored in.

Lapse and Surrender rates

26. In the selection of the expected lapse and surrender rates, the FIE’s experience data should be considered. The changing company practices and market conditions that may affect the lapse and surrender pattern of the policies in the future should also be taken into account.

27. Regard should be had to guaranteed renewable products where the lapse rates are likely to show a sudden and temporary increase when the premium rates are increased at renewal date.

Bonus and Dividend Rates

28. The future bonus and dividend rates assumed in the valuation should take into account any relevant laws or regulatory requirements and internal policy which the FIE is subject to for managing the participating business.

29. In setting the bonus and dividend rates, reference should be made to the latest bonus investigation study that supports the derivation of the current applicable bonus and dividend rates, and consider the fairness and equity among different policies.

Provision for Adverse Deviation (PAD)

30. The PAD is the component of the value of the insurance liabilities that relates to the inherent uncertainty in the best estimate experience. As the PAD represents an additional component of the liability value, it is therefore aimed at ensuring that the value of the insurance liabilities is established at an adequate level.

31. In the valuation of any policy that provides accident and health benefits, the DFHC (Licensed Insurer) should calculate the PAD in respect of the part of the policy relating to accident and health benefits based on the 75 per cent level of sufficiency.

32. Where a DFHC (Licensed Insurer) uses the simplified method, in particular the UPR, referred to in paragraph 1(8) or paragraph 1A(9) of **Appendix 3A-1** of this Notice, the DFHC (Licensed Insurer) should determine PAD in respect of premium liability as the amount of UPR in excess of best estimate liability for the purpose of computing C1 requirement.

33. Where approximations and simplifications are made, there should be additional PAD to ensure that such methods do not understate the policy liabilities.

Appendix 3B-1

VALUATION OF POLICY LIABILITIES OF GENERAL BUSINESS (NET AND GROSS OF REINSURANCE) FOR AN FIE IN A DFHC (LICENSED INSURER)'S FHC GROUP

Recognition and valuation of liabilities of general business (net of reinsurance)

1. (1) A DFHC (Licensed Insurer) must calculate the liabilities (net of reinsurance) in respect of policies of the general business of an FIE in the DFHC (Licensed Insurer)'s Group as the sum of —

a) premium liabilities (net of reinsurance), which is an amount not less than the higher of the following:

(i) the unearned premiums reserves (net of reinsurance) of the general business, which is the aggregate of unearned premium reserves (net of reinsurance) for each policy of the general business determined in the manner provided in paragraph (8);

(ii) the unexpired risk reserves (net of reinsurance), which is the sum of the value of the expected future payments arising from future events insured under policies in force as at the valuation date (including any expense expected to be incurred in administering the policies and settling claims against those policies) and any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency; and

b) claim liabilities (net of reinsurance), which is an amount not less than the value derived from the formula A + B, where —

(i) A is the value of the expected future payments in relation to claims incurred prior to the valuation date (including any expense expected to be incurred in settling the claims) and that fall due for payment after the valuation date, whether or not the claims have been reported to the FIE; and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency.

(2) In determining the unexpired risk reserves (net of reinsurance) mentioned in paragraph (1)(a)(ii) and claim liabilities (net of reinsurance) mentioned in paragraph (1)(b), the DFHC (Licensed Insurer) must —

a) make separate estimates of the gross incurred claims and recoveries from the reinsurance counterparty; and

b) take into account the likelihood of default by the reinsurance counterparty and any non-reinsurance recovery such as salvage and subrogation.

(3) A DFHC (Licensed Insurer) may, instead of determining the unexpired risk reserves (net of reinsurance) mentioned in paragraph (1)(a)(ii) and claim liabilities (net of reinsurance) mentioned in paragraph (1)(b) in the manner provided in paragraph (2), determine the same using claims data that is net of reinsurance if there is no material change in —

a) the manner in which liabilities are reinsured during the period to which the data used to determine the unexpired risk reserves (net of reinsurance) and claim liabilities (net of reinsurance) relates; and

b) the manner in which liabilities are reinsured at the valuation date.

(4) A DFHC (Licensed Insurer) must make separate calculations of the premium liabilities (net of reinsurance), the unexpired risk reserves (net of reinsurance) and the claim liabilities (net of reinsurance) for each line of business that is carried on by the FIE and that is described in Form 13 in Appendix B to MAS Notice FHC-N129;

(5) For the purposes of paragraph (4), a DFHC (Licensed Insurer) must calculate the premium liabilities (net of reinsurance), the unexpired risk reserves (net of reinsurance) and the claim liabilities (net of reinsurance) for each line of business in the following manner:

a) the premium liabilities (net of reinsurance) is an amount not less than the unexpired risk reserves (net of reinsurance);

b) the unexpired risk reserves (net of reinsurance) is the value derived from the formula A + B, after allowing for the effect of diversification (if any) at the level of the relevant insurance business mentioned in paragraph (1), where —

(i) A is the value of the expected future payments arising from future events insured under policies in force as at the valuation date (including any expense expected to be incurred in administering the policies and settling claims against the policies); and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency;

c) the claim liabilities (net of reinsurance) is an amount not less than the value derived from the formula A + B, after allowing for the effect of diversification (if any) at the level of the relevant insurance business mentioned in paragraph (1), where —

(i) A is the value of the expected future payments in relation to claims incurred prior to the valuation date (including any expense expected to be incurred in settling the claims) and that fall due for payment after the valuation date, whether or not they have been reported to the FIE; and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency.

(6) In respect of the general business of an FIE, the amount of premium liabilities (net of reinsurance) and claim liabilities (net of reinsurance) as at the end of an accounting period for each line of business that is carried on by the FIE and that is described in Form 13 of MAS Notice FHC-N129 must not be less than the corresponding amount of premium liabilities (net of reinsurance) and claim liabilities (net of reinsurance) as valued by the actuary appointed under the laws or regulatory requirements that relate to the insurance industry of the jurisdiction in which the general business of the FIE is carried on.

(7) The amount of unearned premium reserves (net of reinsurance) for a policy in respect of general business must be —

a) subject to sub-paragraphs (b) and (c) and paragraph (8), an amount calculated on a basis not less accurate than the 1/24th method;

b) in the case of an FIE that underwrites risks relating to cargo policies, an amount not less than 25% of the net premiums written in the accounting period for those policies or an amount calculated on a basis not less accurate than the 1/24th method; or

c) in the case of an FIE that carries on the business of reinsurance of liabilities under insurance policies —

(i) an amount not less than 25% of the net premiums written in the accounting period in the case of marine and aviation policies and 40% of the net premiums written in the accounting period in other cases; or

(ii) an amount calculated on a basis not less accurate than the 1/24th method.

(8) The amount of unearned premium reserves (net of reinsurance) for a policy in respect of general business must be calculated —

a) where the 1/24th method or some other more accurate method is used, using an amount of net premiums written that is reduced by the actual commissions payable; or

b) in any other case, using an amount of net premiums written without any deduction for commissions payable from the net premiums.

(9) In this Appendix, “marine and aviation policy” means a policy of insurance —

a) upon goods, merchandise or property of any description transported on board vessels, aircraft or other means of conveyance, including incidental transit before and after shipment;

b) upon the freight of, or any other interest in or relating to vessels, aircraft or other means of conveyance;

c) upon vessels or aircraft, or upon machinery, tackle furniture or equipment of vessels or aircraft;

d) against damage arising out of or in connection with the use of vessels or aircraft, including third-party risks; or

e) against risks incidental to the construction, repair or docking of vessels, including third-party risks.

Recognition and valuation of policy liabilities of general business (gross of reinsurance)

1(A). (1) A DFHC (Licensed Insurer) must recognise, as a liability of the general business of an FIE, the liabilities (gross of reinsurance) in respect of the policies of the insurance business.

(2) The DFHC (Licensed Insurer) must calculate the liabilities mentioned in paragraph (1) as the sum of —

a) premium liabilities (gross of reinsurance), which is an amount not less than the higher of the following:

(i) the unearned premium reserves (gross of reinsurance) of the general business, which is the aggregate of unearned premium reserves (gross of reinsurance) for each policy of the general business determined in the manner provided in paragraph (7);

(ii) the unexpired risk reserves (gross of reinsurance), which is the sum of the value of the expected future payments arising from future events insured under policies in force as at the valuation date (including any expense expected to be incurred in administering the policies and settling claims against those policies) and any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency; and

b) claim liabilities (gross of reinsurance), which is an amount not less than the value derived from the formula A + B, where —

(i) A is the value of the expected future payments in relation to claims incurred prior to the valuation date (including any expense expected to be incurred in settling the claims) and that fall due for payment after the valuation date, whether or not the claims have been reported to the FIE; and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency.

(3) In determining the unexpired risk reserves (gross of reinsurance) mentioned in paragraph (2)(a)(ii) and claim liabilities (gross of reinsurance) mentioned in paragraph (2)(b), a DFHC (Licensed Insurer) must take into account any non-reinsurance recovery such as salvage and subrogation.

(4) A DFHC (Licensed Insurer) must make separate calculations of the premium liabilities (gross of reinsurance), the unexpired risk reserves (gross of reinsurance) and the claim liabilities (gross of reinsurance) for each line of business that is carried on by the FIE and that is described in Form 13 in Appendix B to MAS Notice FHC-N129.

(5) For the purposes of paragraph (4), a DFHC (Licensed Insurer) must calculate the premium liabilities (gross of reinsurance), the unexpired risk reserves (gross of reinsurance) and the claim liabilities (gross of reinsurance) for each line of business in the following manner:

a) the premium liabilities (gross of reinsurance) must be an amount not less than the unexpired risk reserves (gross of reinsurance);

b) the unexpired risk reserves (gross of reinsurance) is the value derived from the formula A + B, after allowing for the effect of diversification (if any) at the level of the insurance business mentioned in paragraph (1), where —

(i) A is the value of the expected future payments arising from future events insured under policies in force as at the valuation date (including any expense expected to be incurred in administering the policies and settling claims against the policies); and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency;

c) the claim liabilities (gross of reinsurance) must be an amount not less than the value derived from the formula A + B, after allowing for the effect of diversification (if any) at the level of the insurance business mentioned in paragraph (1), where —

(i) A is the value of the expected future payments in relation to claims incurred prior to the valuation date (including any expense expected to be incurred in settling the claims) and that fall due for payment after the valuation date, whether or not the claims have been reported to the FIE; and

(ii) B is any provision for any adverse deviation from the expected experience, calculated based on the 75 per cent level of sufficiency.

(6) A DFHC (Licensed Insurer) must calculate the amount of unearned premium reserves (gross of reinsurance) for a policy in respect of general business as —

a) in the case of an FIE that underwrites risks relating to cargo policies —

(i) an amount not less than 25% of the gross premiums written in the accounting period for those policies; or

(ii) an amount calculated on a basis not less accurate than the 1/24th method;

b) in the case of an FIE that carries on the business of reinsurance of liabilities under insurance policies —

(i) an amount not less than —

(A) 25% of the gross premiums written in the accounting period in the case of marine and aviation policies; or

(B) 40% of the gross premiums written in the accounting period in other cases; or

(ii) an amount calculated on a basis not less accurate than the 1/24th method; or

c) in any other case, subject to paragraph (7), an amount calculated on a basis not less accurate than the 1/24th method.

(7) A DFHC (Licensed Insurer) must calculate the amount of unearned premium reserves (gross of reinsurance) for a policy in respect of general business —

a) where the 1/24th method or a more accurate method is used, using an amount of gross premiums written which is reduced by the actual commissions payable; or

b) in any other case, using an amount of gross premiums written without any deduction for commissions payable from the gross premiums.

Appendix 3B-2

GUIDELINES ON THE VALUATION OF POLICY LIABILITIES RELATING TO THE GENERAL BUSINESS OF AN FIE IN A DFHC (LICENSED INSURER)'S FHC GROUP

1. The DFHC (Licensed Insurer) should ensure that the certifying actuary of an FIE , in determining~~e~~ the liabilities in respect of general insurance policies, follows the guidance set out in this Appendix in the calculation of URR and CL.

2. While the determination of the liabilities in respect of general insurance policies carried out by the certifying actuary is conducted annually, a DFHC (Licensed Insurer) will still need to determine the value of its policy liabilities for quarterly reporting to the Authority and to satisfy itself that it has complied with the capital adequacy requirement on an on-going basis. It would generally be acceptable for the DFHC (Licensed Insurer) to assume that the results calculated by the certifying actuary anually remains valid throughout the next accounting period if the FIE's business volume and profile, underwriting and claims process and policy, and the general business conditions have not changed significantly. Otherwise, the DFHC (Licensed Insurer) should, depending on the extent of such change, make adjustments to the certifying actuary's calculations or conduct a full re-valuation of the policy liabilities where appropriate.

<u>Valuation Principles</u>

3. The valuations of an FIE's URR and CL should be made based on realistic estimates, and should reflect the individual circumstances of each FIE.

4. The BE of URR and BE of CL represent the mean value in the range of possible values for URR and CL respectively. The determination of the BEs should be based on assumptions as to future experience which reflect the experience and circumstances of the FIE and which is:

   a) made using judgment and experience;

   b) made having regard to reasonably available statistics and other information; and

   c) neither deliberately overstated nor deliberately understated.

5. No material information should be omitted from the valuation process. The Authority would consider a particular piece of information to be material to the overall result of a calculation when its misstatement or omission would cause the result to be misleading to the users of the valuation results.

6. The Authority takes the view that materiality should always be a matter requiring exercise of judgment. The level at which a difference becomes material can be considerably lower than a statistically significant difference. In these circumstances, careful exercise of judgment is expected. While it is reasonable to omit individual items on the grounds of materiality, thought should be given to the cumulative impact. Individual items should not be omitted if the overall result would be materially affected by the omissions.

Basis of Data

7. The data used in the determination of liabilities should be consistent with the data collated to the audited accounts. Any weaknesses in the data should be adjusted for.

8. The statistics should be compiled on both gross and net of reinsurance bases. Statistics on direct and indirect claims handling expenses should also be collated, where material.

Data Source and Verification

9. The data used should be appropriate for the estimation of policy liabilities.

Grouping of Risks

10. The valuation of the policy liabilities of an FIE may require the subdivision of risks into lines or divisions of lines of business with similar characteristics. The most appropriate subdivision for the purposes of the valuation should therefore be determined.

Data Adjustment

11. Where appropriate, adjustments to the data collated should be made to account for abnormal items, such as large losses.

Business Profile

12. The nature of coverage an FIE provides and the mix of risks an FIE has underwritten should be taken into account.

Underwriting Policy

13. Any change in the underwriting policy for each major line of business of an FIE should be considered. Changes in underwriting policy include changes to the selection of risks, delegation of authority, key underwriting personnel, rate levels and premium rating methodology.

Claims Policy

14. An FIE's case reserving policy, including the policy in setting initial case reserves, should be considered. Consideration should also be given to any change in the case reserving and other claims policy for each major line of business of an FIE such as the establishment of claim files, closing of claims, use of loss adjusters or loss solicitors, department structure and case load, claim authority limits and defence of complex claims.

General Business and Industry Conditions

15. The economic, technological, medical, legal, judicial and social trends within the broader community that may have an impact upon the valuation of policy liabilities should be considered.

Analysis of Experience

16. The assumptions used in the valuation process should take into account the impact of social, economic, environmental, legislative and court precedent factors. Care should also be given to any assumption that is implicit in the valuation method selected.

17. The business environment within which an FIE operates in should be factored into the assumptions on premium rate changes.

18. In relation to recoveries, the nature and spread of reinsurance arrangements, including significant changes to the arrangements and non-performance of reinsurance, should be taken into account. Non-reinsurance recoveries like salvage and subrogation should also be considered.

Deriving Best Estimates

19. In view of the inherent uncertainty in insurance business, it may often be appropriate to use more than one method to determine the BE of URR and BE of CL.

20. It is recognised that a full actuarial valuation of the URR is essentially a reunderwriting of the portfolio. Consideration should be had on whether it is appropriate or possible to complete such a valuation as is necessary for determining the CL.

21. For a reasonably stable portfolio, it is often possible to extend the CL valuation models to estimate the URR, on the basis of claims frequency, average costs, and ultimate loss ratios. If this is done, the assumptions used should be adjusted to reflect the changes in risk exposure, underwriting standards, rate levels, and other factors on the expected claims experience.

Deriving Provision for Adverse Deviation (PAD)

22. Professional judgement is often applied to determine the PAD for an FIE as a whole, and for each class of business. In determining the PAD, regard should be had to this Notice, and any other guidance note or relevant professional standard, where applicable.

Appendix 3B-3

CONTINGENCY RESERVES OF AN FIE IN A DFHC (LICENSED INSURER)'S FHC GROUP

1.—(1) Subject to sub-paragraphs (2) and (3), a DFHC (Licensed Insurer) must, for an FIE that is a mortgage insurer and an FIE that is a trade credit insurer in the DFHC (Licensed Insurer)'s FHC group , calculate contingency reserves in accordance with the requirements specified in paragraphs 2 to 4 of this Appendix.

(2) Notwithstanding sub-paragraph (1), where an FIE that is a mortgage insurer does not have any claim liabilities (net of reinsurance) and premium liabilities (net of reinsurance) in respect of all the mortgage insurance policies, the DFHC (Licensed Insurer) may withdraw the contingency reserves held in respect of mortgage insurance policies.

(3) A DFHC (Licensed Insurer) that has a trade credit insurer which is a captive insurer in its FHC group may, for the purposes of calculating contingency reserves in accordance with paragraphs 2 and 3 of this Appendix, disregard the net premiums written, underwriting profit earned, net claims incurred and net premiums earned in respect of any trade credit insurance policy comprised in the insurance business if the trade credit insurance policy is written by the captive insurer to cover an in-house risk.

(4) In sub-paragraph (3), "in-house risk", in relation to a trade credit insurance policy written by a captive insurer, means a risk of a related corporation of the captive insurer that may ultimately result in losses affecting only the related corporation (and no other party) if the related corporation had not insured the risk with the captive insurer, and includes any risk where the captive insurer is only responsible for insuring the related corporation's share of the risk in an insured.

Contingency reserves requirement for a DFHC (Licensed Insurer)'s FIE that is a mortgage insurer

2.—(1) At the end of each accounting period and subject to sub-paragraphs (6) and (7), i the DFHC (Licensed Insurer)must transfer to the contingency reserves 50% of the net premiums earned by an FIE in its FHC group in that period in respect of mortgage insurance policies.

(2) Subject to sub-paragraphs (3) and (4), any transfer to the contingency reserves may be withdrawn —

a) at the end of an accounting period; and

b) to the extent that the net claims incurred by the FIE in respect of mortgage insurance policies exceed 35% of the net premiums earned by the FIE in respect of mortgage insurance policies during that accounting period.

(3) Any withdrawal under sub-paragraph (2) is to be attributed to transfers made to the contingency reserves on a first-in, first-out basis such that all withdrawals under sub-paragraph (2) are attributed to transfers in the order that they have been made to the contingency reserves, beginning with the earliest transfer.

(4) Where the amount to be withdrawn under sub-paragraph (2) exceeds the outstanding value of the transfer that it is to be attributed to under sub-paragraph (3) (being the balance remaining after deducting withdrawals that had been attributed to that transfer previously), the excess amount is to be attributed to the transfer immediately following the aforementioned transfer, and so on until the withdrawal has been fully attributed to one or more transfers.

(5) Where a DFHC (Licensed Insurer)has made a transfer to the contingency reserves under sub-paragraph (1) in respect of an accounting period (the particular accounting period), the DFHC (Licensed Insurer)must, at the end of 10 contiguous accounting periods following the particular accounting period, withdraw from the contingency reserves an amount that is equal to the difference between —

a) the transfer to the contingency reserves made in respect of the particular accounting period; and

b) the aggregate of the amounts withdrawn under sub-paragraph (2) and attributable to the transfer in respect of the particular accounting period in accordance with sub-paragraphs (3) and (4),

and such withdrawal is to be regarded as attributed to that transfer for the purpose of sub-paragraph (3).

(6) Where the amount of contingency reserves maintained by an FIE at the end of an accounting period is equal to or above the threshold amount for that accounting period after taking into account any withdrawal to be made under sub-paragraphs (2) and (5) only, the DFHC (Licensed Insurer) is not required to make the transfer under sub-paragraph (1).

(7) Where, in respect of any accounting period, after taking into account —

a) any withdrawal to be made under sub-paragraphs (2) and (5) in respect of that accounting period; and

b) any transfer to be made under sub-paragraph (1) in respect of that accounting period,

the amount of contingency reserves maintained by a DFHC (Licensed Insurer)'s FIE would exceed the threshold amount for that accounting period, the amount that the DFHC (Licensed Insurer)must transfer for the purpose of sub-paragraph (1) is reduced by an amount that is equal to the extent by which the contingency reserves would exceed the threshold amount.

Contingency reserves requirement for a DFHC (Licensed Insurer)'s FIE that is a trade credit insurer

3.—(1) Subject to sub-paragraphs (3) and (4), at the end of each accounting period, a DFHC (Licensed Insurer) must, in respect of an FIE in its FHC group, transfer to the contingency reserves —

a) where the amount of contingency reserves maintained by an FIE is less than one-third of the threshold amount at the end of an accounting period — the higher of the following amounts:

   (i) 12% of the net premiums written in that period in respect of trade credit insurance policies;

   (ii) 50% of underwriting profit earned during that period in respect of trade credit insurance policies; or

b) where the amount of contingency reserves maintained by an FIE is equal to or more than one-third of the threshold amount at the end of an accounting period — the lower of the following amounts:

   (i) 12% of the net premiums written in that period in respect of trade credit insurance policies;

   (ii) 50% of underwriting profit earned during that period in respect of trade credit insurance policies.

(2) Any transfer to the contingency reserves may be withdrawn at the end of an accounting period and to the extent that the net claims incurred by the FIE in respect of trade credit insurance policies exceed the net premiums earned by the FIE in respect of trade credit insurance policies during that accounting period.

(3) Where the amount of contingency reserves maintained by an FIE at the end of an accounting period is equal to or above the threshold amount for that accounting period after taking into account any withdrawal to be made under sub-paragraph (2), the DFHC (Licensed Insurer) is not required to make the transfer under sub-paragraph (1).

(4) Where, in respect of any accounting period, after taking into account —

a) any withdrawal to be made under sub-paragraph (2) in respect of that accounting period; and

b) any transfer to be made under sub-paragraph (1) in respect of that accounting period,

the amount of contingency reserves maintained by an FIE would exceed the threshold amount for the accounting period, the amount which the DFHC (Licensed Insurer)must transfer for the purpose of sub-paragraph (1) is reduced by an amount that is equal to the extent by which the contingency reserves would exceed the threshold amount.

Definitions

4. In this Appendix —

"net claims incurred" means the sum of —

a) the net claims settled in an accounting period; and

b) the claim liabilities (net of reinsurance) at the end of the accounting period less the claim liabilities (net of reinsurance) at the beginning of the accounting period;

"net premiums earned" means the sum of —

a) the net premiums written in an accounting period; and

b) the premium liabilities (net of reinsurance) at the beginning of the accounting period less the premium liabilities (net of reinsurance) at the end of the accounting period;

"threshold amount" —

a) in relation to the contingency reserves for an accounting period for a mortgage insurer, means 400% of the highest of the following amounts:

   (i) the amount of the net premiums written for that accounting period;

   (ii) the amount of the net premiums written for the preceding accounting period;

   (iii) the amount of the net premiums written for the accounting period preceding the accounting period referred to in sub-paragraph (ii); and

b) in relation to the contingency reserves for an accounting period for a trade credit insurer, means 150% of the highest of the following amounts:

   (i) the amount of the net premiums written for that accounting period;

   (ii) the amount of the net premiums written for the preceding accounting period;

   (iii) the amount of the net premiums written for the accounting period preceding the accounting period referred to in sub-paragraph (ii);

   (iv) the amount of the net premiums written for the accounting period preceding the accounting period referred to in sub-paragraph (iii);

   (v) the amount of the net premiums written for the accounting period preceding the accounting period referred to in sub-paragraph (iv).

Appendix 3C

DETERMINATION OF RISK-FREE DISCOUNT RATE

1. A DFHC (Licensed Insurer) must use the risk-free discount rate in valuing liabilities in respect of non-participating policies, non-unit reserves of investment-linked policies, as well as the minimum condition liability of participating businesses for the purpose of statutory reporting required under MAS Notice FHC-N129.

2. A DFHC (Licensed Insurer) must use a three-segment approach to determine the risk-free discount rate, where the segments and discount rates within each segment must be determined as follows:

   (a) **Segment 1: Valuation date to LLP**

   For this segment, a DFHC (Licensed Insurer) must determine the discount rate based on market information on government bonds and use an LLP set as 20 years for SGD and 30 years for USD denominated liabilities.

   (b) **Segment 2: From LLP to end of Convergence Period**

   For this segment, a DFHC (Licensed Insurer) must determine the discount rate based on extrapolating the risk-free forward rates between first segment and third segment. The length of Segment 2 is known as the convergence period and a DFHC (Licensed Insurer) must set it as 40 years for SGD and 30 years for USD denominated liabilities.

   (c) **Segment 3: From the end of convergence period onwards**

   For this segment, a DFHC (Licensed Insurer) must determine the discount rate based on a UFR.

3. A DFHC (Licensed Insurer) must determine the UFR as the sum of expected real interest rate and expected inflation rate. For both SGD and USD denominated liabilities:

   (a) The expected real interest rate is 1.8%; and

   (b) The expected inflation rate is 2.0%

   A DFHC (Licensed Insurer) must use a UFR of 3.8%.

4. A DFHC (Licensed Insurer) must obtain the risk free forward rates in Segment 2 by extrapolation using the Smith-Wilson method except that where the DFHC (Licensed

Insurer) is able to satisfy the cash flow matching requirement beyond the LLP, a DFHC (Licensed Insurer) may commence the extrapolation immediately after the point where liability cash flows are matched.

5. For the purposes of the Smith-Wilson method, for the alpha parameter which measures the speed of convergence towards UFR, a DFHC (Licensed Insurer) must use the lowest value (rounded up to the next 0.05) that produces a risk-free forward rate at the commencement of Segment 3) that differs from the UFR by not more than 0.5 basis point.

6. For liabilities in other currencies, a DFHC (Licensed Insurer) must use LLP and UFR as provided in the table below:

Table 1: LLP, Convergence Period and UFR to use liabilities denominated in other currencies besides SGD and USD

Currency		LLP	Convergence Period	UFR
AUD	Australian Dollar	30	30	3.8%
CAD	Canadian Dollar	30	30	3.8%
CHF	Swiss Franc	20	40	2.8%
CNY	Yuan Renminbi	10	50	6.0%
DKK	Danish Krone	20	40	3.8%
EUR	Euro	20	40	3.8%
GBP	Pound Sterling	50	30	3.8%
HKD	Hong Kong Dollar	15	45	4.4%
IDR	Rupiah	10	50	8.0%
INR	Indian Rupee	10	50	7.0%
JPY	Yen	30	30	3.8%
KRW	Won	20	40	4.4%
MYR	Malaysian Ringgit	15	45	5.0%
NOK	Norwegian Krone	10	50	5.0%
NZD	New Zealand Dollar	20	40	4.8%
PHP	Philippine Peso	10	50	7.0%
SAR	Saudi Riyal	15	45	6.0%

SEK	Swedish Krona	10	50	3.8%
THB	Baht	10	50	5.0%
TWD	New Taiwan Dollar	10	50	4.4%
ZAR	Rand	30	30	7.0%

Appendix 3D

RECOGNITION AND VALUATION OF ASSETS

Equity securities

1. (1) A DFHC (Licensed Insurer) must value an equity security as follows:

(a) where it is listed on a securities exchange, at its market value; or

(b) where it is not listed on any securities exchange, at its net realisable value.

(2) In determining the net realisable value of an equity security which is not listed on a securities exchange, the DFHC (Licensed Insurer) shall take into account —

(a) the amount of consideration it would receive by selling the equity security; and

(b) the net tangible asset value of the equity security.

Debt securities

2. (1) A DFHC (Licensed Insurer) must value a debt security as follows:

(a) where it is listed on any securities exchange, at its market value; or

(b) where it is not listed on any securities exchange, at its net realisable value.

(2) In determining the net realisable value of a debt security that is not listed on a securities exchange, the DFHC (Licensed Insurer) must take into account —

(a) the prevailing interest rate;

(b) the likelihood of default by the issuer; and

(c) the cash flows that are expected to arise from the debt security.

Land and buildings

3. (1) A DFHC (Licensed Insurer) must value any land or building at its estimated market value.

(2) In estimating the market value of any land or building, the DFHC (Licensed Insurer) shall take into account —

(a) the last available valuation report made by a qualified property valuer;

(b) the prevailing market for the land or building; and

(c) any damage or improvement affecting the land or building from the date of the last available valuation report.

(3) A DFHC (Licensed Insurer) must obtain a new valuation from a qualified property valuer —

(a) when the value of the land or building has been substantially impaired by any event; and

(b) in any event, at least once every 3 years.

(4) For the purposes of paragraph (3), the DFHC (Licensed Insurer) must ensure that the qualified property valuer conducts a physical inspection of the land or building in providing the valuation.

Loans

4. A DFHC (Licensed Insurer) must value loans made to other persons by aggregating the principal amounts outstanding under all loans less any allowance for impairment losses.

Cash and deposits

5. (1) A DFHC (Licensed Insurer) must value any cash or deposit with a financial institution, other than a negotiable certificate of deposit, at the nominal amount of such cash or deposit after deducting any amount deemed uncollectible from the financial institution.

(2) A DFHC (Licensed Insurer) must value a negotiable certificate of deposit at its market value.

Outstanding premiums and agents' balances

6. A DFHC (Licensed Insurer) must value the outstanding premiums and agents' balances by aggregating the principal amounts outstanding after deducting any allowance for impairment losses.

Deposits withheld by cedants

7. A DFHC (Licensed Insurer) must value deposits withheld by cedants by aggregating the amounts of deposits outstanding after deducting any amount deemed uncollectible from the cedant.

Reinsurance recoverables

8. A DFHC (Licensed Insurer) must value reinsurance recoverables by aggregating the amounts of reinsurance recoverables outstanding after deducting any allowance for impairment losses.

Reinsurers' share of policy liabilities

9. (1) A DFHC (Licensed Insurer) must recognise, as assets of the DFHC (Licensed Insurer)'s FHC group for the general business of the FHC group, the reinsurers' share of premium liabilities, and the reinsurers' share of claim liabilities, in respect of the policies of the general business.

(2) A DFHC (Licensed Insurer) must calculate the reinsurers' share of premium liabilities mentioned in paragraph (1) as the amount of premium liabilities (gross of reinsurance) less the amount of premium liabilities (net of reinsurance).

(3) A DFHC (Licensed Insurer) must determine the amount of premium liabilities (gross of reinsurance) and the amount of premium liabilities (net of reinsurance) mentioned in paragraph (2) in the manner provided in paragraphs 1A(2)a) and 1(1)a) of **Appendix 3B-1**, respectively.

(4) A DFHC (Licensed Insurer) must calculate the reinsurers' share of claim liabilities mentioned in paragraph (1) as the amount of claim liabilities (gross of reinsurance) less the amount of claim liabilities (net of reinsurance).

(5) A DFHC (Licensed Insurer) must determine the amount of claim liabilities (gross of reinsurance) and the amount of claim liabilities (net of reinsurance) mentioned in paragraph (4) in the manner provided in paragraphs 1A(2)b) and 1(1)b) of **Appendix 3B-1**, respectively.

(6) A DFHC (Licensed Insurer) must make separate calculations of the reinsurers' share of premium liabilities and the reinsurers' share of claim liabilities for each line of business that is carried on by the FHC group and that is described in Form 13 in Appendix B to MAS Notice FHC-N129.

(7) A DFHC (Licensed Insurer) carrying on life business must recognise, as an asset of a participating business, non-participating business or investment-linked business, the reinsurers' share of policy liabilities in respect of the following, respectively:

(a) the policies of the participating business;

(b) the policies of the non-participating business;

(c) the policies of the investment-linked business.

(8) A DFHC (Licensed Insurer) carrying on life business must calculate the reinsurers' share of policy liabilities in respect of the policies of a participating business mentioned in paragraph (7)(a) as the value derived from the formula A − B, where —

(a) A is the sum of —

(i) the liability (gross of reinsurance) in respect of each non-participating policy of the participating business, determined in the manner provided in paragraph 1A(3) of **Appendix 3A-1**; and

(ii) the liability (gross of reinsurance) in respect of each participating policy of the participating business, which is the value derived from the formula (W + X) − Y, where —

(A) W is the value of the expected future payments arising from the guaranteed benefits of the policy (including any expense that the DFHC (Licensed Insurer) expects to incur in administering the policy and settling any claim against the policy);

(B) X is any provision for any adverse deviation from the expected experience; and

(C) Y is the value of future receipts arising from the policy; and

(b) B is the minimum condition liability of the participating business.

(9) A DFHC (Licensed Insurer) carrying on life business must calculate the reinsurers' share of policy liabilities in respect of the policies of a non-participating business mentioned in paragraph (7)(b), which is the value determined in the manner provided in paragraph 1A(8) of **Appendix 3A-1** less the value determined in the manner provided in paragraph 1(5) of **Appendix 3A-1**.

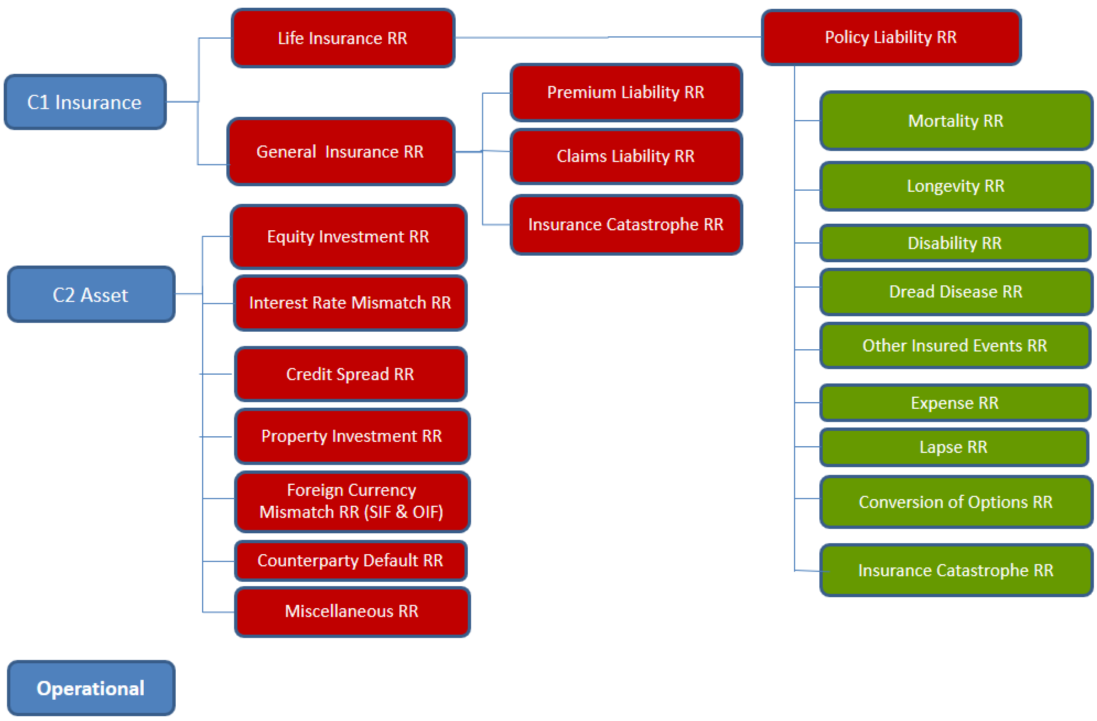
(10) A DFHC (Licensed Insurer) carrying on life business must calculate the reinsurers' share of policy liabilities in respect of the policies of an investment-linked business mentioned in paragraph (7)(c), which is the value determined in the manner provided in

paragraph 1A(8) of **Appendix 3A-1** less the value determined in the manner provided in paragraph 1(5) of **Appendix 3A-1**.

Appendix 4-I

SCHEMATIC OVERVIEW OF RISK REQUIREMENTS

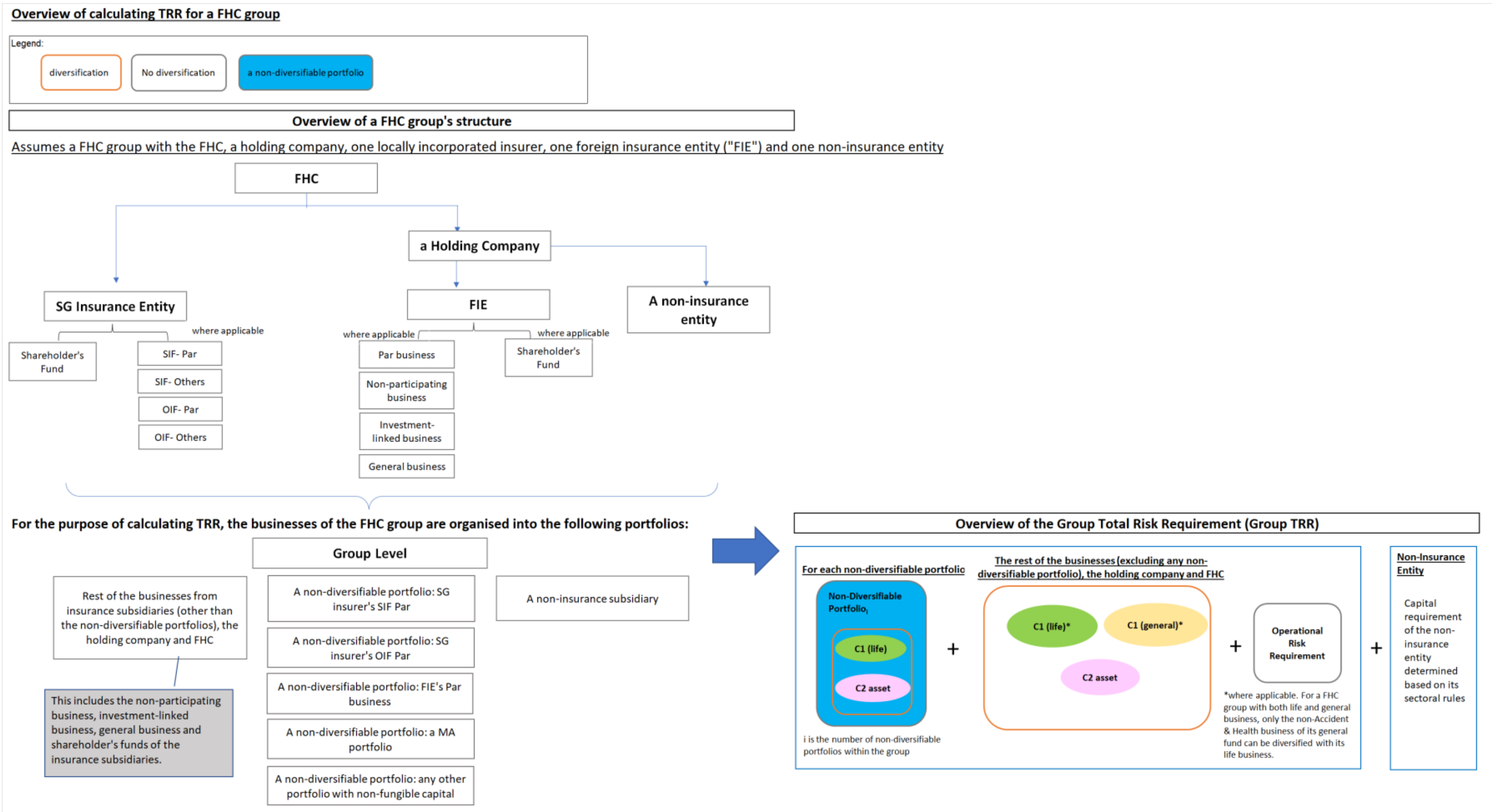
<u>Diagram 1: Risk Modules Making up Total Risk Requirement under Section 4</u>



Note: RR refers to Risk Requirements

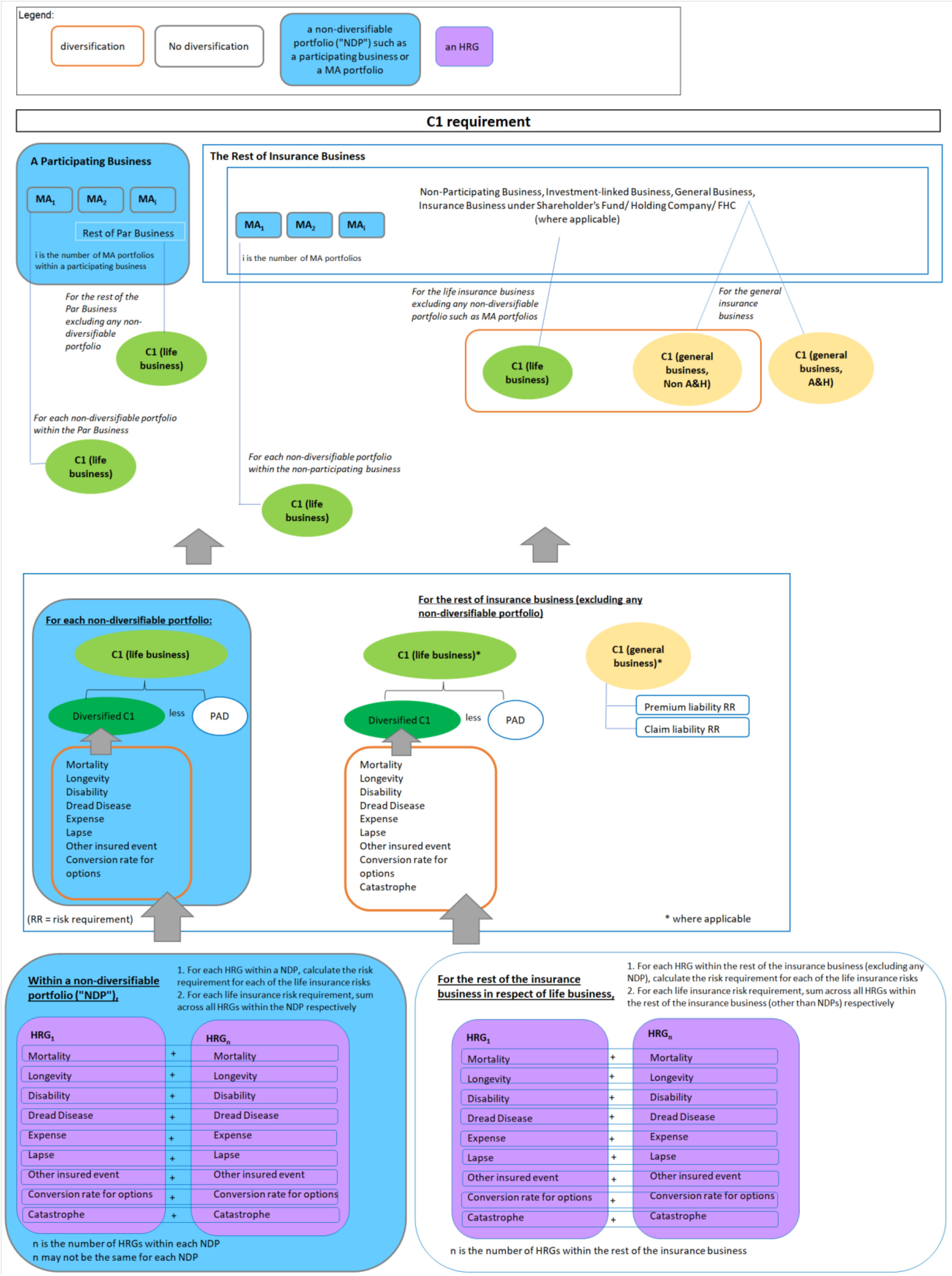
Appendix 4-II

SCHEMATIC VIEW OF CALCULATING TOTAL RISK REQUIREMENT FOR A DFHC (LICENSED INSURER)'S FHC GROUP



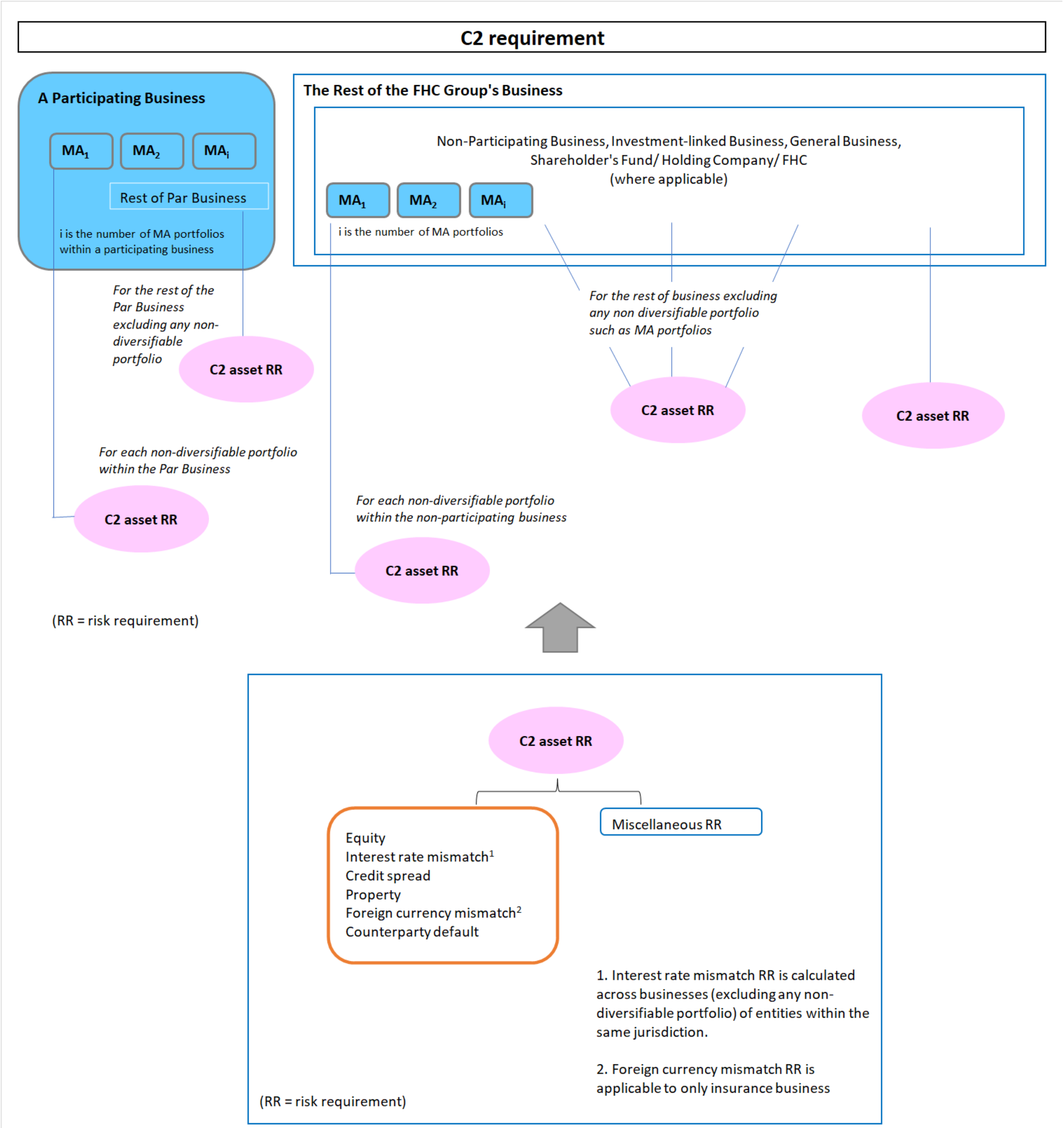
Appendix 4-III

SCHEMATIC VIEW OF AGGREGATING C1 REQUIREMENT



Appendix 4-IV

SCHEMATIC VIEW OF AGGREGATING C2 REQUIREMENT



Appendix 4A

PREMIUM LIABILITY AND CLAIM LIABILITY RISK FACTORS BY VOLATILITY CATEGORIES

TABLE 1 — PREMIUM LIABILITY RISK FACTOR AND CLAIM LIABILITY RISK FACTOR

Volatility Category	Premium Liability Risk Factor	Claim Liability Risk Factor
Low	124%	120%
Medium	130%	125%
High	136%	130%

TABLE 2 — VOLATILITY CATEGORY (EXCLUDING POLITICAL RISK)

Volatility Category	*Business lines — Singapore insurance business*	*Business lines — Offshore insurance business*
Low	a. Personal Accident b. Health c. Property	
Medium	a) Cargo b) Motor c) Employers' Liability d) Surety e) Engineering f) Credit/Credit-Related (excluding Mortgage) g) Others — Non-liability class	a) Cargo b) Property c) Credit/Credit-Related (excluding Mortgage) d) Engineering
High	a) Marine Hull b) Aviation Hull c) Professional Indemnity d) Public Liability/Product Liability e) Others – Liability class	a) Marine Hull b) Aviation Hull c) Motor d) Liability and others (excluding political risk).

Note:

In this Table -

"Aviation Hull", "Cargo", "Credit/Credit Related", "Employers' Liability", "Engineering", "Health", "Marine Hull", "Motor", "Personal Accident", "Product Liability", "Professional Indemnity", "Property", "Public Liability", and "Surety" have the same respective meanings given in paragraph 2 of MAS Notice 129 in the case of a licensed insurer in Singapore and paragraph 2 of MAS Notice FHC-N129 in the case of an FIE.

"Mortgage" means a DFHC (Licensed Insurer)'s insurance business relating to mortgage insurance policies.

"Offshore insurance business" means, in the case of an insurer licensed in Singapore that belongs to a DFHC (Licensed Insurer)'s FHC group, the general business of the insurer's offshore policies and overseas branches, and in the case of an FIE that belongs to a DFHC (Licensed Insurer)'s FHC group, the FIE's general business.

TABLE 3— VOLATILITY CATEGORY
(POLITICAL RISK)

Volatility Category	*Domicile of the risk — in Singapore*	*Domicile of the risk — outside Singapore*
Low	Political risk	
High		Political risk

Appendix 4B

TREATMENT OF COLLECTIVE INVESTMENT SCHEMES

1. For CIS, a DFHC (Licensed Insurer) may calculate the asset risk charge by looking-through to the underlying assets held by the CIS and treating the asset holdings as separate and distinct investments. A DFHC (Licensed Insurer) must use updated data to conduct the look-through. A DFHC (Licensed Insurer) must then subject each of these assets to the relevant C2 risk module.

2. A DFHC (Licensed Insurer) may perform the look-through using data at an earlier point in time than the valuation date, but no earlier than one month prior to the valuation date, unless otherwise approved by the Authority.

> ***Guidelines:***
>
> *1A. For property funds, the data used for the look-through should not be earlier than 1 month prior to the valuation date. However, the valuations of the properties used in the look-through data may be older than 1 month, provided that the most recent property value is used, and the real estate investment trusts ("REITs") comply with the Code on CIS for property funds.*

3. For CIS which invests a portion or entirely in debt securities or debt derivatives, a DFHC (Licensed Insurer) may treat the underlying debt securities which are of the same currency as a single debt security and calculate the risk charges based on the relevant risk modules by assuming the average maturity, coupon and credit quality of the debt securities or debt derivatives.

> ***Guidelines:***
>
> *1. For the purposes of paragraph 3,*
>
> *a) where groupings are according to duration bands,* a DFHC (Licensed Insurer) *should ensure that the durations assigned to the bands are demonstrably prudent.*
>
> *b) where groupings across different credit quality steps are used,* a DFHC (Licensed Insurer) *should ensure that the credit quality steps assigned to the groups are demonstrably prudent.*

4. A DFHC (Licensed Insurer) may allocate the underlying exposures with reference to the investment mandate of the scheme subject to the DFHC (Licensed Insurer) ensuring that for the purposes of the risk requirement computation, the allocation

is done in such a manner that produces the maximum overall capital requirement. In computing the risk requirement, the DFHC (Licensed Insurer) must assume that the CIS invests, to the maximum extent allowed, in the asset class that attracts the highest risk requirement, and that the CIS thereafter continues making investments in descending order until the maximum total investment level is reached.

5. Where a DFHC (Licensed Insurer) chooses not to adopt the look-through approach, either based on the actual allocation of the underlying exposures or the investment mandate, the DFHC (Licensed Insurer) must apply a 50% risk charge to the market value of the CIS.

6. Where a DFHC (Licensed Insurer) adopts a look-through approach, the DFHC (Licensed Insurer) must retain evidence to demonstrate that the proposed allocation of the investment exposure of the CIS into the relevant asset class meets the requirement in paragraph 4. A DFHC (Licensed Insurer) must provide such evidence to the Authority upon request.

<u>Guidelines:</u>

2. *Below example illustrates how* a DFHC (Licensed Insurer) *should make reference to the investment mandate of the CIS when deriving a suitable risk charge.*

   A CIS has a mandate that states that it invests 20-30% in listed Singapore equities and 70-80% in equities listed in Other Markets.

   For risk charging purposes, since equities that are listed in "Other markets" attract a higher risk charge, it should be assumed that the CIS invests 20% in listed Singapore equities and 80% in equities listed in Other Markets in order to produce the maximum overall capital requirement for the CIS.

   The resulting risk charge for the entire CIS is therefore (20% x 35%) + (80% x 50%) = 47%.

3. *The DFHC (Licensed Insurer) should consult the Authority should there be any uncertainty on the risk requirement treatment for its CIS holdings.*

Appendix 4C

RECOGNISED MULTILATERAL AGENCIES

<u>Name of Multilateral Agency</u>

1. The African Development Bank
2. The Asian Development Bank
3. The Bank for International Settlements
4. The European Bank for Reconstruction and Development
5. The European Investment Bank
6. The Inter-American Development Bank
7. The International Bank for Reconstruction and Development (The World Bank)
8. The International Finance Corporation
9. The International Monetary Fund

Appendix 4D

APPROACHES FOR RECOGNISING A DFHC (LICENSED INSURER)'S INTERNAL CREDIT RATING MODEL AND PROCESS FOR UNRATED CORPORATE DEBT SECURITIES

1. A DFHC (Licensed Insurer) may recognise the internal credit rating of its corporate debt securities derived based on its internal credit rating model, in accordance with Approach 1. A DFHC (Licensed Insurer) may use an internally derived credit rating for its unrated corporate debt security, derived based on its internal credit rating process, in accordance with Approach 2 below. A DFHC (Licensed Insurer) must apply the internal credit rating derived under either approach to the credit spread risk adjustment for credit spread risk requirement computation, computed in accordance with paragraph 4.3.3.3. For avoidance of doubt, for bonds issued by Singapore statutory boards and recognised multilateral agencies, a DFHC (Licensed Insurer) must apply a credit spread of 50% of that proposed for corporate debt securities with Credit Quality Class A, unless the DFHC (Licensed Insurer) is of the view that it would not be prudent to do so.

<u>Guidelines:</u>

1. *In assessing whether it will be prudent to apply a credit spread of 50% of that proposed for corporate debt securities with Credit Quality Class A, a DFHC (Licensed Insurer) should consider applying a higher credit spread for bonds issued by Singapore statutory boards and recognised multilateral agencies, than what is stated above, where the DFHC (Licensed Insurer)'s internal credit rating model or internal credit rating process yields a poorer credit quality.*

   For example, if the internal credit rating process rates a bond issued by Singapore statutory boards and recognised multilateral agencies to be of Credit Quality Class D, then the DFHC (Licensed Insurer) may consider using a credit spread risk adjustment for Credit Quality Class D.

A. <u>Approach 1</u>: Full recognition under internal credit rating model

2. A DFHC (Licensed Insurer) that wishes to adopt an internal credit rating model to recognise the internal credit rating of its corporate debt securities must apply in writing to the Authority.

3. Upon receiving an application under paragraph 2, the Authority may—

   (a) Grant approval subject to such conditions or restrictions as may be imposed by the Authority; or

(b) Refuse to grant approval.

4. Without affecting any other matter that the Authority may consider relevant, the Authority may in determining whether to grant its approval under paragraph 3(a), have regard to the following criteria:

(a) The application and definition of default under the model;

(b) The definition of model parameters and their derivation, such as probability of default, and where relevant, loss given default and exposure after default;

(c) The minimum requirements on information and data used for deriving estimates of model parameters;

(d) The model validation standards.

5. The Authority shall not grant approval under paragraph 3(a) unless the DFHC (Licensed Insurer) has derived the probability of default parameter used in the internal credit rating model of the DFHC (Licensed Insurer)'s FHC group.

6. A DFHC (Licensed Insurer) that has received approval under paragraph 3(a) to adopt an internal credit rating model must apply the internal credit rating derived from such model to all its externally rated and unrated corporate bonds and must not apply the default credit spread risk adjustment in between Credit Quality Class D and Class E for unrated corporate debt securities, as specified in paragraph 4.3.3.3f).

7. A DFHC (Licensed Insurer) that has received approval to adopt an internal credit rating model under paragraph 3(a) must comply with such other conditions as may be specified by the Authority by notice in writing in respect of the adoption of such a model.

<u>Guidelines:</u>

2. MAS is an integrated supervisor and the criteria to fulfil for full recognition of internal credit rating should be aligned where relevant across different types of financial institutions. The requirements for a full recognition of internal credit rating model will be similar to those set out in MAS Notice 637, including but not limited to Annex 7X, 7Y, 7AA, 7AB.

3. *An interested DFHC (Licensed Insurer) intending to seek approval for such an internal credit rating model is encouraged to engage MAS early.*

B. **<u>Approach 2</u>: Partial recognition under internal credit rating process**

8. Subject to paragraphs 9 and 10, a DFHC (Licensed Insurer) with an internal credit rating process may recognise a credit rating derived from such internal credit rating process for any unrated corporate debt security (other than investments in unrated infrastructure debt security and unrated structured product), where the DFHC (Licensed Insurer) satisfies all of the following conditions:

(a) The DFHC (Licensed Insurer) must satisfy all the governance-based criteria set out in **Appendix 4E**;

(b) The DFHC (Licensed Insurer) must notify the Authority at least 3 months prior to recognising any credit rating derived from its internal credit rating process;

(c) The DFHC (Licensed Insurer) must provide the Authority with written confirmation at least 3 months prior to recognising any credit rating derived from its internal credit rating process that the governance criteria set out in **Appendix 4E** have been met;

(d) The DFHC (Licensed Insurer) must only use scoresheets developed by or with ECAIs recognised by the Authority set out in **Appendix 4J** unless the Authority has directed by notice in writing that an alternative approach be used.

<u>Guidelines:</u>

4. *A DFHC (Licensed Insurer) should have an established internal credit rating process and the ratings should be used pervasively in internal credit risk management and other significant business decisions of the DFHC (Licensed Insurer)'s FHC group relating to credit risk.*

9. Notwithstanding paragraph 8, a DFHC (Licensed Insurer) must not recognise any internal rating that is better than Credit Quality Class D equivalent (as set out in **Appendix 4K**) for any unrated corporate debt security, even if the internal credit rating is better. Where the DFHC (Licensed Insurer)'s internal credit rating process results in an internal credit rating that is worse than the default rating of average of Credit Quality Class D and Class E (as set out in **Appendix 4K**), the DFHC (Licensed Insurer) must use its internal credit rating.

10. The Authority may derecognise the DFHC (Licensed Insurer)'s internal credit rating process, if the DFHC (Licensed Insurer) does not, or subsequently does not, comply with the criteria set out in **Appendix 4E.** Upon being notified in writing of the Authority's derecognition, a DFHC (Licensed Insurer) must cease to recognise any internal credit rating derived from any such derecognised internal credit rating process immediately.

Guidelines:

5. The reasons for the carve out of investments in unrated infrastructure debt security and unrated structured product are mainly the lack of expertise of insurers in rating such investments compared to plain vanilla corporate bonds, as well as a smaller pool of similar assets that are externally rated for insurers to back-test against their own rating methodology to meet validation requirements.

Appendix 4E

CRITERIA FOR RECOGNITION OF INTERNAL CREDIT RATING PROCESS ("PROCESS") FOR UNRATED DEBT SECURITIES UNDER PROPOSED APPROACH 2

1. <u>Board Oversight</u>

a) The board of directors of a DFHC (Licensed Insurer) (hereby referred to as the "Board") must be responsible for ensuring that the governance around the process is adequate, including ensuring that process is being used for its intended purpose and that applicable controls are put in place, and that these controls remain adequate on an ongoing basis. A DFHC (Licensed Insurer) must inform its Board and ensure that the Board understands the objectives, basis and the controls in place for the process. The DFHC (Licensed Insurer) must ensure that the information provided to the Board is adequate for the Board to perform its roles effectively.

b) The Board may delegate some of its responsibilities with respect to the process to senior management or staff, or committees comprising senior management or staff. However, the Board must continue to exercise oversight to ensure that its delegated responsibilities are effectively carried out.

c) The DFHC (Licensed Insurer) must inform the Board of any material changes to the process. The DFHC (Licensed Insurer) must also inform the Board of any material exceptions from established policies and procedures, or weakness, in respect of process.

<u>Guidelines:</u>

1. *For example, persistent occurrences of material differences between realised and predicted outcomes of ratings should be reported. This could happen when back-testing of internal ratings consistently differ from external ratings.*

2. <u>Senior Management Oversight</u>

a) The DFHC (Licensed Insurer) must ensure that the senior management of the FHC group exercises active oversight to ensure the continuing appropriateness of the process and its use.

b) The DFHC (Licensed Insurer) must inform its senior management and ensure that the senior management understands the design and operation of the process and its use. The DFHC (Licensed Insurer) must ensure that material aspects of these areas and material differences between established process and actual practice, are approved by the senior management and significant issues are reported by the senior management to the Board on a regular and timely basis.

c) The DFHC (Licensed Insurer) must establish comprehensive and adequate written policies and procedures relating to the oversight and control of the process and its use. At a minimum, these policies and procedures must include –

   i) The roles and responsibility of the Board, senior management and other personnel involved in the process;

   ii) The internal control processes and independent oversight of the design and operation of the process and its use;

   iii) The matters which the DFHC (Licensed Insurer) considers material and the authority and approval levels for these matters; and

   iv) The frequency and level of detail of reporting to the Board.

d) The DFHC (Licensed Insurer) must ensure that its senior management ascertains, on an ongoing basis, that the process –

   i) provides for an assessment of the characteristics of the debt security exposures of the DFHC (Licensed Insurer), and a differentiation of risk; and

   ii) is consistent with all applicable rules and regulations as well as established internal policies.

e) The DFHC (Licensed Insurer) must ensure that its senior management and staff in the credit risk control function must meet regularly to discuss the consistency of rating assignments, areas for improvement, and the status of efforts to improve previously identified deficiencies.

Guidelines:

2. The senior management and staff in the credit risk control function should meet at least annually to discuss the consistency of rating assignments, areas for improvement; and at least quarterly on the status of efforts to improve previously identified deficiencies.

f) The DFHC (Licensed Insurer) must ensure that its senior management is responsible for making sure that the staff in charge of any aspect of the model, including rating assignments, credit risk control and internal validation, are adequately qualified and trained to undertake their respective roles.

3. Regular reporting to Board and Senior Management

a) The DFHC (Licensed Insurer) must integrate internal ratings into regular reporting to the Board and senior management on the changes in risk profile of its corporate debt securities. The DFHC (Licensed Insurer) must ensure that the depth and frequency of information provided to its Board and senior management is commensurate with the operations, size and risk profile of the DFHC (Licensed Insurer)'s FHC group.

b) At a minimum, the DFHC (Licensed Insurer) must ensure that the Board and senior management get regular reports on the following material bond portfolios –

i) Risk profile by internal grade;

ii) Risk rating migration across grades with emphasis on unexpected results;

iii) Results of internal validation, including results of replication tests performed to check for systemic biases in rating assignments; and

iv) Reports from internal audit and credit risk control functions on material issues.

Guidelines:

3. Reports for the purposes of paragraphs 3a) and 3b) should be given to the Board and senior management on a quarterly basis.

4. **Credit Risk Control Function**

a) The DFHC (Licensed Insurer) must establish a credit risk function that is responsible for the design or selection, implementation and rating assignment activities and reporting on the effectiveness of the framework. The DFHC (Licensed Insurer) must ensure that the credit risk function is structurally and functionally independent from the personnel and management functions responsible for originating exposures.

b) The DFHC (Licensed Insurer) must ensure that the evaluation of the performance and remuneration of the credit risk control unit takes into consideration how well the credit risks are managed.

Guidelines:

4. For example, a DFHC (Licensed Insurer) should consider the reliability of ratings derived and consistency of ratings.

c) The DFHC (Licensed Insurer) must ensure that its credit risk control function has oversight and supervision responsibilities of the process, and ultimate responsibilities for the ongoing assessments of the performance of and alterations to the process.

5. **Internal validation**

a) A DFHC (Licensed Insurer) must be able to demonstrate to the satisfaction of the Authority upon request, that its' internal validation process enables it to assess the performance of its internal rating process consistently, and its' internal validation is robust and likely to remain so. For the purposes of this paragraph, "internal validation process" refers to the range of processes and activities that contribute to the internal assessment as to whether the DFHC (Licensed Insurer) is capable of deriving consistent and appropriate ratings.

b) The DFHC (Licensed Insurer) must perform internal validation of its process regularly and at least annually.

c) The DFHC (Licensed Insurer) must ensure that the internal credit rating process is consistent with external ratings by ECAIs recognised by the Authority set out in **Appendix 4J** and must back-test samples of internal ratings for externally rated corporate debt securities. The DFHC (Licensed Insurer) must also ensure that the internal credit rating process is consistent across portfolios. For the purposes of this paragraph, the internal credit rating process is consistent across portfolios if the internal rating derived from the internal credit rating process across portfolios are comparable and reflects the risk level consistently across different portfolios.

Guidelines:

5. *For example, the internal credit ratings should reflect risk levels consistently across different portfolios, such as across sectors or geographical locations.*

d) The DFHC (Licensed Insurer) must ensure that no person responsible for the design or implementation of the process for a class of exposures participates in the validation work relating to that class of exposure.

6. Independent review of internal validation

a) The DFHC (Licensed Insurer) must ensure that the Internal Audit function reporting to the Audit Committee reviews the internal validation processes and that the Internal Audit function ascertains that the validation processes are implemented as designed and are effective. In performing this role, the Internal Audit function may seek the assistance of other internal or third party specialists, as long as overall responsibility remains with the Internal Audit function. The DFHC (Licensed Insurer) must ensure that its Internal Audit function does not use any internal or third party specialists that are involved in or are responsible for –

i) the design, selection or implementation of the process used for that class of exposures; and

ii) the origination of exposures for that class of exposures.

b) The DFHC (Licensed Insurer) must ensure that the Internal Audit function conducts reviews of the ongoing validation of internal ratings regularly and at least annually.

7. Documentation

a) The DFHC (Licensed Insurer) must ensure that all internal validation checks are comprehensively documented.

b) The DFHC (Licensed Insurer) must keep documentation of the rating criteria, which at the minimum, must include all of the following:

i) The rationale for the choice of rating criteria, including analysis demonstrating that the rating criteria and procedures are likely to result in ratings that differentiate risk, and that the rating criteria have taken all relevant and material transaction characteristics into account;

ii) The rationale for assigning a corporate debt security to a particular rating where more than one rating methodology is used;

iii) The relationship between corporate debt security grades in terms of the level of risk each grade implies, and the risk of each grade in terms of both a description of the probability of default typical for corporate debt securities assigned to that grade and the criteria used to distinguish that level of credit risk;

iv) Any report produced in respect of any periodic review of rating criteria and procedures to determine whether the rating criteria remain fully applicable to the current portfolio taking into account external conditions.

c) The DFHC (Licensed Insurer) must keep documentation of the rating process, which at the minimum, must include all of the following:

i) The responsibilities of the parties that rate and approve rating grades;

ii) The definition of what constitutes a rating exception and override, and the situations where exceptions and overrides can be used and the approval authorities for such exceptions and overrides;

iii) The frequency of rating reviews, including the policy on refreshing relevant criteria;

iv) The history of significant changes in the rating process to enable easy identification of any changes made to the rating process; and

v) The organisation of rating assignment, including the internal control structure.

Appendix 4F

TREATMENT OF COLLATERAL AND GUARANTEES

1. Where a DFHC (Licensed Insurer) holds eligible collateral against an asset or an asset has been guaranteed, the DFHC (Licensed Insurer) may recognise the effects of these risk mitigants and may reduce risk requirements accordingly in accordance with this Appendix.

Collateral

2. Where a collateral satisfies all of the requirements in paragraph 3 ("eligible collateral"), a DFHC (Licensed Insurer) may consider such eligible collateral held against an asset in place of the asset. Where the risk-adjusted value of the collateral, as calculated in paragraphs 4 and 5, does not fully cover the full value of the asset, a DFHC (Licensed Insurer) may only replace the covered portion and must not replace the uncovered portion.

3. For the purposes of paragraph 2, the requirements are as follows:

    (a) the collateral must be held by the DFHC (Licensed Insurer) as security for the whole of the liabilities of the reinsurance counterparty under the contracts of reinsurance to which the collateral relates;

    (b) under the terms of the agreement under which the collateral is provided, the reinsurance counterparty must not withdraw the collateral so long as any liability mentioned in sub-paragraph (a) is secured on the collateral but may reduce the value of the collateral in the event of, and in proportion to, a reduction in such liability;

    (c) in the case of an insurance group entity within the DFHC (Licensed Insurer)'s FHC group licensed to carry on life business, the collateral must only relate to that business and the deduction must relate to liabilities secured thereon; and

    (d) in the case of an insurance group entity within the DFHC (Licensed Insurer)'s FHC group licensed to carry on general business, the collateral must only relate to that business and the deduction must relate to liabilities secured thereon.

4. A DFHC (Licensed Insurer) must determine the risk-adjusted value of eligible collateral by multiplying the value of the collateral in column 1 in the table below and with the collaterisation factor in column 3:

Table 1: Table of Collaterals with Corresponding Collaterisation Factors

Collateral (Column 1)	Haircut (Column 2)	Collaterisation Factor (Column 3)
Cash or cash value of a policy loan	0%	100%
Security issued by a government or a public authority	5%	95%
Corporate debt securities in Credit Quality Class A and Class B	10%	90%
Corporate debt securities in Credit Quality Class C and Class D	15%	85%
Security listed on a securities exchange	30%	70%
None of the above	100%	0%

5. Where the collateral is denominated in a different currency from that the liabilities secured are denominated in, a DFHC (Licensed Insurer) must reduce its risk-adjusted value further by 12%.

Guidelines:
An example of how collateral should be treated:

Assuming -

Value of asset = $600, and

Collateral is in the form of cash of $500

Risk adjusted value of collateral = $500 (based on 100% x $500)

The DFHC (Licensed Insurer) would need to compute counterparty default risk requirement on the cash collateral. The remaining $100 of the asset shall be risk-charged accordingly.

6. For the purposes of this Appendix, "security issued by a government or a public authority" means a debt security which -

(a) is issued or fully guaranteed by the Government;

(b) is issued or fully guaranteed by a central government or central bank of a country or territory which has a sovereign rating of investment grade; or

(c) is issued or fully guaranteed by a central government or central bank of a country or territory which does not have a sovereign rating of investment grade, is denominated in the national currency of that country, and has a residual maturity of 12 months or less.

Guarantees

7. A DFHC (Licensed Insurer) may take credit for a guarantee where the guarantee is—

(a) Direct;

(b) Explicit;

(c) Irrevocable;

(d) Unconditional; and

(e) Legally enforceable for the remaining term to maturity of the asset.

8. A DFHC (Licensed Insurer) may use the credit rating of the third party guarantor when determining the stresses to be applied to the asset under credit spread risk sub-module and counterparty default risk sub-module.

9. Where a guarantee does not cover the full value of the asset, a DFHC (Licensed Insurer) must determine the risk requirements on the unprotected portion using the credit rating of the original counterparty.

Appendix 4G

TREATMENT OF STRUCTURED PRODUCTS AND DERIVATIVES

Structured Products

1. For the purposes of this Appendix, "structured products" refer to investments that —

    a) provide exposure to an underlying reference portfolio of assets or risks, where the risks can be in the form of any security, index or currency; and

    b) typically take the form of a tranche exposure, and includes credit-related securitisation exposures and insurance linked securities.

Guidelines:

1. Examples of structured products include residential mortgage-backed securities, asset-backed securities and catastrophe bonds.

2. A DFHC (Licensed Insurer) must apply counterparty default risk requirement to structured products and compute the counterparty default risk requirement based on the credit rating of the product offeror. A DFHC (Licensed Insurer) must apply the counterparty default risk charge to the market value of each structured product.

3. In calculating the market-related risk requirements for structured products, a DFHC (Licensed Insurer) must do either of the following:

    a) A DFHC (Licensed Insurer) must adopt a look-through approach and apply the relevant risk module. To account for volatility and illiquidity risk of structured products, a DFHC (Licensed Insurer) must apply a 50% premium on the derived market risk requirement;

    b) A DFHC (Licensed Insurer) must apply a fixed 50% risk charge on the entire marked-to-market value of the investment.

Guidelines:

2. Where a look-through approach is adopted, structured products can be decomposed into different equivalent bundles of cash and derivative holdings.

4. A DFHC (Licensed Insurer) must retain evidence to demonstrate that the proposed allocation of market risk exposure of a structured product into the relevant risk charge requirements in section 4.3 on C2 requirement in this Notice reflects the risk nature of the asset. A DFHC (Licensed Insurer) must provide such evidence to the Authority upon request.

Equity Derivatives

5. A DFHC (Licensed Insurer) must convert its equity derivative instruments into notional positions in the relevant underlying equity instruments and use the current market value of the underlying instruments to calculate its market risk capital requirement for equity position risk.

a) In the case of an equity derivative instrument that is an equity option, the DFHC (Licensed Insurer) must calculate its market risk capital requirement for an equity option by –

(i) Identifying the option and the associated underlying financial instrument;

(ii) Calculating the market risk capital requirement for combination of long put and long outright position in underlying instrument by calculating the product of the market value of the outright position and the equity risk stress factor, and subtracting the amount that the option is in-the-money from that product;

(iii) Calculating the market risk capital requirement for each long call or long put as –

A. Market value of underlying instruments multiplied by equity risk stress factor; or

B. market value of option,

whichever is lower; and

(iv) Summing the market risk capital requirements determined in (ii) and (iii) above.

b) In the case of an equity swap,

(i) where the DFHC (Licensed Insurer) receives an amount based on change in value of a single equity or equity index, the DFHC (Licensed Insurer) must assume a notional long position in the equity or equity index in calculating the market risk capital requirement; and

(ii) where the DFHC (Licensed Insurer) pays an amount based on change in value of another equity or equity index, the DFHC (Licensed Insurer) must assume a notional short position in the equity or equity index in calculating the market risk capital requirement.

Interest Rate Derivatives

6. A DFHC (Licensed Insurer) must convert its interest rate-related derivatives into notional positions in the relevant underlying instruments, and use the current market value of the principal amount of the underlying instruments to calculate its interest rate mismatch risk requirement.

7. A DFHC (Licensed Insurer) must convert its credit derivatives into notional positions in the relevant reference obligations, and use the current market value of the principal amount of the reference obligations to calculate its interest rate mismatch risk requirement.

8. In the case of an interest rate swap, where a DFHC (Licensed Insurer) receives fixed rate and pays floating rate, a DFHC (Licensed Insurer) must treat the interest rate swap as the sum of the following:

a) notional short position in a government debt with coupon equal to floating rate and maturity equal to next reset date; and

b) notional long position in government debt with coupon equal to fixed rate of swap and maturity equal to maturity of swap.

Credit Derivatives

9. In the case of a credit derivative which is part of a DFHC (Licensed Insurer)'s risk mitigation policy, the DFHC (Licensed Insurer) need not subject the credit derivative to a capital requirement for spread risk, where the DFHC (Licensed Insurer) holds either of the following:

a) the instrument underlying the credit derivative;

b) another exposure with respect to which the basis risk between that exposure and the instrument underlying the credit derivative is less than 10% at all times.

10. In all other cases, a DFHC (Licensed Insurer) must apply a capital treatment founded on the substitution approach, to a credit derivative, where the protected portion of a counterparty exposure is assigned the credit quality class of the guarantor or protection provider, while the uncovered portion retains the credit quality class of the underlying counterparty.

Foreign Currency Derivatives

11. In the case of a foreign exchange forward or futures contract, a DFHC (Licensed Insurer) must treat the foreign exchange forward or futures contract (as the case may be) as two notional currency positions:

a) A long notional position in the currency which the DFHC (Licensed Insurer) has contracted to buy; and

b) A short notional position in the currency which the DFHC (Licensed Insurer) has contracted to sell,

where each notional position has a value equal to the present value of the amount of each currency to be exchanged in the case of a foreign exchange forward or futures contract, as the case may be.

All Derivatives

12. To avoid doubt, the DFHC (Licensed Insurer) must still apply the counterparty default risk requirement for all derivatives.

Appendix 4H

CREDIT EXPOSURE FACTORS

1. A DFHC (Licensed Insurer) must determine the "credit exposure factor" in accordance with the table below, and paragraphs 2 and 3.

Type of transaction	Residual maturity of contract	Credit exposure factor
(1) Physical commodity contracts	(a) 12 months or less 10%	10%
	(b) more than one year but not more than 5 years	12%
	(c) more than 5 years	15%
(2) Equity contracts	(a) 12 months or less	6%
	(b) more than one year but not more than 5 years	8%
	(c) more than 5 years	10%
(3) Foreign exchange contracts *(other than leveraged foreign exchange contracts which are subject to margin requirements)* or gold contracts	(a) a contract with original maturity of 14 calendar days or less	0%
	(b) 12 months or less, except a contract with original maturity of 14 calendar days or less	1%
	(c) more than one year but not more than 5 years	5%
	(d) more than 5 years	7.5%
(4) Interest rate contracts	(a) 12 months or less	0%
	(b) more than one year but not more than 5 years	0.5%
	(c) more than 5 years	1.5%

2. In the case of contracts with multiple exchange of principals, a DFHC (Licensed Insurer) must multiply the credit exposure factor obtained from the table above by the number of remaining payments in the contract.

3. In the case of a single currency floating or floating interest rate swap, a DFHC (Licensed Insurer) must apply a credit exposure factor of zero.

Appendix 4I

RECOGNITION OF EXTERNAL CREDIT ASSESSMENT INSTITUTIONS ("ECAI")

1. The Authority may recognise an ECAI if the Authority –

   (a) is satisfied that the ECAI meets the recognition criteria set out under paragraph 5[3] below; and

   (b) has received a letter of support from a DFHC (Licensed Insurer) stating that it intends to use the external credit assessments of that ECAI for the purpose of calculating regulatory capital requirements pursuant to this Notice.

2. The recognition of an ECAI by the Authority is for the sole purpose of enabling a DFHC (Licensed Insurer) to calculate regulatory capital requirements pursuant to this Notice, and must not be taken as regulation of the ECAI or licensing or approval of the ECAI to do business in Singapore.

3. The Authority may revoke its recognition of an ECAI if the ECAI no longer meets the criteria set out in this Notice.

4. The list of recognised ECAIs for insurers is currently set out in **Appendix 4J**.

5. **Recognition Criteria**

5.1 **Objectivity**: The methodology for assigning credit assessments of a recognised ECAI must be rigorous, systematic and subject to validation based on historical experience. Credit assessments must be subject to ongoing review and responsive to changes in financial condition of the entity assessed. An assessment methodology for each market segment, including rigorous backtesting, must have been established for at least one year, and preferably at least three years. In this regard –

   (a) the ECAI must document and have procedures in place to ensure that its assessment methodologies are applied consistently in the formulation of all credit assessments in a given asset class, industry sector or region[4];

[3] For this purpose, the Authority will consider, among others, the ECAI's adherence to the "Code of Conduct Fundamentals for Credit Rating Agencies" issued by IOSCO (revised May 2008).

[4] "Asset class" refers to categories such as loans, asset-backed securities, collateralised debt obligations, etc., "industry sector" refers to categories such as utilities, financial institutions, telecommunications, etc., and "region" refers to categories such as emerging markets, Asia ex-Japan, Europe, etc.

(b) the ECAI must establish a credit assessment committee with formalised terms of reference to approve credit assessments that have been recommended by credit assessment analysts. The ECAI must also have an independent internal audit function (or a function that plays a similar role and carries out similar tasks) to assess the compliance of the ECAI with its internal policies and procedures;

(c) the assessment methodologies of the ECAI must incorporate factors that are relevant in determining an entity's creditworthiness. To the extent possible, the ECAI must be able to demonstrate that its assessment methodologies have produced accurate credit assessments in the past;

(d) the assessment methodologies of the ECAI must be based on both qualitative and quantitative approaches;

(e) the assessment methodologies of the ECAI are subject to robust and quantitative backtesting based on at least one year of historical data, and preferably three years. Other statistical studies such as transition and default matrices must be carried out periodically by the ECAI to validate its assessment methodologies over time and across different asset classes. Any systematic assessment errors identified through backtesting and other statistical reviews must be incorporated in the assessment methodologies; and

(f) the ECAI must have procedures that are written and implemented to ensure that its credit assessments are reviewed and updated at least annually or upon the occurrence of material events.

5.2 **Independence**: A recognised ECAI should not be subject to economic, political and any other pressures that may influence its credit assessments. The credit assessment process should be as free as possible from any constraints which could arise in situations where the composition of the board of directors or the shareholder structure of the ECAI may be seen as creating a conflict of interest. In this regard –

(a) the ECAI should have in place and implement adequate processes and safeguards to ensure that its ownership structure and board composition do not prejudice the objectivity of its credit assessments;

(b) the ECAI should not conduct any business transactions with any of the entities it assesses that could undermine the objectivity of its credit assessments;

(c) the ECAI should be able to demonstrate that its businesses, other than those incidental or synergistic to the issuance of credit assessments, are operationally separated from its credit assessment business;

(d) the ECAI should be able to demonstrate that its financial viability is not dependent on revenue generated from a few key customers;

(e) the ECAI should provide adequate disclosure of its pricing policy and any fee charged should not be dependent on the credit assessment issued;

(f) credit assessments should be made by a credit assessment committee composed of adequately qualified and experienced individuals, in accordance with the established criteria and methodology of the ECAI; and

(g) employees of the ECAI should not be in an executive position in any of the entities assessed by the ECAI and should not be compensated in a way that could lead to a compromise in the objectivity of the credit assessments.

5.3 **International Access and Transparency**: The individual credit assessments of a recognised ECAI, the key elements underlying the assessments and whether the issuer participated in the assessment process must be publicly available on a non-selective basis, unless they are private assessments. In addition, the general procedures, methodologies and assumptions for arriving at assessments used by a recognised ECAI must be publicly disclosed. In this regard, the individual credit assessments of the ECAI must be accessible to any DFHC (Licensed Insurer) which intends to use them for regulatory capital calculations pursuant to this Notice and included in the ECAI's transition matrix.

5.4 **Disclosure**: A recognised ECAI should publicly disclose its code of conduct, the general nature of its compensation arrangements with assessed entities, its assessment methodologies (including the definition of default, the time horizon and the meaning of each credit assessment), the actual default rates experienced in each credit assessment category, and the transitions of the assessments, for example, the likelihood of "AA" ratings becoming "A" over time. In this regard –

(a) the ECAI should make public the principles of its assessment methodologies;

(b) the ECAI should publicly disclose in a timely manner, any material changes made to its assessment methodologies or any significant event that could affect its performance on any of the criteria set out in paragraphs 5.1 to 5.6;

(c) the ECAI should publicly disclose information regarding the meaning of each credit assessment category, actual default rates, transition matrices, definition of default and the time horizon for which a default is considered. For credit assessments of securitisations, loss and cash-flow analysis as well as sensitivity of ratings to changes in the underlying ratings assumptions should be made publicly available; and

(d) the ECAI should publicly disclose whether a credit assessment was solicited or unsolicited. For the latter, the ECAI should make public its definition of an unsolicited credit assessment.

5.5 **Resources**: A recognised ECAI should have sufficient resources to carry out credit assessments properly. These resources should allow for sufficient ongoing contact with senior and operational levels within the entities assessed in order to add value to the credit assessments. In this regard –

(a) the ECAI should possess a sufficient number of staff members with the requisite level of analytical skills and professional experience necessary for them to perform credit assessments competently;

(b) the ECAI should be financially sound and have enough resources to invest in the necessary infrastructure required for the efficient processing of data and timely release of reliable credit assessments; and

(c) the ECAI should establish recruitment and training policies for each level of analysts under its employment.

5.6 **Credibility**: To some extent, credibility is derived from the criteria above. In addition, the reliance on an ECAI's external credit assessments by independent parties (e.g. investors, insurers, trading partners) would be evidence of the credibility of the assessments of the ECAI. The credibility of an ECAI is also underpinned by the existence of internal procedures to prevent the misuse of confidential information. Considerations assessed by the Authority to determine if the ECAI satisfies this criterion include:

(a) the financial viability and market share of the ECAI, especially in the market for which the ECAI is operating and is to be recognised;

(b) the level of market acceptance and reliance on the credit assessments of the ECAI;

(c) statistical data that demonstrates market reliance on the credit assessments of the ECAI (e.g. market movements in response to changes in credit assessments); and

(d) the presence of internal procedures to detect misuse or unauthorised disclosure or leakage of confidential information.

6. **Mapping Process**

6.1 The Authority will map the external credit assessments of a recognised ECAI to the credit quality classes set out in **Appendix 4K**, taking into account the quantitative and qualitative factors set out in paragraphs 6.2 to 6.5 below.

6.2 In determining the credit quality classes to which the external credit assessments of a recognised ECAI are mapped, information considered by the Authority includes –

(a) the two most recent three-year CDRs ("Cumulative Default Rate"); and

(b) the ten-year average of the three-year CDRs,[5]

of the ECAI for each of its credit assessment categories (eg. AAA, AA, A, BBB and so on), against the benchmarks recommended by BCBS[6] set out in Tables 4I-I and 4I-II respectively.

Table 4I-I: BCBS Benchmark for Comparing Two Most Recent Three-year CDRs

S&P Credit Ratings Moody's Credit Ratings	AAA-AA Aaa-Aa	A A	BBB Baa	BB Ba	B B
Monitoring Level	0.8%	1.0%	2.4%	11.0%	28.6%
Trigger Level	1.2%	1.3%	3.0%	12.4%	35.0%

Table 4I-II: BCBS Benchmark for Comparing Ten-year Average of Three-year CDRs

S&P Credit Ratings Moody's Credit	AAA-AA Aaa-Aa	A A	BBB Baa	BB Ba	B B

[5] The three-year CDR refers to the sum of all defaults that have occurred in a given three-year period for all entities that have been assessed by the ECAI as belonging to the same credit assessment category. For example, in 2008, the two most recent three-year CDRs will be for the periods 2004-2006 and 2005-2007, and the ten-year average of the three-year CDRs will be the average of the three-year CDRs for the three year periods ending on each of the ten years from 1998-2007. For newly established ECAIs, the Authority may consider information on three-year CDRs for whatever number of years the ECAI has been in operation and the ECAI's projection of its long-run average of three-year CDRs.

[6] Basel Committee on Banking Supervision

Ratings					
20-Year Average of Three-Year CDR	0.10%	0.25%	1.00%	7.50%	20.00%

6.3 Where any of the two most recent three-year CDRs exceed the 'monitoring' level set out in Table 4I-I, this implies that the ECAI's current default experience is higher than the international default experience. The Authority may consult with the relevant ECAI to understand the reason behind the higher default rates experienced by the ECAI, and may adjust the mapping to the credit quality classes set out in **Appendix 4K** if the Authority considers it appropriate to do so.

6.4 Where any of the two most recent three-year CDRs exceed the 'trigger' level set out in Table 4I-I, this implies that the ECAI's current default experience is significantly higher than the international default experience. In such cases, there would be a presumption that the ECAI's credit assessment standards are weak or inappropriately applied and the Authority will generally adjust the mapping to the credit quality classes set out in **Appendix 4K**. However, the Authority may maintain the existing mapping set out in **Appendix 4K** if it is assessed that the higher CDRs experienced by the ECAI is not due to weak credit assessment standards. In such cases, the Authority may require a DFHC (Licensed Insurer) to maintain additional capital pursuant to section 36(2) of the FHC Act.

6.5 While the above comparisons form the central basis for the mapping process, qualitative factors considered by the Authority that affect the comparability of CDRs include -

(a) the pool of issuers covered by the ECAI;

(b) the range of credit assessments assigned by the ECAI;

(c) the definition of each credit assessment category;

(d) the definition of default used by the ECAI;

(e) the dynamic properties and characteristics of the rating system or methodology; and

(f) the geographical coverage (i.e. use of regional or global data)

Appendix 4J

RECOGNISED ECAIS

1. The following entities are recognised as ECAIs by the Authority pursuant to **Appendix 4I**:

   a) Moody's Investor Services;

   b) Standard and Poor's Corporation;

   c) Fitch, Inc;

   d) A. M. Best Company, Inc.

Appendix 4K

CREDIT QUALITY CLASS CLASSIFICATION BY CREDIT RATING

Table 1 – Long-term credit rating scales:

Long-Term Credit Quality Class	External Credit Rating Agencies			
	Moody's Investors Services	Standard & Poor's Ratings Services	Fitch Ratings	A. M. Best Company, Inc.
Class A	Aaa	AAA	AAA	Aaa
Class B	Aa1, Aa2, Aa3	From AA+ to AA-	From AA+ to AA-	From aa+ to aa-
Class C	A1, A2, A3	From A+ to A-	From A+ to A-	From a+ to a-
Class D	Baa1, Baa2, Baa3	From BBB+ to BBB-	From BBB+ to BBB-	From bbb+ to bbb-
Class E	Ba1, Ba2, Ba3	From BB+ to BB-	From BB+ to BB-	From bb+ to bb-
Class F	B1, B2, B3	From B+ to B-	From B+ to B-	From b+ to b-
Class G	Caa1 and below	CCC+ and below	CCC+ and below	ccc+ and below

Table 2 – Short-term credit rating scales:

Short-Term Credit Quality Class	External Credit Rating Agencies			
	Moody's Investors Services	Standard & Poor's Ratings Services	Fitch Ratings	A. M. Best Company, Inc.
Class A1	Not applicable	A-1+	F1+	AMB-1+
Class B1	P-1	A-1	F1	AMB-1
Class C1	P-2	A-2	F2	AMB-2
Class D1	P-3	A-3	F3	AMB-3
Class E1	NP	B and below	B and below	AMB-4

Notes:

1. A DFHC (Licensed Insurer) may calculate its total risk requirement using ratings from one or more of the rating agencies listed above.

2. For any particular rating agency used by the DFHC (Licensed Insurer), the DFHC (Licensed Insurer) must use all publicly available ratings from that agency in calculating the total risk requirement.

3. Where more than one rating agency is used by the DFHC (Licensed Insurer) and more than one rating is available on a particular security or entity, a DFHC (Licensed Insurer) must use the second best rating of the security or entity in calculating the total risk requirement.

4. Where the particular security or entity is not rated by any of the rating agencies used by the DFHC (Licensed Insurer), a DFHC (Licensed Insurer) must not treat the security or entity as investment grade.

5. In the case where the debt security is unsecured and unsubordinated, the credit rating of the issuer of the debt security may be used in lieu of the credit rating of the debt security itself.

Appendix 4L

COUNTERPARTY RISK CLASS CLASSIFICATION BY CREDIT RATING

Table 1 on counterparty risk classes

	External Credit Rating Agencies			
Counterparty Risk Class	**Moody's Investors Services**	**Standard & Poor's Ratings Services**	**Fitch Ratings**	**A. M. Best Company, Inc.**
Class A	Aaa	AAA	AAA	Aaa
Class B	Aa1, Aa2, Aa3	From AA+ to AA-	From AA+ to AA-	From aa+ to aa-
Class C	A1, A2, A3	From A+ to A-	From A+ to A-	From a+ to a-
Class D	Baa1, Baa2, Baa3	From BBB+ to BBB-	From BBB+ to BBB-	From bbb+ to bbb-
Class E	Ba1, Ba2, Ba3	From BB+ to BB-	From BB+ to BB-	From bb+ to bb-
Class F	B1, B2, B3	From B+ to B-	From B+ to B-	From b+ to b-
Class G	Caa1 and below	CCC+ and below	CCC+ and below	ccc+ and below

Notes:

1. A DFHC (Licensed Insurer) may calculate its total risk requirement using ratings from one or more of the rating agencies listed above.
2. For any particular rating agency used by the DFHC (Licensed Insurer), the DFHC (Licensed Insurer) must use all publicly available ratings from that agency in calculating the total risk requirement.
3. Where more than one rating agency is used by the DFHC (Licensed Insurer) and more than one rating is available on a particular security or entity, a DFHC (Licensed Insurer) must use the second best rating of the security or entity in calculating the total risk requirement.
4. Where the particular security or entity is not rated by any of the rating agencies used by the DFHC (Licensed Insurer), a DFHC (Licensed Insurer) must not treat the security or entity as investment grade.

Appendix 4M

REQUIREMENTS FOR RECOGNITION OF LETTER OF CREDIT

(1) Eligible Issuers	A DFHC (Licensed Insurer) must not recognise a letter of credit ("LC") unless it is issued by a guarantor or protection seller which is: (a) a central government, a central bank, the Bank for International Settlements, the International Monetary Fund, the European Central Bank or the European Community; (b) a Multilateral Development Bank ("MDB") as listed in **Appendix 4N**; (c) a public sector entity ("PSE"); (d) a banking institution; or (e) in the case where the credit protection is – (i) not provided for a securitisation exposure, any other entity with an external credit assessment by a recognised ECAI; or (ii) provided for a securitisation exposure, any other entity which has a Counterparty Risk Class C or better as set out in **Appendix 4L** at the time the credit protection was provided, and a Counterparty Risk Class D or better as set out in **Appendix 4L** during the period of recognition of the LC.
(2) Recognition of LC	A DFHC (Licensed Insurer) must not recognise the use of an LC unless – (a) all documentation relating to the LC is binding on all relevant parties and legally enforceable in all relevant jurisdictions; (b) the DFHC (Licensed Insurer) complies with the requirements set out in the Criteria for Recognition of Guarantees at paragraph (5) below; and (c) the DFHC (Licensed Insurer) complies with all the public disclosure requirements as specified in writing by the Authority. ***Guidelines:*** *The disclosure requirements follow those set out in MAS Notice 124 but modified to be applied at the FHC group level. For example, the information may include the FHC group's company profile (including the nature of its*

	business, objectives and strategies), key features of its corporate governance framework, internal controls, risk management, material risk exposures, determination of technical provisions, capital adequacy, financial performance, investment risk and liquidity risk.
(3) Use of Multiple Risk Mitigation Methods	A DFHC (Licensed Insurer) must ensure that the reduction in the reinsurance adjustment, where applicable, does not exceed the notional amount of credit protection. Where the LC is denominated in a different currency from that of the secured liabilities, a DFHC (Licensed Insurer) must reduce the notional amount of credit protection by 12% in determining the reduction in the reinsurance adjustment. Where a DFHC (Licensed Insurer) uses multiple risk mitigation methods for a single exposure, the DFHC (Licensed Insurer) must sub-divide the exposure into portions covered by each risk mitigation method and must calculate the exposure amount of each portion separately. ***<u>Guidelines:</u>*** *Multiple risk mitigation methods for a single exposure may include for example, both collateral and guarantee. The exposure should be sub-divided into the portion covered by each risk mitigation method, i.e. portion covered by collateral, and portion covered by the LC.* A DFHC (Licensed Insurer) must apply the same approach when recognising eligible credit protection by a single protection provider where the eligible credit protection has differing maturities.
(4) Inadequate Compliance with the Authority's Requirements	The Authority may prohibit a DFHC (Licensed Insurer) from fully recognising the effects of an LC if—

	(a) the Authority is not satisfied that the DFHC (Licensed Insurer) has complied with the requirements in the section on Recognition of LC above; or (b) the Authority is not satisfied with the effectiveness of the LC in mitigating credit risk exposure, and the DFHC (Licensed Insurer) must not recognise the effect of any LC to the extent of any such prohibition, and must comply with such other actions that the Authority may specify by notice in writing.
(5) Criteria for Recognition of Guarantees	For the purposes of paragraph (2), the DFHC (Licensed Insurer) must ensure that all of the following conditions are satisfied: (a) The guarantee must be an explicitly documented obligation assumed by the guarantor; (b) The guarantee must represent a direct claim on the guarantor; (c) The guarantee must explicitly refer to a specific coverage so that the extent of the credit protection cover is clearly defined; (d) Other than in the event of non-payment by the DFHC (Licensed Insurer)'s ceding insurance group entity in respect of the guarantee if applicable, there must be an irrevocable obligation on the part of the guarantor to pay out a pre-determined amount upon the occurrence of a credit event, as defined under the guarantee; (e) The guarantee must not contain any clause, the fulfilment of which is outside the direct control of the DFHC (Licensed Insurer)'s ceding insurance group entity, that— (i) will allow the guarantor to unilaterally cancel the guarantee; (ii) will increase the effective cost of the guarantee as a result of deteriorating credit quality of the underlying exposure; (iii) may prevent the guarantor from being obliged to pay out in a timely manner in the event that the underlying obligor fails to make any payment due; or (iv) may allow the maturity of the guarantee agreed ex-ante to be reduced ex-post by the guarantor;

	(f) the DFHC (Licensed Insurer)'s ceding insurance group entity must be able to pursue the guarantor for any monies outstanding under the documentation governing the transaction upon the default of, or non-payment by, the underlying obligor, and must have the right to receive such payments from the guarantor without first having to take legal action to pursue the obligor for payment; (g) the guarantee must cover all types of payments that the underlying obligor is expected to make under the documentation governing the transaction; (h) the term of the guarantee must be at least one year; and (i) the guarantee must be renewed at least 90 days prior to expiration, otherwise the guarantee must no longer be recognised in the 90 days immediately prior to the expiration of the guarantee.

Appendix 4N

QUALIFYING MULTILATERAL DEVELOPMENT BANK ("MDB")

The following entities are recognised as MDBs by the Authority pursuant to **Appendix 4M:**

1. the African Development Bank;
2. the Asian Development Bank;
3. the Asian Infrastructure Investment Bank;
4. the Caribbean Development Bank;
5. the Council of Europe Development Bank;
6. the European Bank for Reconstruction and Development;
7. the European Investment Bank;
8. the European Investment Fund;
9. the Inter-American Development Bank;
10. the Islamic Development Bank;
11. the Nordic Investment Bank;
12. the International Finance Facility for Immunisation; or
13. the World Bank Group, including the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation and the Multilateral Investment Guarantee Agency.

Appendix 4O

THE USE OF MODIFIED RISK FACTORS

ANNEX A - APPLICATION

1. For the purpose of computing Group CAR, a DFHC (Licensed Insurer) who wishes to replace the factors set out in Section 4 of this Notice used for computing one or more of the risk requirements, with factors recalibrated by the DFHC (Licensed Insurer)'s FHC group (hereby referred to as the "modified risk factors"), must apply in writing to the Authority for approval for use of the modified risk factors, the methodology used to derive the modified risk factors and must comply with the submission requirements set out in **Annex C**. In deciding whether to approve the use of modified risk factors, the Authority will take into account whether the criteria set out in **Annex D** and all other criteria which the Authority considers relevant has been satisfied.

2. Upon receiving an application mentioned in paragraph 1, the Authority will consider the application, including the risk requirements the DFHC (Licensed Insurer)'s FHC group wishes to recalibrate and how the DFHC (Licensed Insurer) satisfies the governance requirements on the use of modified risk factors as set out in **Annex B**, and may grant approval to the DFHC (Licensed Insurer) with or without conditions (including but not limited to a condition requiring the DFHC (Licensed Insurer) to provide the Authority with information or documents on a periodic basis), or refuse to grant the approval.

3. The Authority may at any time revoke any approval given to a DFHC (Licensed Insurer) under paragraph 2.

4. Where the Authority has granted approval under paragraph 2, the DFHC (Licensed Insurer) must not use the factors under Section 4 of this Notice without the prior written approval of the Authority.

5. Where a DFHC (Licensed Insurer) elects to cease to apply the modified risk factors in the computation of Group CAR as approved by the Authority under paragraph 2, the DFHC (Licensed Insurer) must not revert to using modified risk factors in computing Group CAR unless the DFHC (Licensed Insurer) has reapplied for the Authority's written approval in accordance with paragraph 1. The DFHC (Licensed Insurer) may only reapply for the Authority's approval 24 months after ceasing the use of modified risk factors. As part of the approval process for the reapplication, the DFHC (Licensed Insurer) must provide a justification to the Authority for its reapplication for the use

of the modified risk factors and the Authority must be satisfied with the justification provided by the DFHC (Licensed Insurer).

6. Where the Authority has granted approval under paragraph 2, the DFHC (Licensed Insurer) must immediately notify the Authority in writing when it becomes aware that it has failed, or is likely to fail, to comply with any governance requirement in **Annex B** or any additional condition imposed by the Authority under paragraph 2. To avoid doubt, providing notification under this paragraph to the Authority does not absolve the DFHC (Licensed Insurer) from complying with paragraph 7.

7. Where a DFHC (Licensed Insurer) that applies the modified risk factors is unable to comply with any governance requirement in **Annex B** or any additional condition imposed by the the Authority under paragraph 2, it must take the necessary steps to comply with the conditions or requirements as the case may be within a period of three months from the date the Authority is notified by the DFHC (Licensed Insurer) or becomes aware of such non-compliance, whichever is earlier. Where the DFHC (Licensed Insurer) is not able to comply with the conditions or requirements within this time limit, the DFHC (Licensed Insurer) must cease the use of the modified risk factors in the computation of Group CAR. Where the DFHC (Licensed Insurer) thereafter wishes to apply for the use of the modified risk factors for the purpose of computing Group CAR, the DFHC (Licensed Insurer) must reapply for the Authority's written approval in accordance with paragraph 1 and may only reapply for the Authority's approval 24 months after ceasing the use of the modified risk factors.

8. Where a DFHC (Licensed Insurer) ceases to apply modified risk factors in the computation of Group CAR, the DFHC (Licensed Insurer) must calculate the Group TRR based on Section 4 of this Notice.

ANNEX B – GOVERNANCE REQUIREMENTS

1. A DFHC (Licensed Insurer) that wishes to use modified risk factors in computing Group CAR must meet the governance requirements set out in this Annex.

2. **Board oversight**

   a) The DFHC (Licensed Insurer) must ensure that the board of directors of the DFHC (Licensed Insurer) (the "Board") approves the DFHC (Licensed Insurer)'s application to the Authority for the use of modified risk factors in computing Group CAR, including the selection of the risk requirements to be replaced by the modified risk factors and any subsequent changes to the modified risk factors.

   b) The DFHC (Licensed Insurer) must ensure that the Board approves all matters relating to the use of modified risk factors on which the DFHC (Licensed Insurer) must notify or seek the prior approval of the Authority.

   c) The DFHC (Licensed Insurer) must ensure that the Board understands the objectives, basis and impact of using modified risk factors for computing Group CAR.

   d) The Board may delegate some of its responsibilities to senior management or staff, or committees comprising senior management or staff. However, the Board must continue to exercise oversight to ensure that its delegated responsibilities are effectively carried out.

3. **The team of executive officers or committee delegated with responsibility**

   a) The DFHC (Licensed Insurer) must ensure that the team of executive officers or committee delegated with responsibility over the use of modified risk factors (hereby referred to as the "the committee") exercises active oversight to ensure the continuing appropriateness of the modified risk factors for computing Group CAR.

   b) The DFHC (Licensed Insurer) must ensure that the committee approves any changes to the modified risk factors including changes such as (but not limited to) data used in the calibration.

   c) The DFHC (Licensed Insurer) must ensure that the committee ensures that the governance around the process to derive the modified risk factors is adequate and robust. The DFHC (Licensed Insurer) must ensure that the information provided to the committee is adequate for the committee to perform its role effectively.

d) The DFHC (Licensed Insurer) must ensure that the committee establishes adequate procedures relating to the governance of the derivation of the modified risk factors. At a minimum, these procedures must make clear –

(i) The roles and responsibility of the Board, senior management and other personnel involved in the process;

(ii) The internal validation process and governance framework;

(iii) The matters which the DFHC (Licensed Insurer) must notify and seek approval from the Board and the Authority; and

(iv) The frequency and level of detail of reporting to the Board.

e) The DFHC (Licensed Insurer) must ensure that the committee is responsible for making sure that the staff in charge of deriving the modified risk factors and internal validation are adequately qualified and trained to undertake their respective roles.

f) For the purpose of obtaining the approval from the Authority as specified in paragraph 1 of **Annex A**, the DFHC (Licensed Insurer) must ensure that the committee provides the Authority with the confirmation that the governance requirements set out in this Annex are met.

4. **Internal validation**

a) The DFHC (Licensed Insurer) must perform regular internal validation of its process in deriving the modified risk factors. At the minimum, this must include:

(i) checking that the design of, and the derivation of, the modified risk factors is carried out based on the methodology which the Authority has approved. **Annex D** sets out some of the criteria which the Authority will consider in approving the methodology;

(ii) ensuring that the modified risk factors remain appropriate for the purpose of computing Group CAR; and

(iii) comparing the modified risk factors against an independent and appropriate benchmark and explaining any material deviation.

Guidelines:

1. Independent and appropriate benchmarks may include the relevant market indices of the same asset type (for example, equity index listed in a particular market that is comparable to the actual equities held by the DFHC (Licensed Insurer)'s FHC group).

b) The DFHC (Licensed Insurer) must be able to demonstrate to the satisfaction of the Authority upon request, that its internal validation process enables it to ensure that the modified risk factors are appropriate, and its internal validation process is robust and likely to remain so.

c) The DFHC (Licensed Insurer) must ensure that the person responsible for the validation work possesses sufficient expertise to conduct the validation and is not involved in the derivation of the modified risk factors.

d) The DFHC (Licensed Insurer) must perform regular internal validation of its process in deriving the modified risk factors and such internal validation must be performed at least annually.

Guidelines:

2. A person who possesses "sufficient expertise" will include but is not limited to a person who has experience in areas such as investment management and actuarial valuation.

5. For the purpose of preparing the Annual Returns in MAS FHC-N129, the DFHC (Licensed Insurer) must appoint an internal auditor to conduct independent reviews to ensure that the FHC group complies with the approval and governance requirements set out in **Annexes A** and **B**.

6. Depending on the specific circumstances of the DFHC (Licensed Insurer)'s FHC group, the Authority may request for an independent review to be conducted by an external party to ensure that the modified risk factors are derived in accordance with the methodology approved by the Authority, and that the modified risk factors are appropriate for computing Group CAR. In such cases, the DFHC (Licensed Insurer) must ensure that the external party possesses sufficient expertise to conduct the independent review.

Guidelines:

3. If a DFHC (Licensed Insurer) were to request for recalibration of a risk requirement that requires a more complex assessment and calculation, the Authority may request for an *independent review by an external party to ensure that the modified risk factors are derived correctly and are appropriate for use in calculating Group CAR.*

7. The DFHC (Licensed Insurer) must ensure that any findings arising from the independent reviews conducted by an internal auditor and external party are reported to the committee and the Board.

8. The DFHC (Licensed Insurer) must seek the written approval of the Authority prior to implementing any changes to the modified risk factors that have been approved by the Authority for the purpose of computing Group CAR.

9. **Documentation**

   a) The DFHC (Licensed Insurer) must ensure that the internal validation work conducted is comprehensively documented, which at the minimum, must include:

      (i) checks conducted in ensuring that the modified risk factors are derived based on methodology approved by the Authority. **Annex D** sets out some of the criteria which the Authority will consider in approving the methodology; and

      (ii) the assessment carried out in ensuring that the modified risk factors are appropriate, including the comparison against an independent and appropriate benchmark.

Guidelines:
4. Refer to Guideline 1 of this appendix for guidance on what may constitute as independent and appropriate benchmark.

   b) The DFHC (Licensed Insurer) must keep documentation of the derivation of the modified risk factors, which at the minimum, must include all of the following:

      (i) the data used, including any proxy to actual data and assessment on the appropriateness of the proxy used;

      (ii) any key assumptions used in deriving the modified risk factors;

      (iii) the proposed and approved modified risk factors;

(iv) the impact to Group CAR arising from the use of modified risk factors; and

(v) any major changes made from the last review of the modified risk factors.

ANNEX C - SUBMISSION REQUIREMENTS

1. For the purpose of obtaining the Authority's approval for the use of modified risk factors under paragraph 1 of **Annex A**:

   a) A DFHC (Licensed Insurer) must provide the Authority the following:

      (i) A document setting out the risk requirements and the jurisdictions that the DFHC (Licensed Insurer) wishes to recalibrate the factors set out in Section 4 of this Notice used for computing these risk requirements; and

      (ii) Justification for the selection of risk requirements which it wishes to recalibrate and adopt as modified risk factors. The justification must include the impact on the Group CAR and the reasons for not selecting the other risk requirements for recalibration.

<u>Guidelines:</u>
1. To maintain a consistent and unbiased application of the use of modified risk factors across all risk requirements, the DFHC (Licensed Insurer) should provide reasons for recalibrating the selected risk requirements, which may include having sufficient, relevant and credible internal data to support the calibration, and that the factors set out in Section 4 of this Notice do not appropriately reflect the risk profile of the DFHC (Licensed Insurer)'s FHC group and may result in material differences in the impact on the Group CAR. The DFHC (Licensed Insurer) should not only replace the risk requirements which would reduce the FHC group's required capital.

      (iii) For the risk requirements selected for recalibration, any exposure that the DFHC (Licensed Insurer) intends to exclude from the recalibration exercise, the justification for excluding the exposure and the treatment to calculate the risk requirement for the excluded exposures;

      (iv) A detailed description of the methodology used in deriving the modified risk factors;

      (v) A copy of the governance processes set out in **Annex B**;

      (vi) Confirmation from the team of executive officers or committee delegated with the responsibility over the modified risk factors (as specified in paragraph 3f) of **Annex B)** that the governance requirements set out in **Annex B** are met; and

Guidelines:

2. Confirmation can be in the form of meeting minutes that show the discussion and approval of the relevant documentation.

(vii) Any other relevant information that the DFHC (Licensed Insurer) considers to be necessary for assessment and decision by the Authority.

b) Where the DFHC (Licensed Insurer) fails to provide all of the requested information and documents as set out in sub-paragraph a), the application will be deemed to be incomplete. The Authority's assessment will only commence from the date of complete submission of all information and documents to the Authority.

Guidelines:

3. The Authority's assessment may take at least 6 months from the date of complete submission of all information and documents to the Authority.

c) Notwithstanding the submission requirements specified in sub-paragraph a), the Authority may request for additional information or documents during the course of its review of the DFHC (Licensed Insurer)'s application.

Guidelines:

4. The documents specified in this Annex should be submitted via an email attachment to the DFHC (Licensed Insurer)'s liaison officer in the Authority, using AES 256 encryption or higher. The DFHC (Licensed Insurer) should deliver the corresponding alphanumeric password of minimum 12 characters in length or encryption key via a separate transmission channel (e.g. telephone) to the Authority.

ANNEX D - CRITERIA RELATING TO THE CALIBRATION METHODOLOGY THAT THE AUTHORITY CONSIDERS WHEN APPROVING THE USE OF MODIFIED RISK FACTORS

1. **<u>Data to be used</u>**

a) The data to be used in calibrating the risk requirement should be representative of the actual holding of the assets and liabilities (where applicable) of the DFHC (Licensed Insurer)'s FHC group that are relevant to the risk requirement to be calibrated.

> *<u>Examples</u>*
>
> *(i) Subject to paragraph 1d), for the calibration of equity risk requirement, the DFHC (Licensed Insurer) should use data on the historical price movements of the actual equity holdings of the FHC group.*
>
> *(ii) The data used for calibrating the interest rate adjustments for interest rate mismatch risk requirement should be based on the market information on government bonds for the currency that the relevant asset and liability are denominated in. The relevant asset and liability should be those that are sensitive to interest rate changes. For instance, for assets denominated in Malaysia Ringgit, historical observations of Malaysian Government Securities should be used.*

b) For the selected risk requirements to adopt the use of modified risk factors, the DFHC (Licensed Insurer) should include all exposures of the FHC group, such as all markets and currencies for the derivation of the modified risk factors. If the DFHC (Licensed Insurer) intends to exclude any exposure from the recalibration exercise, it should provide the Authority with a justification for example due to immateriality of data or lack of relevant data to perform a proper recalibration. The DFHC (Licensed Insurer) should also document the justification and treatment for these excluded exposures.

c) The data used for deriving the modified risk factors should be accurate, relevant, complete, and appropriate.

d) Proxies to actual data (as specified in sub-paragraph a)) may be used if the actual data is insufficient, incomplete or inappropriate.

e) Where proxies to actual data are used, the FHC group should ensure that the proxies meet the data quality set out in sub-paragraph c) and produce reasonably reliable estimates of the modified risk factors. For instance, actual historical data or proxies to actual data may be deemed as inappropriate if they are not reflective of the future performance of the asset which it represents.

f) The data period to be used for the calibration should be approved by the Authority and such data period should be at least 10 years.

2. **Target Criteria for Calibration of Risk Requirements**

The risk requirements should be calibrated to correspond to a Value at Risk ("VaR") of 99.5% confidence level over a one-year period.

3. **Methodology**

a) The calibration of the risk requirement should be in the same structure and minimally be at the same level of granularity, if not more granular, than that specified in section 4 of this Notice. For example,

   i. the risk requirements for equities should not be less granular than the categories "equities listed in developed markets" and "other equities";

   ii. for interest rate mismatch risk requirement, the interest rate adjustments should be calibrated based on percentage changes to the relevant base yield curve and this should be done for both upward and downward interest rate scenarios.

b) The data should be converted to a stationary time series of daily 1-year rolling rate of change (such as the return of an asset class) to form a distribution of rate of changes. The risk requirement should be derived by taking the 0.5^{th} percentile of the resulting distribution except for the upward interest rate adjustment for calculating interest rate mismatch risk requirement (where applicable) which should be derived by taking the 99.5^{th} percentile of the distribution. For example, for a data period that commences from 1 January 2003, the percentage annual rate of change in equity prices from 1 January 2003 to 1 January 2004 is the first data point and the percentage annual rate of change from 2 January 2003 to 2 January 2004 is the next data point.

c) For the purpose of calibrating the interest rate adjustments for calculating interest rate mismatch risk requirement (where applicable), the calibration should minimally be done for the following durations up to the last liquid point as specified in **Appendix 3C** of this Notice. For durations in between the calibrated durations, the interest rate adjustments should be linearly interpolated in between the two nearest calibrated data points.

i. 3-months, 1-year, 2-year, 5-year, 10-year, 15-year, 20-year, 30-year

d) The calibration of the risk requirement should not consider any diversification benefits with other risks. In recognising diversification benefits in the aggregation of risk requirements for the purpose of computing Group CAR, the FHC group should apply the correlation matrices that are set out in section 4 of this Notice.

4. The Authority may specify in writing to the DFHC (Licensed Insurer)'s FHC group other requirements relating to the data used and calibration methodology of the risk requirements under Section 4 of this Notice.

5. The data and the calibration process should be updated at least annually and more frequently where there is a material change in the FHC group's risk profile that will affect the appropriateness of the modified risk factors.

Appendix 5A

MINIMUM REQUIREMENTS FOR PAID-UP ORDINARY SHARES

1. A DFHC (Licensed Insurer) must not include a paid-up ordinary share of the DFHC (Licensed Insurer) as CET1 Capital unless all of the following conditions are satisfied –

(a) in the event the DFHC (Licensed Insurer) is liquidated, the holder of the ordinary share must have the most subordinated claim;

(b) in the event the DFHC (Licensed Insurer) is liquidated, the entitlement of ordinary shareholders to a claim on the residual assets must be proportional to their share of issued share capital. The claims of ordinary shareholders to residual assets must be unlimited and variable and must not be fixed or capped;

(c) the amount paid-up by ordinary shareholders must be perpetual and must not be repaid outside of liquidation but a DFHC (Licensed Insurer) may —

(i) carry out discretionary repurchases; or

(ii) reduce capital in any discretionary manner,

that is allowable under written law;

(d) the DFHC (Licensed Insurer) must not create an expectation at issuance that the ordinary shares will be bought back, redeemed or cancelled, and the DFHC (Licensed Insurer) must not enter into any contract when issuing the ordinary shares, where the terms of the contract might give rise to any such right or expectation;

(e) the DFHC (Licensed Insurer) must only pay distributions in respect of ordinary shares ("distributions") to the extent that the DFHC (Licensed Insurer) has profits distributable under written law. The level of distributions must not be tied or linked to the amount paid-up at issuance, and must not be subject to a contractual cap, except to the extent that the DFHC (Licensed Insurer) is unable to pay distributions that exceed the level of profits distributable under written law;

(f) there must be no circumstances under which the DFHC (Licensed Insurer) is obliged to pay distributions and the non-payment of distributions must not be an event of default;

(g) a DFHC (Licensed Insurer) must only pay distributions after the DFHC (Licensed Insurer) has satisfied all its other legal and contractual obligations, and after the

DFHC (Licensed Insurer) has made payments on AT1 capital instruments and Tier 2 capital instruments. A DFHC (Licensed Insurer) must not make any preferential distributions, including in respect of other CET1 Capital;

(h) the ordinary share takes the first and proportionately greatest share of any losses as they occur. To avoid doubt, in cases where capital instruments have a permanent write-down feature, the DFHC (Licensed Insurer) must ensure that it meets this requirement in respect of ordinary shares. In this regard, it absorbs losses on a going concern basis proportionately and *pari passu* with all other CET1 capital instruments;

(i) the DFHC (Licensed Insurer) must recognise the amount paid-up by ordinary shareholders as equity and must not recognise the amount paid-up by ordinary shareholders as a liability, for the purpose of determining balance sheet insolvency;

(j) the amount paid-up by ordinary shareholders must be classified as equity under the Accounting Standards;

(k) the ordinary share must be directly issued and fully paid-up in cash, and the DFHC (Licensed Insurer) must not directly or indirectly fund the purchase of the ordinary share;

(l) the amount paid-up by ordinary shareholders must not be secured or covered by a guarantee of the DFHC (Licensed Insurer) or any of its related corporations or other affiliates. The ordinary share must also not be subject to any other arrangement that legally or economically enhances the seniority of the claim;

(m) the ordinary share must be issued with the approval of the ordinary shareholders. The approval must either be given directly by the ordinary shareholders or, if permitted by written law, given by the board of the DFHC (Licensed Insurer) or by other persons duly authorised by the ordinary shareholders; and

(n) the DFHC (Licensed Insurer) must clearly and separately disclose the ordinary share on the DFHC (Licensed Insurer)'s balance sheet.

2. In the case where the DFHC (Licensed Insurer) issues non-voting ordinary shares as part of CET1 Capital, a DFHC (Licensed Insurer) must ensure that the non-voting ordinary shares are identical to the voting ordinary shares of the DFHC (Licensed Insurer) in all respects, except the absence of voting rights.

Appendix 5B

MINIMUM REQUIREMENTS FOR AT1 CAPITAL INSTRUMENTS

1. A DFHC (Licensed Insurer) must not include a capital instrument of the DFHC (Licensed Insurer)'s FHC group as AT1 Capital unless all of the following conditions are satisfied:

(a) the instrument must be issued and fully paid-up in cash, and the DFHC (Licensed Insurer) must only include the net proceeds received from the issuance of the instrument as financial resources of the DFHC (Licensed Insurer)'s FHC group;

(b) the holder of the instrument must have a priority of claim, in respect of the principal and interest of the instrument in the event of a winding up of the DFHC (Licensed Insurer), which is lower than that of policy owners, other creditors of the DFHC (Licensed Insurer) and holders of qualifying Tier 2 instruments, except where such persons rank equally with, or behind the holder of the instrument;

(c) the paid-up amount must not be secured or covered by a guarantee of the DFHC (Licensed Insurer) or any of its related corporations or other affiliates, or any other arrangement, that legally or economically enhances the priority of the claim of any holder of the instrument vis-a-vis the persons set out in sub-paragraph (b);

(d) the holder of the instrument must waive the holder's right, if any, to set off any amounts the holder owes the DFHC (Licensed Insurer) against any subordinated amount owed to him due to the instrument and the holder must commit to return any set-off amounts or benefits received to the liquidator;

(e) subject to sub-paragraph (f), the subordination provisions of the instrument must be governed by the laws of Singapore;

(f) notwithstanding sub-paragraph (e), the subordination provisions of the instrument may be subject to the laws of a jurisdiction other than Singapore, if the DFHC (Licensed Insurer) satisfies itself that all the conditions specified in this Appendix, other than that set out in sub-paragraphs (e) and (f), are met under the laws of that jurisdiction;

(g) the principal must be perpetual. For the purposes of this paragraph—

  (i) the principal is perpetual if there is no maturity date, and there are no step-ups or other provisions that mandate or create an incentive for the DFHC (Licensed Insurer) to redeem the capital instrument; and

(ii) each of the following is considered an incentive to redeem:

(A) a call option combined with an increase in the credit spread of the capital instrument if the call option is not exercised;

(B) a call option combined with a requirement or an investor option to convert the capital instrument into ordinary shares if the call is not exercised; or

(C) a call option combined with a change in reference rate where the credit spread over the second reference rate is greater than the initial payment rate less the swap rate.

Guidelines:

1. *For example, if the initial reference rate is 0.9%, the credit spread over the initial reference rate is 2% (i.e. the initial payment rate is 2.9%), and the swap rate to the call date is 1.2%, a credit spread over the second reference rate greater than 1.7% (2.9% - 1.2%) would be considered an incentive to redeem.*

To avoid doubt, a conversion from a fixed rate to a floating rate or vice versa in combination with a call option without any increase in credit spread is not deemed an incentive to redeem. The DFHC (Licensed Insurer) must, however, not do anything to create an expectation that the call will be exercised;

(h) subject to paragraph 2 of this Appendix, the capital instrument must be callable at the option of the DFHC (Licensed Insurer) only after a minimum of five years from the issue date, and the DFHC (Licensed Insurer) must comply with all of the following requirements when exercising any call option:

(i) the DFHC (Licensed Insurer) must not exercise the call option without the prior approval of the Authority[7];

(ii) the DFHC (Licensed Insurer) must not create an expectation that the call option will be exercised; and

[7] To avoid doubt, the Authority refers to the Monetary Authority of Singapore and does not refer to the authority which governs the laws of the jurisdiction (other than Singapore) which the entity operates in.

Guidelines:

2. For example, the Authority is not likely to grant approval for redemption where a DFHC (Licensed Insurer) calls a capital instrument and replaces it with another capital instrument that is more costly (e.g. with a higher credit spread).

(iii) the DFHC (Licensed Insurer) must not exercise a call option unless —

(A) The instrument is replaced by the DFHC (Licensed Insurer) with capital of the same or better quality, and the replacement of this capital is done at conditions which are sustainable for the income capacity of the DFHC (Licensed Insurer). The DFHC (Licensed Insurer) must replace the instrument concurrently with the call of the capital instrument, but must not replace the instrument after the capital instrument is called; or

(B) The DFHC (Licensed Insurer) demonstrates to the Authority before the call that the FHC group's capital position meets the capital adequacy requirement as specified in Section 2 of this Notice and any directions issued by the Authority pursuant to section 36(2) of the FHC Act, where applicable, after the call option is exercised.

(i) a DFHC (Licensed Insurer) must only repay the principal with the prior approval of the Authority. The DFHC (Licensed Insurer) must not assume or create any expectation that approval will be given by the Authority. Without prejudice to any other matter that the Authority may consider relevant, the Authority may, in determining whether to grant its approval, consider whether the DFHC (Licensed Insurer)'s capital position is likely to remain adequate after repayment;

Guidelines:

3. The repayment of principal may be done through for example, repurchases or redemptions.

(j) with regard to the dividend or coupon on the instrument —

(i) The DFHC (Licensed Insurer) must have full discretion at all times to cancel distributions or payments. To avoid doubt, the DFHC (Licensed Insurer) must not have any obligation to make distributions or payments in kind upon the cancellation of any distributions or payments. For the purposes of this sub-paragraph:

(A) A DFHC (Licensed Insurer) must ensure that the instrument does not have any mechanism that obliges the DFHC (Licensed Insurer) to make a dividend or coupon payment on the instrument, if it has made a payment on another (typically more junior) capital instrument or share ("dividend pusher");

> ***Guidelines:***
>
> *4. A dividend pusher feature is inconsistent with the requirement for the DFHC (Licensed Insurer) to have full discretion at all times to cancel distributions or payments.*

(B) To avoid doubt, the instrument may have a mechanism that stops the DFHC (Licensed Insurer) from making a dividend payment on its ordinary shares or other AT1 capital instruments if a dividend or coupon payment is not paid on its AT1 capital instruments ("dividend stoppers"), provided that the DFHC (Licensed Insurer) retains full discretion at all times to cancel distributions or payments.

(ii) any cancellation of dividend or coupon must not be an event of default;

(iii) the DFHC (Licensed Insurer) must have full access to cancelled payments to meet obligations as they fall due; and

(iv) any cancellation of dividend or coupon must not result in restrictions being imposed on the DFHC (Licensed Insurer), except in relation to distributions to ordinary shareholders;

> ***Guidelines:***
>
> *5. For example, restrictions which impede the DFHC (Licensed Insurer)'s ability to restructure or improve its capital position.*

(k) a DFHC (Licensed Insurer) must only pay any dividend or coupon on the instrument to the extent that the DFHC (Licensed Insurer) has profits distributable under any written law, determined from the latest statements of account lodged with the Authority in accordance with MAS Notice FHC-N129 or such other subsequent audited statements of account provided to the Authority;

(l) the instrument must not have a credit sensitive dividend feature, including a dividend or coupon that is reset periodically, based in whole or in part on the credit standing of the DFHC (Licensed Insurer) or any insurance group entity;

(m) the instrument must not contribute to liabilities exceeding assets, if such a balance sheet test forms part of any national insolvency law governing the provisions of the instrument;

(n) where the instrument is classified as a liability under the Accounting Standards, the instrument must have either of the following principal loss absorption features –

(i) a provision under which the instrument converts to ordinary shares if the CET1 Capital of the DFHC (Licensed Insurer) falls below 55% of the Group TRR (excluding participating businesses); or

(ii) a write-down mechanism that allocates losses to the capital instrument if the CET1 Capital of the DFHC (Licensed Insurer) falls below 55% of the Group TRR (excluding participating businesses). The write-down must have all of the following effects:

(A) it must reduce the claim of the holder of the instrument in a liquidation of the DFHC (Licensed Insurer);

(B) it must reduce the amount to be repaid when a call option is exercised; and

(C) it must partially or fully reduce dividend or coupon payments on the instrument;

For the purposes of this paragraph —

1. a conversion under the provision mentioned in sub-paragraph (n)(i) or a write-down under the mechanism mentioned in sub-paragraph (n)(ii) must generate CET1 Capital;

2. any aggregate amount converted in accordance with the provision mentioned in sub-paragraph (n)(i) or written down under the mechanism mentioned in sub-paragraph (n)(ii) must be at least equivalent to the amount needed to immediately return the DFHC (Licensed Insurer)'s CET1 Capital to 55% of the Group TRR (excluding participating businesses) or, if this is not possible, the amount of the full principal value of the instruments;

3. where a DFHC (Licensed Insurer) writes down an aggregate amount under the mechanism mentioned in sub-paragraph (n)(ii), the DFHC (Licensed Insurer) must not write the aggregate amount back up at any later point in time; and

4. the DFHC (Licensed Insurer) must trigger the principal loss absorption features if the DFHC (Licensed Insurer) is unable to maintain a CET1 capital of 55% or more via other means including capital injection.

(o) where a DFHC (Licensed Insurer) issues the instrument in a foreign currency, the DFHC (Licensed Insurer) must revalue the instrument periodically (at least monthly) in terms of Singapore dollars at the prevailing exchange rates. Where the DFHC (Licensed Insurer) intends to use a swap to hedge the foreign exchange exposure arising from the foreign currency instrument, the DFHC (Licensed Insurer) must consult the Authority on the capital treatment applicable to the hedge prior to such use;

(p) the DFHC (Licensed Insurer) and all of its insurance group entities and associates must not purchase the instrument, and the DFHC (Licensed Insurer) must not directly or indirectly fund the purchase of the capital instrument;

(q) the instrument must not have any feature that hinders recapitalisation, including provisions that require the issuer to compensate investors if a new instrument is issued at a lower price during a specified time frame. For the purposes of this paragraph, where there is a dividend stopper as defined in sub-paragraph (j)(i)(B) within the terms and conditions of the AT1 capital instrument, such a feature must not hinder the recapitalisation of the DFHC (Licensed Insurer).

<u>Guidelines:</u>

6. For example, a dividend stopper on an AT1 capital instrument must not:

(a) attempt to stop payment on another capital instrument where such payments are not fully discretionary;

(b) prevent distributions to ordinary shareholders for a period that extends beyond the point in time that dividend or coupon payments on the AT1 capital instrument are resumed; or

(c) impede the normal operation of the DFHC (Licensed Insurer) or any restructuring activity such as acquisitions or disposals.

(r) if the instrument is not issued out of an entity within the DFHC (Licensed Insurer)'s FHC group, the proceeds from the issuance of the instrument must be immediately available without limitation to an entity within the DFHC (Licensed Insurer)'s FHC group in a form which meets or exceeds all of the other requirements set out in this Appendix, for inclusion in AT1 Capital;

Guidelines:

7. For example, the instrument may be issued out of a special purpose entity.

(s) the DFHC (Licensed Insurer) must disclose the main features of the instrument clearly and accurately to the investors of the instrument;

(t) the agreement governing the issuance of the instrument must not be amended or varied without the prior approval of the Authority where the amendment or variation may impact the instrument's eligibility as AT1 Capital.

2. The Authority may grant approval for redemption of an instrument within the first five years from the issue date where –

(a) there is a change in tax status of the instrument due to changes in applicable tax laws of the country or territory in which the instrument was issued; or

(b) there is a change relating to the recognition of the instrument as an AT1 capital instrument,

and provided that the requirements set out in paragraph 1 of this Appendix are met.

The Authority will, in determining whether to grant approval, consider whether the DFHC (Licensed Insurer) was in a position to anticipate the event at the issuance of the instrument.

Appendix 5C

MINIMUM REQUIREMENTS FOR TIER 2 CAPITAL INSTRUMENTS

1. A DFHC (Licensed Insurer) must not include a capital instrument of the DFHC (Licensed Insurer) as Tier 2 Capital unless all of the following conditions are satisfied –

(a) the instrument must be issued and fully paid-up in cash, and a DFHC (Licensed Insurer) must only include the net proceeds received from the issuance of the instrument as financial resources of the FHC group;

(b) the holder of the instrument must have a priority of claim in respect of the principal and interest of the instrument, in the event of a winding up of the DFHC (Licensed Insurer), which is lower than that of policy owners and other creditors of the DFHC (Licensed Insurer), except where such persons rank equally with, or behind, the holder of the instrument;

(c) the paid-up amount must not be secured or covered by a guarantee of the DFHC (Licensed Insurer) or any of its related corporations or other affiliates, or any other arrangement, that legally or economically enhances the priority of the claim of any holder of the instrument vis-a-vis the persons set out in sub-paragraph (b);

(d) the holder of the instrument must waive the holder's right, if any, to set off any amounts the holder owes the DFHC (Licensed Insurer) against any subordinated amount owed to him due to the instrument and the holder must commit to return any set-off amounts or benefits received to the liquidator;

(e) subject to sub-paragraph (f), the subordination provisions of the instrument must be governed by the laws of Singapore;

(f) notwithstanding sub-paragraph (e), the subordination provisions of the instrument may be subject to the laws of a jurisdiction other than Singapore, if the DFHC (Licensed Insurer) satisfies itself that all the conditions specified in this Appendix, other than in sub-paragraphs (e) and (f), are met under the laws of that jurisdiction;

(g) with regard to the maturity of the capital instrument:

  (i) the instrument must have a minimum original maturity of at least 5 years. Where the agreement governing the issuance of the capital instrument provides for the loan to be drawn down in a series of tranches, the minimum original maturity for each tranche must be 5 years from the date of its first draw-down;

(ii) recognition of the instrument in Tier 2 Capital in its final five years to maturity must be amortised on a straight-line basis by 20% per annum in accordance with Table 1 below. Where the capital instrument is repayable in separate tranches, each tranche must be amortised individually, as if it were a separate loan; and

Table 1: Amortisation Schedule for a Tier 2 capital instrument

Years to maturity (x)	Amortised amount eligible to be included in Tier 2 Capital
x > 4	100%
3 < x ≤4	80%
2 < x ≤ 3	60%
1 < x ≤ 2	40%
x ≤ 1	20%

(iii) there must be no step-ups or other provisions that mandate or create an incentive for the DFHC (Licensed Insurer) to redeem the capital instrument.

(iv) For the purposes of this sub-paragraph each of the following is considered an incentive to redeem:

(A) a call option combined with an increase in the credit spread of the capital instrument if the call option is not exercised;

(B) a call option combined with a requirement or an investor option to convert the capital instrument into ordinary shares if the call is not exercised; or

(C) a call option combined with a change in reference rate where the credit spread over the second reference rate is greater than the initial payment rate less the swap rate.

Guidelines:

1. *For example, if the initial reference rate is 0.9%, the credit spread over the initial reference rate is 2% (i.e. the initial payment rate is 2.9%), and the swap rate to the call date is 1.2%, a credit spread over the second*

reference rate greater than 1.7% (2.9% - 1.2%) would be considered an incentive to redeem.

To avoid doubt, a conversion from a fixed rate to a floating rate or vice versa in combination with a call option without any increase in credit spread is not deemed an incentive to redeem. The DFHC (Licensed Insurer) must, however, not do anything to create an expectation that the call will be exercised;

(h) subject to paragraph 2 of this Appendix, the capital instrument must be callable at the option of the DFHC (Licensed Insurer) only after a minimum of five years from the issue date, and the DFHC (Licensed Insurer) must comply with all of the following requirements when exercising any call option:

(i) the DFHC (Licensed Insurer) must not exercise the call option without the prior approval of the Authority;

(ii) the DFHC (Licensed Insurer) must not create an expectation that the call option will be exercised. Where this requirement is met, an option to call the capital instrument after five years but prior to the start of the amortisation period is not deemed an incentive to redeem;

Guidelines:

2. For example, the Authority is not likely to grant approval for redemption where a DFHC (Licensed Insurer) calls a capital instrument and replaces it with another capital instrument that is more costly (e.g. with a higher credit spread).

(iii) the DFHC (Licensed Insurer) must not exercise a call option unless -

(A) The instrument is replaced by the DFHC (Licensed Insurer) with capital of the same or better quality, and the replacement of this capital is done at conditions which are sustainable for the income capacity of the DFHC (Licensed Insurer). The DFHC (Licensed Insurer) must replace the instrument concurrently with the call of the capital instrument, but must not replace the instrument after the capital instrument is called; or

(B) The DFHC (Licensed Insurer) demonstrates to the Authority before the call that its capital position meets the capital adequacy requirement as specified in Section 2 of this Notice and any directions issued by the Authority pursuant to section 36(2) of the FHC Act, where applicable, after the call option is exercised.

(i) the holder of the capital instrument must not have any rights to accelerate the repayment of future scheduled payments (either coupon or principal), except in a bankruptcy or liquidation of the DFHC (Licensed Insurer);

(j) the instrument must not have a credit sensitive dividend feature, including a dividend or coupon that is reset periodically, based in whole or in part on the credit standing of any entity within the DFHC (Licensed Insurer)'s FHC group;

(k) where the DFHC (Licensed Insurer) issues the instrument in a foreign currency, the DFHC (Licensed Insurer) must revalue the instrument periodically and at least monthly in terms of Singapore dollars at the prevailing exchange rates. Where the DFHC (Licensed Insurer) intends to use a swap to hedge the foreign exchange exposure arising from the foreign currency instrument, the DFHC (Licensed Insurer) must consult the Authority on the capital treatment applicable to the hedge prior to such use;

(l) the DFHC (Licensed Insurer)'s FHC group and associates must not purchase the instrument, and the DFHC (Licensed Insurer) must not directly or indirectly fund the purchase of the capital instrument;

(m) if the instrument is not issued out of an entity within the DFHC (Licensed Insurer)'s FHC group, the proceeds from the issuance of the instrument must be immediately available without limitation to an entity within the DFHC (Licensed Insurer)'s FHC group in a form which meets or exceeds all of the other requirements set out in this Appendix, for inclusion in Tier 2 Capital;

Guidelines:

3. For example, the instrument may be issued out of a special purpose entity.

(n) the DFHC (Licensed Insurer) must disclose the main features of the instruments clearly and accurately to the investor of the instrument;

(o) the agreement governing the issuance of the instrument must not be amended or varied without the prior approval of the Authority where the amendment or variation may impact the instrument's eligibility as Tier 2 Capital.

2. The Authority may grant approval for redemption of an instrument within the first five years from the issue date where –

(a) there is a change in tax status of the instrument due to changes in applicable tax laws of the country or territory in which the instrument was issued; or

(b) there is a change relating to the recognition of the instrument as a Tier 2 capital instrument,

and provided that the requirements set out in paragraph 1 of this Appendix are met.

The Authority will, in determining whether to grant approval, consider whether the DFHC (Licensed Insurer) was in a position to anticipate the event at the issuance of the instrument.

Appendix 5D

SUBMISSION REQUIREMENTS FOR A DFHC (LICENSED INSURER) INTENDING TO ISSUE OR RECOGNISE A CAPITAL INSTRUMENT AS CET1, AT1 OR TIER 2 CAPITAL

1. A DFHC (Licensed Insurer) must –

   (a) consult the Authority at least 3 months prior to the issuance of any capital instrument which has additional features which are not explicitly addressed in **Appendix 5A** for paid-up ordinary share as CET1 Capital, **Appendix 5B** for AT1 Capital, or **Appendix 5C** for Tier 2 Capital; and

   (b) submit all of the following documents to the Authority at least 1 month before including any issuance as CET1 Capital, AT1 Capital or Tier 2 Capital:

      (i) a declaration signed by the Chief Executive of the DFHC (Licensed Insurer) confirming –

         (A) that the DFHC (Licensed Insurer) is responsible for complying with the requirements for inclusion of the issuance of the paid-up ordinary share as CET1 Capital, issuance of the AT1 capital instrument as AT1 Capital, or the issuance of the Tier 2 capital instrument as Tier 2 Capital;

         (B) that all the requirements for the inclusion of the issuance of the paid-up ordinary share capital instrument, AT1 capital instrument or Tier 2 capital instrument set out in **Appendix 5A, Appendix 5B or Appendix 5C**, as the case may be, have been met;

         (C) the expected date on which the issuance would be included as CET1 Capital, AT1 Capital or Tier 2 Capital; and

         (D) that the DFHC (Licensed Insurer) is aware that the Authority may take such necessary action against the DFHC (Licensed Insurer), including requiring the exclusion of the issuance for inclusion as CET1 Capital, AT1 Capital or as Tier 2 Capital, if the issuance does not, or subsequently does not, comply with the requirements set out in **Appendix 5A**, **Appendix 5B or Appendix 5C**, as the case may be;

(ii) all the executed agreements and offering documents governing the issuance of the paid-up ordinary share capital instrument, AT1 capital instrument or Tier 2 capital instrument;

(iii) all external legal opinions obtained in respect of the issuance of the paid-up ordinary share capital instrument, AT1 capital instrument or the Tier 2 capital instrument stating that the requirements in **Appendix 5A**, **Appendix 5B** or **Appendix 5C**, as the case may be, have been met;

(iv) a memorandum of compliance stating how the issuance complies with each of the requirements set out in **Appendix 5A, Appendix 5B** or **Appendix 5C**, as the case may be, and identifying the relevant portions of the agreements and offering documents governing the issuance of the paid-up ordinary share capital instrument, AT1 capital instrument or Tier 2 capital instrument which address each requirement;

(v) where the agreements and offering documents governing the issuance of the paid-up ordinary share capital instrument, AT1 capital instrument or Tier 2 capital instrument are governed by the laws of a jurisdiction other than Singapore, a written external legal opinion from an advocate and solicitor qualified to practise Singapore law, that he has reviewed all the agreements and offering documents governing the issuance, including any legal opinion from foreign law practitioners provided pursuant to sub-paragraph (iii) and the memorandum of compliance, and confirms that the memorandum of compliance read together with such agreements, offering documents, legal opinions and any letter of undertaking provided by the DFHC (Licensed Insurer) or any insurance group entity address the requirements of **Appendix 5A**, **Appendix 5B** or **Appendix 5C**, as the case may be.

2. For the purposes of sub-paragraph 1 (b)(iii), the written external legal opinion must not be qualified, in particular with respect to the prohibition on provisions which mandate or create incentives for the redemption of the instrument, and other requirements relating to loss absorption, priority of claims, waiver of set-off amounts or benefits and subordination.

Appendix 5E

COMPONENTS OF FINANCIAL RESOURCES RELATING TO REGULATORY ADJUSTMENT, REINSURANCE ADJUSTMENT, FINANCIAL RESOURCE ADJUSTMENT AND ADJUSTMENT FOR ASSET CONCENTRATION

A. Regulatory adjustment

1. A DFHC (Licensed Insurer) must calculate regulatory adjustment as the sum of the following:

   (a) Allowance for provision for non-guaranteed benefits; and

   (b) Allowance for negative reserves.

B. Allowance for provision for non-guaranteed benefits

2. For the purposes of paragraph 1(a), a DFHC (Licensed Insurer) must calculate the allowance for provision for non-guaranteed benefits of a participating business as —

   (a) the difference between —

      (i) the liability (net of reinsurance) in respect of the policies of the participating business determined in accordance with regulation 20(6) of the Insurance (Valuation and Capital) Regulations 2004 in the case of an insurance group entity in its FHC group that is a licensed insurer in Singapore and paragraph 1(6) of **Appendix 3A-1** of this Notice in the case of an insurance group entity in its FHC group that is an FIE; and

      (ii) the minimum condition liability of the participating business; or

   (b) the aggregate of the values of expected payments arising from non-guaranteed benefits of each participating policy and any PAD from the expected experience for each participating policy of the participating business, determined in accordance with regulation 20(3)(b) and (c) of the Insurance (Valuation and Capital) Regulations 2004 in the case of an insurance group entity in its FHC group that is a licensed insurer in Singapore and paragraph 1(3)(b) and (c) of **Appendix 3A-1** of this Notice in the case of an insurance group entity in its FHC group that is an FIE,

   whichever is lower.

C. Allowance for negative reserves

3. For a HRG in respect of a DFHC (Licensed Insurer)'s life business, where the sum of the liability (net of reinsurance) for each policy calculated by the application of paragraph 4.2.18a) is less than zero ("negative reserve"), the DFHC (Licensed Insurer) may recognise the negative reserve for the HRG as a positive regulatory adjustment in the manner specified in paragraphs 4 to 6.

4. A DFHC (Licensed Insurer) must determine the negative reserve for the HRG recognised as positive regulatory adjustment by applying the insurance shocks for the C1 requirement to each policy in the HRG, in the same manner for determining the C1 requirement in accordance with paragraphs 4.2.16 to 4.2.26 of this Notice, to derive the amount of negative reserve for the HRG after the application of the C1 shocks. A DFHC (Licensed Insurer) must calculate the positive regulatory adjustment as the negative reserve for the HRG remaining after the application of the C1 shocks.

5. A DFHC (Licensed Insurer) must not recognise as positive regulatory adjustment, the amounts of negative reserves recognised from the application of regulation 20(4) of the Insurance (Valuation and Capital) Regulations 2004 in the case of an insurance group entity in its FHC group that is a licensed insurer in Singapore and paragraph 1(4) of **Appendix 3A-1** of this Notice in the case of an insurance group entity in its FHC group that is an FIE, to prevent double recognition.

6. A DFHC (Licensed Insurer) must determine the allowance for negative reserves in the following manner:

   (a) in relation to a non-diversifiable portfolio and the rest of the insurance businesses in the DFHC (Licensed Insurer)'s FHC group, the sum of the negative reserve recognised as positive regulatory adjustment in respect of each HRG in the portfolio and rest of the insurance businesses, as the case may be; and

   (b) in relation to a DFHC (Licensed Insurer), the sum of the negative reserve recognised as positive regulatory adjustment in respect of each non-diversifiable portfolio and rest of the insurance businesses.

D. Reinsurance Adjustment

7. A DFHC (Licensed Insurer) must calculate the reinsurance adjustment for a reinsurance counterparty as follows:

C = A x B, where—

A is the reinsurance reduction, which is the reinsurer's share of policy liabilities, premium liabilities and claim liabilities calculated in the manner prescribed in regulation 16A of the Insurance (Valuation and Capital) Regulations 2004 in the case of an insurance group entity in its FHC group that is a licensed insurer in Singapore and paragraph 9 of **Appendix 3D** of this Notice in the case of an insurance group entity in its FHC group that is an FIE, for policies ceded to the reinsurance counterparty.

B is the appropriate counterparty default risk charge set out in Table 4H of the counterparty default risk requirement, which shall be determined based on the Counterparty Risk Class of the reinsurance counterparties that contributes to the reinsurance reduction. To avoid doubt, the treatment for counterparties that are unrated must be consistent to that specified in paragraph 4.3.6.2d).

8. For the purposes of paragraph 7 –

(a) item A may be reduced, where there is one or more collaterals from the reinsurance counterparty that each satisfies the requirements in **Appendix 4F**, by the risk-adjusted value of each collateral as specified in **Appendix 4F**;

(b) where there is a letter of credit issued in favour of the insurance group entity that is exposed to the reinsurance counterparty and where the insurance group entity meets the requirements in **Appendix 4M**, or a trust in which the insurance group entity is a beneficiary that satisfies such requirements as the Authority may specify in directions, item A may, in addition to any reduction under sub-paragraph (a), be reduced by such amount as the Authority may specify in directions. The DFHC (Licensed Insurer) must set up a corresponding counterparty default risk charge to account for the counterparty risk exposure to the issuer of the letter of credit; and

(c) where item C calculated in accordance with paragraph 7 exceeds item A, the reinsurance adjustment must be taken to be item A.

9. A DFHC (Licensed Insurer) may use any alternative method to calculate the reinsurance adjustment if the method results in a reinsurance adjustment which is no less than that calculated in accordance with paragraphs 7 and 8, and in such a case, the Authority may require the DFHC (Licensed Insurer) to provide documentary evidence of the fact.

10. A DFHC (Licensed Insurer) must calculate the reinsurance adjustment of an insurance business as the aggregate of the reinsurance adjustments for each reinsurance counterparty calculated in accordance with paragraphs 7 and 8 or in accordance with paragraph 9, to whom the DFHC (Licensed Insurer) cedes its liabilities in respect of the policies of its business.

E. Financial Resource Adjustment

11. A DFHC (Licensed Insurer) must calculate financial resource adjustment as the sum of the following items:

(a) the sum of the product of the appropriate counterparty risk factor set out in paragraph 14 and each of the following (if any) —

(i) all deposits placed with a related corporation, unless where these deposits aggregated with all other deposits placed with that related corporation and other related corporations which are —

(A) banks licensed under the Banking Act 1970; and

(B) in Counterparty Risk Class A, B or C as set out in **Appendix 4L**

are less than or equal to 5% of the total assets of the FHC group;

(ii) any loan to or guarantee granted for a related corporation, except where such loan or guarantee arises from a contract of insurance; and

(iii) any other unsecured amount owed by a related corporation, except where such unsecured amount arises from a contract of insurance;

(b) where the deposits referred to in sub-paragraph (a)(i) as aggregated, are more than 5% of the total assets of the FHC group, the product of the amount exceeding 5% and the counterparty risk factor of the related corporation that is excluded in the calculation of Group CAR with the lowest rating (such rating being the credit rating set out in **Appendix 4L**);

(c) any charged asset, except where —

(i) the charge was created to secure a credit facility and the DFHC (Licensed Insurer) has not fully drawn down on the credit facility, in which case only the amount drawn down and that has not been recognised as a liability on the balance sheet of the DFHC (Licensed Insurer) shall be included as a charged asset;

(ii) a liability is incurred by the DFHC (Licensed Insurer) in respect of the charged asset for use in the conduct of the insurance business of the DFHC (Licensed Insurer), in which case only the amount of the liability shall be included as a charged asset;

(iii) the asset is provided as a collateral for a transaction for which the DFHC (Licensed Insurer) is required to calculate a derivative counterparty risk requirement in accordance with paragraph 4.3.6.4 of this Notice, in which case only the amount in excess of the amount of the liability that is incurred and recognised as a liability on the balance sheet of the DFHC (Licensed Insurer) as a result of the derivative transaction shall be included as a charged asset;

(d) any deferred tax asset;

Guidelines:

3. Deferred tax assets that do not rely on future profitability of the DFHC (Licensed Insurer) can be included in financial resources. An over-instalment of tax or current year tax losses carried back to prior years may give rise to a claim or receivable from the government or relevant tax authority. Such amounts are usually classified as current tax assets for accounting purposes. The recovery of such a claim or receivable does not rely on the future profitability of the DFHC (Licensed Insurer) or any insurance group entity, and can be recognised in financial resources.

(e) any intangible asset (including goodwill);

(f) any investment in securities in a multi-class issue, where the securities are not of investment grade and the investment is a form of credit enhancement to the special purpose vehicle or trust used for the issue of the securities;

(g) where it relates to an insurance business of an entity within the DFHC (Licensed Insurer)'s FHC group and the entity is required to maintain contingency reserves in respect of that business under the laws of the jurisdiction which the entity operates in, the negative of the lower of —

(i) 50% of the contingency reserves in each insurance business of the entity in accordance with regulation 22A of the Insurance (Valuation and

Capital) Regulations 2004 in the case of a licensed insurer in Singapore and paragraph 1 of **Appendix 3B-3** of this Notice in the case of an FIE; and

(ii) 50% of the C1 requirement of that business;

(h) where it relates to an insurance business, the negative of the exchange translation reserves resulting from the translation of the financial statements of that insurance business from a non-Singapore dollar denominated functional currency to the presentation currency in Singapore dollars;

(i) where it relates to the "Tier 1 Capital" of a DFHC (Licensed Insurer), the sum of —

(i) the amounts referred to in sub-paragraphs (g) and (h) in respect of all insurance businesses that belong to the FHC group; and

(ii) the negative of the exchange translation reserves resulting from the translation of the financial statements of all assets and liabilities that do not belong to any insurance business from a non-Singapore dollar denominated functional currency to the presentation currency in Singapore dollars;

(j) any equity security held in a related corporation;

(k) where it relates to the components of "Other Reserves" of a DFHC (Licensed Insurer)'s FHC Group as specified in MAS Notice FHC-N129 with a negative value, excluding contingency reserves (as specified in sub-paragraph (g)) and excluding exchange translation reserves (as specified in sub-paragraph (h)), the negative of such components; and

(l) any other adjustments that the Authority may specify to a DFHC (Licensed Insurer) for the purposes of this sub-paragraph.

11A. For the purpose of paragraph 11(a)(i), the total assets of the DFHC (Licensed Insurer)'s FHC group must not include the reinsurers' share of policy liabilities, and in the case of an investment-linked business, the part of the business relating to the unit reserves of the policies of the business.

12. For the purpose of paragraph 11(a)(i), the total assets of the DFHC (Licensed Insurer)'s FHC group must not include the reinsurers' share of policy liabilities, and

in the case of an investment-linked business, the part of the business relating to the unit reserves of the policies of the business.

13. The Authority may, if it considers fit in the circumstances of a particular DFHC (Licensed Insurer) or class of DFHC (Licensed Insurer)s, issue a direction under section 60(1) of the FHC Act for an amount to be the financial resource adjustment in relation to that DFHC (Licensed Insurer) or class of DFHC (Licensed Insurer)s for the purposes of this paragraph.

14. For the purposes of paragraph 11, the counterparty risk factor corresponding to the counterparty risk class (as defined in **Appendix 4L**) is set out in the following table:

Table 1: Counterparty risk factor by counterparty risk class

Counterparty Risk Class	Counterparty Risk Factor (%)
Class A to Class B	20
Class C	50
Class D and below	100

F. Adjustment for Asset Concentration

15. A DFHC (Licensed Insurer) must calculate the adjustment for asset concentration as the difference between –

(a) the total asset value (less the reinsurers' share of policy liabilities); and

(b) the value of assets that do not exceed any concentration limit set out in the following tables.

15A. For the purpose of paragraph 15, a DFHC (Licensed Insurer) must not include the part of the business relating to the unit reserves of the policies of an investment-linked business.

Table 2-I: Table of concentration limits

Item	Description of limit	As % of the total assets (excluding reinsurers' share of policy liabilities) of the DFHC (Licensed Insurer)'s FHC Group
(1)	Counterparty exposure limit to a counterparty or a group of related counterparties (except any transaction related to a contract of insurance):	
	(a) where the counterparty is the Government, any central government or central bank of a country or territory which has a sovereign rating of investment grade or higher, any company wholly owned by the Government, or any statutory board in Singapore	100%
	(b) where the counterparty is an approved financial institution	20%
	(c) where the counterparty is not an entity specified in sub-paragraph (a) or any approved financial institution, and is listed on any securities exchange	10%
	(d) where the counterparty is not an entity specified in sub-paragraph (a) or any approved financial institution, and is not listed on any securities exchange	5%
(2)	Equity securities limit:	
	(a) exposure to any equity security (other than a collective investment scheme) that is listed on a securities exchange	5%
	(b) exposure to any unlisted equity (other than any collective investment scheme)	2.5%
	(c) exposure to unlisted equities (other than any collective investment scheme) in aggregate	10%
	(d) where the equity security is a collective investment scheme	10%

Item	Description of limit	As % of the total assets (excluding reinsurers' share of policy liabilities) of the DFHC (Licensed Insurer)'s FHC Group
(3)	Unsecured loans limit: (a) to a single counterparty (b) in aggregate	 1% 2.5%
(4)	Property exposure limit	35%
(5)	Foreign currency risk exposure calculated under paragraph 4.3.5.6 of the Section 4 in this Notice for any insurance business in respect of Singapore policies	40%
(6)	Limit on the aggregate value of assets to which the miscellaneous risk factor set out in paragraph 4.3.7.1 of the Section 4 in this Notice applies	2.5%

Table 2-II: Table of concentration limits

Item	Description of limit	In absolute terms
(7)	For general business relating to Singapore policies, limit on aggregate value of assets that are not liquid assets	Total assets supporting the liabilities of the general business relating to Singapore policies (less reinsurers' share of policy liabilities in respect of the business and 30% of claim liabilities (net of reinsurance))

16. A DFHC (Licensed Insurer) must determine the adjustment for asset concentration at the following levels of granularity:

(a) each participating business; and

(b) for rest of the insurance businesses that belong to the DFHC (Licensed Insurer)'s FHC group.

16A. For the purposes of Table 2-I and Table 2-II –

"approved financial institution" means any bank, merchant bank or finance company licensed by the Authority or any other commercial bank licensed in a foreign country;

"liquid assets" means any security issued by the Government and public authorities of Singapore, any cash and deposit in Singapore dollars in approved financial institutions, or any bill of exchange in Singapore dollars accepted or endorsed by a bank licensed under the Banking Act 1970 which arises from a bona fide commercial transaction and which is payable within 3 months;

"property corporation" means any body corporate where —

(a) more than 50% of the total turnover of the body corporate is derived from property-related activities; or
(b) more than 50% of the total assets of the body corporate comprise interests in or rights over immovable property situated in Singapore, other than such immovable property or any part thereof which is used —
  (i) as premises for the conduct of any business carried on by body corporate;
  (ii) for the business of a hotel or hostel; or
  (iii) for community, charity or educational purposes;

"property-related activities" means —

(a) the construction of or the causing of the construction of any building on, over or under any land in Singapore for the purpose of sale by the person carrying out or causing such construction, of any right or interest in the land which would be appurtenant to such building, other than a building or part thereof constructed for use —
  (i) for the business of a hotel or hostel; or
  (ii) for community, charity or educational purposes;

(b) the acquisition or holding of any interest in or right over immovable property situated in Singapore for the purposes of rental, or for the purposes of securing a profit from its sale, other than such immovable property or part thereof used or to be used —
  (i) by the person acquiring or holding the immovable property for occupation by himself or members of his family or as premises for any business carried on by him;
  (ii) for the business of a hotel or hostel; or
  (iii) for community, charity or educational purposes;

(c) the financing of any activity referred to in paragraph (a) or (b);
(d) the making of loans to any property corporation;
(e) the acquisition or holding as beneficial owner of shares or debentures issued by any property corporation; and
(f) the acquisition or holding as beneficial owner of debentures the payment of principal or interest of which is contingent, directly or indirectly, on the turnover, profits or cash flow from any activity under paragraph (a), (b), (c), (d) or (e);

"property exposure" means the aggregate of —

(a) value of immovable property held, excluding such portion of the value as may be attributable to any interest in or right over immovable property or any part thereof used for the purpose of conducting the business of the DFHC (Licensed Insurer) in Singapore or housing or providing amenities for its officers;
(b) amounts of shares and debentures beneficially held by the DFHC (Licensed Insurer) and issued by any property corporation;
(c) amounts of debentures beneficially held by the DFHC (Licensed Insurer) and issued by any person other than a property corporation, where the payment of principal or interest is contingent, whether in whole or in part, on the turnover, profits or cash flow from any property-related activity;
(d) amounts outstanding, or will potentially be outstanding, to the DFHC (Licensed Insurer) under any form of lending or guarantees (except in the case of a debenture) to any property corporation or to any related corporation of a property corporation for use by the property corporation; and
(e) amounts outstanding, or will potentially be outstanding, to the DFHC (Licensed Insurer) under any form of lending or guarantees (except in the case of a debenture) to any person other than a property corporation —
    (i) in a case where such person is a corporation, for the purpose of financing or facilitating the property-related activities of that person or any of its related corporations; and
    (ii) in any other case, for the purpose of financing or facilitating the property-related activities of that person,

but does not include any amounts in respect of —

(A) credit facilities granted by the DFHC (Licensed Insurer) to the Government or to any statutory board; or

(B) any instrument or transaction described in sub-paragraphs (a) to (e) to the extent that the DFHC (Licensed Insurer) would be indemnified or otherwise protected from losses that may be incurred by it under that instrument or transaction pursuant to a guarantee issued by any bank or any credit derivative entered into by the DFHC (Licensed Insurer) with any person other than a property corporation.

16B. For each limit stated in Table 2-I, where the amount of assets falling within the limit is calculated to be less than $5 million, a limit of $5 million shall apply.

17. A DFHC (Licensed Insurer) may use any alternative method to calculate the adjustment for asset concentration if the method results in an amount which is no less than that determined in the manner specified above, and in such a case, the Authority may require the DFHC (Licensed Insurer) to provide documentary evidence of that fact.

Appendix 6

AGGREGATION METHOD

1. Subject to the written approval of the Authority, a DFHC (Licensed Insurer) may use the aggregation method ("AM") described in paragraph 2 for one or more insurance group entities in the DFHC (Licensed Insurer)'s FHC Group in calculating Group CAR.

> ***Guidelines:***
>
> 1. *The key consideration on whether AM can be used for one or more insurance group entities to calculate Group CAR will be the comparability of the local valuation and capital framework of the insurance group entity or entities within the FHC group with RBC 2 framework. Areas to be included for consideration of such comparability would include the valuation basis of assets and liabilities, the scope of risks covered, explicit target criterion for calibration of the risk requirements and quality of capital assessment.*
> 2. *Another consideration where AM may be used to calculate Group CAR would be to include a non-insurance entity's financial resources and risk requirements based on the entity's sectoral rules.*

2. Under the AM, the DFHC (Licensed Insurer) must, subject to paragraphs 3 to 5 –

   a) Add the financial resources ("FR") of the insurance group entity or entities in the DFHC (Licensed Insurer)'s FHC Group, as the case may be, to the Group FR in paragraph 2.1.2 of this Notice as directed by the Authority;

   b) Add the total risk requirements ("TRR") of the insurance group entity or entities in the DFHC (Licensed Insurer)'s FHC Group, as the case may be, to the Group TRR in paragraph 2.1.2 of this Notice as directed by the Authority; and

c) Include any other adjustments to the Group FR and Group TRR in paragraph 2.1.2 of this Notice which the Authority may specify.

Guidelines:

3. There may be adjustments to the Group FR and Group TRR that may be necessary when computing the Group CAR, where AM is used, to avoid any double counting. For instance, if the Group FR already included the surplus of the entity (where the use of AM has been approved by the Authority) under net assets of the FHC group, adding the FR of this entity would result in double counting of the entity's surplus.

3. The DFHC (Licensed Insurer) must ensure that the FR and TRR of the insurance group entity or entities in the DFHC (Licensed Insurer)'s FHC Group that is or are using AM, as the case may be, are calculated in accordance with the local regulatory requirements.

4. The DFHC (Licensed Insurer) must ensure that the insurance group entity or entities in the DFHC (Licensed Insurer)'s FHC Group, as the case may be, is or are as specified in accordance with section 2.4 of this Notice.

5. A DFHC (Licensed Insurer) must make the following adjustments from the Group FR in respect of any entities in the DFHC (Licensed Insurer)'s FHC Group that are using AM, as the case may be,:

   a) exclude equity investments within entities under the DFHC (Licensed Insurer)'s FHC group[8];

   b) exclude any intra-group transactions within the DFHC (Licensed Insurer)'s FHC group; and

   c) deduct any deficits arising from entities in the DFHC (Licensed Insurer)'s FHC group, other than deficits arising from the entities included for calculation of capital adequacy requirement in accordance with section 2.4 of this Notice, if the DFHC (Licensed Insurer) has not already done so in accordance with paragraph 5.9 of this Notice.

[8] This is to prevent multiple gearing and leveraging within the FHC group.