

CAPITAL & RISK MANAGEMENT
PILLAR 3 DISCLOSURES FOR THE PERIOD ENDED DECEMBER 31, 2022
BUTTERFIELD BANK (CAYMAN) LIMITED



Capital and Risk Management Pillar 3 Disclosures for the period ended December 31, 2022

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1. Overview

1.1 Background

Effective September 1, 2021¹, the Cayman Islands Monetary Authority (“CIMA” or the “Authority”) implemented the disclosure requirements proposed by the Basel Committee on Banking Supervision (“BCBS”) and referred to as the Pillar 3 disclosures under the Basel II regulatory framework.

Pillar 3 disclosures are designed to promote market discipline by providing market participants with key information on a firm’s risk exposure and risk management processes. Pillar 3 also aims to complement the minimum capital requirements described under Pillar 1, as well as the supervisory processes of Pillar 2.

Increased transparency allows for independent and timely scrutiny by stakeholders (i.e. investors, analysts, financial customers and other market participants). In turn, the bank’s board of directors (the “board”) and senior management are aligned with the interests of stakeholders due to periodic monitoring. Furthermore, it encourages the strengthening of core business practices that mitigate the bank’s exposures to risks in addition to the level of capitalisation. Stakeholders influence the behaviour of the bank and discourage the bank’s decisionmakers from engaging in activities which may result in exposure to undue risk that undermine their interests.

The Pillar 3 disclosures will also improve comparability and consistency of disclosures between banks, with a common framework allowing market participants to engage in meaningful comparisons between banks.

1.2 Basis of Disclosures

This disclosure document has been prepared by the Bank on a standardised basis and in accordance with the rules laid out in the BCBS standards issued in January 2015 entitled ‘Revised Pillar 3 Disclosure Requirements’ and in March 2017 entitled “Pillar 3 disclosure requirements – consolidated and enhanced framework” and as summarised by the CIMA in its Rules and Guidelines – Market Discipline Disclosure Requirements – Pillar 3.

Unless otherwise stated, all figures are as at December 31, 2022 and are expressed in US dollars. Certain tables in this report may not sum due to rounding.

1.3 Scope of Application

Butterfield Bank (Cayman) Limited is regulated by the CIMA. The Basel II Framework, therefore, applies to the Bank and its subsidiary undertakings (together referred to as the “Bank”). Full details of the basis of consolidation can be found in Note 2 of the Bank’s audited consolidated financial statements for the year ended December 31, 2022.

There are no differences between the basis of consolidation of the Bank for accounting and prudential purposes.

The Bank is made up of the following principal operating entities, which are all wholly owned subsidiaries and fully consolidated in the Bank’s financial statements:

Butterfield Bank (Cayman) Limited
Butterfield Trust (Cayman) Limited

1.4 Location and Verification

Pursuant to CIMA guidance issued in September 2021, these disclosures have been submitted following Board approval.

¹ Market Discipline Disclosure Requirements (Pillar 3) - Rules and Guidelines – 1 September 2021

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The disclosures are not subject to external audit except where they are equivalent to those prepared under the accounting requirements for the inclusion in the Bank's Audited Financial Statements.

These disclosures have been published on the Bank's corporate website <https://www.butterfieldgroup.com/cayman/pillar-3-disclosure>

2. Risk Management Objectives and Policies (OVA)

2.1 Risk Governance

The principal types of risk inherent in the Bank's business are financial, compliance, operational, reputational and strategic risks.

The Board has overall responsibility for determining the strategy for risk management, setting the Bank's risk appetite and ensuring that risk is monitored and controlled effectively. It accomplishes its mandate through the activities of the following dedicated committee:

The Audit, Compliance and Risk Policy Committee ("ACRPC"): This committee of the Board assists the Board in fulfilling its responsibilities by overseeing the Bank's risk profile and its performance against approved risk appetites and tolerance thresholds. Specifically, the ACRPC considers the sufficiency of the Bank's policies, procedures and limits related to the identification, measurement, monitoring and control of activities that give rise to credit, market, liquidity, interest rate, operational, regulatory, compliance, climate and reputational risks, as well as overseeing its compliance with laws, regulations and codes of conduct. In addition, the ACRPC reviews the overall adequacy and effectiveness of the Bank's system of internal controls and the control environment, including the respective risk management process. The ACRPC reviews recommendations arising from internal and independent audit review activities and management's response to any findings raised.

The ACRPC's Terms of Reference are aligned with the strategic risk management objectives of the Bank's parent company (The Bank of N.T. Butterfield & Son Limited, Bermuda) and its Group Board. The Committee is chaired by a non-executive director drawn from the Bank's Board.

The Management Committee is led by the Managing Director and is responsible for setting business strategy and for monitoring, evaluating and managing risks across the Bank. It is supported by the following management committees:

The Risk Committee: This committee comprises executive and senior management team members and is chaired by the Managing Director. The Risk Committee provides a forum for the strategic assessment of risks assumed across the Bank as a whole based on an integrated view of credit, market, liquidity, legal, regulatory and financial crime compliance, fiduciary, operational, cybersecurity, climate, insurance, pension, investment, capital and reputational risks, ensuring that these exposures are consistent with the risk appetites and tolerance thresholds promulgated by the Board and oversees the compliance of regulatory obligations arising under applicable laws, rules and regulations. It is responsible (i) for reviewing, evaluating and recommending the Bank's risk appetite framework, the results of the Internal Capital Adequacy Assessment Process ("ICAAP") (including all associated stress testing performed) and the Bank's key risk policies to the Board for approval or ratification of Group Policies; (ii) for reviewing and evaluating current and proposed business strategies in the context of our risk appetites; and (iii) for identifying, reviewing and advising on current and emerging risk issues and associated mitigation plans; and (iv) for reviewing the Bank's compliance with external regulations and internal policies. The Risk Committee is supported in the execution of its mandate by the work undertaken by the Group Compliance, Operational, Credit and Market Risk functions.

The Asset and Liability Committee ("ALCO"): This committee comprises executive and senior management team members and is chaired by the CFO. ALCO is responsible for liquidity, interest rate and foreign exchange rate risk management and other balance sheet issues. It also oversees key policies and the execution of the Bank's investment and capital management strategies and monitors the associated risks assumed. It is supported in the execution of its mandate by the work undertaken by the Group Financial Institutions Committee ("FIC"), a dedicated sub-committee that is responsible for the evaluation and approval of recommended inter-bank and counterparty exposures assumed in the Bank's treasury and investment portfolios along with the Group Treasury, Credit and Market Risk functions.

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The Credit Committee ("CC"): This committee comprises executive and senior management and is chaired by the Head of Credit Risk Management. CC is responsible for a broad range of activities relating to the monitoring, evaluation and management of credit risks assumed across the Bank at both transaction and portfolio levels. It is supported in the execution of its mandate by the Group Credit Risk Management Team. Credit authorisations above delegated limits are escalated to the Group Credit Committee for approval. The committee is also responsible for approving significant provisions and other impairment charges. It also oversees the overall credit risk profile of the Bank in regards to non-accrual loans and assets. Provision recommendations are made to the Group Provisions and Impairments Committee.

2.2 Risk Management

We manage our exposure to risk through a three "lines of defence" model.

The first "line of defence" is provided by our Jurisdictional business units, which retain ultimate responsibility for the risks they assume and for bearing the cost of risks associated with these exposures.

The second "line of defence" is provided by our Risk Management and Compliance functions, which work in collaboration with our business units to identify, assess, mitigate and monitor the risks associated with our business activities and strategies. They do this by:

- Making recommendations to the ACRPC and the Group Risk and Compliance Committee ("GRCC") of the Group Board regarding the constitution of the Risk appetite framework;
- Setting risk strategies that are designed to manage risk exposures assumed in the course of pursuing our business strategies and aligning them with agreed appetites;
- Establishing and communicating policies, procedures and limits to control risks in alignment with these risk strategies;
- Measuring, monitoring and reporting on risk levels;
- Opining on specific transactions that fall outside delegated risk limits; and
- Identifying and assessing emerging risks

The functions within the Risk Management and Compliance groups that support our risk management activities are outlined below.

Group Market Risk ("GMR") – This unit provides independent oversight of the measurement, monitoring and control of liquidity and funding risks, interest rate and foreign exchange risks as well as the market risks associated with our investment portfolios. GMR also monitors compliance with both regulatory requirements and our internal policies and procedures relating to the management of these risks.

Cayman Credit Risk Management ("CCRM") and Group Credit Risk Management ("GCRM") – These units are responsible for the adjudication and oversight of credit risks associated with our retail and commercial lending activities and the management of risks associated with our investment portfolios and counterparty exposures. GCRM also establishes the parameters and delegated limits within which credit risks may be assumed and promulgates guidelines on how exposures should be managed and monitored.

Cayman Operational Risk ("COpRisk") and Group Operational Risk ("GOpRisk") – These units assess the effectiveness of our procedures and internal controls in managing our exposure to various forms of operational risk, including those associated with new business activities and processes and the deployment of new technologies. COpRisk and GOpRisk also oversee our incident management processes and reviews the effectiveness of our loss data collection activities.

Cayman Compliance and Group Compliance – These units provide independent analysis and assurance of our compliance with applicable laws, regulations, codes of conduct and recommended best practices, including those associated with the prevention of financial crime, including money laundering and terrorist financing. Compliance is also responsible for assessing our potential exposure to upstream risks and for providing guidance on the preparations that should be made in advance of these changes coming into effect. The Group Head of Compliance and Operational Risk reports directly to the President and CRO.

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The third “line of defence” is provided by our Group Internal Audit function, which performs oversight and ongoing review, and challenges the effectiveness of the internal controls that are executed by both the business, Risk Management and Compliance. The Group Head of Internal Audit has a dual reporting line to both the Chair of the Audit Committee and the Chairman and CEO.

Further details on the risk management framework can be found in the Annual Report of the Group for the year ended December 31, 2022 under Item 5.A: Risk Management (Page 79).

3. Prudential Metrics

The table below provides an overview of the Bank’s prudential regulatory metrics for the last 5 quarters.

Table 1: Key Metrics (CAP) (OV1) (LR2) (LIQ1) (LIQ2)

	a	b	c	d	e
(in millions of \$)	December 31, 2022	September 30, 2022	June 30, 2022	March 31, 2022	December 31, 2021
Capital Constituents (amounts)					
A Tier 1 Capital	359,509,548	342,752,980	326,371,058	314,375,980	308,630,700
B Deductions from Tier 1 Capital	39,468,582	37,520,123	40,309,163	42,970,703	44,239,744
Net Tier 1 Capital (A-B)	320,040,966	305,232,857	286,061,895	271,405,277	264,390,956
C Tier 2 Capital	2,240,298	2,869,723	2,727,328	1,571,765	1,774,089
D Deductions from Tier 2 Capital	-	-	-	-	-
Net Tier 2 Capital (C-D)	2,240,298	2,869,723	2,727,328	1,571,765	1,774,089
E Tier 3 Capital	-	-	-	-	-
Available Capital Base (A-B+C-D+E)	322,281,264	308,102,580	288,789,223	272,977,042	266,165,045
Risk-weighted assets (amounts)					
Total RWA	1,344,327,290	1,365,145,050	1,365,552,526	1,365,564,002	1,371,609,249
Risk-based capital ratios as a percentage of RWA					
Tier 1 ratio (%)	23.8%	22.4%	20.9%	19.9%	19.3%
Total capital ratio (%)	24.0%	22.6%	21.1%	20.0%	19.4%
Basel III Leverage Ratio					
Total Basel III leverage ratio measure	4,612,841,674	4,635,103,342	4,721,297,453	4,780,705,754	5,101,170,766
Basel III leverage ratio (%)	6.9%	6.6%	6.1%	5.7%	5.2%
Liquidity Coverage Ratio					
Total HQLA	1,460,774,927	1,366,087,475	1,364,251,276	1,624,444,678	1,709,937,749
Total net cash outflow	1,026,669,068	1,172,387,298	1,081,427,657	1,129,692,335	1,214,822,286
LCR ratio (%) ²	142%	117%	126%	144%	141%
Net Stable Funding Ratio					
Total available stable funding	2,766,599,734	2,721,932,213	2,812,344,902	2,727,397,844	2,788,253,686
Total required stable funding	1,306,028,997	1,343,768,118	1,382,534,332	1,278,571,347	1,315,135,569
NSFR ratio (%) ²	212%	203%	203%	213%	212%

Capital levels increased, driven by earnings accretion partially offset by dividends. Risk-weighted Assets (“RWA”) decreased due to increased sovereign lending and the repayment of a non-domestic commercial loan.

The Liquidity Coverage Ratio (“LCR”) and Net Stable Funding Ratio (“NSFR”) remained stable over the period.

4. Capital Adequacy

4.1 Capital Management

One of management’s primary objectives is to maintain the confidence of our clients, Bank regulators and shareholder. A strong capital position helps the Bank to take advantage of profitable investment opportunities and withstand unforeseen adverse developments.

The Bank manages its capital on a legal entity basis, through its ICAAP process. The Finance division has the responsibility for measuring, monitoring and reporting capital levels within guidelines and risk appetite limits.

² The LCR and NSFR ratios are shown as the actuals at the end of the relevant quarter. LCR and NSFR ratios shown in tables LIQ1 and LIQ2 under section 6 are shown as the simple averages of the 3 monthly observations respectively.

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In establishing the guidelines and limits for capital, a variety of factors are taken into consideration, including the overall risk of the business in stressed scenarios, regulatory requirements, capital levels relative to our peers, and the impact on our credit ratings.

4.2 Regulatory Capital Framework

The current regulatory capital framework is based on three pillars:

- Pillar 1: Sets the minimum capital requirements for credit, market and operational risk. Information is presented in Tables 2-4 below.
- Pillar 2: Under the Basel framework as implemented by the CIMA, the Bank undertakes an ICAAP process, which is an internal assessment of all material risks to determine the sufficiency of the Bank's capital adequacy. This internal assessment takes account of the minimum capital requirement and other risks not covered by the minimum capital requirement (Pillar 2). Where capital is deemed as not being able to mitigate a particular risk, alternative management actions are identified and described within the ICAAP. The ICAAP is presented to the ACRPC prior to being presented to the Board for challenge and approval and then submission to the Authority. The ICAAP process is performed annually or more frequently should the need arise.
- Pillar 3: Aims to promote market discipline through regulatory disclosure requirements.

4.3 Capital Structure (CAP)

Tier 1 capital is comprised of common share capital, retained earnings and other reserves. It may also include interim retained profits that have been reviewed by external auditors.

Regulatory adjustments to Tier 1 capital include: goodwill and intangible assets and the Bank's loan of a capital nature to an affiliated entity. For accounting purposes, acquired customer relationships are capitalised as intangible assets where they meet certain criteria and amortised over a period not exceeding 15 years.

Tier 2 capital is comprised of qualifying allowances for expected credit losses.

Table 1 above shows the composition of capital constituents in arriving at Available Capital Base.

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4.4 Linkages Between Financial Statements and Regulatory Exposures

Table 2: Differences between accounting and regulatory scopes of consolidation and mapping of financial statement categories with regulatory risk categories (LI1)

	a	b	Carrying values of items:				g
			c	d	e	f	
	Balance sheet as at December 31, 2022	Under regulatory scope of consolidation as at December 31, 2022	Subject to credit risk framework	Subject to counterparty credit risk framework	Subject to the securitization framework	Subject to market risk framework	Not subject to capital requirements or subject to deduction from capital
(in millions of \$)							
Assets							
Cash items	667,016,854	667,016,854	667,016,854	-	-	-	-
Items in the course of collection from other banks	99,818	99,818	99,818	-	-	-	-
Investments - Held to maturity	1,776,915,246	1,776,915,246	-	-	1,776,915,246	-	-
Financial assets at fair value	776,641,535	776,641,535	392,882,031	-	383,759,503	-	-
Derivative financial instruments	-	-	-	-	-	-	-
Loans and advances to banks	30,165,000	-	-	-	-	-	30,165,000
Loans and advances to customers	1,239,634,968	1,239,724,186	1,239,724,186	-	-	-	(89,218)
Reverse repurchase agreements and other similar secured lending	-	-	-	-	-	-	-
Available for sale financial investments	-	-	-	-	-	-	-
Goodwill	550,568	-	-	-	-	-	550,568
Intangible assets	8,753,014	-	-	-	-	-	8,753,014
Other assets	66,366,616	66,366,616	66,366,616	-	-	-	-
Total assets	4,566,143,619	4,526,764,255	2,366,089,505	-	2,160,674,748	-	39,379,364
Liabilities							
Deposits from banks	(2,727,731)	(2,727,731)	-	-	-	-	(2,727,731)
Items in the course of collection due to other banks	-	-	-	-	-	-	-
Customer accounts	(4,292,813,854)	(4,292,813,854)	-	-	-	-	(4,292,813,854)
Repurchase agreements and other similar secured borrowings	-	-	-	-	-	-	-
Trading portfolio liabilities	-	-	-	-	-	-	-
Financial liabilities designated at fair value	-	-	-	-	-	-	-
Derivative financial instruments	(334,894)	(334,894)	-	-	-	-	(334,894)
Other liabilities	(50,017,985)	(50,017,985)	-	-	-	-	(50,017,985)
Total liabilities	(4,345,894,464)	(4,345,894,464)	-	-	-	-	(4,345,894,464)

Table 3: Main sources of differences between regulatory exposure amounts and carrying values in financial statements (LI2)

	a	b	c	d	e	
						Items subject to:
	Total	Credit risk framework	Securitization framework	Counterparty credit risk framework	Market risk framework	
(in millions of \$)						
1	Asset carrying value amount under scope of regulatory consolidation (as per template LI1)	4,526,764,253	2,366,089,505	2,160,674,748	-	-
2	Liabilities carrying value amount under regulatory scope of consolidation (as per template LI1)	-	-	-	-	-
3	Total net amount under regulatory scope of consolidation	4,526,764,253	4,526,764,253	-	-	-
4	Off-balance sheet amounts	83,900,455	83,900,455	-	-	-
5	Differences in valuations	-	-	-	-	-
6	Differences due to different netting rules, other than those already included in row 2	-	-	-	-	-
7	Differences due to consideration of provisions	-	-	-	-	-
8	Differences due to prudential filters	-	-	-	-	-
9	Exposure amounts considered for regulatory purposes	4,610,664,708	4,610,664,708	-	-	-

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4.5 Minimum Capital Requirement: Pillar 1

As at December 31, 2022, the Tier 1 and Total capital ratios of the Bank were 23.8% and 24.0%, respectively.

The following table provides a general overview of RWAs by type of risk with additional disclosures pertaining thereto in the following sections:

Table 4: Overview of RWA (OV1)

		a	b	c
		RWA		Minimum capital requirements
		December 31, 2022	September 30, 2022	December 31, 2022
1	Credit risk (excluding counterparty credit risk) (CCR)	718,064,330	732,104,963	78,987,076
2	Securitization exposures	358,673,941	364,968,570	39,454,134
3	Counterparty credit risk	210,334	798,518	23,137
4	Of which: current exposure method	210,334	798,518	23,137
5	Of which: standardized method	-	-	-
6	Market risk	242,587	136,901	26,685
7	Of which: Equity Risk (ER)	-	-	-
8	Operational risk	267,136,099	267,136,099	29,384,971
9	Of which: Basic Indicator Approach	-	-	-
10	Of which: Standardised Approach	267,136,099	267,136,099	29,384,971
11	Of which: Alternative Standardised	-	-	-
12	Total (1+2+3+6+8)	1,344,327,291	1,365,145,050	147,876,002

4.6 Leverage Ratio

The Basel III framework introduced the leverage ratio as a simple, non-risk based measure to restrict the build-up of leverage in the banking sector.

As at December 31, 2022, the leverage ratio for the Bank was 6.9%, which is in excess of the 3% regulatory minimum set by the CIMA.

The tables below provide a reconciliation of the accounting assets and the leverage ratios denominator, the exposure measure, and the data is presented as the actuals at the end of the two quarters in the second half of 2022:

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Table 5: Summary comparison of accounting assets vs leverage ratio exposure measure (LR1)

		December 31, 2022	September 30, 2022
1	Total consolidated assets as per published financial statements	4,566,143,619	4,589,324,155
2	Adjustment for investments in banking, financial, insurance or commercial entities that are consolidated for accounting purposes but outside the scope of regulatory consolidation	-	-
3	Adjustment for securitised exposures that meet the operational requirements for the recognition of risk transference	-	-
4	Adjustments for temporary exemption of central bank reserves (if applicable)	-	-
5	Adjustment for fiduciary assets recognised on the balance sheet pursuant to the operative accounting framework but excluded from the leverage ratio exposure measure	(39,468,582)	(37,520,123)
6	Adjustments for regular way purchases and sales of financial assets subject to trade date accounting	-	-
7	Adjustments for eligible cash pooling transactions	-	-
8	Adjustments for derivative financial instruments	1,003,090	861,580
9	Adjustment for securities financing transactions (i.e. repurchase agreements and similar secured lending)	-	-
10	Adjustment for off balance sheet items (i.e. conversion to credit equivalent amounts of off-balance sheet exposures)	82,831,032	79,491,726
11	Adjustments for prudent valuation adjustments and specific and general provisions which have reduced Tier 1 capital	2,332,516	2,946,003
12	Other adjustments	-	-
13	Leverage ratio exposure measure	4,612,841,674	4,635,103,342

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Table 6: Leverage ratio common disclosure template (LR2)

		a	b
		December 31, 2022	September 30, 2022
On-balance sheet exposures			
1	On-balance sheet exposures (excluding derivatives and securities financing transactions (SFTs), but including collateral)	4,566,095,038	4,586,193,148
2	Gross up for derivatives collateral provided where deducted from balance sheet assets pursuant to the operative accounting framework	-	-
3	(Deductions of receivable assets for cash variation margin provided in derivatives transactions)	-	-
4	(Adjustment for securities received under securities financing transactions that are recognised as an asset)	-	-
5	(Specific and general provisions associated with <u>on balance sheet exposures</u> that are deducted from Basel III Tier 1 capital)	2,332,516	2,946,003
6	(Asset amounts deducted in determining Basel III Tier 1 capital and regulatory adjustments)	(39,468,582)	(37,520,123)
7	Total on-balance sheet exposures (excluding derivatives and SFTs) (sum of lines 1 and 6)	4,528,958,972	4,551,619,028
Derivative exposures			
8	Replacement cost associated with all derivatives transactions (where applicable net of eligible cash variation margin and/or with bilateral netting)	48,581	3,131,008
9	Add on amounts for potential future exposure associated with all derivatives transactions	1,003,090	861,580
10	(Exempted central counterparty (CCP) leg of client cleared trade exposures)	-	-
11	Adjusted effective notional amount of written credit derivatives	-	-
12	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	-	-
13	Total derivative exposures (sum of lines 8 to 12)	1,051,670	3,992,588
Securities financing transaction exposures			
14	Gross SFT assets (with no recognition of netting), after adjusting for sale accounting transactions	-	-
15	(Netted amounts of cash payables and cash receivables of gross SFT assets)	-	-
16	CCR exposure for SFT assets	-	-
17	Agent transaction exposures	-	-
18	Total securities financing transaction exposures (sum of lines 14 to 17)	-	-
Other off-balance sheet exposures			
19	Off-balance sheet exposure at gross notional amount	266,210,954	267,187,891
20	(Adjustments for conversion to credit equivalent amounts)	(183,362,169)	(187,687,596)
21	(Specific and general provisions associated with off balance sheet exposures deducted in determining Tier 1 capital)	(17,753)	(8,569)
22	Off-balance sheet items (sum of lines 19 and 21)	82,831,032	79,491,726
Capital and total exposures			
23	Tier 1 capital	320,040,965	305,232,857
24	Total exposures (sum of lines 7,13, 18 and 22)	4,612,841,674	4,635,103,342
Leverage ratio		6.94%	6.59%
25	Basel III leverage ratio (including the impact of any applicable temporary exemption of central bank reserves)		
25a	Basel III leverage ratio (excluding the impact of any applicable temporary exemption of central bank reserves)		
26	National minimum leverage ratio requirement	3%	3%
27	Applicable leverage buffers	3.94%	3.59%

The increase in the leverage ratio is driven primarily by the increase in Tier 1 Capital.

5. Credit Risk Measurement, Mitigation and Reporting (CRA)

5.1 Credit Risk Overview

Credit risk is defined as the risk that unexpected losses arise as a result of the Bank's borrowers or market counterparties failing to meet their obligations to repay. Credit risk is managed through the CCRM and GCRM function. CCRM provides a system of checks and balances for our diverse credit-related activities by establishing and monitoring all credit-related policies and practices throughout the Bank and assuring their uniform application. These activities are designed to diversify credit exposure on an industry and client basis, thus lessening overall credit risk. These credit

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management activities also apply to our use of derivative financial instruments, including foreign exchange contracts and interest rate risk management instruments, which are used primarily to facilitate client transactions.

Individual credit authority for commercial and other loans is limited to specified amounts and maturities. Credit decisions involving commitment exposure in excess of the specified individual limits are submitted to CRM and then to the GCC, which provides a forum for ongoing Executive review of loan activity, establishing our credit guidelines and policies and approving selected credit transactions in accordance with our business objectives. The committee reviews large credit exposures, establishes and reviews credit strategy and policy and approves selected credit transactions. The FIC manages counterparty risk in respect of third party bank counterparties which do not have commercial credit relationships within the Group and also approves country exposure limits.

As part of our ongoing credit granting process, internal ratings are assigned to commercial clients before credit is extended, based on an assessment of creditworthiness. At least annually, a review of all significant credit exposures is undertaken to identify, at an early stage, clients who may be facing financial difficulties. Internal borrower risk ratings are also reviewed during this process, allowing identification of adverse individual borrower and sector trends, and accurate application of internal borrower risk ratings which incorporates but not limited to an assessment of climate risk impacting borrower risk ratings.

An integral part of the CRM function is to formally review past due and potential problem loans to determine which credits, if any, need to be placed on non-accrual status or charged off. The allowance for loan losses is reviewed quarterly to determine the amount necessary to maintain an adequate provision for current expected credit losses.

Another way credit risk is managed is by requiring collateral. Management's assessment of the borrower's creditworthiness determines whether collateral is obtained. The amount and type of collateral held varies but may include deposits held in financial institutions, mutual funds, US Treasury securities, other marketable securities, income-producing commercial properties, accounts receivable, residential real estate, property, plant and equipment, and inventory. Values of variable collateral are monitored on a regular basis to ensure that they are maintained at an appropriate level, which includes an assessment of the climate risk impact on the value of the collateral.

5.2 Credit Risk - Retail and Private Banking

Retail and private lending activity is split between residential mortgages, personal loans, credit cards and authorised overdrafts. Retail credit risks are managed in accordance with limits and processes set out in the credit risk policies and guidelines approved by GCC and GRCC (and approved by the Board). The policies set out where specialist underwriting may be needed.

For residential mortgages, a combination of lending policy criteria, lending guidelines and underwriting are used to make a decision on applications for credit. The primary factors considered are affordability, residential status, residential history, credit history, employment history, nature of income and LTV of the residential property. In addition, confirmation of a borrower's identity is obtained and an assessment of the value of the collateral carried out prior to granting a credit facility. When considering applications, the primary focus is placed on the willingness and ability to repay.

For other retail lending products, similar lending policy criteria are used and each product has its own policy and underwriting guidelines to enable decisions on applications for credit and to manage accounts. The factors used are attuned to the relevant lending product, although affordability and credit history are considered in all cases. Ongoing monitoring of all retail and private banking credit is undertaken by the relevant business unit as well as by CCRM. In addition, the GCC reviews reports on a weekly basis. In the event that particular exposures show adverse features such as arrears, the Bank's specialist recovery teams generally work with borrowers to resolve the situation.

5.3 Credit Risk - Commercial Banking

Commercial credit risks are managed in accordance with limits and asset quality measures set out in the credit risk policies and guidelines approved by GCC (and ratified by the Board).

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In respect of Commercial Banking, there is a level of delegated authority to underwrite certain credit risks based upon an evaluation of the borrower's experience, track record, financial strength, ability to repay, transaction structure and security characteristics. Lending decisions for large or high-risk exposures are based upon a thorough credit risk analysis and the assignment of an internal borrower risk rating, and are subject to further approval by the assigned officers in CRM or the GCC.

Consideration is also given to risk mitigation measures which will provide the Group with protection, such as third-party guarantees, supporting collateral and security, legal documentation and financial covenants. Commercial portfolio asset quality monitoring is based upon a number of measures, including the monitoring of financial covenants, cash flows, pricing movements and variable collateral. In the event that particular exposures begin to show adverse features such as payment arrears, covenant breaches or business trading losses, a full risk reassessment is undertaken. Where appropriate, a recovery team will work with the borrower to resolve the situation. If this proves unsuccessful, the case will be subject to intensive monitoring and management procedures designed to maximize debt recovery.

5.4 Credit Risk - Treasury

Treasury credit risks are managed in accordance with limits, asset quality measures and criteria set out within the policy approved by the GCC and ratified by the Board. The policy also sets out powers that require higher levels of authorisation according to the size of the transaction or the nature of the associated risk. The FIC identifies, assesses, prioritizes and manages our risks associated with counterparty exposure to other financial institutions, as well as country-specific exposures.

Exposures to financial institutions arise within the Bank's investment portfolio and treasury operations. Treasury exposures primarily take the form of deposits with banks and foreign exchange positions. Exposures to financial institutions in the investment portfolio can take the form of bonds, floating rate notes and or certificates of deposit.

Diversification and avoidance of concentration is emphasised. The Group establishes limits for countries and each financial institution where there is an expected exposure. Ongoing asset quality monitoring is undertaken by Treasury and CRM and reports are sent to the FIC, GCC and the GRCC on a monthly basis. Exception reporting takes place against a range of asset quality triggers. Treasury uses a number of risk mitigation techniques including netting and collateralisation agreements. Other methods (such as margining and derivatives) are used periodically to mitigate the risk associated with particular transactions or group of transactions.

For its exposure to Treasury credit risk, the Group uses external credit assessment institutions as permitted under Basel II and III for sovereign, financial institutions, asset-backed securities, covered bonds and corporate credit risks. With regards to financial institutions and corporates, the Group's preference for a long-term rating is the senior unsecured rating. However, counterparty ratings and/or short-term deposit or commercial paper ratings are used if this is unavailable. For asset-backed securities, the issue or tranche rating is used.

5.5 Exposures

The following tables analyse the Bank's regulatory credit risk exposures as at December 31, 2022. Exposures are allocated to specific standardised exposure portfolios determined by the Authority's rules and guidelines and it is these portfolios that determine the risk weights used. These exposures include both on and off-balance sheet exposures with the latter shown separately after Credit Conversion Factors have been applied.

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Table 7: Credit Quality of Assets (CR1)

		a	b	c	d
		Gross carrying values of		Allowances / impairments	Net values (a+b-c)
		Defaulted exposures	Non-defaulted exposures		
1	Loans	923,687	1,271,208,796	(2,733,420)	1,269,399,064
2	Debt securities	-	2,646,405,046	-	2,646,405,046
3	Off-balance sheet exposures	-	265,490,954	(17,753)	265,473,201
4	Total	923,687	4,183,104,796	(2,751,173)	4,181,277,310

Defaulted exposures noted above are those for which the accrual of interest has been discontinued.

5.6 Impairment Provisions

Impairment of Financial Assets

On January 1, 2020, the Bank adopted Accounting Standards Update 2016-13 Financial Instruments – Credit Losses (Topic 326). Accordingly, from the date of adoption, the Bank uses a Current Expected Credit Loss (“CECL”) model which is based on expected losses. The model used by the Bank up to December 31, 2019 to estimate credit losses was based on incurred losses. The CECL model is applied by the Bank to the measurement of credit losses on financial instruments at amortised cost, including loan receivables and HTM debt securities. The Bank also applies the CECL model to certain off-balance sheet credit exposures such as undrawn loan commitments, standby letters of credit, financial guarantees, and other similar instruments. In line with Topic 326, the Bank will present credit losses on AFS securities as a valuation allowance rather than as a direct write-down. Changes in expected credit losses are recorded through the respective credit loss allowances on the consolidated balance sheets as well as in the provision for credit losses (or recoveries) in the consolidated statements of operations.

The Bank's PCI loans outstanding as at January 1, 2020 are now classified as PCD loans and both the amortised cost and an allowance for expected credit losses are disclosed and included with other non-PCD loans' figures. The Bank will continue to recognise the amortisation of the noncredit discount, if any, as interest income based on the yield of such assets. The Bank has not restated comparative information previously accounted for under the incurred loss and the PCI models.

Under the CECL model, the Bank collects and maintains attributes as they relate to its financial instruments that are within the scope of CECL including fair value of collateral, expected performance over the lifetime of the instruments and reasonable and supportable assumptions about future economic conditions. The Bank's measurement of expected losses takes into account historical loss information and is primarily based on the product of: the respective instrument's PD, LGD and EAD. For AFS securities, any allowance for credit losses is based on an impairment assessment.

Past Due, Non-accrual, TDR and Impaired Loans

Detailed information regarding the definitions of past due, non-accrual, TDRs and impaired loans can be found in Note 2 (h. Loans) of the Bank's Consolidated Financial Statements for the year ended December 31, 2022. The definitions for past due, non-accrual, TDRs and impaired loans are the same for both accounting and regulatory purposes.

The following table shows the past due loans and allowances for impaired exposures and charges to the consolidated statement of operations for the period ended December 31, 2022. The amounts shown as delinquent represent the full amount of the loan outstanding and not just the delinquent amount:

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Table 8: Change in stock of defaulted loans and debt securities (CR2)

		FY 2022
1	Defaulted loans and debt securities at end of the previous reporting period	473,753
2	Loans and debt securities that have defaulted since the last reporting period	1,446,865
3	Returned to non-defaulted status	988,700
4	Amounts written off	-
5	Other changes	8,231
6	Defaulted loans and debt securities at end of the reporting period (1+2-3-4±5)	923,687

The net increase in defaulted loans was driven by a well secured residential mortgage that moved into non-accrual status. Further details of the Bank's past due, non-accrual, TDR and impaired loans can be found in Note 6 of the Bank's audited Consolidated Financial Statements for the year ended December 31, 2022.

Allowance for Credit Losses

The Bank maintains an allowance for credit losses, which in management's opinion is adequate to absorb all estimated credit-related losses in its lending and off-balance sheet credit-related arrangements at the balance sheet date.

For AFS debt securities in an unrealised loss position, the Bank first assesses whether it intends to sell, or it is more likely than not that it will be required to sell the security before recovery of its amortised cost basis. If either of the criteria regarding intent or requirement to sell is met, the security's amortised cost basis is written down to fair value through income. For AFS debt securities that do not meet the aforementioned criteria, the Bank evaluates whether the decline in fair value has resulted from credit losses or other factors. In making this assessment, management considers the extent to which fair value is less than amortised cost, any changes to the rating of the security by a rating agency, and adverse conditions specifically related to the security, among other factors. If this assessment indicates that a credit loss exists, the present value of cash flows expected to be collected from the security are compared to the amortised cost basis of the security. If the present value of cash flows expected to be collected is less than the amortised cost basis, a credit loss exists and an allowance for credit losses is recorded for the credit loss, limited by the amount that the fair value is less than the amortised cost basis. Any impairment that has not been recorded through an allowance for credit losses is recognised in other comprehensive income.

Losses are charged against the allowance when management believes the uncollectibility of an AFS debt security is confirmed or when either of the criteria regarding intent or requirement to sell is met.

The allowance for credit losses on loans is a valuation account that is deducted from the loans' amortised cost basis to present the net amount expected to be collected on the loans. Loans are charged off against the allowance when management believes the uncollectibility of a loan balance is confirmed. Expected recoveries do not exceed the aggregate of amounts previously charged-off and expected to be charged-off.

Management estimates the allowance balance using relevant available information, from internal and external sources, relating to past events, current conditions, and reasonable and supportable forecasts. Historical credit loss experience provides the basis for the estimation of expected credit losses. Adjustments to historical loss information are made for differences in the current-loan specific risk characteristics such as differences in underwriting practices, vintage, portfolio mix, delinquency level, term as well as changes in environmental conditions, such as changes in macroeconomic factors and collateral values.

The allowance for credit losses is measured on a collective pool basis when similar risk characteristics exist. The Bank has identified the following portfolio segments: Residential mortgages, Consumer loans (including overdrafts), Commercial loans (including overdrafts), Commercial real estate loans and Credit cards. For loans and overdrafts, Management uses a PD and LGD model to estimate the allowance for credit losses, and a loss-rate. Loans that do not

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share risk characteristics are evaluated on an individual basis. Loans evaluated individually are not also included in the collective evaluation. For Credit cards, Management uses a loss rate to estimate expected credit losses.

Expected credit losses are estimated over the contractual term of the loans. The contractual term excludes potential extensions, renewals and modifications unless management has a reasonable expectation at the reporting date that the extension or renewal options included in the original contract will occur or that a troubled debt restructuring will be executed. Credit card receivables do not have stated maturities, therefore establishing a contractual term is performed by using analytical approximation of behaviour.

5.7 Credit Risk Concentrations

Concentration risk is defined as: any single exposure or group of exposures with the potential to produce losses large enough, relative to the Bank's capital, total assets or overall risk level, to threaten the Bank's health or ability to maintain core operations.

The management of concentration risk is addressed in the first instance by the Bank's large exposure policy and related credit guidelines, which require that credit facilities to entities that are affiliated through common ownership or management are aggregated for adjudication and reporting purposes. The policy also defines what constitutes a large exposure and the related reporting requirements. The CRM function also undertakes monitoring and assessment of our exposure to concentration risk, reporting the results of these analyses to the CC, GCC, the ACRPC, the GRCC and Risk Policy and Compliance Committee ("RPCC").

The factors taken into consideration when assessing concentration risk are as follows:

- single or linked counterparty;
- industry or economic sector (e.g. hospitality, property development, commercial office building investment);
- geographic region;
- product type;
- collateral type; and
- maturity date (whether of the facility or of interest rate fixes).

5.7.1 Counterparty Concentration is the risk associated with assuming a high level of exposure to a single counterparty, the failure of which may have an adverse impact on the Bank.

Large exposures are reviewed quarterly by the ACRPC, GRCC and RPCC for the loan portfolio and the treasury/investment portfolios. Group Market Risk and Treasury functions work closely together on daily treasury positions and exceptions. The review of large exposures considers:

- Facility total;
- Any link with other facilities;
- Total linked facility being within guidelines;
- BRR;
- Security value on the facility; and
- LTV percentage against minimum security covenants.

5.7.2 Industry Concentration encompasses the scenario that a risk factor inherent within an industry is tied to an entire portfolio of accounts or investments; e.g., a portfolio made up of a large number of small individual loans where all the counterparties are hotel operators. We believe that due to the nature of the Bank's client base our exposure to the property, insurance and fund sectors could be classified as industry concentration, although we believe that geographic and product concentration are the more appropriate risks to measure.

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5.7.3 Geographic Concentration of the book is monitored as follows:

- Reports are generated which provide details of all the property loan exposure of the Bank. Through this, loans are subdivided into regional exposure.
- From this, the percentage breakdown per region of the Bank's property exposure is analysed and reported to the ACRPC, GRCC and RPCC. Assessment of the exposure allows the committees to decide whether the Bank should decline further lending in any area in which it is becoming over-weighted.

The geographic distribution of loans is presented in "Note 7: Credit risk concentration" of the Bank's December 31, 2022 audited consolidated financial statements.

5.7.4 Product Concentration is defined in the context of credit risk, as an over-weighting in the portfolio to a given product type, making the Bank vulnerable to the impact of a variety of external factors that could either reduce demand for the product itself or lead to an increase in the level of default rates experienced.

Butterfield operates as a full service bank in Cayman and aims to satisfy the requirements of its customers in the community through the range of products and services it offers. Accordingly, there is no dependence or concentration on a single product in this market outside of the residential mortgage portfolios which comprise 63.8% of the Bank's loan book, and loans for many purposes (e.g. education, business support, family requirements, green products) may also be in the form of residential mortgages.

Product category analysis confirms that the total lending portfolio is concentrated in the property market; this has been addressed in stress testing performed.

5.7.5 Collateral Concentration considers whether the Bank's loan book is secured by a limited number of collateral types. An example of this would be when a large value of loans to a diversified group of borrowers is all secured by shares in the same company or by the shares of various companies within the same industry sector. Any decline in the value of these shares or in the performance of the sector as a whole could have an adverse impact on the Bank's security position across all affected borrowers.

The most obvious and relevant example of collateral concentration is the Bank's exposure to real estate property values. Ignoring cash-backed facilities, the largest collateral concentrations within the portfolio are to residential and commercial property. The greatest risk with collateral concentration is that the value of the security could be severely reduced. To simulate this, the Bank's stress testing process incorporates a scenario in which all real estate collateral is devalued by factors as high as 30%.

5.7.6 Maturity concentration has been classified as the concentration of loans that are either:

- Maturing at any similar time, leading to a sudden fall in the value of the portfolio and the income that this generates; or
- Have fixed interest rates that are approaching maturity at similar times, potentially impacting the repayment obligations on the borrowers (if rates have subsequently risen) and therefore the risk of default in the affected portfolio.

5.8 Credit Risk Mitigation

The Bank uses a wide range of techniques to reduce credit risk of its lending. The most basic of these is performing an assessment of the ability of a borrower to service the proposed level of borrowing without distress. However, the risk can be further mitigated by obtaining security for the funds advanced.

The following tables reflect the split between the Bank's secured and unsecured exposures as well the effects of the credit risk mitigation techniques utilised.

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Table 9: Credit Risk Mitigation Techniques - Overview (CR3)

		Not to exceed the value in column b, can be less						
		a	b	c	d	e	f	g
		Exposures unsecured: carrying amount	Exposures secured by collateral	Exposures secured by collateral, of which: secured amount	Exposures secured by financial guarantees	Exposures secured by financial guarantees, of which: secured amount	Exposures secured by credit derivatives	Exposures secured by credit derivatives, of which: secured amount
1	Loans	263,989,022	989,267,158	989,267,158	16,142,884	16,142,884	-	-
2	Debt securities	485,730,298	2,160,674,748	2,160,674,748	-	-	-	-
3	Total	749,719,320	3,149,941,906	3,149,941,906	16,142,884	16,142,884	-	-
4	Of which defaulted	-	923,687	923,687	-	-	-	-

Table 10: Standardised Approach - Credit Risk Exposure and Credit Risk Mitigation Effects (CR4)

		a		b		c		d		e		f	
		Exposures before CCF and CRM				Exposures post-CCF and CRM				RWA and RWA Density			
		On-balance sheet amount		Off-balance sheet amount		On-balance sheet amount		Off-balance sheet amount		RWA		RWA Density	
1	Sovereigns and their central banks	753,773,150	-	14,725,012	-	721,106,861	-	14,725,012	-	-	-	-	-
2	Non-central government public sector entities	-	-	-	-	-	-	-	-	-	-	-	-
3	Multilateral development banks	-	-	-	-	-	-	-	-	-	-	-	-
4	Banks	539,247,459	-	-	-	539,247,459	-	-	-	144,455,598	-	26.8%	-
5	Securities firms	-	-	-	-	-	-	-	-	-	-	-	-
6	Corporates	41,897,030	-	55,506,451	-	42,098,788	-	55,506,451	-	67,105,055	-	68.8%	-
7	Regulatory retail portfolios	72,413,427	-	646,163	-	72,542,921	-	646,163	-	60,365,373	-	82.5%	-
8	Secured by residential mortgages	812,877,649	-	9,737,793	-	814,956,821	-	9,737,793	-	296,952,122	-	36.0%	-
9	Secured by commercial real estate	79,577,946	-	2,233,365	-	79,875,936	-	2,233,365	-	82,109,301	-	100.0%	-
10	Past-due exposures	711,771	-	-	-	690,300	-	-	-	690,300	-	100.0%	-
11	High-risk categories	-	-	-	-	-	-	-	-	-	-	-	-
12	Other Balance Sheet Exposures	101,437,563	-	1,051,670	-	101,437,563	-	1,051,670	-	66,596,915	-	65.0%	-
13	Total	2,401,935,995	-	83,900,455	-	2,371,956,648	-	83,900,455	-	718,274,664	-	29.2%	-

The RWA density declined in 2H 2022 driven by the redeployment of funds from the interbank market into Canadian and US treasuries, which are zero risk-weighted.

Table 11: Standardised Approach - exposures by asset classes and risk weights (CR5)

		a	b	c	d	e	f	g	h
Risk Weight		0%	20%	35%	50%	75%	100%	150%	Total credit exposures amount (post CCF and post-CRM)
Asset Classes									
1	Sovereigns and their central banks	735,831,873	-	-	-	-	-	-	735,831,873
2	Non-central government public sector entities	-	-	-	-	-	-	-	-
3	Multilateral development banks	-	-	-	-	-	-	-	-
4	Banks	-	417,227,105	-	122,020,353	-	-	-	539,247,459
5	Securities firms	-	-	-	-	-	-	-	-
6	Corporates	13,117,982	11,861,885	-	15,425,386	-	57,199,985	-	97,605,239
7	Regulatory retail portfolios	869,868	-	-	-	47,815,372	24,503,844	-	73,189,083
8	Secured by residential mortgages	-	-	804,315,026	-	19,750,901	628,688	-	824,694,614
9	Secured by commercial real estate	-	-	-	-	79,875,936	2,233,365	-	82,109,301
10	Past-due exposures	-	-	-	-	-	690,300	-	690,300
11	High-risk categories	-	-	-	-	-	-	-	-
12	Other Balance Sheet Exposures	34,971,129	1,151,488	-	-	-	66,366,617	-	102,489,234
13	Total	784,790,852	430,240,478	804,315,026	137,445,740	147,442,208	151,622,799	-	2,455,857,103

Residential mortgages

Residential property is the Bank's main source of collateral and means of mitigating credit risk inherent in the residential mortgage portfolio. All mortgage lending activities are supported by underlying assumptions and estimated values received from independent third parties.

All residential property must be insured to cover property risks through a third party.

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Commercial

Commercial property is the Bank's primary source of collateral and means of mitigating credit risk inherent in its commercial portfolios. Collateral for the majority of commercial loans comprises first legal charges over freehold or long leasehold property but the following may also be taken as security:

Life insurance policies	Credit balances	Assignments
Shares	Guarantees	Equitable charges
Debentures	Chattel mortgages	Charges over residential property

For property-based lending, supporting information such as professional valuations are an important tool to help determine the suitability of the property offered as security and, in the case of investment lending, generating the cash to cover interest and principal payments.

All standard documentation is subject to in-house legal review and sign-off in order to ensure that the Bank's legal documentation is robust and enforceable. Documentation for large advances may be specifically prepared by independent solicitors. Insurance requirements are always fully considered as part of the application process and the Group ensures that appropriate insurance is taken out to protect the property against an insurable event.

Treasury

Collateral held as security for treasury assets, including investments, is determined by the nature of the instrument. Loans, debt securities, treasury and other eligible bills are generally unsecured with the exception of asset-backed securities and similar instruments, which are secured by pools of financial assets.

The International Swaps and Derivatives Association ("ISDA") Master Agreement is the Bank's preferred method of documenting derivative activity. It is common in such cases for a Credit Support Annex to be executed in conjunction with the ISDA Master Agreement in order to mitigate credit risk on the derivatives portfolio. Valuations are performed, agreed with the relevant counterparties, and collateral is exchanged to bring the credit exposure within agreed tolerances.

The Bank's legal documentation with its counterparties for derivative transactions grants legal rights of set-off for those transactions. Accordingly, for credit exposure purposes, negative market values on derivatives will offset positive market values on derivatives with the same counterparty in the calculation of credit risk, subject to an absolute exposure by counterparty.

The Exposure at Default ("EAD") value to the counterparty is measured under the standardised approach for measuring counterparty credit risk exposures method and is derived by adding the gross positive fair value of the contract (replacement cost) and an add-on potential future exposure and applying a multiple of 1%.

The following table shows the exposures to counterparty credit risk for derivative contracts as at December 31, 2022:

Table 12: Analysis of CCR exposure by approach (CCR1)

		Total Replacement Cost Mark-To-Market	Add-On Potential Future Exposure (PFE)	EAD post-CRM	RWA
1	Current Exposure Method (CEM)	48,581	1,003,090	1,051,670	210,334
2	Standardised Method	-	-	-	-
3	Simple Approach for Credit Risk Mitigation (for SFTs)	-	-	-	-
4	Comprehensive Approach for Credit Risk Mitigation (for SFTs)	-	-	-	-
5	Total	48,581	1,003,090	1,051,670	210,334

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Table 13: Standardised Approach - CCR exposures by regulatory portfolio and risk weights (CCR3)

Risk Weight	a	b	c	d	e	f	g	h	i
	0%	10%	20%	50%	75%	100%	150%	Others	Total credit exposure
Regulatory portfolio									
Sovereigns and their central banks and MDBs	-	-	-	-	-	-	-	-	-
Non-central government public sector entities	-	-	-	-	-	-	-	-	-
Banks and securities firms	-	-	1,051,670	-	-	-	-	-	1,051,670
Corporates	-	-	-	-	-	-	-	-	-
Regulatory retail portfolios									
Secured by residential property	-	-	-	-	-	-	-	-	-
Secured by commercial real estate	-	-	-	-	-	-	-	-	-
Equity	-	-	-	-	-	-	-	-	-
Past-due loans	-	-	-	-	-	-	-	-	-
Higher-risk categories	-	-	-	-	-	-	-	-	-
Other assets	-	-	-	-	-	-	-	-	-
Total	-	-	1,051,670	-	-	-	-	-	1,051,670

5.9 Securitisation (SECA)

The Bank has not, to date, securitised assets that it has originated. The Bank's total exposure to purchased securitisation positions as at December 31, 2022 was \$2.2 billion by carrying value, with U.S. government and federal agencies accounting for the majority of this exposure. Refer to Table 14 below.

Table 14: Securitisation exposures in the banking book (SEC1)

	a	b	c	d	e	f	h	i	j
	Bank acts as originator			Bank acts as sponsor			Bank acts as Investor		
(In millions of \$)	Traditional	Synthetic	Sub-Total	Traditional	Synthetic	Sub-Total	Traditional	Synthetic	Sub-Total
1 Retail - of which	-	-	-	-	-	-	2,160,674,748	-	2,160,674,748
2 Residential mortgages	-	-	-	-	-	-	2,155,048,848	-	2,155,048,848
3 Credit cards	-	-	-	-	-	-	-	-	-
4 Other retail exposures	-	-	-	-	-	-	5,625,900	-	5,625,900
5 Re-securitisation	-	-	-	-	-	-	-	-	-
6 Wholesale - of which	-	-	-	-	-	-	-	-	-
7 Loans to corporates	-	-	-	-	-	-	-	-	-
8 Commercial mortgages	-	-	-	-	-	-	-	-	-
9 Lease and receivables	-	-	-	-	-	-	-	-	-
10 Other wholesale	-	-	-	-	-	-	-	-	-
11 Re-securitisation	-	-	-	-	-	-	-	-	-
12 Total	-	-	-	-	-	-	2,160,674,748	-	2,160,674,748

A combination of ratings published by Fitch, Moody's and S&P are used to derive the external rating to be used under the standardised approach for securitisation exposures.

The following table shows the aggregate amount of the Bank's purchased securitisations by risk weighting as at December 31, 2022:

Table 15: Securitisation Exposures in the Banking Book and Associated Capital Requirements - Bank Acting as Investor (SEC4)

	a	b	c	d	e	f	g	h	i	j	k
	Exposure values (by RW bands)					Exposure values (by regulatory approach)		RWA (by regulatory approach)		Capital charge after cap	
	≤ 20% RW	> 20% to 50% RW	> 50% to 100% RW	> 100% to 1250% RW	1250% RW	SA / SSFA	1250%	SA / SSFA	1250%	SA / SSFA	1250%
1 Total exposures	2,165,289,974	-	-	-	-	2,165,289,974	-	358,673,941	-	28,693,915	-
2 Traditional securitization	2,165,289,974	-	-	-	-	2,165,289,974	-	358,673,941	-	28,693,915	-
3 Of which securitization	2,165,289,974	-	-	-	-	2,165,289,974	-	358,673,941	-	28,693,915	-
4 Of which retail underlying	2,165,289,974	-	-	-	-	2,165,289,974	-	358,673,941	-	28,693,915	-
5 Of which wholesale	-	-	-	-	-	-	-	-	-	-	-
6 Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-
7 Of which senior	-	-	-	-	-	-	-	-	-	-	-
8 Of which non-senior	-	-	-	-	-	-	-	-	-	-	-
9 Synthetic securitization	-	-	-	-	-	-	-	-	-	-	-
10 Of which securitization	-	-	-	-	-	-	-	-	-	-	-
11 Of which retail underlying	-	-	-	-	-	-	-	-	-	-	-
12 Of which wholesale	-	-	-	-	-	-	-	-	-	-	-
13 Of which re-securitization	-	-	-	-	-	-	-	-	-	-	-
14 Of which senior	-	-	-	-	-	-	-	-	-	-	-
15 Of which non-senior	-	-	-	-	-	-	-	-	-	-	-

6. Market and Liquidity Risk

6.1 Market Risk Overview (MRA)

Market risk is the risk of a loss in earnings or decrease in value of the Bank's balance sheet due to adverse movements in market factors such as interest rates, foreign exchange rates, credit spreads and equity prices.

Market risk exposures are generally calculated and monitored independently of each other. All market risks are monitored closely and regularly reported to ALCO and GALCO by the Group Market Risk function, within the Risk Management Group.

6.2 Interest Rate Risk (IRR)

Interest rate risk is our exposure to movements in interest rates. Such risk is a normal part of banking and exposure to it can be an important source of profitability and shareholder value. However, where risk is excessive, the threat to earnings and capital can be significant. Changes in interest rates impact earnings by changing net income as well as the level of other interest-sensitive income and expenses. Such changes also affect underlying value of assets, liabilities and off balance-sheet instruments, and hence the economic value of the Bank, since the present value of future cash flows changes as interest rates shift. With respect to investments, this risk only arises in the banking book, as the Bank does not run a trading book.

The principal objective of our interest rate risk management is to maximize profit potential while minimising exposure to changes in interest rates. Our actions in this regard are taken under the guidance of ALCO and GALCO. The committees are actively involved in formulating the economic assumptions that we use in our financial planning and budgeting processes and establishes policies which control and monitor the sources, uses and pricing of funds. From time to time, we utilise hedging techniques to reduce interest rate risk. ALCO and GALCO uses interest income simulation and economic value of equity analysis to measure inherent risk in our balance sheet at specific points in time.

Appetite for interest rate risk is documented in the Bank's and Group's policies on market risk and investments. This includes the completion of stress testing on at least a quarterly basis of the impact of an immediate and sustained shift in interest rates of +/- 200 basis points on Net Interest Income ("NII"), Economic Value of Equity ("EVE") and the ratio between Tangible Total Equity and Average Tangible Assets.

Key modelling and parametric assumptions used in calculating Δ EVE and Δ NII in the table below include:

- The average repricing maturity of deposits is the product of the modelled maturity of deposits and their sensitivity to market rate movements. These models are calibrated based on historical observations, industry benchmarking and expert judgement. The models are also subjected to periodic back-testing and challenge/reaffirmation.
- Loan prepayment rates are calibrated from historical observations and expert judgement.
- For U.S. Agency Mortgage Backed Securities, which constitute the majority of the Bank's investment portfolio, we use models developed by an external service provider. The outcomes of these models are periodically challenged using two different industry prepayment models and fitted as necessary.
- Commercial margins are included in the calculation of EVE.
- The Bank does not perform any aggregation across currencies. Risk metrics are calculated for each balance sheet item at the individual level using yield curves and discount factors applicable to the item's original currency.
- Average and longest repricing maturities assigned to non-maturity deposits are 4.5 and 6 years, respectively.

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Table 16: Quantitative information on IRRBB (IRRBB1)³

(in millions of US\$)	ΔEVE		ΔNII	
	December 31, 2022	December 31, 2021	December 31, 2022	December 31, 2021
Parallel up	(51.7)	(13.3)	10.0	23.8
Parallel down	(19.0)	(47.8)	(15.7)	17.9
Steeper	(42.4)	(12.0)		
Flattener	4.3	(7.1)		
Short rate up	1.2	23.1		
Short rate down	(12.3)	34.6		
Maximum	(51.7)	(47.8)	(15.7)	17.9
	December 31, 2022		December 31, 2021	
Tier 1 capital	319.7		264.4	

Market interest rates have increased significantly in 2022, driven by global Central Banks' actions to curtail inflation. During 2022, the US Federal Reserve raised its base rate by 450 bps to a target range of 4.50% - 4.75% and the Bank of England base rate was raised by 300 bps to 3.5%. Consistent with the large rate hikes, the Bank is seeing the impact of its balance sheet asset-sensitivity with its NII increasing by 27% in 2022.

As market interest rates increase, the balance sheet has become less asset-sensitive due to higher customer demand for fixed-rate loans and more sensitive deposit costs. The Bank is expecting the NII to continue to increase in 2023, albeit at a slower pace compared to the 2022.

Additional details are given in the Group's Annual Report for the year ended December 31, 2022 under "Item 5.A: Market Risks (Page 81)".

6.3 Foreign Exchange Risk

The Bank holds various non-Cayman Dollar ("KYD") denominated assets and liabilities. The domestic currency of the Cayman Islands is pegged to the U.S. Dollar ("USD").

Assets and liabilities denominated in currencies other than KYD or USD are translated to USD at the rates of exchange prevailing at the balance sheet date. The resulting gains or losses are included in foreign exchange revenue in the consolidated statement of operations.

We also provide foreign exchange services to our clients, principally in connection with our community banking and wealth management businesses, and effect other transactions in non-KYD currencies. Foreign currency volatility and fluctuations in exchange rates may impact the value of non-KYD denominated assets and liabilities and raise the potential for losses resulting from foreign currency trading positions where aggregate obligations to purchase and sell a currency other than KYD or USD do not offset one another, or offset each other in different time periods. If the policies and procedures we have in place to assess and mitigate potential impacts of foreign exchange volatility are not followed, or are not effective to mitigate such risks, our results and earnings may be negatively affected.

The Bank and Group maintains a clearly articulated foreign exchange risk exposure tolerance framework which limits exposures to select currencies. A full definition of the tolerance framework is contained in the Group's Market Risk Management Policy and its associated standards.

Note 15 of the Consolidated Financial Statements as at December 31, 2022 provides details of the Bank's foreign exchange and other derivative instruments as at that date.

6.4 Liquidity Risk

The objectives of liquidity risk management are to ensure that the Bank can meet its cash flow requirements and capitalise on business opportunities on a timely and cost effective basis. Liquidity is defined as the ability to hold

³ Updated on an annual basis only

Capital and Risk Management Pillar 3 Disclosures for the period ended December 31, 2022

and/or generate cash adequate to meet the Bank's needs for day-to-day operations, severely adverse conditions, and material long and short-term commitments. Liquidity risk is the risk of potential loss if the Bank were unable to meet its funding requirements at a reasonable cost.

Liquidity is monitored and managed at each banking jurisdictional level and on a group-wide basis. The Group treasury functions, located in Bermuda, Cayman Islands, Guernsey, Jersey and the United Kingdom, manage day-to-day liquidity in each of their respective jurisdictions. The Group Market Risk function has the responsibility for measuring and reporting to senior management on liquidity risk positions. Liquidity is managed based on demand, commitments, specific events and uncertainties to meet current and future financial obligations of a short-term nature. The objective in managing liquidity is to respond to the needs of depositors and borrowers as well as to earnings enhancement opportunities in a changing marketplace. Management is responsible for establishing and monitoring liquidity targets as well as strategies to meet these targets. The Bank and Group adopts a cautious liquidity risk appetite with internal quantitative liquidity risk tolerances more stringent than regulatory requirements. Specifically, the Bank and Group manages liquidity against internal limits established by the Market Risk Management Policy and its related Liquidity Risk Standard and quarterly stress testing methodology.

The balance sheet includes loans representing 27.8% of total assets as at December 31, 2022. Further, at that date there were significant sources of liquidity within the balance sheet in the form of cash and cash equivalents, short-term investments and investments amounting to \$3.2 billion, or 70.5%, of total assets.

An important element of the liquidity management is the liquidity contingency plan which can be employed in the event of a liquidity crisis. The objective of the liquidity contingency plan is to ensure that liquidity is maintained during periods of stress. This plan takes into consideration a variety of scenarios that could challenge liquidity. These scenarios include specific and systemic events that can impact on and off-balance sheet sources and uses of liquidity. This plan is reviewed and updated at least annually.

There is no central bank in Cayman or Bermuda and thus there is no 'lender of last resort' and neither does the Group have committed standby facilities in its favour. The Group does have access to funding from the inter-bank market on an uncommitted basis and also have put in place formalised but uncommitted repurchase and collateralised facilities with counterparties which enable it to access funding on a secured basis. However, in a financial crisis, access to some of these liquidity sources may be restricted or the Bank or Group may not be able to access them at all. Another source of liquidity for the Bank and Group is the ability to draw funding from capital markets globally. The availability and cost of these funds are influenced, in part, by the Group's credit rating; as a result, a downgrade in the Group's credit ratings could have an adverse impact on its liquidity funding and the cost thereof. Similarly, a downgrade in Cayman or Bermuda's sovereign credit rating could also adversely affect the Bank's and Group's ability to access liquidity.

6.4.1 Liquidity Coverage Ratio

The objective of the LCR is to promote the short-term resilience of a bank's liquidity risk profile, ensuring that it has adequate stock of unencumbered HQLA that can easily be converted into cash to meet its liquidity needs in an acute stress scenario lasting for 30 days. The CIMA requires Cayman banks to maintain a minimum LCR of 100%. The Bank remained in compliance with this requirement as at December 31, 2022 and throughout the year then ended.

Data is presented as the simple average of the three monthly observations over the last quarter of 2022. HQLA is comprised predominantly of Canadian and US sovereign debt and US government and federal agency securities whilst customer deposits remain the primary source of funding.

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Table 17: LCR Disclosure Template (LIQ1)

		Quarter Ended December 31, 2022	
		a	b
		TOTAL UNWEIGHTED VALUE (average)	TOTAL WEIGHTED VALUE (average)
HIGH-QUALITY LIQUID ASSETS			
1	Total high-quality liquid assets (HQLA)		1,415,631,583
CASH OUTFLOWS			
2	Retail deposits and deposits from small business customers of which:	1,112,159,199	111,215,920
3	<i>Stable deposits</i>	-	-
4	<i>Less stable deposits</i>	1,112,159,199	111,215,920
5	Unsecured wholesale funding, of which:	3,146,801,851	1,356,906,891
6	<i>Operational deposits (all counterparties) and deposits in networks of cooperative banks</i>	1,048,150,305	262,037,576
7	<i>Non-operational deposits (all counterparties)</i>	2,098,651,546	1,094,869,314
8	<i>Unsecured debt</i>	-	-
9	Secured wholesale funding	-	-
10	Additional requirements, of which:	129,534,470	21,182,132
11	<i>Outflows related to derivative exposures and other collateral requirements</i>	-	-
12	<i>Outflows related to loss of funding on debt products</i>	-	-
13	<i>Credit and liquidity facilities</i>	129,534,470	21,182,132
14	<i>Other contractual funding obligations</i>	-	-
15	Other contingent funding obligations	125,886,867	3,776,606
16	TOTAL CASH OUTFLOWS	4,514,382,387	1,493,081,548
CASH INFLOWS			
17	<i>Secured lending (e.g. reverse repos)</i>	-	-
18	<i>Inflows from fully performing exposures</i>	504,413,879	433,365,552
19	<i>Other cash inflows</i>	33,273	-
20	TOTAL CASH INFLOWS	504,447,152	433,365,552
			TOTAL ADJUSTED VALUES
21	TOTAL HQLA		1,415,631,583
22	TOTAL NET CASH OUTFLOWS		1,059,715,996
23	LIQUIDITY COVERAGE RATIO (%)		134%

The average LCR has improved over the period as a result of increasing HQLA levels in the final quarter of 2022.

6.4.2 Net Stable Funding Ratio

The objective of the NSFR is to require banks to maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities over a one-year horizon. The CIMA requires Cayman banks to maintain a minimum NSFR of 100%. The Bank is in compliance with this requirement as at December 31, 2022 and for the year then ended.

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Table 18: NSFR Disclosure Template (LIQ2)

	(in millions of \$)	Unweighted value by residual maturity				Weighted value
		a No maturity*	b <6 months	c 6 months to <1 year	d ≥1 year	
Available stable funding (ASF) item						
1	Capital:	-	-	-	361,749,846	361,749,846
2	Regulatory capital	-	-	-	361,749,846	361,749,846
3	Other capital instruments	-	-	-	-	-
4	Retail deposits and deposits from small business customers:	1,041,205,127	115,766,104	28,883,872	8,259,765	1,075,529,358
5	Stable deposits	-	-	-	-	-
6	Less stable deposits	1,041,205,127	115,766,104	28,883,872	8,259,765	1,075,529,358
7	Wholesale funding:	2,604,020,862	460,919,058	36,486,797	-	1,329,320,531
8	Operational deposits	1,015,073,058	-	-	-	507,536,529
9	Other wholesale funding	1,588,947,804	460,919,058	36,486,797	-	821,784,002
10	Liabilities with matching interdependent assets	-	-	-	-	-
11	Other liabilities:	50,352,879	-	-	-	-
12	NSFR derivative liabilities	-	-	-	-	-
13	All other liabilities and equity not included in the above categories	50,352,879	-	-	-	-
14	Total ASF	-	-	-	-	2,766,599,734
Required stable funding (RSF) item						
15	Total NSFR high-quality liquid assets (HQLA)	-	-	-	-	272,678,746
16	Deposits held at other financial institutions for operational purposes	67,213,591	-	-	-	33,606,796
17	Performing loans and securities:	-	518,380,174	44,199,623	1,153,564,841	873,634,188
18	Performing loans to financial institutions secured by Level 1 HQLA	-	-	-	-	-
19	Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions	-	464,099,738	-	-	69,614,961
20	Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, central banks and PSEs, of which:	-	40,257,260	32,673,502	375,130,105	283,365,202
21	With a risk weight of less than or equal to 35% under the Basel II standardised approach for credit risk	-	-	-	-	-
22	Performing residential mortgages, of which:	-	14,023,176	11,526,121	768,950,744	512,592,632
23	With a risk weight of less than or equal to 35% under the Basel II standardised approach for credit risk	-	14,023,176	11,526,121	768,950,744	512,592,632
24	Securities that are not in default and do not qualify as HQLA, including exchange-traded equities	-	-	-	9,483,992	8,061,393
25	Assets with matching interdependent liabilities	-	-	-	-	-
26	Other assets:	-	18,855,319	4,126	95,861,918	107,935,007
27	Physical traded commodities, including gold	-	-	-	-	-
28	Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs	-	-	-	-	-
29	NSFR derivative assets	-	-	-	-	-
30	NSFR derivative liabilities before deduction of variation margin posted	-	-	-	-	-
31	All other assets not included in the above categories	-	18,855,319	4,126	95,861,918	107,935,007
32	Off-balance sheet items	-	-	349,805,176	-	18,174,259
33	Total RSF	-	-	-	-	1,306,028,996
34	Net Stable Funding Ratio (%)	-	-	-	-	212%

* Items to be reported in the "no maturity" time bucket do not have a stated maturity. These may include, but are not limited to, items such as capital with perpetual maturity, non-maturity deposits, short positions, open maturity positions, non-HQLA equities and physical traded commodities.

7. Operational Risk (OPR)

In providing services, the Bank is exposed to operational risk. This is the risk of loss from inadequate or failed internal processes and systems, actions or inactions of people, or from external events.

The Bank views the management of operational risk as integral to its objective of creating and maintaining shareholder value. Risk management requires the consideration of the risk/reward relationship in both the management of existing activities and the execution of all new business strategies. Our success is also dependent, in part, upon maintaining our reputation as a well-managed institution with our shareholder, existing and prospective clients, creditors, and regulators. In order to maintain this reputation, we seek to minimise the frequency and severity of operational losses associated with compliance and fiduciary matters, product, process, technology failures, and business continuity.

Operational risk is mitigated through effective internal controls embedded in our business activities and our risk management practices, which are designed to continuously re-assess the effectiveness of these controls in order to keep the risk we assume at levels appropriate to our risk appetite as approved by the Board. Our overall approach is based on the following four guiding principles:

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- Assessing risks is a day-to-day business activity that is the concern of every employee;
- Decisions are based on an assessment of all relevant operational risks;
- Risk decisions shall be made at the appropriate level based on clear lines of responsibility and delegated authority; and
- Unnecessary risks shall be avoided.

Data on operational losses and any significant control failures incurred are captured through an incident reporting process. These events are reported to the Risk Committee, GRCC, ACRPC and RPCC, which assess the sufficiency of the corrective actions taken by management to prevent recurrence. Committees also receive regular reporting on actual performance against established risk tolerance metrics.

For the purposes of calculating its operational risk capital requirements, the Bank and Group have adopted the Standardised Approach as set out in the Basel Capital Accord. Under this, gross income is regarded as a proxy for the operational risk exposure within each business line and the capital charge for operational risk is calculated based on gross income over the preceding three years.

Risk Weighted Assets and corresponding capital charge assigned to Operational Risk in 2022 was \$ 267.1 million and \$29.4 million respectively (2021: \$271.7 million; \$29.9 million).

8. Remuneration (REM)

Details of Butterfield Group's remuneration and compensation strategy for senior management and staff may be found commencing on page 99 of the 2022 Annual Report⁴.

The Compensation & Human Resources Committee of the Group's Board of Directors reviews and confirms strategic compensation and remuneration decisions as follows;

"The Compensation & Human Resources Committee, on behalf of the Board, reviews and approves executive compensation, employee salary ranges, levels and degrees of participation in incentive compensation programs (including bonuses and equity-based incentive plans) and oversees employee development, relations and succession. Specifically, the Compensation & Human Resources Committee evaluates the fairness and effectiveness of the compensation practices implemented by the Group, approves overall compensation packages for executives, provides regular updates on executive compensation to the Board, approves changes in employee salary ranges for employees, approves the criteria and design of the Group's incentive bonus plans and approves changes to the other employee benefit plans. The Compensation & Human Resources Committee also recommends to the Board changes in the Group's equity-based incentive plans and the granting of awards under such plans, reviews and approves changes to our pension plans, reviews periodic management reports on our compensation and benefits, as well as other matters bearing on the relationship between management and employees, while making recommendations to the Board concerning our senior level organization structure and staffing, training and employee development programs."

At December 31, 2022, the Bank in Cayman had 244 full time permanent employees, the majority of whom were eligible to participate in the discretionary incentive bonus plan based on overall Group, Jurisdictional and Individual performance measured against an overall scorecard which includes financial and risk based metrics. No portion of the discretionary incentive bonus plan is guaranteed. For fiscal 2022, discretionary incentive components of Salaries and other employee benefits accounted for 12.4% of the total Salaries and other employee benefits (2021: 10.3%).

9. Asset Encumbrance

The Bank has provided cash collateral for certain foreign exchange swap facilities with two of its counterparties as at year end. Details of these balances may be seen in Note 4: Short term investments and Note 15: Accounting for derivatives and risk management in the Bank's audited consolidated financial statements for the year ended December 31, 2022. In addition, the Bank has a facility by one of its custodians, whereby the Bank may offer up to

⁴ <https://www.butterfieldgroup.com/investor-relations/financial-reports>

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\$200 million of standby letters of credit to its customers on a fully secured basis. Under the standard terms of the facility, the custodian has the right to set-off against securities held of 110% of the utilised facility. At 31 December 2022, \$121.0 million (2021: \$145.5 million) of standby letters of credit were issued under this facility.

Table 19: Asset Encumbrance (ENC)

	a	b	c	d
	Encumbered Assets	(Optional) Central Bank Facilities	Unencumbered Assets	Total
Short Term Investment	7,983,948	-	-	7,983,948
Investments	133,402,658	-	2,420,154,123	2,553,556,781
All other assets	-	-	2,004,602,890	2,004,602,890
	141,386,606	-	4,424,757,013	4,566,143,619

10. Other Information

10.1 Abbreviations

The following abbreviated terms are used throughout the document:

AFS	Available-for-Sale
ACRPC	Audit, Compliance and Risk Policy Committee
ALCO	Asset and Liability Committee
BCBS	Basel Committee on Banking Supervision
Board	Board of Directors
BRR	Borrower Risk Ratings
CCR	Counterparty Credit Risk
CE	Common Equity
CECL	Current Expected Credit Losses
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CIMA	Cayman Islands Monetary Authority
CRM	Credit Risk Management
EAD	Exposure at Default
EVE	Economic Value of Equity
ECAIs	External Credit Assessment Institutions
FIC	Financial Institutions Committee

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GALCO	Group Asset and Liability Committee
GCC	Group Credit Committee
GRCC	Group Risk and Compliance Committee
HQLA	High Quality Liquid Assets
HTM	Held-to-Maturity
ICAAP	Inter Capital Adequacy Assessment Process
IRRBB	Interest Rate Risk in the Banking Book
ISDA	International Swaps and Derivatives Association
LCR	Liquidity Coverage Ratio
LGD	Loss-Given Default
LTV	Loan-to-Value
NII	Net Interest Income
NSFR	Net Stable Funding Ratio
PCD	Purchased Credit Deteriorated
PCI	Purchased Credit-Impaired
PD	Probability of Default
RPCC	Risk Policy and Compliance Committee
RWA	Risk-weighted Assets
S&P	Standard and Poor's rating agency
SA-CCR	Standardised Approach for measuring Counterparty Credit Risk exposures
SAP	Supervisory Assessment Process
TDR	Troubled debt restructuring



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