HUDCO's
Risk Management Policy
&
Operating Manual
Risk Management Policy and Operating Manual

September 2012

Submitted to:
Housing & Urban Development Corporation (HUDCO)

Submitted by:
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A 100 % subsidiary of CRISIL Ltd., A Standard & Poor's Company
PREFACE

This document details the Risk Management Policy & Operating Manual of Housing & Urban Development Corporation (HUDCO). The document has been designed taking into account the current risk management framework at HUDCO, the observations and recommendations of CRISIL Risk and Infrastructure Solutions Limited (CRS) Diagnostic review report.

The document has been divided into the following broad sections:

1. Background & Scope
2. Key Risks for HUDCO
3. Risk Governance & Management Structure
4. Supervisory Level - Risk Management Committees
5. Analytical Level - Risk Management Department
6. Operating Manual
   a. Credit Risk Management
   b. Operational Risk Management
   c. Market Risk Management
   d. Liquidity Risk Management
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1. BACKGROUND & SCOPE

Risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities. Risks can come from uncertainty in financial markets, project failures (at any phase in design, development, production, or sustainment life-cycles), credit risk, market risk, liquidity risk, interest rate risk and operational risk such as legal liabilities, accidents, natural causes and disasters as well as deliberate attack from an adversary, or events of uncertain or unpredictable root-cause.

The main objectives of the Risk Management Policy (this "Policy") are to:

1. Establish the company's risk management strategy in line with the goals of the organization and the internal and external environment
2. Define credit, market, operational and liquidity risk management processes so that the risks can be identified, measured, allocated, mitigated, monitored and managed adequately
3. Define organizational structures for effective implementation of the risk management framework, including roles and responsibilities of the company's boards and business units in respect of risk management
4. Establish a risk-driven analytic framework for pricing of products, which together with market and other analysis will guide management's pricing strategy on a transaction and portfolio-wide basis
5. Put in place adequate risk management information systems to capture information, facilitate identification and analysis of risk, allow for adequate periodic reviews to identify risk migration, allow for real time views on single and aggregate risk limit compliance and to assist in early identification of problem exposures so as to allow for timely remedial action
6. Establish training and awareness programs for promoting a risk sensitive culture throughout the Institution
7. Fortify the business & support groups to control and mitigate operational risks
8. Ensure compliance with applicable international best practices on risk management.
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1.3. **Policy Scope**

This policy is applicable to all the business and support functions of HUDCO and covers the following areas of risks:

- Credit Risk
- Operational Risk
- Market Risk
- Liquidity Risk
- Interest Rate Risk

1.4. **Policy Review**

The Board of Directors (BoD)/ Risk Management Committee of the Board (RMCB), along with the respective Risk Management Committees viz. Credit Risk Management Committee, Operational Risk Management Committee and Asset Liability Committee shall ensure that the policy is updated to take into account any change in the product structure as well as overall balance sheet structure thereby impacting the risk appetite.

The BoD has assigned the responsibility of updation and review of this policy to the Risk Management Unit. It is expected that the policy review exercise should be undertaken at least once every year. Policy review status should be updated to the BoD and any updation / amendment requirements should be presented to the BoD for approvals.

1.5. **Policy Compliance**

The RMCB will oversee the implementation of the Risk Management Policy, review its functioning periodically and provide direction where needed. It will review various decisions taken by the various Risk Management Committees for managing the various risks.

Compliance of this policy is required from all the business and support functions of the institution. However, RMCB can grant exemptions from compliance with certain sections of the policy after taking into account the reasons for such non-compliance. The exemption must be for a specific timeframe and subject to periodic review.
2. KEY RISKS FOR HUDCO

Credit risk is defined as the possibility of losses associated with diminution in the credit quality of borrowers or counterparties. In a bank's/FI's portfolio, losses stem from outright default due to inability or unwillingness of a customer or counterparty to meet commitments in relation to lending, trading, settlement and other financial transactions. Alternatively, losses result from reduction in portfolio value arising from actual or perceived deterioration in credit quality.

Credit risk policy lays the foundation of the credit risk management framework by describing all other components of the framework including methodologies for identifying, measuring, monitoring and mitigating/controlling risk. The policy is commensurate with the scale and complexity of HUDCO's operations, taking cognizance of the external business environment and articulating the envisaged strategy. This policy provides the guideline for all credit risk management activities and must be strictly adhered to.

The most obvious and largest source of credit risk is a loan; however, HUDCO may face other sources of credit risk throughout their lending and investing activities within on and off balance sheet items. These sources constitute an important portion of credit or counterparty risk.

Loans comprise a major part of the asset structure of HUDCO, which ordinarily presents the greatest credit risk, and, therefore, potential loss exposure to HUDCO. Moreover, pressure for increased profitability and liquidity needs from a more complex industry have produced great innovation and approaches to lending. Based on the current lending and investment profile, the following instruments pose credit risk for HUDCO.

- **Term Loans** are meant for a longer period of time with a set of schedule for disbursements and repayments. They are repaid through instalments over the life of the loan
- **Placements** are primarily deposits placed with various banks
- **Other Investments** in Bonds on a Held-to-maturity basis and Equity instruments.

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1 Reserve Bank of India Paper on Guidance Note _ Credit Risk _ October_2002
Credit risk can derive three types of underlying risks:

i. Default Risk

Default risk is the probability of the event of default characterized by missing a payment obligation. Payment default is declared when a scheduled payment has not been made after the due date.

Other various events of default which do not necessarily generate immediate losses, but they increase the likelihood of ultimate default, which is bankruptcy, are:

- Technical default which occurs when counterparty or a borrower breaks a covenant, such as a financial ratio subject to predetermined bound. This event does not usually endanger the borrower or counterparty survival, but it usually triggers negotiations and the prompt repayment of all outstanding exposure. In that case the borrower or counterparty is virtually bankrupt since he cannot repay all the funds borrowed.

- Economic default which is triggered when the market value of assets or the economic value of assets (i.e. the value of discounted future expected cash flow) go below the value of outstanding debt.

ii. Exposure Risk

Exposure risk is generated by the uncertainty prevailing with future amounts at risk. Committed lines of credit allow the borrower to draw on these lines whenever he wants, subject to a limit fixed by the bank/FI. More specifically, unutilized limits of overdrafts and future drawdown on project financing imply uncertainty with the cash flow and repayment schedule.

However, credit facilities for which there is a repayment schedule or a contractual obligation have very small or negligible exposure risk because the future outstanding balances are known in advance, except in the case of prepayment.

In the case of market instruments, the source of exposure risk lies within the market movement, which determines the future amount at risk as it faces continuous changes.

iii. Recovery Risk

In the event of default, recoveries are not predictable; they depend upon the guarantees received from the borrower. Accordingly, the organisation faces at least the following types of recovery risk:
• Collateral (or asset value) risk, which is the uncertainty with respect to the ability to access the collateral, to dispose of it, the costs required to sell it, its value and marketability
• Third party guarantee risk which lies in the enforceability of contingencies given by third parties to the Organisation, which transform the default risk of the borrower into a joint default risk with the guarantor
• Legal risk which arises when the Organisation undertakes legal procedures against a borrower whose commitments will be suspended until the end of the procedure where recoveries could be affected

2.2. Eligibility Schemes

The eligible schemes for lending will be as per HUDCO policy as approved by the board from time to time.

2.3. Market Risk

Market Risk is defined as the possibility of loss to an institution caused by changes in the market variables. The Bank for International Settlements (BIS) defines market risk as "the risk that the value of 'on' or 'off' balance sheet positions shall be adversely affected by movements in Equity and interest rate markets, currency exchange rates and commodity prices". Thus, Market Risk is the risk to the institution's earnings and capital due to changes in the market level of interest rates or prices of securities, foreign exchange and equities, as well as the volatilities of those changes.

Treasury positions (Held-for-Trading (HFT) and Available-for-Sale (AFS)) are subject to mark-to-market accounting, i.e., positions are revalued based on current market values. In the case of on-balance sheet positions, reflected as such on the balance sheet; the impact of realized and unrealized gains and losses is included in the income statement. Market risk is often propagated by other forms of risk like counterparty credit risk and market liquidity risk and thus must be managed in conjunction with them.

2.2. Types of Market Risk

The following are the components of Market Risk that the institution faces:

a. Interest Rate Risk

Interest Rate Risk refers to the risk of loss in earnings or economic value of the Assets as a consequence of movement in interest rates. The Interest Rate Risk is defined to include the following:
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- Re-pricing Risk - Risk due to timing differences in the maturity (for fixed rate) and re-pricing (for floating rate) of institution's assets, liabilities and off-balance-sheet (OBS) positions
- Yield Curve Risk - Risk due to changes in the slope and shape of the yield curve. Yield curve risk arises when unanticipated shifts of the yield curve have adverse effects on an institution's income, assets and underlying economic value
- Basis Risk - Risk due to imperfect correlation in the adjustment of the rates earned and paid on different instruments with otherwise similar re-pricing characteristics
- Options Risk - Risk due to options embedded in the institution's assets, liabilities and Off Balance Sheet (OBS) portfolios. Options may be stand alone instruments such as exchange-traded options and over-the-counter (OTC) contracts, or they may be embedded within the standard instruments

b. Foreign Exchange Risk

Foreign Exchange Risk refers to the risk of loss in earnings or economic value of the assets as a consequence of adverse movement in currency exchange rates. The key areas of foreign exchange risk are:

- Spot Risk - Defined as the risk that an institution may suffer losses as a result of adverse exchange rate movements during a period in which it has an open position in spot foreign exchange transaction;
- Swap Risk - Defined as the risk that an institution may suffer losses as a result of adverse interest and exchange rate movements during a period in which it has an open position in forward foreign exchange transaction.

c. Equity price Risk

Equity price risk refers to the risk of loss in earnings or economic value of the assets as a consequence of adverse movement in equity prices. It applies to long and short positions in all instruments that exhibit market behavior similar to equities.
The ‘International Convergence of Capital Measurement and Capital Standards’ issued by the Basel Committee on Banking Supervision (BCBS) defines operational risk as ‘the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk.’

Unlike other risk faced by Institutions, operational risk is inherent in the processes and operations of an Institution and cannot be separated from other risks. This fact makes effective management of the operational risks all the more critical for the Institution. Operational risks in the Institution are a function of the Institution’s overall environment and culture, employee competence and integrity, management strategies and philosophies, extant and degree of process centric approach to business, etc.

The Institution will use multiple frameworks for effective measurement and management of operational risks. The frameworks to be used by the Institution will be a mix of qualitative and quantitative frameworks. These will be used to measure, manage and mitigate operational risks. The following frameworks would be used by the Institution:

**Self Assessment Framework** - This framework is a qualitative framework and is also known as the ‘Risk and Control Self Assessment (RCSA) Framework. Under this framework, self assessment questionnaires are sent to ‘identified process owners’ from each function and the responses are used to assess the level of risk and effectiveness of controls in place to mitigate the risk.

**Key Risk Indicator Framework** - This framework involves identification and monitoring of certain risk indicators which would be predictive of potential future loss events. This is a forward looking framework for Operational Risk Management. These indicators help to identify potential high risk areas and enable the management to take preventive action to prevent/reduce impact of possible losses.

**Incident Reporting Framework** - Basel regulations and RBI guidelines require Institutions to maintain a database of all operational loss events which have occurred. Maintenance of such a database requires a well-defined quantitative framework for reporting operational loss incidents and related information. This framework lays down the procedure for creating and maintaining an operational loss incident database.

**Issue and Action Planning Framework** - Operational risk management through the above framework will highlight certain areas of improvement. The above framework could also require
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Framing of action plans for improvement in controls, redesign of processes, etc. The same can be carried out through Issue and Action Planning which will require identification of actionable items at the outset. This framework includes identification of action plan, assignment of responsibility to specific users to carry out the actionable and review the status of those actionable, including deviations if any.

2.4 Liquidity Risk

Liquidity risk is the risk to the Corporation’s earnings and capital arising from its inability to timely meet obligations when they come due without incurring unacceptable losses. Liquidity risk primarily arises due to the maturity mismatch associated with assets and liabilities of the Corporation. Although liquidity risk dynamics vary according to an Organisation’s funding market, balance sheet, and inter-corporate structure, the most common signs of possible liquidity problems include rising funding costs, requests for collateral, a rating downgrade, decreases in credit lines, or reductions in the availability of long-term funding.

Liquidity Risks can be broadly classified as:

- **Funding Risk** – Insufficient cash and liquid assets to meet unanticipated withdrawals (on deposits and loan commitments)

- **Time Risk** – Fall in expected liquidity level due to non-payment of cash inflows, e.g. default or loan payment

- **Call Risk** – Liquidity risk due to contingencies transforming off balance sheet liabilities to on balance sheet

The cost of liquidity is measured in terms of cost of obtaining new funds or liquidating the existing assets. Thus, the Treasury would ensure that the Corporation has acceptable level of liquidity at the given level of cost of liquidity on an on-going basis. Failure in liquidity management can have serious regulatory, financial and strategic implications in terms of regulatory fines, reputation risks, rating downgrades etc.

2.5 Interest Rate Risk

Interest Rate Risk refers to the risk of loss in earnings or economic value of assets as a consequence of adverse movement in interest rates. These risks are in the form of repricing risk, basis risk, yield curve risk and risk due to embedded optionality.
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- **Repricing risk** refers to the risk of loss in the earnings or economic value due to the changes in the overall level of interest rates. The primary and most often discussed form of interest rate risk arises from timing differences in the maturity (for fixed-rate) and repricing (for floating-rate) of an institution's assets, liabilities, and off-balance sheet positions.

- **Basis risk** arises from a shift in the relationship of the rates in different financial markets or on different financial instruments. Basis risk occurs when market rates for different financial instruments, or the indices used to price assets and liabilities, change at different times or by different amounts. For example, basis risk occurs when the spread between the three-month Treasury and the three-month London interbank offered rate (Libor) changes. This change affects a Corporation's current net interest margin through changes in the earned/paid spreads of instruments that are being repriced. It also affects the anticipated future cash flows from such instruments, which in turn affects the underlying net economic value of the Corporation.

- **Yield curve risk** is the risk of loss in earnings and economic value of the book caused by the change in the relative levels of interest rates for different tenors. Similar to the repricing risk, this also arises from repricing mismatches between assets and liabilities. Yield curve risk arises when unanticipated shifts of the yield curve have adverse effects on a institution's income or underlying economic value. Yield-curve risk arises from variations in the movement of interest rates across the maturity spectrum. It involves changes in the relationship between interest rates of different maturities of the same index or market (e.g., a three-month Treasury versus a five-year Treasury). The relationships change when the shape of the yield curve for a given market flattens, steepens, or becomes negatively sloped (inverted) during an interest rate cycle.

- **Risks arising out of embedded options** - The asymmetrical payoff characteristics of instruments with optionality features pose significant risk particularly to those who sell them, since the options held, both explicit and embedded are exercised to the advantage of the holder and the disadvantage of the seller. Option risk arises when an institution or an institution's customer has the right (not the obligation) to alter the level and timing of the cash flows of an asset, liability, or off-balance sheet instrument. An option gives the option holder the right to buy (call option) or sell (put option) a financial instrument at a specified price (strike price) over a specified period of time. For the seller (or writer) of an option, there is an obligation to perform if the option holder exercises the option.
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3. RISK GOVERNANCE & MANAGEMENT STRUCTURE

3.1. Overview

Risk management framework and its sub-component the risk governance structure are integral to the operations and culture of Imperial Institution. A typical Risk management function assists the institution with the formulation of risk appetite, strategies, policies and limits. It also facilitates as a review, oversight and support function throughout the organisation on risk related issues.

The institution's risk governance framework is designed to support this objective. It encompasses identification, measurement, monitoring and controlling of risks to ensure that risk related decisions are in line with the organisational strategy and objectives as set by the Board of Directors.

The overall Risk Management Organization is structured in three layers:

1. **Strategic or Supervisory level**, which consists of an oversight by the Board of Directors through a Risk Management Committee of the Board, Executive Committee, Board Audit Committee, other Board-level committees and committees of the Senior Management, namely the Asset-Liability Committee (ALCO) and the Project Approval Committee.

2. **Analytical level**, which consists of the Risk Management Division, with the over-arching responsibility to translate the directions of the various risk committees into policies and procedures of the Institution and to regularly measure individual risks (including credit, market, operational risks), monitor and report the risk position of the Institution to the appropriate committees.

3. **Tactical level**, which consists of the management of the risk at the source of origination of the risks i.e. in the business functions and in Treasury & operations divisions. It is the responsibility of these units to decide on which risks to assume and which risks to mitigate within the policies and procedures set by the Risk Management Division.

The role and responsibilities of various functionaries at the Strategic and Analytical level, and responsible for oversight and control would be documented in further detailed in the ensuing sections.
4. SUPERVISORY LEVEL - RISK MANAGEMENT COMMITTEES

4.1 Overview

The different risk related committees at the Board and Senior Management level and their relationships are illustrated below. The composition of each of these committees and the roles they will play in the risk management activities of the Institution are detailed later in this section.

The below figure depicts the broad hierarchy of various committees responsible for risk management. In addition, the Board Audit Committee would provide an independent assurance to the Board.

Supervisory level Structure – Board & Management Committees

From the perspective of oversight and control, the RMCB shall oversee the decisions taken by Credit Risk Management Committee, Operational Risk Management Committee and ALCO. However, the decisions of Project Approval Committee (PAC) would be informed to the Risk Management Committee of the Board. PAC will be supported by independent risk rating done by RMD and rating will be informed by RMD to RMCB.
The Board of Directors carries the ultimate responsibility for assuming and understanding the risks run by the institution's business activities and ensuring that they are properly managed. The board of the institution plays a pivotal role in ensuring a culture and an environment of sound risk management. The board will have the following duties relating to risk & compliance:

- Establish, approve and review the risk management philosophy and processes;
- Determine the institution's risk appetite and ensure that it is well enshrined in its corporate culture;
- Ensure that the institution maintains appropriate systems for risk management and control, including appropriate processes for conducting business in compliance with legislation, regulations, and internal policies and procedures;
- Oversight of the institution's changing risk profile;
- Review the institution's credit and investment quality

The Risk Management Committee of the Board (RMCB), a sub-committee of the Board, would be responsible for the principal function of supervision, oversight and monitoring of all the risks taken by the institution. The Committee would assist the board in fulfilling its risk management responsibilities by periodically,

- reviewing and assessing the integrity and adequacy of the risk management function of the institution;
- approving major policies related to the different risks faced by the institution;
- reviewing the adequacy of the capital and its efficient allocation to the institution's businesses;
- reviewing certain risk limits and regular risk reports and make recommendations to the Board.

The RMCB shall have direct access to, and receive regular reports from the institution's management which will include point-in-time and trend reports containing delinquency statistics, portfolio segmentation, asset quality data, liquidity and interest rate gaps, business-unit wise operational losses as well as reports characterizing portfolio risk-return trade-offs, relationship profitability, risk concentration, and capital distribution. It shall have the power to conduct or authorize investigations into any matter within the committee's scope and responsibilities.
Members of the Risk Management Committee of the Board

The Risk Management Committee of the Board will comprise of the following members:

- CMD HUDCO – Chairman of RMC
- 2 Independent Directors
- DF
- DCP
- Company Secretary-Member Secretary

By invitation

- Head (Operation)/ED (Operations)
- Head (Resource)/ED (Resource)
- ED (Risk Management)

The quorum for the meeting would be any two directors including CMD and one independent director.

Responsibilities of the Risk Management Committee of the Board

The RMCB as part of its responsibilities shall:

- Review and assess the strategies, policies, structures, models and procedures in place to govern the understanding, identification, measurement, reporting and mitigation of major risks faced by the Institution;
- Review and critically assess the Institution’s risk profile consisting of:
  - **Credit risk:** including assessing large exposures, approving major credit policy changes and procedures, and analyzing the performance of credit products via monitoring arrears, balance sheet exposure, trend analysis, industry and geographic concentration
  - **Market risk:** review of relevant issues relating to financial markets activities (particularly trading and investments) as well as market risk limits, policies and management framework
  - **Operational risk:** assess the policies and procedures in place to control monetary losses resulting from inadequate or failed internal processes, people, and systems or from external events.
  - **Interest rate risk:** assess the effects of changes in market interest rates on the Institution’s assets/liabilities and market positions
  - **Funding and liquidity risk:** assess liquidity policies for the Institution as well as the contingency plan for management of an escalated liquidity requirement
  - **Capital adequacy risk:** review the adequacy of the Institution’s capital and its efficient allocation to various businesses.
  - **Regulatory and reputation risk:** regularly monitor changes in regulatory laws that may affect the Institution’s positions locally and overseas. Assess how the management anticipates and responds to changes of a market or regulatory nature that impact its reputation in the marketplace;
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- Assess the implementation of risk management and internal compliance and control systems throughout the Institution;
- Monitor the ongoing effectiveness and independence of risk management functions and review and approve the budget allocated to risk management functions;
- Review issues raised by Internal Audit that impact the risk management framework or the Institution's risk management;
- Consider and provide advice to the board, when appropriate, on the risk impact of any strategic decision that the Board may be contemplating, including considering whether any strategic decision is within the "risk appetite" established for the Institution;
- Identify, understand and assess the types of risk inherent in the Institution's business activities or major new products or services to be launched;
- Regularly report committee activities to the Board of Directors with recommendations when required;
- Promote awareness of a risk based culture leading to a balance between risk and reward for the risks accepted;
- Review and assess on a regular basis the adequacy of the risk management structure and recommend any proposed changes to the board for approval.

The Credit Risk Management Committee's objectives are to:

- Ensure that the Institution's credit policies are complied with and procedures are being consistently applied in all units
- Consider and propose changes to existing risk related policies/procedures as and when appropriate
- Review of reports and findings identified by the Risk Management, including the different risk limits that are recommended for ultimate approval by the Board
- Review all issues related to the implementation of Credit Risk Management projects based on feedback from risk management department and arbitrate any inter-departmental issues pertaining to these projects

Members of the Committee
Credit Risk Management Committee will comprise of:

- DF (as Chairman of Committee),
- Head (Operations),
- Head (Loan Accounts),
- Head (Resource),
- Head (DMRC) and
- Head (Risk) as Member Secretary

The quorum for the meeting shall be any 3 members including the DF
Responsibilities of the Credit Risk Management Committee

The Credit Risk Management Committee’s responsibilities include:

- Define risk strategy and ensure that it is aligned with the Institution’s overall business objectives.
- Approve prudential limits/ceilings based on the business plans/portfolio strategies for:
  - Maximum exposure to an individual counterparty
  - Maximum exposure to an industry
  - Maximum exposure to one security
  - Geographical diversification
  - Sovereign/country risk limit
- Review the Institution’s credit practices and ensure that credit risk policies are efficient, appropriate, and are being complied with.
- Ensure that the Institution is always in conformity with the Basel/NHB requirements concerning credit risk measurement and management.
- Review management reports from businesses on loans approved under agreed thresholds, large exposure reports and other reports which the Committee considers appropriate to enable it to monitor credit risk.
- Assess regularly the composition of the loan portfolios and the impact of the changes in the economic environment on the level of credit risk.
- Inform the RMCB about credit risk profile of the Institution periodically and discharge any additional responsibility assigned.
- Approve any deviation to the policy on behalf of the RMCB.

The Assets & Liabilities Management Committee (ALCO)’s mission is to:

- Manage the Balance Sheet of the Institution in the best interest of the organization, within the main parameters of the Institution in terms of growth, liquidity and interest income.
- Establish, in accordance with board directives, policies and procedures to control and limit the liquidity risk and interest rate risk including the related foreign currency risk.
- Determine the size and duration of mismatched positions and take the adequate measures to hedge exposures when mandated by market conditions.
- Guide the pricing of the Institution’s Assets and Liabilities accounts, in accordance with the approved budget and annual plan.
- Review and set control limits, procedures, reports, ratios and market trends, which impact the Institution’s Balance Sheet.
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- Manage the Institution’s capital in terms of its efficient allocation to different products and lines of businesses
- Report to the Risk Management Committee of the Board through Minutes-of-Meetings to ensure transparency of committee decisions

Members of the Committee

The Asset Liability Committee will have seven members, inclusive of the committee's Chairman.

- Director Finance – Chairman, ALCO
- Head Resources
- Head Operations
- Head Loan Accounts
- Head General Accounts
- Head Economic Cell
- Head Risk Management – Member Secretary
- Any other officer nominated by ALCO Chairman

The minimum quorum for the meeting shall be 4 members including DF.

Responsibilities of the Committee

The ALCO’s responsibilities cover the following:

- Manage and monitor the limits/guidance values/targets set on interest rate risk and liquidity risk by the Risk Management Committee of the Board.
- Manage the structural liquidity, including cash flows, funding diversification and maintenance of minimum levels of liquid assets
- Assess and invoke Balance Sheet strategies to minimize the cost of funding and enhance the net interest rate margins
- Lay down guidelines for pricing for loans (excluding credit risk).
- Set guidelines for the management of the Investment book within Treasury
- Capital Management functions including management of structural positions and non-interest earning assets
- Establish significant funding sources threshold for the Institution’s borrowings and review exposure reports
- Monitor various portfolio risk and performance ratios and reports including market trends
- Ensure adherence to “Hedging policy for forex” and its regular review in consultation with Resource Mobilisation wing
- Review the results of stress testing and scenario analysis for assessment on liquidity and interest rate risk including underlying assumptions
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- Determine, in accordance with board directives, exposure limits for open FX position, stop loss limits, liquidity gap limits, interest gap limits, and so on.
- Assess regularly the composition of the investment portfolios and the impact of the changes in the economic environment on the level of market risk.
- Manage and control risks not covered by the ALCO such as reputation risk - oversee how the management deals with negative publicity of the Institution, which may have potential impact on the Institution’s earnings.

The Operational Risk Management Committee’s objectives are to:

- Ensure that the Institution’s operational risk management policies are complied with and procedures are being consistently applied in all units.
- Consider and propose changes to existing risk-related policies/procedures as and when appropriate.
- Review of reports and findings identified by the Risk Management, including the different risk limits that are recommended for ultimate approval by the Board.
- Review all issues related to the implementation of Operational Risk Management projects based on feedback from related steering committees and arbitrate any inter-departmental issues pertaining to these projects.

Members of the Committee
The members of the committee shall be as under:

- DCP – Chairman
- Head Operations
- Head Resources
- Head Law
- Head IT
- Head HRMA
- Head Internal Audit
- Hear Risk – Member Secretary
- Any other officer nominated by ORMC Chairman from RO

The minimum quorum for the committee would be 4 members including DCP.

Responsibilities of the Operational Risk Management Committee

The Operational Risk Management Committee’s responsibilities include:
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- Define risk strategy and ensure that it is aligned with the institution's overall business objectives.
- Approve, and oversee the implementation of a firm-wide operational risk framework to explicitly manage each and every source of operational risk as a distinct risk to the institution's safety and soundness including:
  - Technology risk: technological failure, programming errors, deteriorating systems, contingency planning.
  - Employee risk: human error, internal fraud, confidentiality breach.
  - Customer risk: client dissatisfaction, contractual disagreement.
  - Capital asset risk: safety, security, fire/flood.
  - External risk: external fraud, legal risk, collapse of markets, war.
- Ensure that Operational Risk Management policies and procedures are being adequately implemented and complied with.
- Review reports from the Operational Risk Management Unit concerning the status of operational risk management efforts at the institution, including, but not limited to, identification, assessment, monitoring and control/mitigation of operational risk. Key information in these reports will include risk indicators, event data and self-assessment results and related issues, loss data etc.
- Review the results of internal audits that relate to operational risk as defined by the institution; oversee and monitor management's response thereto; and report as necessary to the Audit Committee and the Board of Directors concerning the results of such audits and the progress of management in implementing any corrective action.
- Review periodic updates from line management regarding specific operational risk-related topics including, but not limited to, information security, physical security, business continuity, and compliance.
- Inform the RMCB about operational risk profile of the institution periodically and discharge any additional responsibility assigned.
- Approve any deviation to the policy on behalf of the RMCB.

The role and responsibilities of the Project Approval Committee shall be in accordance with HUDCO's master circular as defined from time to time.
5. ANALYTICAL LEVEL - RISK MANAGEMENT DEPARTMENT

As the independent and dedicated risk management function of the Institution the Risk Management Department, will:

- have a direct reporting line to the Chairman & Managing Director;
- be independent from the business units that generate risks;
- have the responsibility for the identification, measurement, monitoring and reporting of all risk exposures of the Institution;
- be supported by an effective management information system and have access to all information within the Institution;
- have adequate financial resources and IT tools to perform its duties and staffed by persons with the relevant expertise and knowledge.

The below diagram summarizes the structure of the Risk Management function.

![Risk Management Function Diagram]

5.2. Role & Responsibilities

The responsibilities of the various functions under the Risk Management Unit have been further detailed under this section. The Head - Risk Management Department carries the overall responsibility of managing the function.
The Head - Risk Management Department is the link between the Institution's Supervisory Level and Analytical Level Risk Management and will be the focal point for all the risk-related activities in the Institution. As part of the Senior Management of the Institution, the person will be responsible for:

- Providing the overall leadership, vision and direction for enterprise risk management
- Establishing an integrated risk management framework for all aspects of risk across the organization
- Developing risk management policies, including the quantification of management's risk appetite through specific risk limits, in view of general economic conditions and operating environment
- Implementing a set of risk metrics and reports, including losses and incidents, key risk exposures and early warning indicators
- Allocating economic capital to business activities based on risk, and optimizing the Institution's risk portfolio through business activities and risk transfer strategies
- Improving the Institution's risk management readiness through communication and training programmes, risk-based performance measurement and incentives, and other change management programmes
- Developing the analytical, systems and data management capabilities to support the risk management function
- Research in new risk measurement methodologies and evaluating the suitability of the same for risk management
- Ensure compliance with internal policies
- Monitoring the Institution's asset portfolio to ensure a judicious risk profile
- Participate in different risk related committee meetings to monitor the Institution's overall risk management status / performance
- Report to the Board of Directors through the Risk Management Committee of the Board on the Institution's risk profile and suggest ways to control and minimize the risks.

This unit is responsible for the reporting and management of credit risk across the Institution.

The credit risk management structure shall be as under:
The roles and responsibilities of the Portfolio Management and Credit Risk Analytics unit are detailed below:

A. Loan & Investment Portfolio Management

The retained credit risk of the Institution should be actively managed within the context of market liquidity, risk appetite, and the overall approach to credit risk management as determined by the portfolio targets and risk limits set by the Management Risk Committee to ensure appropriate diversification and optimal portfolio returns. This unit should also develop risk aggregation capabilities for active portfolio management. Broad role and responsibilities of the unit will be as follows:

- Develop and modify, as and when required, the credit policies and procedures of the Institution and its subsidiaries
- Concentration analysis along dimensions like Customer Ratings, Customer Groups, Industry or Economic Sector and Time
- Facility concentration analysis along dimensions like Product, Exposure Size, Currency, Geography, Industry, and Time
- Exposure tracking against Facility and Customer limits
Risk Management Policy and Operating Manual

- Exception reports for breaches to Group, Portfolio, and industry limits
- Evolve strategies to proactively manage concentration risks
- Analyze the impact of stress conditions on the portfolio and different scenarios that the institution could encounter with an appropriate remedial action plan
- Evolve risk transfer strategies to lower the cost of hedging undesirable risks, as well as to increase the organization's capacity to originate desirable risks
- Report the composition of the credit portfolio of the institution and movements in the portfolio on a regular basis to the Credit Risk Management Committee and to the Risk Management Committee of the Board.
- Facilitate move towards allocation of economic capital and risk based performance measurement
- Integrate risk-based capital into the institution's strategy and align it with risk based performance measurement

B. Credit Risk Analytics

The ability to quantify and manage credit on a consistent basis is dependent on the development of a sound risk analytics system. The Credit Risk Analytics team designs and builds risk measurement systems for credit risk and provides the basis for risk measurement within the risk organization. The responsibilities of the units include:

- Design, develop and implement Internal Rating Systems to aid Facility and Obligor Ratings
- Monitor and evaluate performance of credit support systems (say, Rating Systems) to aid account acquisition and portfolio management
- Implement procedures to verify that rating definitions are consistently applied across the organization
- Review & document changes to the rating process
- Ensure that appropriate control procedures are in place with regard to model inputs and outputs
- Conduct rating migration analysis and analysis of rating changes on exposure and collateral levels
- Compute the Probability of Default, Loss Given default, and Exposure at Default
- Conduct analysis on credit mitigation (collateral, guarantees, credit derivatives, and netting) impact on the credit portfolio
- Measurement of concentration risk of exposure and collaterals - dimensions like Counterparty, Geography, Industry Sector, issuer, market, and collateral types
- Measurement of concentration risk for guarantees and credit derivatives
- Develop consistent and adequate portfolio models for risk measurement and regular back-testing to check the models and the assumptions used
- Conduct supplementary stress scenario analysis to capture extreme events
This unit is responsible for the reporting and management of market risk across the Institution. The proposed structure is as under:

### Market Risk & Asset Liability Management Structure

Specifically, the roles and responsibilities of the Resource Mobilization Wing and Market Risk Management unit are:

**A. Treasury Middle-Office**
- Frequent valuation of the financial instruments based on approved valuation methodologies and data source as well as reporting of the same
- Daily monitoring and reporting of the trading positions, risk based limits and the aggregate risk positions of the Treasury

**B. Market Risk & Asset Liability Management**
- Develop policies, procedures and practices regarding market risk and ensure that market risk is appropriately identified, measured, monitored and controlled across the group
- Define the risk measurement methodologies for different products and risk types
- Define the trading limits for different trading desks and traders, and the risk based limits for risk positions
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- Regularly review limits on the size of the Institution's liquidity positions over particular time horizons
- Review liquidity and interest rate risk reports for reasonableness, consistency, and completeness
- Undertake the measurement of market risk for the Institution, stress-testing and assess impact on liquidity and interest rate risks according to Basel II

ALCO Support Group

ALCO Support Group is primarily responsible for providing necessary information and support to the Risk Management Department for onward submission to ALCO. Accordingly, the key responsibilities of ALCO Support Group including Risk Management Department are:

- Collating and maintaining the minutes of the ALCO meeting, preparing the agenda for ALM and carrying out various analyses required for ALCO meetings
- Ensuring the validity and accuracy of the data used for ALM analysis
- Monitoring of GAP and exceptions reporting
- Preparation of strategy notes on ALM including hedging strategies for consideration of the ALCO
- Independent sourcing of benchmark rates and market data used for ALM Analysis
- Development of ALM models, statistics and performing operations of ALM system
- Making specific requests to ALCO for training, systems up-gradation etc.
- Generating all the MIS as required by the internal policies and regulatory requirements

In the context of ALM, the Risk Management Department shall provide analysis reports related to

- Duration analysis
- NII sensitivity
- Gap reports (maturity and interest rate) Residual maturity gaps, Static interest rate gaps
- Key performance measures
- Financial ratios

The above reports shall be prepared quarterly as per NHB directions\(^2\). Reports shall focus on large demands or liquidity trends instead of routine liquidity needs. For example, the reports shall depict how the Corporation shall meet large funding needs for a new product launch program, investment strategy, or disbursement. This shall be treated as an exception and accordingly noted in the minutes.

\(^2\) As per prudent practices, the reports may be prepared monthly subject to discretion of the Board
The Operational Risk Management (ORM) unit provides the framework for identification, assessment and measurement of operational risk across the institution. In addition, mitigation and control measures such as BCP, DRP, and IT security also form part of the overall responsibility of the operational risk unit.

The Operational risk management structure would be as under:

Based on the nature of activities, the unit's functions have been subdivided into:
A. Operational Risk Oversight & Control

The business line managers are directly responsible for managing and mitigating operational risks in their areas of their responsibility. They must understand their tasks and responsibilities related to operational risk management embedded in each of their job description. They must ensure that their staff understands operational risk in their day-to-day activities. Each business line/support function must assign a "Unit Risk Supervisor" who will execute/coordinate Operational Risk Management Programs within his/her business area and report results and issues to the ORM unit. A dotted line reporting structure will govern the relationship between Unit Risk Supervisor and ORM unit. Aside from the Unit Risk Supervisor, all staff in the organization should play a role in the identification and management of Operational Risk.

The roles and responsibilities of the ORM unit include the following:

- Clear definition and categorization of the risks
- Develop and maintain Institution-wide ORM policy
- Develop and enhance ORM programs and tools
- Lead the selection and implementations of ORM related systems
- Collate information on operational risks and report it to senior management and board
- Assist the business lines in the implementation of the ORM Programs
- Act as an independent facilitator in running Operational Risk Tools
- Analysis of the new products, activities, and systems from an operational risk perspective
- Identify, train and coach the Unit Risk Supervisors in the all the business units across the organization enabling them to report efficiently all identified risks.
- Ensure timely reporting of the Risk Control Self Assessment (RCSA) results, Key Risk Indicators (KRI s) and loss data by the Unit Risk Supervisors.
- Provide support to the Internal Audit Department
- Develop and maintain the Business Continuity Plan for the organization in consultation with various business and operational units
- Develop and coordinate the implementation of the Disaster Recover Plan in consultation with the Technology & Operations unit.
- Act as a consultant on all information security issues for the organization and highlight the risks
- Ensure that security policies and procedures are applied and respected in the organization, and these are continuously updated
- Ensure that there is no access violation or unauthorized attempts and take appropriate action for breach
- Design and monitor security on groups’ systems and network
- Monitor the antivirus, internet and email security as well as the intrusion detection/prevention system across the Institution
B. Operational Risk Measurement

The operational risk measurement function deals with the estimation of operational risk capital charge based on past loss data as well as results of RCSA and KRI. Accordingly, the responsibilities under this function include:

- Ensure comprehensive collation of data on operational losses
- Ensure qualitative and quantitative forward looking risk assessment
- Support business units in mapping processes, risks and controls across the organization.
- Set benchmarks for risk frequency and severity assessment in consultation with business and operational units
- Set benchmarks for control assessment in consultation with business and operational units
- Establish general and unit-specific key risk indicators
- Set thresholds for key risk indicators in consultation with internal audit unit
- Develop methodologies for aggregation of risk, control and KRI scores at unit level and/or process level.
- Develop models for estimation of operational risk based on a combination of loss data and scenario analysis
- Develop scenarios for stress testing

The Capital Management unit provides the framework for identification, assessment and measurement of other risks for the Institution, conducting stress tests as well as management of capital commensurate with the risk profile of the Institution. Accordingly, the broad functions of the unit shall include:

- To review and recommend to the BOD/ RMCB the capital plan of the Institution at annual intervals and lay down capital planning process and responsibilities as well as contingency planning for dealing with deviations and unexpected events like restrictions on business activities, etc.
- To lay down and modify the risk appetite statement.
- To set short term and long term goals for capital levels based on current and projected changes to the risk profile.
- To review and approve the methodologies and approaches for risk assessment under Pillar II of Basel Accord on an ongoing basis.
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- To develop an internal strategy for maintaining adequate capital, which reflects desired level of risk coverage, expected balance sheet growth, future sources and application of fund, acquisitions, new products and services, market image, strategic goals.

- To develop a sound methodology for allocation of capital across the business lines and allocating capital among the internal business in line with their amount of risk as well as taking into account potential volatility of exposures, changes in assumed correlation between exposure under adverse circumstances.

- To review and appraise the capital management strategy of the Institution and review the capital targets and levels in relation to such strategy.

- To ensure that detailed documentation of methodologies, assumptions, procedures and minutes of meeting etc is available for all the processes of Internal Capital Adequacy Assessment Process (ICAAP) and is communicated to the concerned stakeholders and appropriate authority and responsibilities have been allocated.

- To ensure robust stress testing and scenario analysis have been carried out to arrive at capital adequacy level.

- To ensure that new risks arising out of events like new product launch, new business, increased volume, changes in concentration, changes quality of portfolio or in overall economic scenario have been properly incorporated in the risk assessment.

- To apprise the Board of Directors/ RMCB of the ICAAP and capital adequacy levels.

Each business and support function is required to comply with the requirements of the policy. It is mandatory unless specifically exempted. The business and support functions are required to perform the following functions -

1. Carry out self assessments at the pre-determined frequency
2. Implement necessary action plans within the prescribed timeframe, which are defined, based on the self-assessment results.
3. Report on the status of the action plans to the ORMD
4. Report the KRI results / loss incidents on a timely basis to the ORMD
5. Comply with the Operational Risk Management Policy and the directions of the ORMD as regards operational risk
The Resource Mobilization Department will be responsible for ALM and hedging of foreign exchange exposures for the Corporation. Accordingly, the responsibilities to include:

- Ensure compliance with the policy as well as any applicable regulatory requirements
- Prepare the Annual Funding and Liquidity plan
- Review Currency Risk Hedging policy & ensure adherence thereof
- Initiate appropriate actions if there is a breach of the limits
- Approve Group contingency funding plan

The backbone of Risk Management framework is the availability of accurate, timely and required information from the different IT systems of the Corporation. Accurate identification of assets and liability positions, underlying risks, their residual maturities and their behavioral patterns are important inputs in the risk control frameworks. It is the responsibility of Information technology Unit to organize the required reports in collaboration with Treasury and Risk Management and make them available in a timely manner.
Despite the significant effort devoted to analyzing the risks present in each transaction and the time spent negotiating the structured solutions to them, it is inevitable that certain transactions will default. For the company as a whole, prudent risk management involves both minimizing the risks in each individual transaction and recognizing and carefully limiting correlated risk.
To this end, the company will at all times maintain and apply a limit framework that fixes maximum single risk and aggregate group risk exposure so as to mitigate concentration of credit risk. The limit framework will reflect the company’s risk tolerance, will be monitored prudently and will be updated to reflect each transaction exposure and its amortization.
The Credit team, RMC and Credit Committee shall ensure that all transactions approved by them comply with these limits, and the exceptions, if any, are duly approved by the Board.

a. Single project exposure limit

The company will maintain and apply an exposure\(^3\) limit for single credit exposures so as to minimize losses due to default from a single credit exposure. The quantum of the permitted credit exposure shall be determined by taking into account the following three factors, each of which is subject to a separate limit:

1. NHB defined limits
2. Total project cost
3. Overall portfolio composition

For purposes of each of the limits, aggregate exposure of the company to a single credit shall be determined by reference to the maximum aggregate actual and/or contingent liabilities of the company, without reduction of any contingent amount by any credit conversion factor, but as reduced to the extent that any part of the exposure is ceded by irrevocable assignment or transfer to third parties.

The institution shall follow the exposure norms proposed by the BoD from time to time.

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\(^3\) Exposure here includes on and off balance sheet credit exposures as well as fixed income or equity investment exposures.
The company acknowledges that it is important to rigorously evaluate proposed transactions before any additional credit exposure is approved. This appraisal process will aim to provide the approving and supervising Boards a complete analysis of the financial, commercial, technical and managerial profile of the project/borrower and other significant parties from whom performance is required, including facilities managers, construction companies, insurance companies, equipment providers, other providers of credit and the like.

The credit officers, risk officers, internal legal counsel and outside legal counsel assigned to the matter, with the assistance of technical, insurance and other relevant specialists, will conduct due diligence to analyze the proposed transaction and ensure compliance with this Policy. A standardized appraisal template will be used to assure comprehensive coverage of a broad range of due diligence issues, but each of the parties conducting due diligence is expected to actively seek to expand the due diligence enquiry beyond the standard issues set out in the template in a manner that reflects the unique nature of each project and the issues that are specific to it.

This section sets out below examples of issues to be considered during the credit appraisal process and structures that typically will feature to mitigate transaction risk. The following does not purpose to be comprehensive, and the Chief Risk Officer, other members of the Risk Management Department and members of the Legal Department will from-to-time prepare and circulate memoranda setting forth principles of analysis, due diligence checklist items, required transaction structures and model terms and conditions that the Corporate, Risk and Legal Departments will implement in specific transactions.

a. Appraisal guidelines

The Appraisal guidelines shall be in accordance with HUDCO's Master Circular as amended from time to time.

b. Risk assessment

All extensions of credit or investment will be submitted for approval only after a thorough assessment of the project/entity to which the exposure would relate. This process comprises evaluation of the financial, technical, environmental and managerial aspects of the project. The experience, ability and track record of the project sponsors to successfully complete similar kind of projects will also be evaluated.

The Standard Appraisal Template has been designed to help the company capture all relevant details in the standard and structured format. The Standard Appraisal Template shall be in lines with the Risk Assessment model adopted by the Corporation. The Standard Appraisal Template addresses such important matters as contracts, project details, Board of Directors, main sponsors, concession
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agreement terms and conditions, funding arrangements, financial close, clearances (obtained as well as pending) and project milestones including the date of completion.

Every credit proposal shall be assigned a credit rating as per the process detailed in Section 6.1.4.

a. Overview

Risk mitigation will be considered, along with measurement of risk and implementation of the limit framework. Risk mitigation can be achieved in several ways, including use of security mechanisms such as

a. Escrow accounts,
b. Insurance,
c. Charge on Project assets
d. Portfolio Reallocation

a) Escrow account

Every project will establish an escrow or similar project account and all funds constituting the financing package to meet the total project cost will be credited to such escrow account. During the operating period, all fees/income collected from the users or other sources will be exclusively deposited therein. The Concession Agreement should define the priorities in accordance with which the above funds are to be applied under different conditions. The escrow agreement governing the setting up and operations of the escrow account should be executed between the lender(s), the project company and an escrow banker.

b) Insurance

Every project will establish and maintain during the construction and operating period such insurances up to such maximum sums as are prudent and as may be required in accordance with financing documents and applicable laws. The company may retain insurance consultants to advise on prudent insurance requirements. Insurance coverage may include, for example, business interruption, replacement/reinstatement casualty and force major events.

c) Primary security

* Risk mitigation techniques and measures as proposed in the Master Circular of HUDCO would continue to be applicable unless otherwise proposed by the Board.
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Senior financing facilities (together with all interest, liquidated damages, fees), costs, charges, expenses and other monies and all other amounts stipulated and payable to the lenders ideally will be secured by:

- A direct agreement between the company as lender, other lenders as relevant, the project company and the concession grantor, providing for suspension of the grantor's right to terminate the concession for a defined period after default and providing the lender(s) the opportunity to implement a remedial plan to rectify the default, including by way of removal of the operator;

- A concession grantor's promise to pay compensation on termination of the concession in amounts sufficient to fully repay senior debt, the trigger for compensation payment including each of concession grantor default, project company default and uninsurable force major risk. The compensation on termination payment obligation covering senior debt would be without regard to claims of equity sponsors for their own compensation, breach or wrongdoing by any project participant or the market value of any re-tendered concession.

- A charge/assignment of all revenues and receivables of the project company from the project or otherwise;

- An escrow cum trust & retention account opened with a designated bank, in which all the cash inflows of the project shall be deposited. The lenders shall have the first charge on the escrow account opened under the terms of the concession agreement;

- A first charge on a pari-passu basis on all the present and future immovable and movable assets (including receivables) of the company, if any;

- A first charge on a pari-passu basis on all intangible assets (other than project assets) including but not limited to the contractual rights, goodwill, uncalled capital, and intellectual property rights of the project company;

- Full benefit of other Lenders' security package listed in their relevant project and finance documents, including substitution rights and termination payments;

- Assignment of its rights and benefits under the concession agreement and other project agreements;

- Pledge of project company shares in favour of the lenders/security trustee;

- In some cases, irrevocable corporate guarantee of the project sponsors for meeting any shortfall in amount payable to the lenders in respect of the facility on account of termination of the concession agreement for reason of project company or sponsor breach.
Risk Management Policy and Operating Manual

d) Portfolio reallocation

The company intends to apply best practice portfolio management techniques to mitigate risk in the credit portfolio. However, infrastructure investment portfolios are notoriously "lumpy" (i.e., contain a small number of large exposures). This reflects several factors, including (i), the large financing needs of single projects and (ii) that infrastructure projects are characterized by relatively low returns on equity and steady, long-tenored project returns, which drive large exposures to realize sufficient investment returns in light of the substantial efforts needed to invest. For this reason transaction-level risk management, through proper identification and mitigation of risk, is of paramount importance. Nevertheless, portfolio reallocation will play a significant role in risk mitigation, particularly as the portfolio matures after the initial ramp-up stage.

Reallocation can be achieved by transfer of risk to third parties by way of loan sale or other risk transfer, as detailed below. Shifting the target of sectoral focus as the portfolio grows will also provide a reallocation benefit, and the Chief Risk Officer and the Head – Strategy are expected to work closely together to set strategic priorities that reflect both P&L targets and portfolio diversification and rebalancing goals.

The standard guiding principle of risk mitigation by portfolio reallocation is that credit risk can be mitigated at a portfolio level by structuring, diversifying and optimizing an existing portfolio. The various risk mitigation actions that can be taken include:

- Pooling such assets and entering into securitization transactions
- Entering into derivatives like credit default swaps (as and when the market evolves)
- Entering into credit insurance products (as and when the market evolves)

b. Collateral Valuation Process:

The collateral valuation process includes the procedure for ongoing valuation of collateral, their continuous availability, enforceability and reliability. The valuation norms shall be as under:

Valuation of Collateral

- Valuation should be based on the current market value of the collateral. It should not be biased in order to enable the corporation to (a) grant a higher credit limit to the borrower or (b) improve its internal credit rating or (c) make a smaller quantum of provisions or (d) continue interest accrual for a problem credit.
- HUDCO should ensure that the valuation method used, whether internal or external, is based on assumptions that are both reasonable and prudent and all assumptions should be clearly documented.
- Collateral should be valued, wherever possible, at net realizable value, defined as the current market value less any potential realization costs (e.g. carrying costs of the repossessed collateral, legal fees or other charges associated with disposing of the collateral).
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- Market value should be the price at which an asset might be sold at the valuation date assuming (a) existence of a willing buyer and seller, (b) the transaction is at arm’s length, (c) a reasonable period has been allowed for the sale, and (d) the asset is freely exposed to the market.

- To cater for collateral whose market value is highly volatile, apply a conservative haircut for the purpose of determining the extent to which an exposure is secured. The quantum of that haircut will depend on the price volatility of the collateral, the term of the exposure and whether the collateral is denominated in a different currency from the underlying debt.

- A conservative approach should be adopted for valuing the collateral of problem credits, as in practice, the forced-sale value, rather than the open market value, is likely to be closer to what eventually may be realised from an asset sale when the market conditions are unfavourable. Therefore, a discount to the estimated market value should be applied where appropriate.

Valuers’ Competence

- Credit Unit should establish criteria for determining when to use external valuers. For assets without a readily available market value (such as unlisted investments or a large commercial complex) or assets which need specific expertise to assess the correct value (such as fine arts and antiques), in such cases, Credit Unit should use external experts for appropriate valuation of the pledged eligible collateral.

- Credit Unit should maintain and update the list of approved external valuers and surveyors on a frequent basis. They should be professionally qualified, reputable, experienced and competent. Their performance should be regularly monitored and evaluated.

- Credit Unit should ensure that the internal valuation unit possesses sufficient knowledge and expertise to perform their duties. Periodic training should be provided to the internal valuation unit to enhance their skills and competencies.

- Accuracy and effectiveness of methodology for conducting internal valuations should also be back-tested by comparing the valuation with actual sale proceeds received on subsequent disposal of the assets.

Frequency of Revaluation

- Collateral should be re-valued on a regular basis, though the frequency may vary with the type of collateral involved and the nature and the internal credit rating of the underlying credit exposure. For example, mark-to-market valuation of a portfolio of shares pledged by margin financing customers should be done at least on a daily basis. At times when the stock market is highly volatile, this should be performed intra-day.

- For large or problem exposures which are secured by real estate, there should preferably be quarterly revaluations. The frequency may need to be increased further if the property market is declining rapidly as determined by ‘Chief Risk Officer’ of the organisation.
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Independence of Valuation

The collateral management unit has the responsibility to perform periodic valuations of collateral. Credit Unit may choose to use the internal experts from other departments to conduct the valuation. In such cases, it should ensure that staff conducting internal valuations, carrying out site visits of the collateralised properties should be independent of the credit origination function of the corporation.

- Credit Unit should ensure that external valuation agency doesn’t have any vested interest in the valuation of the collateral. It should be monitored by Credit Unit on a regular basis.

c. Collateral Documentation:

HUDCO shall ensure that the collaterals received by the organisation satisfy the following conditions:

Legal requirements for recognition of collateral

- All agreements must be binding and enforceable in the relevant jurisdiction.
- HUDCO must be able to liquidate collateral independently in the event of default (as defined in the agreement) by the obligor.
- HUDCO has to show robust processes to declare default of the obligor and to undertake liquidation of the collateral.
- If collateral is held by a custodian, the bank/FI should ensure that the custodian segregates the collateral from its own assets.

Operational requirements for recognition of collateral

- The collateral value should not have a direct correlation with the performance of the obligor
- The collateral must be valued periodically

Loan-to-Value Ratio

The Credit Unit should specify the maximum loan-to-value ratio for major types of assets accepted as collateral. Such ratios should be commensurate with the relative risk of the asset and provide an adequate buffer against potential losses in realising the collateral. Reductions in realizable value of the collateral arise from the following:

- Potential fluctuations in the market value of the collateral (or the exchange value for foreign currency assets),
- The carrying costs of maintaining the repossessed collateral before it is disposed of, and
- The costs incurred for disposing of the collateral (e.g., auction fees of properties).

Where there are external guidelines on the subject of LTV (say, NHB policy on lending against securities or real estate), the Credit Unit should ensure compliance with such guidelines.
Verification of Title and Ownership

The Credit Unit, in conjunction with Legal Department, should verify that the collateral being pledged can be charged to the bank/FI. The collateral offered by the obligor should be unencumbered and materially consistent with its description in the Loan Application:

- Verify of the existence and ownership of the assets being pledged before acceptance.
- Ensure that there is no prior claim, or claim of equal ranking, by another party on the collateral (i.e. non-encumbrance certificate should be obtained if possible from appropriate authority if possible).
- Secure control of the collateral prior to the draw-down of credit facilities.
- Where there is a need for the collateral to be held by a third party, HUDCO should obtain that party’s written confirmation that it has no claim over the collateral.
- Charges on collateral should be registered promptly with the relevant authorities where appropriate.

Enforceability of Collateral and Guarantees

- The Credit Unit should ensure that credit documentation, including guarantees and pledge agreements, is legally enforceable in all relevant jurisdictions. Positive legal opinions should be obtained on the subject to avoid future surprises and complications.
- The credit documentation should empower the bank/FI to apply the collateral freely to discharge the borrower's obligations in case they are not discharged by the borrower in accordance with the loan agreement (e.g. due to breach of the repayment terms, liquidation or bankruptcy of the borrower).
- Where the cost of liquidating collateral has to be borne by the borrower, this should be clearly stated in the agreement to give the borrower notice and to avoid such a clause being unenforceable against a person dealt as a customer.

Insurance of Collateral

- The Credit Unit should, wherever possible, take out insurance for collateral naming the bank/FI as the beneficiary.
- A list of approved insurers should be maintained. They should be professionally qualified, reputable, experienced and competent. Their performance should be regularly monitored and evaluated.
- The cost of insurance, unless borne by the borrower, should be factored into the pricing of the credit.
- The insurer should be financially sound and independent of the borrower concerned.
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Safe Custody and Access Controls

The Credit Unit has to coordinate with the Legal unit to develop policy and procedures for the lodgement of collateral related documents. The following would constitute the reference guidelines:

- Authority and responsibility should be clearly delegated to relevant individuals and departments for safe custody of collateral and guarantees.
- Original document for collateral and guarantees received by HUDCO should be kept in a fire-proof safe or vault.
- The location of collateral and guarantees should be properly recorded and controlled to facilitate easy retrieval.
- There should be dual control over the access to collateral and guarantees, in particular, where the collateral can easily be sold in the market.
- Movement of collateral and guarantees should be duly authorized, and acknowledged.
- Collateral and guarantees withdrawn for processing should be promptly returned for safe custody.
- Prior to the release of collateral or guarantees, it should be ensured that:
  a. All conditions for release stipulated in the relevant loan agreements have been fully complied with, and
  b. The release has been properly authorized.
- Once the conditions for release are satisfied, collateral and guarantees should be returned to the borrower promptly and confirmation of receipt obtained from the borrower.

Top-up of Collateral

- If a borrower needs to provide additional collateral, the conditions warranting this action should be clearly documented in the agreement with the borrower.
- Cases where additional collateral may be required include:
  a. The value of the original collateral falls significantly due to fluctuations in market price, which reduces the Maximum Loanable Value (MLV) for that type of collateral.
  b. Deterioration in the debt-servicing ability of the borrower.
- Procedures for requesting additional collateral should be clearly documented.

Disposals

- All properties, share capital and debt securities acquired by the Organisation, by realization of debts due to it, should be disposed of at the earliest suitable opportunity in case of classified accounts.
- Credit Unit must co-ordinate with remedial management unit with respect to such accounts.
Disposal value for the collaterals should be approved by the Risk Management Department and/or RMC, Board based on the delegation of financial powers.

Concentration Limits

Taking similar types of asset as collateral or accepting collateral (or guarantees) from the same issuer (or provider) creates a concentration risk. The Credit Unit will be responsible for developing methodology for the managing concentration risk. For example, the limits on concentration risk could be in the form of a cap on the amount of:

- Lending secured by the same type of collateral,
- Financial collateral taken from a particular issuer or market, and
- Support obtained from a particular guarantor or protection provider.

Collateral Reporting

The Credit Unit will be responsible for developing a framework for MIS on collateral for the Risk Management and Senior Management of the corporation. These reports would provide obligor-wise exposure and collateral details that would aid decision making by the Risk Management Department.

Collateral Analytics

Credit Unit will analyse collateral data on an ongoing basis for concentration and correlation risks across various collateral types.

It is critical for the unit to keep abreast of developments happening in the environment, both domestic and foreign, on an ongoing basis.

A credit risk rating framework is a valuable tool to identify, measure, monitor and manage credit risk, and has several uses of strategic value:

- Individual credit selection, where the company's credit facility risk in respect of the project is rated and approved/rejected based on the ratings profile and other credit analysis
- Pricing (credit spreads) and transaction level analysis
- Portfolio level analysis reflecting the health of the portfolio based on the ratings
- Support for surveillance, monitoring and internal MIS
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a. Use of Internal Rating System

Considering the current nature of business, HUDCO shall adopt credit rating models to assess exposures under the following asset classes:

- Corporate
- Real Estate Developers
- PSUs
- State & Central Government Agencies
- Housing Loans
- NGOs

These credit rating models shall be hosted on a web based System that would allow HUDCO to automate the process of credit information capture and credit risk rating across various hub locations. The system would support two-dimensional models for compliance with Basel guidelines and risk based pricing.

Overall, the internal rating system would have the following features:

1. Capture Borrower financials and other related information
   The system would be able to capture borrower profile related information and financial data for the borrower. Both user entry and upload for financial data would be supported.

2. Credit Risk Rating
   The system would have the capability of generating a credit risk rating based on the quantitative and qualitative information captured. The system would be able to support hosting of existing and new rating models on a web based platform.

3. Two dimensional Basel compliant Risk Rating Models
   The system would support configuration and usage of borrower and facility risk rating model.

4. Workflow for review and decision
   The system would support role based workflow to allow users at different levels to review, reject or approve the rating along with recommendations / comments / justifications.

5. Rating override and audit trail
   The system would allow users to override any rating while capturing justification for such overrides.

6. Estimation of PD and LGD
   The system would support estimation of Probability of Default and Loss Given Default based on internal data.

7. Risk Based Pricing
   The system would be able to capture cost of funds and recommend a fee structure for different exposures based on the risk adjusted return on capital methodology.

8. Reporting
   The system would support individual exposure level and portfolio level reports.
Currently HUDCO has not adopted internal rating models and systems. Accordingly this section can be further updated post adoption of credit rating models.

### Asset Classification and Provisioning

The classification of assets in the portfolio shall be done on the basis of objective criteria, so that the norms can be applied in a uniform and consistent manner. The NPA definition, Asset classification and provisioning shall be in accordance with the NHB norms from time to time.

### Surveillance and Monitoring Mechanisms

In spite of sound risk management and appraisal processes, some credit exposure will develop weakness on account of changes in internal or external conditions. Monitoring mechanisms listed below shall be followed to identify such credits before become non-performing assets. These monitoring mechanisms will assist the company in identifying the need and timing for remedial measures and actions to limit losses, as well as guide the use of triggers, control rights, reserves and similar protective structures in future transactions.

#### a. Site visits

The Credit officer for the transaction should schedule the first site visit before commencing any advance of funds or incurrence of credit exposure. Members of the Mission team will be advised of these visits and will be given an opportunity to attend. For subsequent site visits, the surveillance officer of the RMD should ensure at least one visit per year per project, unless more frequent visits are warranted.

**Report on Site Visits:** After each site visit, the Loan Department or surveillance officer, as relevant, will submit a site visit report to the Mission team. In case there are major deviations in project implementation or in progress vis-à-vis the original schedule, the officer must highlight such variances with justifications or concerns.

Further details on the credit monitoring process are separately set out in the Credit Manual.

#### b. Tracking process

Standard assets with certain financial or operational irregularities as well as borrowers with a weak financial position and irregularities in documentation will be monitored regularly. Certain irregularities have been defined below to help detect early warning signs.

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5 Surveillance and Monitoring mechanisms as proposed in the Master Circular of HUDCO would continue to be applicable unless otherwise proposed by the Board.
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i. Financial/Operational Irregularities

• Interest, principal or any other amount owed to the company overdue for more than 1 day

• Obligor failure to fund any reserve, defeasance or other account in the manner and at the times required in the project documentation

• Any notice from any concession grantor of non-performance under the concession agreement or any default, potential event of default, termination or intent to terminate under the concession agreement

• Diversion of funds

• Incomplete documentation

• Non-compliance with any terms or conditions of any project or financing agreement

• Failure to meet any milestones for completion of the project stages

• Failure to obtain or maintain any licenses or other required clearances

• Failure of equity sponsor to pay up equity as per its obligation

• Failure of any other financing party to advance funds or maintain its lending commitment

ii. Weak Financial Position

• Poor financial performance in terms of declining sales and profits, cash losses, net losses, erosion of net worth, management of escrow account, etc.

• Slippages in basic financial parameters

iii. Slippage in the rating

• The rating of the borrower migrates 1 rating grade lower than the initial rating

The above list is not exhaustive and there may be other signals that may be noted during appraisals/inspection of the site.

c. Monitoring

Monitoring of the borrower accounts is an important phase of the process of credit risk management. A well laid out system for account monitoring at different operational & functional level should be formulated. The system of monitoring should however be commensurate to the size of exposure on the borrower account.
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The following suggested process can be implemented:

a. All borrower account above a particular exposure limit should be monitored by the Credit Monitoring Cell (to be set up within the institution). The choice of the threshold limit should be decided by the management of HUDCO depending on the general size of the exposures.

b. Various feedback statements like the quarterly financial statements, monthly security reports etc. are used as monitoring tools for various authorities.

c. Accounts which are sub-standard in nature with 30 days past overdue etc. with exposures above a particular limit should monitored regularly.

d. Accounts rated below a particular threshold in the internal rating system of HUDCO could be taken up for regular monitoring.

d. Problem Loans Management

The surveillance department of the RMD will update the Chief Risk Officer and the RMC of the BoD at least monthly on the status of problem credit exposures, the nature of the problem, recovery progress on overdue amounts, corrective action taken or proposed to be taken at the specific account and portfolio level, proposed exercise of control rights, and discussions with other creditors and concession grantees on action to rectify the problem.

MIS shall also be provided to the RMC and RMD on monthly recoveries from overdue cases (% of initial overdue recovered on a monthly basis) to enable an understanding of payment behaviour.

The Risk Management Department must ensure that necessary corrective actions have been initiated in order to reduce/prevent the incidences of slippages in the quality of credit exposures.

e. Default Resolution and OTS

Default issue should be reviewed and monitored very closely by a committee of senior functionaries. Default Monitoring and Resolution Committee (DMRC) at HUDCO is constituted by Director (Finance), Chairman of the Committee and other senior official as decided by HUDCO’s senior management. HUDCO’s master circular on Default resolution and One-time settlement (OTS) details the procedure to be adopted therein.

Management Information Systems (MIS)

Management information system (MIS) is a system or process that provides the necessary and optimal information to manage an organization effectively. MIS and the information it generates are the essential components of prudent, informed and reasonable business decisions. The importance of maintaining a consistent approach to the development, use, and review of MIS systems cannot be overemphasized.
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Effective MIS ensures that the appropriate presentation formats and time frames required by operations and senior management are met. MIS needs to be maintained and developed by either manual or automated systems or a combination of both. MIS should always be adequately sophisticated and complex to meet an institution's unique business goals and objectives. The report formats to be generated are provided in Appendix A.
<table>
<thead>
<tr>
<th>#</th>
<th>Report Type</th>
<th>Report Name</th>
<th>Description</th>
<th>Frequency</th>
<th>Responsibility</th>
<th>Report submitted to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Portfolio Status Report</td>
<td>Borrower-wise exposure report</td>
<td>Base report having borrower-wise exposure details for all sectors</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Top exposure-wise report</td>
<td>List of all the top 10 exposures in the portfolio with all the above details.</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Geographical distribution of exposure report</td>
<td>Provides information on geographic concentration of exposure</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Industry-wise exposure report</td>
<td>Distribution of portfolio into various sectors</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group-wise exposure report</td>
<td>List of the top 10 groups exposure wise.</td>
<td>Quarterly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rating-wise exposure report</td>
<td>Overall distribution of the portfolio into the various rating grades with the information like total exposure, sanctioned amount, % utilization etc.</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low rated exposure details</td>
<td>Details of all the projects having rating grade 6, 7 &amp; 8.</td>
<td>Quarterly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Product-wise exposure details</td>
<td>Exposure distribution in various products offered by the organisation</td>
<td>Quarterly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Irregularity monitoring report</td>
<td>Tracks the account status/ slippage into NPA based on the warning signals.</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Portfolio Rating Transition Matrix</td>
<td>The report would capture the migration of the companies/ projects across rating grades.</td>
<td>Annually</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Borrower-wise Rating Transition report</td>
<td>This report will be used to track the performance of the borrowers on a continuous basis, capturing any downgrade/ upgrade in the ratings.</td>
<td>Annually</td>
<td>CRMD</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overdue Bucketing Report</td>
<td>This report will be used to monitor the ageing of overdue accounts in the portfolio</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td>2</td>
<td>Portfolio Monitoring Reports</td>
<td>NPA Slippage report</td>
<td>This report will capture the details about the borrowers who have defaulted during the current reporting period.</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
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<tr>
<td></td>
<td></td>
<td>NPA Classification report</td>
<td>This report will classify the various NPA accounts, at the gross level and net level.</td>
<td>Quarterly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPA &amp; Provision Movement report</td>
<td>The report will capture any increase/ decrease in the NPA and provisions amount during the period.</td>
<td>Quarterly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Report Type</th>
<th>Report Name</th>
<th>Description</th>
<th>Frequency</th>
<th>Responsibility</th>
<th>Report submitted to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery Reports</td>
<td>Account-wise Recovery report</td>
<td>This report lists all the borrower-wise recoveries and provides the break-up into interest and principal recoveries.</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td>Recovery Reports</td>
<td>Budget v/s Actual Recovery report</td>
<td>The report provides details about the zone-wise budgeted recovery and the actual recovery in the period. It also provides the target recoveries in the coming months.</td>
<td>Monthly</td>
<td>Loan Accounts Wing</td>
<td>Risk Management Committee</td>
</tr>
<tr>
<td>Audit Report</td>
<td>Internal audit report</td>
<td>The report would capture the summary of the internal audit carried out by the audit team. The report would have information like accounts audited, discrepancies reported, reasons for the same, corrective action (if any) etc.</td>
<td>Annually</td>
<td>Internal Audit Department</td>
<td>Risk Management Committee</td>
</tr>
</tbody>
</table>
a. Risk and Control Identification Process

Each of the business units and support units will identify the operational risks inherent in all material products, activities, processes and systems. This will require a documentation of the activities and processes carried out by the business unit and the applicable operational risks for those identified activities and processes. The risks include both internal and external risks that the business unit might be exposed to on account of the processes and activities carried out by it.

The ORMD Unit shall facilitate the identification of operational risk and controls by the business/support group through joint workshops. The workshop shall include discussion on the following to identify risks at both unit and process level:
1) Work Process Mapping
2) Audit Results
3) Internal Loss Events
4) External Data
5) Risk Maps
6) Policies & Procedure
7) Organisation Structure
8) Other internal Management Tools

The above exercise will lead to the creation of a detailed process-risk-control library containing the following information:
6. Business Unit
7. Sub-Unit
8. Process
9. Sub-Process
10. Risks

Appendix 1 provides list of the Basel business units defined for operation risk. The identified process-risk-controls for the business and support units of the institution will be documented in a format specified as per Appendix 2.
The identification and mitigation of operational risks and controls is a continuous process. As new products and business activities develop and/or processes are designed and modified, the associated operational risks/controls must be identified. The ownership of operational risk rests with the business/support group. The Business/Support Unit shall be responsible for ensuring management of identified risks and controls in accordance with the requirements of this policy.

The business unit and support units will nominate a team of experienced officers who will be responsible for identification of the key risk events in their unit. The identified risk events will be mapped to the risk event type classification as defined by Basel II guidelines.

For each risk identified, staff involved in the day-to-day activities from the RCSA entity should identify the controls that are in place to mitigate that risk. Identified controls should be classified in such a manner to facilitate the analysis of overall results i.e. preventive, detective, corrective etc.

b. **Key Risk Indicator Framework**

Risk Indicators are measures that attempt to identify potential operating losses before they happen. They have a strong correlation with operational risks and values of the indicators falling outside an established range indicate potential operational loss scenarios. When such indicators are designed to address key risks/loss scenarios, they are termed as **Key Risk Indicators (KRI)**.

KRI s can be categorized as **Lead Indicators** and **Lag Indicators**. Lead Indicators provide indications of possible future losses. Lag Indicators provide information on the risk events and transactions that have already occurred. KRI s can also be classified as 'Loss Measures', 'Process Indicators' and 'Environmental Indicators'.

1. **Loss Measures**: Loss measures monitor the actual effect of operational loss event. By definition, loss measures are ex post (lagging) in nature.
2. **Process Indicators**: Process indicators measure the quality of operations and the effectiveness of controls. Most process indicators measure performance and are ex post in nature and do not provide much insight into future. Process Indicators can be transformed into leading indicators by making them exception oriented. (i.e. error rates, limit breach, outstanding positions)
3. **Environmental Indicators**: Environmental indicators are typically ex ante (leading) and can have a large qualitative component. (i.e. employee satisfaction, training level)

The criteria for selection of KRI s are as follows:

1. **Data Availability**: The selection of KRI is primarily dependent on the availability and reliability of data to be used for calculation of risk indicators.
2. **Suitability**: The identified KRI should be an appropriate measure of the underlying risk driver.

The RCSA results shall be referred to while assessing the same.
3. **Risk Exposure**: The identified KRI should indicate past, current and projected level of risks and can be used as criteria to monitor, escalate and manage risk and related action plans.

4. **Early Warning**: The identified KRI should provide "early warning" signals to trigger actions that reduce potential risk exposures.

5. **Composite Indicators**: An independent KRI may not be effective in isolation and need to be combined with other KRIs.

**a. Comprehensive Definition of Key Risk Indicators**

On identification of the Key Risk Indicators, it is critical to comprehensively define the Key Risk Indicators so that the KRI framework achieves its desired objectives. The following aspects for each of the KRIs must be comprehensively defined:

1. **KRI Description** - It must specify the nature of the KRI and the kind of risk exposure / loss exposure it seeks to monitor.

2. **Metrics used to arrive at the KRI result** - The metrics used to compute the KRI result must be defined. Along with the metrics, the periodicity of data collection for the metric values must also be clearly specified. The unit of measurement in which the values of the metrics of the KRI will be reported must also be specified.

   **Per iodicity of the monitoring** - Based on the nature of the KRI and the kind of risk exposure it monitors, the monitoring frequency for the KRI could be determined. The frequency specification for the KRI must take into account timely availability of data and supporting infrastructure for ensuring that the KRI results are timely available. Typically there is monthly monitoring of KRIs.

   **Tolerance Levels / Thresholds** - The KRI results can be interpreted only when compared with pre-determined tolerance levels. The tolerance levels must be set based on the risk acceptance levels for the nature of the risk exposure / loss exposure. Escalation matrix must also be defined for breaches of tolerance levels to Business Heads, Support Heads, Senior Management based on the degree and nature of the breaches.

   **Points of Monitoring of the KRIs** - This involves defining the business units, support units and offices where the KRIs would be monitored. KRIs peculiar to a specific line of business will be monitored for those business lines itself while common KRIs like staff attrition rate, percentage of staff not availing mandatory continuous leave, etc. will be monitored for multiple business / support units.

   **Responsibility for data collection** - The data collection mechanism for computation of the KRI results must be defined. The source of data and the person (s) responsible for providing the required data to the ORMD must be identified.

The above details for the KRI database will be maintained by the ORMD. The ORMD is required to report to CRO and ORMC based on the results of the KRI monitoring provided by the business and support units. The ORMD will also interact with business and support heads to review the
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current KRI’s being identified and decide on discontinuing / addition of KRI’s. The decision on these aspects however will be taken only after concurrence with ORMC.

c. Loss Data Capture Framework
Operational risk loss would be the financial impact associated with the operational event that is recorded in the financial statement and would include for example,
(a) Loss incurred, and
(b) Expenditure incurred to resume normal functioning, but would not include opportunity costs and foregone revenue etc.
However, the Institution must also track the potential loss (i.e. extent to which further loss may be incurred due to the same operational risk event), near misses, attempted frauds, etc where no loss has actually been incurred by the Corporation, from the point of view of strengthening the internal systems and controls and avoiding the possibility of such events turning into actual operational risk losses in future.
The tracking of individual internal event data is an essential prerequisite to the development and functioning of operational risk measurement system. Internal loss data is crucial for tying an Institution’s risk estimates like frequency & severity of losses to its actual loss experience.

Tracking of internal loss event data is an essential prerequisite to the development and functioning of a creditable operational risk management system. This can be achieved in a number of ways, including using internal loss data as the foundation of empirical risk estimates, as a means of validating the inputs and outputs of the Corporation’s risk measurement system, or as the link between loss experience and control decisions.

d. Operational Risk in new Products /Services
The basic objective of assessing the operational risk in new products and services is to identify and understand the nature and degree of the risks the Institution would be exposed to due to the new product or service launch. If prior identification of the risks is done, the Institution can define and implement controls to mitigate the risks and be a risk aware organization. Hence, the process for identification of operational risks must be extended to the new products and services to be launched by the Institution. The new product approval note must be vetted and approved by the ORMD.
The following procedure is to followed for assessment of new product / process approval-
1. Preparation of concept note by the unit and submission to ORMD-The unit is required to prepare a concept note on the proposed product / service and submit the note to the ORMD giving details of the proposed product to be introduced. It must include details like the product features, target customer groups and their profile for the products and the business’s own assessment of the likely risks for the same. The business must also identify controls proposed to be introduced or already in place to mitigate the risks identified. The concept note will be signed off by the Business Unit Head and then sent to the ORMD.
2. Review of concept note by the ORMD-The ORMD will review the concept note received from the business within the agreed Turn Around Times (TAT). The ORMD may seek clarifications from the business unit. ORMD can also request other business units to provide their comments based on the nature of the new product.

Inputs / comments from other units - Based on the nature of the product proposed to be launched; the ORMD may require other units to provide their inputs / comments. This process will ensure that any requirements for modification in processes/ controls in other units are also examined prior to product launch. The units will provide the responses to the ORMD within the agreed time-lines.

Sign off from Compliance Department / Legal Department / IT Department - The new product / service approval process should also include a review by Compliance, IT and Legal Department. The respective department heads/ team members will sign off on the concept note.

Sign off by ORMD - The ORMD will ensure that the risks identified in the concept note are comprehensive. It will also ensure that controls have been identified to mitigate the same. It will also examine and analyze the comments / observations of other business units. It will then provide a sign off with comments indicating additional risks and controls if any. It will communicate the same to the respective unit and agree on timelines for actionable from the concerned business unit / other units.

6.2.2 Process for Assessment, Monitoring & Measurement of Operational Risk

a. Overview

Risk & Control Self Assessment (RCSA) is the process where the Operational Risks inherent in a Business or Units, products and activities are identified, and the effectiveness of the controls are evaluated, tested and monitored by the business units. The operational risks that could adversely affect Institution are recognized and assessed continually. The assessment, which is conducted at the level of individual businesses and support functions, includes the identification and evaluation of internal & external factors and events that could have an adverse effect on the Institution. Control procedures that mitigate the risks identified form an integral part of the risk assessment process.

Key Risk Indicator is defined as a measure that attempts to identify potential operating losses before such losses happen. A KRI is a business process parameter, which is predictive of changes in the operational risk profile of that process.

Operational loss event is an incident leading to alteration in the expected outcome(s) of a business activity or process due to inadequate or failed processes, people, system or external events. As part of the Institution's operational risk assessment system, relevant operational risk data including material losses by business lines will be tracked. This information will play a
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prominent role in risk reporting and analysis. It will also help in the process of monitoring and controlling the operational risk profile of the institution.

b. Operational Risk and Control Self Assessment (RCSA) Methodology

Risk & Control Self Assessment is a continuous process and would be conducted at regular intervals. The periodicity of the self assessment exercise will be determined by the ORMD in consultation with the business and support units and with the concurrence of the ORMC. The ORMD may decide to conduct an assessment out of the normal assessment cycle based on its periodical review & monitoring of overall health of the business or support unit with respect to operational risk management.

Each Business/ Support Group is required to carry out the RCSA process with the ORMD being the facilitator. This includes the following stages:
1. Selection of unit for RCSA.
2. Scheduling of RCSA.
3. Assessment of Inherent risk.
4. Assessment of Controls.
5. Assignment of overall risk rating to Business/ Support Unit.
7. Internal Audit Validation.
8. Reporting RCSA results.
10. Ongoing Monitoring & Periodic Review.

1. Selection of unit for RCSA

As the RCSA is applicable to all business and support units, the unit level of RCSA needs to be decided which include all the processes covered by that RCSA unit. The unit for RCSA would be decided by the ORMD in consultation with business / support units and Internal Audit.

Before identification of the units, complete analysis of that particular unit should be done regarding its structure, business done by it, complexity involved, internal, external and regulatory audit and investigation reports as well as applicable regulatory requirements. The units should be identified in such a manner that it can be mapped with concerned audit entities as assessment results are validated by internal auditor.

2. RCSA Schedule

Scheduling for RCSA would be done by ORMD in joint consultation with respective unit and IAD. Scheduling should be done for a given time frame e.g. for the financial year. The basis of scheduling is criticality and significance of risk environment in the assessed unit.
Original scheduling of the self assessment exercise would be subject to periodical review based on the following inclusive parameters:

1. Control Effectiveness
2. Internal Audit results
3. Loss events occurred during the interim period
4. Result of Key Risk Indicator (KRI) analysis

Change in external market conditions like technological changes, introduction of new regulatory requirements, introduction of new products or activities, entering into a new geography.

The identified units should conduct RCSA for their applicable risk and controls as per the approved schedule.

3. Assessment of Inherent Risk

Inherent risk is a measure of risk in its natural state, i.e., risk of particular event occurring due to inherent nature of the activity, before considering the controlling factors which prevent its occurrence or limit its impact. Risks must be categorized into the 'Level 1' and 'Level 2' Operational Risk Event Categories (with Level 3 being optional).

After identifying risk events and mapping them to the risk event type classification, the exposure at each risk event must be evaluated and rated on a five-point scale for probability/frequency and five-point scale for impact for assessing both inherent and residual risk basis.

The assessment of frequency and severity of the risk events will be done by using the rating scales listed below. The business user assessing the frequency of risk event occurrence will assess it as 'Likely' if the probability of the risk event materializing is between 20-40%.

In assessment of severity of the risk event, the business user will assess the impact of the risk event on the Institution and aim to quantify it in monetary terms. The business user will use his understanding of the business and its risk levels to assess the frequency & severity of the risk events.

Note: This scale is indicative and may differ for each business segment based upon its business characteristic. The final scale to be used for self assessment will be approved by RMCB and ORMC. The ORMD will review the scale and its thresholds on regular basis based upon results of self assessments.
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Rating Scale for Assessment of Frequency

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Expected</td>
<td>Above 60%</td>
</tr>
<tr>
<td>4</td>
<td>Highly Likely</td>
<td>40-60%</td>
</tr>
<tr>
<td>3</td>
<td>Likely</td>
<td>20-40%</td>
</tr>
<tr>
<td>2</td>
<td>Not Likely</td>
<td>10-20%</td>
</tr>
<tr>
<td>1</td>
<td>Remote</td>
<td>0-10%</td>
</tr>
</tbody>
</table>

Rating scale for Assessment of Severity

<table>
<thead>
<tr>
<th>Score</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
</table>
| 5     | Critical | Inability to achieve business objectives, e.g.:
|       |        | • Loss of significant business                                               |
|       |        | • Massive reduction in company reputation with stakeholders                  |
|       |        | • Excessive costs dramatically impacting long term profitability and viability|
|       |        | • Inability to attract new business                                           |
|       |        | • Significant IT disruptions leading to significant delays in business operations|
| 4     | High   | Constrained ability to achieve business objectives, e.g.:
|       |        | • Significant but recoverable reduction in company credibility and/or reputation|
|       |        | • Significant reduction in service and business capability                    |
|       |        | • Incurring excessive costs that impact current earnings and profitability    |
|       |        | • Loss or misappropriation of significant assets                             |
|       |        | • Loss of significant number of key personnel                                |
|       |        | • Significant downgrading of financial rating                                |
| 3     | Moderate | Moderate impact on achievement of business objectives, e.g.:
|       |        | • Loss of high value customers or alliances                                   |
|       |        | • Temporary loss of service or business capability                            |
|       |        | • Temporary, but recoverable reduction in creditability/reputation            |
|       |        | • Short term increase in costs or loss of revenue                             |
| 2     | Low    | Limited impact on achievement of business objectives e.g.:
|       |        | • Temporary delay in reaching objectives                                     |
|       |        | • Short term or limited reputation damage                                     |
|       |        | • Limited impact on customer retention                                       |
|       |        | • Limited increase in costs                                                  |
|       |        | • Minimal impact to revenue or earnings                                       |
| 1     | Minor  | Relatively insignificant impact on the achievement of business                |
4. Assessment of Controls

Controls associated with each risk event are rated as per the table given below. The underlying criterion for assessing the standard controls should be its “Effectiveness”.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Scoring Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient</td>
<td>The rating indicates that the internal control processes are providing reasonable assurance that the risk of loss or error to the RCSA unit is controlled in appropriate low level.</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>The rating indicates that the internal control processes are providing reasonable assurance except for one or more high priority issue relating to weakness in internal control.</td>
</tr>
<tr>
<td>Needs Improvement</td>
<td>This rating indicates that although the risk of error or loss to the RCSA unit is moderate, it may lead to future breakdown of controls or exposure to loss by the Institution.</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>This rating indicates that the risk of error or loss to the unit is at unacceptable level.</td>
</tr>
</tbody>
</table>

Control Criticality: We can also provide details of control criticality and its scale as the same is being used in our software and risk rating.

5. Assign Overall Risk Rating to the RCSA Unit

The overall risk rating for the unit would be an output of inherent risk and control effectiveness assessment based on the following parameters:

1. Importance of the risk
2. Impact on the process/unit if the risk occurs
3. Probability of the risk occurring if no controls were present
4. Standard of control (effectiveness) present.

The overall rating of the unit will be assigned by Unit Risk Supervisor based on remaining risk that is not eliminated after considering the control mechanisms or mitigating characteristics of the operating environment. It is the gap in control which may or may not be within the risk appetite. In the later case, apart from considering alternative risk mitigation, corrective actions plans are taken in order to strengthen the control environment. Reason for any override in the
risk rating by unit owner should be documented. The Institution must use the same rating scale for rating frequency and severity of losses which is used in assessment of inherent risk.

6. Design Corrective Action Plan

Corrective action plans are designed to strengthen control environment where, control weaknesses are found to exist as a result of actual compliance testing, occurrence of loss event, alarming KRI etc. Action plan must be documented with specific task, responsibilities and timelines for completion.

The progress of action plan should be monitored and long term action plan should be reviewed by ORMD on a periodical basis. Action plan must at least be developed for risk events whose risk is substantially high. Delay or failure to complete the action plan would be incorporated in the management reporting.

Whenever weak controls exist, it should be documented and subject to appropriate and prompt corrective action plan. Business Unit Head must initiate corrective action plan and thereafter track resolution. ORMD will follow up with Business Unit Head to ensure that corrective action plans are being completed. The relevant unit must identify any risk factor that is not currently controlled effectively.

At a minimum, the corrective action plan must include:
1. Business Unit/Sub Unit
2. Unit Details
3. Clear description of each weak control (process)
4. Action plan to resolve the deficiency
5. Various task to be done under the action plan
6. Target date for resolution
7. Details of officer responsible

Corrective action plan for a control weakness arising from all sources (e.g., independent assessment by IAD, RCSA, and external audits) must be monitored until rectified by the responsible Business Unit Head. ORMD must document any slippage in meeting previously agreed target dates with reasons and report the same. Final rating shall be available for validation by internal audit. This rating shall also be included in the risk profile of the risk entity.

7. Internal Audit Validation

Internal Audit Department (IAD) is independent of Business Unit and ORMD. Since personnel, who are actually involved in daily operations of the unit, assess the risk in the unit, there is a possibility of bias assessment process. IAD should conduct an independent validation of RCSA results on sample basis. This would help to ensure the objectivity in the entire process. This
would also provide assurance to the senior management on the results of the self assessment process.

A copy of internal audit report should also go to the ORMD for the purpose of validation and analysis of RCSA results. ORMD must analyse the results of internal audit rating and findings. If major differences are found the same should be analyzed in consultation with the unit and the internal auditor. Major/Key differences should be included in management reporting along with the reasons for the differences.

8. Reporting RCSA results
RCSA is a key component in building risk profile of a risk entity. ORMD must establish a detailed process for comprehensive RCSA reporting which will cover:
1. Inherent Risk and Residual Risk of Risk Entity.
2. Overall Risk & Control Rating of Risk Entity.
3. Controls where assessment results are not satisfactory.

Reports should be for all levels viz management, Business Unit as well as RCSA unit as per their importance, criticality and confidentiality.

9. Training and Support
In order to effectively implement RCSA framework in a particular unit, staff members of that entity should be trained about RCSA, risk event identification, evaluation, documentation, reporting.
Training should be an ongoing task and training requirement should be decided by ORMD in consultation with business unit. ORMD must develop detailed process to cater to the need for training and support to entities and business units. ORMD must act as a facilitator to the business units in the effective conduct of RCSA.

10. Ongoing Monitoring and Periodical Review
Business unit head would monitor the RCSA results and action plan on a periodical basis in order to ensure timely completion of RCSA and Implementation of action plans. Business unit shall coordinate with ORMD for material changes due to internal and external factors. Business Unit must periodically review the risk and controls of an entity in the light of development in techno-business environment, introduction of new products, entry in new geography, change in organizational structure, major loss events, pending action plans, non-compliance by units, etc.

11. Benefits of RCSA Implementation
Implementation of a robust self-assessment program helps improve the maturity of the business processes. Some of the significant advantages of implementing RCSA framework are:
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- RCSA is done by process-owners, who are closely involved in the regular operational business processes. Hence, the risk assessment done by them would reflect the true picture of operational risk levels in the Organisation.
- RCSA brings in process-owner involvement by including them in active monitoring of risks, facilitating a critical self review and audit of controls.
- RCSA helps implement a proactive rather than reactive process. RCSA provides a method for identifying control weaknesses within the current processes and developing action plans to eliminate the weaknesses.

c. Implementation of RCSA

1. Identification of operational risk

- The first step towards identifying risk events is to list out all the activities that are susceptible to operational risk.
- Risk identification is paramount for the subsequent development of a viable operational risk monitoring and control system.
- Organisation should identify and assess the operational risk inherent in all material products, activities, processes and systems.
- Effective risk identification should consider both internal factors (such as the organisation's structure, the nature of the organisation's activities, the quality of the human resources, organizational changes and employee turnover) and external factors (such as changes in the industry and technological advances) that could adversely affect the achievement of an organisation's objectives.
- The Corporation should also ensure that before new products, activities, processes and systems are introduced or undertaken, the operational risk inherent in them is identified clearly and subjected to adequate assessment procedures.

2. Assessment of Operational Risk

In addition to identifying the risk events, a bank/FI should assess its vulnerability to these risk events. Effective risk assessment allows an Organisation to better understand its risk profile and effectively target risk management resources. Amongst the possible methods that may be used by Organisation for assessing operational risk are:

i) **Self Risk Assessment**: A bank/FI assesses its operations and activities against a menu of potential operational risk vulnerabilities. This process is internally driven and often incorporates checklists and/or workshops to identify the strengths and weaknesses of the operational risk environment. Scorecards, for example, provide a means of translating qualitative assessments into quantitative metrics that give a relative ranking of different types of operational risk exposures. Some scores may relate to risks unique to a specific business line while others may rank risks that cut across business lines. Scores may address inherent risks, as well as the controls to mitigate them.
ii) **Risk Mapping:** In this process, various business units, organizational functions or process flows are mapped by risk type. This exercise can reveal areas of weakness and help prioritize subsequent management action.

An example of risk and control self assessment in Loan disbursement process is:
In Regional Office, one of the processes performed daily is loan disbursement. In list of activities, one will be pre disbursement process. Risk in this example would be legal documents not executed. Control in this activity will be checking and verification of legal documents mandatory and maker checker control.

d. **Measuring Risk Levels and Control Effectiveness**

RCSA is used to measure operational risk levels across the organisation by assessing levels of critical risks and effectiveness of their respective controls.

**Measuring Risk Score**
Assessing a potential risk event means gaining insights on:
- **Frequency:** How often is the risk event likely to happen?
- **Severity:** How much money would the Institution lose the risk event actually occurs?

The severity is measured in monetary units such as Rupees. The frequency can most conveniently be measured in number of times per year.

The frequency and severity values obtained by assessment should be converted to grades. The frequency could be classified into grades\(^6\) such as 'rare', 'infrequent', 'moderate frequency' and 'high frequency', while severity could be classified as 'negligible', 'moderate severity', 'high severity' and 'catastrophic'.

Each assessed unit will be assigned a frequency and severity grade, based on the values obtained during self-assessment. The risk level of all assessed potential risk events can hence be obtained in terms of the frequency & severity grades. The results for the whole organisation / certain business lines / processes can be viewed using scorecard.

Alternatively, risk levels can also be expressed as 'expected loss', which can be computed as the product of the assessed frequency and severity. In this case, the absolute values of the frequency and severity would be used.

*Note:* The expected loss figures obtained are based on subjective assessments for frequency & severity. Hence, they should not be treated at par with the actual operational loss data.

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\(^6\) The Institution could choose to have more / less grades for frequency & severity classification.
Measuring Control Score
Control effectiveness is assessed using grades such as 'very effective', 'moderately effective', and 'ineffective'. Each of these grades can be assigned a risk score, with a higher score indicating better implementation / effectiveness of the controls. These risk scores can be aggregated to yield control effectiveness scores at different levels (risk, process or business unit).

Assessment Workflow
The RCSA consists of systematic evaluation of all the risks, and their respective controls, associated with various processes in the organisation. A self-assessment questionnaire needs a defined workflow to ensure its effective implementation throughout the organisation. The head-office based operational risk management department will be the co-ordinating body for the complete assessment workflow. It will manage creation of the assessment questionnaires and decide on the coordinators for RCSA at the various organizational units (business lines / zones etc.). There will be different levels of coordinators with clearly defined roles and responsibilities. A typical hierarchy of roles for RCSA workflow is depicted in the figure below.

Central Supervisor: Typically a risk manager in Operational Risk Management Department who maintains and rolls-out the risk and control assessments.

Unit Risk Supervisor: Typically, a process / product owner at business-unit level or regional level who is responsible for the RCSA process assigned to his unit/RO by Central Risk Supervisor. The unit supervisor in consultation with central risk supervisor identifies the resources that will assess and review risk for different business processes.

Assessor: The process owner who actually carries out the assessment after receiving the risk and control assessment intimation from the unit supervisor. Typically, the assessor is appointed by unit supervisor for assessment of risk and controls.
Reviewer: The unit / process level supervisor who reviews the assessment. The assessment workflow is considered complete only when it is approved by the reviewer. Depending on the criticality and perceived risk level of the unit being assessed, multiple reviewers can also be assigned for critical processes.

f. Key Risk Indicator (KRI) Identification and Assessment Methodology

KRI Overview

Key Risk Indicators are forward looking measures which indicate the risk profile of the Institution and any change thereof. KRIs act as early warning indicators and are used to monitor and predict potential operational loss events. KRIs are used in conjunction with a system of thresholds defined by the Institution. When the threshold or tolerance level for any KRI is breached, it triggers review, escalation or management action, if required.

The KRI framework establishment involves the following activities-

1. Identification of KRIs.
2. Comprehensive definition of KRIs.

Identification of KRI

The process of identifying KRI begins with identification of the critical risk categories and the related risk events. For each of the risk events, analysis needs to be done to arrive at the root causes. Subsequently, metrics needs to be identified which have a significant variation in value at the time of the risk event. Of the metrics identified for the risk event, critical events need to be identified for the purpose of framing key risk indicators. These metrics should also have a strong causal relationship with the risk event.

The list of key risks identified during the self assessment framework implementation will be used as a starting point for definition of the KRIs. The risks are identified using results of self assessment programs already implemented, audit and inspection reports and other analyses of key risks / losses carried out by the Institution.

On identifying the key risks, the nominated officers from the business and support unit along with the ORMDF will carry out the root cause analysis of the risk events. Based on the results of this analysis, metrics will be identified which can be used in KRI definition.

Thus, the outcome of the above exercise will be a list of identified Key Risk Indicators. This process is illustrated by an example in the figure below. For risk category of 'people risk', first the risk events are listed down. Then the risk causes are identified which lead to the risk indicators.
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Sample KRI identification process

Analysis of critical risk categories and risk events is a good starting point for identifying key risk indicators.

While identifying the key risk indicators, it must be ensured that the risk drivers are entities which can be easily measured and quantified. KRI values cannot be qualitative or subjective in nature. Second point of caution is that the KRIIs must have a strong and direct correlation with an identified potential risk event. For example, the number of unsuccessful network login attempts is a very poor indication of the strength of network security and a bad KRI for managing network strength.

Defining KRIIs

After the Key Risk Indicators have been identified, they need to be comprehensively defined. They should be defined in a way such that their values have a uniform meaning across business lines and geographical locations. For example, if an organisation were to use a KRI like staff attrition rate, the percentage of employees leaving the organisation conveys more meaning than just the absolute number of employees quitting. Defining KRIIs in this way is advantageous as the tolerance limits do not need to be modified whenever there is a change in the total number of transactions. Also, values of the same KRI can be easily compared across various business units and locations.

A KRI is usually defined as a function of multiple risk factors which include the risk sensitive metrics & measures of the scale. Continuing with the earlier example of the KRI “staff attrition rate”, the risk factors here would be the “number of employees quitting the organisation in the observation period”, and “number of employees on the payroll in the observation period”. The KRI would be defined as a ratio of the two risk factors.
Along with the risk factors and their linking function, the following key attributes of a KRI also need to be specified in the definition.

- **Tolerance levels** – Each KRI should have well defined tolerance level benchmarks with which the measured value would be compared. Different benchmark ranges for KRI value should be specified as mentioned below:
  - An acceptable value range
  - A medium alert range or 'yellow zone' which would indicate that someone should keep an eye on the KRI
  - A high alert range or 'red zone' which would trigger alerts to the management and necessitate immediate action

These benchmark ranges should be derived at by using expert judgment as well analysis of historical loss events. A risk score can be linked to each of these ranges, which would help in aggregating KRI risk scores and arriving at one final number indicating the level of risk in any business line.

- **Monitoring frequency** – KRIs need to be continuously monitored and evaluated for indications of risk. However, each would need to be monitored with a different frequency (daily / weekly / monthly / quarterly etc) depending on its definition as well as the nature of the underlying risk.

- **Dimension of monitoring** – A KRI could be measured at the level of organization, business unit or the geographical location depending on the intent and definition. For example, a KRI like failed transaction could be measured at the location level, while staff attrition rate could be measured at business unit levels.

- **Points of Monitoring** – Some KRIs might not be relevant for all business units or locations due to variations in processes, technology, demographics etc. Hence, along with the dimension, the business units and geographical locations points for monitoring the KRI also need to be specified. For each point of measuring the KRI, responsibility must be fixed with specific personnel for capturing values of risk drivers and exposure indicators. If approval of KRI values is required, then that responsibility must also be fixed.

- **Level of criticality** – All KRIs will not be equally important in defining the risk profile of the organisation. Different criticality levels (low, medium, high) should be created and each KRI should have a criticality level. The risk levels measured by a KRI would be a function of its criticality level and the tolerance range its value falls in.

- **Data Source** – The source of data for the risk factors should be identified and processes should be put in place for obtaining the data on the required periodicity.

- **KRI Threshold Level**

  Threshold Level is the maximum tolerance level for a specific KRI beyond which escalation occurs to management and steps towards improvement are mandatory. There may be several escalation points (triggers) for single KRI requiring different levels of management response.
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(e.g., action by line manager, senior business manager, executive level manager, or Chief Risk Officer).

Following criteria shall be used for determining the threshold level and escalation points:

- Available benchmark of peer institutions.
- Empirical data of the normal frequency.
- Management's estimation, validated by testing/observation over time.
- Operational Risk appetite of the Institution.

The KRI Threshold levels are defined below:

<table>
<thead>
<tr>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk</td>
<td>KRI within the review period breached a level set by management warranting immediate attention and review for control design or operation needing improvement.</td>
</tr>
<tr>
<td>Medium risk</td>
<td>KRI within the review period breached a level set by management requiring management attention to determine if control design or operation needs improvement.</td>
</tr>
<tr>
<td>Low Risk</td>
<td>KRI within the review period did not breach the maximum level set by management and requires normal management review.</td>
</tr>
</tbody>
</table>

- Establishment of Key risk indicators

Development of key risk indicators starts with risk assessment. Risk events in a business/support group shall be identified, assessed and catalogued with associated controls and risk drivers. The following sources of information shall be examined to identify significant risks and aid in KRI identification:

- Historical internal loss events
- Risk & Control Self Assessment results
- Internal/external audit findings
- Regulatory/Audit inspection findings
- Workshops/discussions with business support functions

Criteria for selection of KRI

The following are considerations in the selection of KRIs:

- **Data Availability:** The selection of KRI is primarily dependent on the availability and reliability of data to be used for calculation of risk indicators.

- **Suitability:** The identified KRI should be an appropriate measure of the underlying risk driver. The RCSA results shall be referred to while assessing the same.

- **Risk Exposure:** The identified KRI should indicate past, current and projected level of risks and can be used as a criteria to monitor, escalate and manage risk and related action plans.
• **Early Warning**: The identified KRI should provide "early warning" signals to trigger actions that reduce potential risk exposures

• **Composite Indicators**: An independent KRI may not be effective in isolation and need to be combined with other KRIs.

• The OR Unit along with the business/support group shall be responsible for identification of the KRI for the Organisation. The identified KRI shall be documented in the template as per Appendix 3.

**h. Using KRI for Risk Assessment**

As defined above, a KRI is a quantitative and measurable physical entity having a correlation with operational risk events.

For each KRI, there will be a value range which will be observed when the probability of occurrence of the risk events (related to the said KRI) is very low. However, when the KRI value increases, the probability of occurrence of the related events also increase. **A high value of the KRI is indicative of increasing risk levels and vice-versa.**

Additionally, multiple threshold value ranges can be established for each KRI, with each value range corresponding to varying levels of risk. For illustration purposes, the threshold value ranges for a KRI 'Staff Attrition Rate' are provided below.

**KRI: Staff Attrition Rate**

**Threshold Value Ranges**

<table>
<thead>
<tr>
<th>Risk Grade</th>
<th>Threshold Value Range</th>
<th>Risk Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>&lt; 5%</td>
<td>1</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>5% - 15%</td>
<td>5</td>
</tr>
<tr>
<td>High Risk</td>
<td>&gt; 15%</td>
<td>10</td>
</tr>
</tbody>
</table>

Based on the value for the staff attrition rate, the risk level at the point of monitoring can be ascertained as the risk grade, i.e., 'low risk', 'medium risk' or 'high risk'. Additionally, a risk score can also be assigned for the KRI at the point of monitoring. This will be useful for KRI risk score aggregation and help in arriving at risk scores for business lines.

Aggregation of KRI scores can be done at multiple levels and the results will depend on multiple factors. The factors which will play a role in the aggregation scheme are:

• The level at which the aggregation is to be done; RO, business unit or the whole organisation

• The risk scores each threshold benchmark range

• Variance in threshold benchmarks for the KRI across business verticals/ROs

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7 These value ranges are indicative and provided only for illustration purpose. The actual values will need to be decided by the Organisation based upon its risk perception.
The points of monitoring for each KRI, viz. RO / business unit

Varying importance levels for different KRI

I. Aggregation of KRI results

Need for KRI Aggregation

A well-defined aggregation methodology is a critical aspect of the KRI framework. Aggregated KRI scores provide indicators for the risk levels to various stakeholders like business unit heads, product heads, geography heads, etc. In addition, these aggregated results can be used by ROs to understand their risk profiles and possibilities of risk events materializing. Aggregated scores could also be used as an adjustment factor in computing the capital charge requirement under AMA. Aggregated results can be used to assess effectiveness of regional operations, effectiveness of business units by an agreed internal rating scale.

Post identification and definition of the KRIs, Organisation will need to define methodology to aggregate the KRI results across multiple dimensions. The definition of aggregation methodology is essential so that results of the KRI monitoring are available and comparable over different time periods. E.g. 'Term Lending' head would like to know results of the entire KRIs which are monitored that business function. Hence, an aggregation methodology based on business function is essential to get a view of the potential risks levels for each function. Similarly the zonal head for Western Zone would like to know the KRI results for all the ROs within Western Zone. Here, an aggregated result of the KRI scores would be required based on the dimension 'geography'.

Critical Points for defining the Aggregation Methodology

The Organisation needs to consider the following aspects for defining the aggregation methodology for KRIs:

- Dimension of aggregating KRI results - The KRI scores can be aggregated across multiple dimensions like business unit / products, geographies, ROs, etc.

- Tolerance Levels for the KRI defined - The tolerance level for the KRIs could differ from ROs, functions and geographies. The same will accordingly impact the aggregation of the KRI scores.

- Importance Level for each KRI - The importance level assigned to each KRI will also impact the aggregated scores. The critical KRIs need to be assigned greater weight in aggregating KRI results.

- Scale of operations in aggregating the results - The aggregation methodology must provide a feature to scale up or scale down the KRI scores for the points of monitoring by using a scaling parameter. For a larger scale of operations, KRI scores will accordingly scale up and for lower scale of operations, KRI scores will scale down while aggregating the scores. Hence, if the KRI score for the KRI 'Attrition Ratio' is in the High risk zone for Metro Located RO and Medium Risk Zone for Non-metro located RO and the scaling variable of 'Number of employees is used' to scale the scores, then while aggregating the two scores for the two ROs by taking a weighted average, the score for Metro Located RO will get a higher weightage due to the number of employees being higher in the RO. Consequently, the aggregated score will provide the true picture of the potential risk levels.
The KRI results must be aggregated by the organisation on the specific dimensions to facilitate reporting and interpretation of the KRI results. Aggregation of results by these dimensions would provide aggregated KRI results for each of these dimensions. E.g. Aggregation of KRI results by the dimension 'Unit' will provide aggregated KRI results for each unit in the organisation.

The dimensions for aggregating KRI results are -

- Regional Office
- Head Office
- Key Risk Indicators

J. Key Risk Indicator Monitoring

Business Units shall monitor movement/trend in KRI on monthly basis and take corrective actions as per KRI trigger level. The Unit Risk Supervisor shall be responsible for regular KRI reporting as well as reporting the KRI trigger point breach to ORMD/Business Unit Head on monthly basis.

The reports from the Unit Risk Supervisor shall include:
1. Improvements and deterioration in operational risk exposures;
2. Action plans instituted to tackle areas of increasing risk profile;
3. Quantitative measures which can be used as an input for the operational risk profile.

Based on the reports from the Unit Risk Supervisor, the ORMD shall provide reports on KRI to ORMC on a quarterly basis. These reports shall include:
1. Details of escalation triggers breached.
2. Action plans initiated and results of action plans.
3. Trend analysis of KRI.

Appendix 4 includes templates for reporting KRI outcome.

k. Loss Incident Reporting Process

- Overview

Operational loss event is an incident leading to alteration in the expected outcome(s) of a business activity or process due to inadequate or failed processes, people, system or external events.

Operational loss events shall be further classified into:
1. Actual Loss Event: an incident that has resulted into financial loss for the Institution.
2. Potential Loss Event: an incident that has been detected and which may ultimately translate into financial loss for the Institution.
3. Near Miss Event - An incident where the error got identified and rectified before it lead to a financial loss for the Institution.

Operational loss event excludes internal cost overruns, routine variation in actual versus estimated figures and opportunity cost arising from loss event.
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Some of examples of loss event type are internal fraud like unauthorized activity, transactions not reported, intentional mismarking of positions, damage to physical assets of the Organisation, theft, robbery, forgery etc.

• Loss Data Capture Process
All operational loss events shall be captured, verified, analyzed and reported in accordance with the requirements of this policy. The loss data capture process shall consist of following steps:

1. Detection and validation of loss events.
2. Recording of Loss in internal loss database.
3. Initiate recovery proceedings for loss event

a) Detection and Validation of Event
An operational loss event primarily is identified by the employee of the Business Unit. In certain cases operational loss event can also be identified during the investigation / analysis of records by auditors, risk management group or through other external channels. (eg. customer). The detection process shall entail the following:

1. The employee / function detecting the loss events shall intimate the same to the concerned Unit Risk Supervisor/Operational Risk Department contact, immediately on discovery of the incident.
2. The loss event shall require approval of Business Unit Head depending on the impact of loss and delegation of power defined by the institution.
3. The Business Unit shall validate the loss and ensure that the details are captured in the prescribed format for reporting operational loss events immediately on discovery of loss event. The required details include:
   • Business Unit;
   • Product /Service;
   • Location of the incident
   • Date of Occurrence;
   • Date of Discovery;
   • Description of the Incident including cause of the Incident;
     - Actual Loss;
     - Estimated Potential Loss;
     - Amount Recovered;
4. The business unit will classify the loss amount based on the nature - Actual Loss, Near Miss events, etc. In case of actual losses, the unit will record the loss amount based on the monetary impact of the loss.
5. For events for which loss amounts cannot be determined, the unit will estimate the losses and record the loss estimate. The unit will record the estimate amount based on past experience and the nature of the loss event.
6. Business unit will initiate steps for recovery of losses as per pre-defined procedures. The recoveries will be recorded by the business unit when the recoveries are made.

b. Capture of Loss Event
- The operational loss event as reported by Business Unit shall be recorded in an internal loss database.
- Details of the loss event should be entered in Loss Data Capture (LDC) database by the concerned unit identified personnel responsible for data input.
- The loss event shall be classified, allocated and mapped to Basel-II defined event category and business lines.
- The date of discovery/detection of loss along with loss and recovery amount shall be entered in the database.
- Details of near-miss events can be maintained in same database & event type categorized as near miss.
- Any change in loss or recovery estimate shall be recorded on the basis of date of occurrence/discovery of loss event.
- The details required to be input for loss data capture template are explained in Appendix 8.

I. Loss data management/reporting
The loss data captured in accordance with the above process shall form the basis for necessary management action. The loss data management process shall entail the following activities:
- Reporting of loss events to senior management
- Ensure closure of loss event

a. Reporting of Loss Events to Senior Management
The loss event effect shall be reported to senior management. The loss reporting mechanism shall include analysis based on the following report to be sent to Operational Risk Management Cell (ORMD), Risk Management Committee of Executives, Risk Management Committee of the Board at a regular frequency:
- Event Loss summary list which gives a consolidated number of events reported in a various loss event category.
- Loss event summary detail report for analysis of loss events, control weaknesses and recovery details.
- Comprehensive Loss data report gives complete details of all Loss event captured in the database across the Organisation

Appendix 7 includes templates for reporting LDC outcome to senior management.

b. Closure of Loss Event
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Closure of the loss record implies that, the loss amount recorded is final and that recovery, if any, has been recorded against the loss incurred and balance amount has been written off. The Business Unit shall validate the closure of loss event and intimate the same to Finance and OR Unit for recording purpose. The OR Unit shall review open operational loss events with the respective Business Unit on a quarterly basis.

The Business Unit may coordinate with other departments to recover the loss amount. Refer for loss data capture template.

Appendix 5 provides a list of loss event types, which are categorized under the 7 Loss Event Types defined by Basel Guidelines.

Appendix 6 provides a Reporting template for the details of an operational loss event.

The loss data management process shall entail the following activities:

1. Initiate recovery proceedings for loss event.
2. Reporting of loss events to senior management.
3. Ensure closure of loss event.

a) Initiate recovery proceedings for loss event.

The relevant Business Unit shall initiate steps to recover the loss immediately on discovery of loss event. Financial loss may be recovered from any one or more of the modes listed below:

1. Recovery through communication with parties, customer, staff etc.
2. Recovery through remedial team in coordination with Risk Management Department.
3. Recovery through insurance claim in coordination with Finance.
4. Recovery through legal recourse in coordination with Legal Department/HR.

The loss amount may be recovered at once or staggered over a time period. In case of consolidated insurance recovery against multiple loss events, the amount recovered against the claim shall be apportioned, to the respective loss events in the proportion of the loss amount.

b) Reporting of Loss Event to Senior Management

The loss event effect shall be reported to senior management on a monthly basis. The loss reporting shall include:

1. Report to ORMC and Business Unit on loss events and impact of loss.
2. Report to ORMC and Business Unit on analysis of loss events, control weaknesses identified and remedial steps taken.

Appendix 7 includes templates for reporting LDC outcome
c) Closure of Loss Event
Closure of the loss record implies that, the loss amount recorded is final and that recovery, if any, is recorded against the loss incurred. The Business Unit shall validate the closure of loss event and intimate the same to Finance and ORMD for recording purpose. The ORMD shall review open operational loss events with the respective Business Unit on a quarterly basis.

### Operational Risk Reporting

The ORMD shall be responsible for regular reporting of pertinent information to ORMC and Business/support group head which will include reports on operational risk profile and loss events.

1. **Risk Profile Reports**
   - **Risk & Control Self Assessment Reports**– RCSA results with rating assigned to the overall frequency and severity of the assessed risks and control effectiveness environment as well as non compliance issues on a quarterly basis. Report on trend analysis of RCSA will be submitted to ORMC.
   - **Key Risk Indicator Reports** - Escalation triggers breached on monthly basis to ORMC and Business/support group head.

2. **Loss Event Reports**
   - **Analysis of Loss Events**: Monthly report on analysis of loss events along with steps to mitigate operational loss exposure of the Institution.
   - **Operational Loss event reports by Business Verticals**: Summary report based on business unit-wise loss events on a monthly basis.
   - **Operational Loss event reports by Loss Type**: Summary report based on nature of loss events on a monthly basis.

The ORMD will be responsible for furnishing additional information/data required by the CMD/RMCB.

### Operational Risk Control Process

The Institution must implement a sound control system for management of the risk within the tolerance level defined by ORMC. The various control measures include:

a) **Internal Audit Framework**
The Internal Audit Department (IAD) shall conduct regular review of business/support groups. The control weakness identified by IAD shall be communicated to the ORMD.

b) **Review of Policy and Procedure**
Risk Management Policy and Operating Manual

Each business/support Group shall have written policy and procedure manual. The policy and procedure should be reviewed periodically (i.e. annually, bi-annually) by the Business/support group.

The operating policy and procedures of respective business/support group shall provide for:

1. Segregation of duties.
2. Avoidance of conflict of interest roles.
3. Regular monitoring of assigned limits/thresholds.
4. Verification and reconciliation of transactions.
5. Safeguards for access to physical assets and information.

c) Communication of Operational Risk Policy and Procedure

The business/support groups shall ensure that employees are made aware of operational risk. The ORMD shall conduct regular training programs and workshop for awareness on operational risk to various Business Units.

d) Corrective Action Plan

The business/support group shall develop corrective action plan for issues identified by the self assessment, key risk indicator monitoring or loss event monitoring. The ORMD shall also monitor the implementation of corrective action plan and report to ORMC on a quarterly basis.

As in the case of control processes, the ORMD shall also ensure implementation of various operational risk mitigation techniques such as:

A. Information System Security:-

Increased usage of information technology and automation may result into low frequency high severity impact loss events. Each business/support group should periodically ensure:

- Restricted access to information as per classification/need to know basis.
- Entitlement review to periodically validate access rights to Information.
- Due diligence before system change/new system installation.

The business unit and IT department must ensure that any new system/system change before implementation must be reviewed by the ORMD.

B. Business Continuity and Disaster Recovery Procedure Plan:-

Apart from operational risk associated only with current transactions, the Institution is also vulnerable to external and internal events which may limit its ability to fulfill some or all of its business objectives.

To address such risks, the Institution shall establish disaster recovery and business continuity plan, considering various plausible scenarios. HUDCO's business continuity plan has been documented separately. The business continuity and disaster recovery plans must be tested periodically. The
outcomes of the same must be documented and areas requiring modification/improvements must be identified. The same must be highlighted to ORMC/RMCB in the reports presented to them.

C. Insurance:
The Institution may retain certain level of risk or self-insure against the risk. The decision to recommend additional coverage to insure risks is taken by ORMC/ORMD in accordance with overall business strategy and appetite for risk.
a. Overview

The Market Risk Policy is focused on setting a framework for identifying, assessing and managing market risk. The objective of the identification framework is to provide clarity on various dimensions of risk identification and recognition to each of the business units.

The framework ensures that all the sources of risk associated with each of the products and/or activities are identified. Any new products to be implemented shall be analysed in terms of their characteristics relevant to each type of market risk and required changes shall be made to support the systems to capture the required information prior to new products being implemented.

Market Risk is integral to the organisation's activity, and the policy envisages that Resource Mobilisation Wing shall act as a knowledge resource to business divisions that need assistance in understanding, analyzing and quantifying the impact of market risk on the profitability of each business unit.

• Foreign Exchange Operations

The foreign exchange operations of Treasury expose the Corporation to the risk of fluctuations in the foreign exchange rate on both spot items as well as swap items. In addition, the Corporation's exposure through foreign currency lending and investments also lead to foreign exchange risk.

• Debt Investments

The Corporation's investment in Corporate Commercial papers and Government Securities leads to exposure to counterparty credit risk. In addition, these investments also lead to interest rate risk on account of rate movements.

• Equity Investments

The Corporation's investment in equity of various listed entities leads to the likelihood of equity price risk. HUDCO's equity participation in various projects exposes the Corporation to credit risk on the
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investment. However, post listing of the equity on a recognized stock exchange, the nature of risk gets translated to market risk on account of fluctuations in equity prices.

b. Risk Identification Process

The Risk Identification process shall entail the following
1. Resource Mobilisation Wing shall provide a daily MIS on the end of day position for
   a. Placements with Banks
   b. Investment in Government Securities
   c. Investment in Corporate Commercial Papers
   d. Investment in Equity Stocks
   e. Investment in Mutual Funds
2. Based on the information, Risk Management Unit (RMD) shall evaluate the portfolio and assess the nature of risk viz.
   a. Interest Rate Risk due to yield shifts or rate changes
   b. Equity Price Risk due to fluctuations in equity prices
   c. Foreign Exchange Risk due to fluctuations in foreign exchange rates
3. In addition, Risk Management Unit (RMD) shall also evaluate the other risks associated with the portfolio viz.
   a. Credit Risk due to likelihood of default by counterparty
   b. Concentration Risk due to over-exposure to single/limited counterparty(s)
   c. Market liquidity risk due to illiquidity of investment portfolio
   d. Settlement risk on account of failure/ delay in settlement of dues from counterparty
   e. Strategic risk on account of impact of poor investment decisions
   f. Reputation risk on account of market perception of poor investment decisions
4. Based on the assessment, the RMD shall measure the level of risk and direction of risk based on the measurement methodology reflected in the ensuing section.

6.3.2 Market Risk Measurement

a. Overview

This section details the various methodologies for measuring and monitoring the level of market risk in the Institution. The Market Risk Management Unit shall utilize various statistical and non-statistical risk measures to measure the market risk. Combining two or more approaches is a key to enhance the stability of market risk measurement because, taken together, these risk measures provide a more comprehensive view of market risk exposure than any single measure.
Risk Management Policy and Operating Manual

Accordingly, the key objectives of Market Risk Measurement are

- To ensure that a transparent and consistent methodology for measuring market risk is implemented across the Corporation.
- To specify the quantitative and qualitative criteria, which the Corporation intends to use while implementing any market risk measurement methodology and models.
- To provide an explicit methodology to arrive at capital charge for the market risks to which the Corporation is exposed.
- To have an integrated risk measurement framework that captures all components of market risk. This is to ensure that for a given risk factor category, (exchange rates, interest rates and equity prices) the risk must be measured using a single approach for that risk category.

Risk Measurement shall be undertaken at both individual positions, at asset level as well as portfolio level. The portfolio risk assessment shall give reading for diversified as well as un-diversified risks.

All the risk models shall be subject to continuous back testing and periodic review based on back testing results. Any significant changes in the assumptions on which the models are based, shall be approved by RMC to ensure consistency of the measurement processes. This would also ensure estimation of “mark to model” risks on continuous basis.

b. Risk Measurement Process

Post the identification of risks, the following risk measurement techniques shall be used by RMD for assessing the level of risk and direction of risk.

a. Foreign Exchange Exposure

HUDCO runs foreign exchange exposure on foreign currency assets and liabilities as well as on the foreign exchange dealing portfolio.

In accordance with the Financial Accounting standards, the institution's net open position in each currency should be calculated by summing:

- The net spot position (i.e. all asset items less all liability items, including accrued interest, denominated in the currency in question);

8 The proposed limits and reports are futuristic in nature, which would be of utility as and when these instrument are traded by HUDCO.

9 HUDCO shall also be governed by the guidelines provided in the Hedging policy as amended from time to time.
Risk Management Policy and Operating Manual

- The net forward position (i.e. all amounts to be received less all amounts to be paid under forward foreign exchange transactions, including currency futures and the principal on currency swaps not included in the spot position);
- Guarantees (and similar instruments) that are certain to be called and are likely to be irrecoverable;
- Net future income/expenses not yet accrued but already fully hedged (at the discretion of the reporting institution);
- Depending on particular accounting conventions in different countries, any other item representing a profit or loss in foreign currencies;
- The net delta-based equivalent of the total book of foreign currency options.

The nominal amount (or net present value) of the net position in each foreign currency as calculated above is converted at spot rates into the reporting currency. The VaR estimation methodology shall be the Variance-Covariance approach. The estimation of VaR will entail the following:

- For the net open position in each currency, the VaR shall be calculated Currency wise based on volatility vis-à-vis reporting currency. The volatility may be estimated based on standard deviation, percentile method, Exponential Weighted Moving Average (EWMA) or Generalized Auto-Regressive Conditional Heteroskedasticity (GARCH).
- With the perspective of overall balance sheet analysis, VaR shall be estimated assets/liability wise to analyse the impact on the market value.
- Portfolio VaR shall factor the correlation between various currencies as well as between various maturities of assets and liabilities.
- Portfolio VaR figures shall be used for capital allocation by the product of the following:
  - Portfolio Exposure
  - Portfolio VaR
  - Square Root of 10 (Holding Period)
  - 2.33 (Inverse Normal Distribution for 99% Confidence Level)

- The above estimation shall be subject to back-testing conducted by risk management unit at an annual frequency.
- The risk management unit shall also conduct stress testing annually to assess the impact under adverse exchange rate scenarios.

The Value-at-risk would also be estimated instrument-wise as well as dealer-wise to assess performance. Gradually, the MRC may recommend advanced approaches to estimation of VaR.
Risk Management Policy and Operating Manual

b. Investment Portfolio

HUDCO’s Treasury investment portfolio mainly constitutes money market instruments, Corporate debt and Government Securities exposing the institution to interest rate risk.

In accordance with the Basel II Accord, the institution’s interest rate is a combination of specific risk and general market risk. The specific risk charge is designed to protect against an adverse movement in the price of an individual security owing to factors related to the individual issuer. The same would form part of the policy on Exposure limits. However, the market risk management unit would be responsible for monitoring and controlling the same.

The general market risk charge is designed to capture the risk of loss arising from changes in market interest rates. The measurement approach would vary based on the nature of instruments.

The estimation of general market risk charge would entail the following:

1. **Money Market Investments**
   - Spread analysis for inter-bank portfolio based on scenarios for bank rating migration on a monthly basis.

2. **Corporate Debt Investments/ Government Securities**
   - Mark to Market on a weekly basis based on current price of instruments with similar characteristics viz. rating, duration, etc.
   - Present Value of Basis Point (PVBP) Analysis on a weekly basis to assess the impact on the price based on a likely shift in the yield curve by one basis point
   - Calculation of Duration/Modified Duration/Partial Duration both at security level as well as portfolio level on a weekly basis.
   - Stress testing analysis by using the rate shocks for parallel and non-parallel shift in the yield curve on a quarterly basis.
   - Spread analysis for corporate bond portfolio based on scenarios for rating migration on a monthly basis.

c. **Equity Investments**

HUDCO’s equity investments primarily constitute the institution’s participation in various project financing deals. The market risk management unit would be responsible for monitoring and controlling the equity price risk post the same is listed at the local and/or international stock exchange.

The market risk in equity portfolio would constitute risk factors corresponding to each of the equity markets in which the institution holds significant positions. Measurement methodology shall include...
The definition of a risk factor that is designed to capture market-wide movements in equity prices. This would generally be the main index viz. BSE SENSEX and NSE NIFTY.

The measurement methodology shall entail the following:

- Analysis for positions in individual securities would be expressed in "beta-equivalents" relative to this market-wide index on a monthly basis.
- Detailed analysis of risk factors corresponding to various sectors of the overall equity market (for instance, industry sectors or cyclical and non-cyclical sectors). As above, positions in individual stocks within each sector could be expressed in beta-equivalents relative to the sector index. This analysis shall also be conducted on a monthly basis.
- In addition, the scrip-wise and portfolio equity VaR could be estimated as per the variance-covariance approach on a weekly basis.

The Institution shall follow the norms proposed by the Hedging policy to mitigate the risks related to foreign exchange and interest rate risk.

### Market Risk Monitoring & Reporting

a. **Overview**

This section details the various methodologies for monitoring and controlling the level of market risk in the Institution. The Treasury Mid-Office (Risk Management Unit) shall be responsible for monitoring, controlling and reporting the level of market risk in the institution. This role shall include preparation and review of various risk management reports, ensuring adherence to various limits as well as reporting to senior management.

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The formula for the beta of an asset within a portfolio is

\[ \beta = \frac{\text{Cov}(r_a, r_p)}{\text{Var}(r_p)} \]

where \( r_a \) measures the rate of return of the asset, \( r_p \) measures the rate of return of the portfolio, and \( \text{Cov}(r_a, r_p) \) is the covariance between the rates of return.
Risk Management Policy and Operating Manual

b. Limits Framework

The objective of limits framework is to keep the institution's net exposure to various risks within a level consistent with following parameters:

1) Business and market strategy
2) Tolerance for risk
3) Capital allocated to support exposure to market risks
4) Breadth, nature and complexity of activities and
5) Ability to measure and manage exposure to risks.

The following limit framework is recommended for managing various types of risks. The Board of Directors/ RMC shall review these limits at least once a year.

a. Foreign Exchange Limits

The following limit framework shall be adopted to monitor the net exposure to Foreign Exchange risk.

1. Overnight Exposure Limit
2. Currency-wise Individual Gap Limit
3. Management Action Trigger

As and when the Institution undertakes new lines of business exposing it to exchange risk, the limits shall be recalculated and got approved by the authorities prescribed.

1. Overnight Exposure Currency wise Limit

Open position that the Institution may maintain in a particular currency at the end of the day's operations is called Overnight Position. Overnight position in a single currency shall be calculated in accordance with the Basel II Guidelines.

While arriving at the overnight position in respect of each currency, the following factors (Market depth factors) shall be considered:

- Merchant turnover in a currency.
- Estimated inter-bank turnover in that currency
- Total turnover
- Number of trading days in a year
- Average daily turnover
- Minimum marketable lot in that particular currency
- Estimate on the percentage of daily turnover that can remain open

Overnight position in those currencies in which the Institution has sustained a significant level of activity i.e. US Dollars ($), British Pound Sterling (£), Euro (€) shall be calculated specific to the
currency performance under the above parameters. In the case of all other currencies, estimates on uniform basis shall be adopted.

Overall net open position shall be arrived at as a percentage of the Corporation's equity.

2. Currency-wise Individual Gap Limit (Cross Currency Funding)

This is the maximum allowable excess of local currency assets over local currency liabilities thereby restricting the amount of local currency lending through foreign currency assets. The individual gap limit is the maximum allowable mismatch in the currency bought and sold across various maturity buckets. The maximum allowable gaps in local currency have been detailed in the policy on asset liability management. Similarly, the currency-wise maturity gap analysis shall be conducted to assess the gaps in individual currency across buckets. The maximum allowable gaps by currency and maturity bucket shall be stipulated in this policy.

3. Management Action Trigger (MAT)

The MAT represents the management's tolerance for accepting the market risk related losses on a month-to-date basis (i.e. MTD realized and unrealized). The month-to-date profit and loss is calculated for the entire portfolio based on the current market rates. If the loss amount exceeds the MAT prescribed, it triggers management action as regards the decision to 'Hold' or 'Sell'.

This limit is related to the daylight position as trading position is locked into it and is defined in terms of certain amount of domestic currency. Depending upon the position taken by the dealer in a particular currency, any adverse movement in the exchange rate in terms of decimals of domestic currency shall be calculated, the extent of change and the size of position determine the loss.

b. Investment Portfolio

The following limit framework shall be adopted to monitor the net exposure to Interest rate risk.

1. Instrument Limit
2. Management Action Trigger
3. Duration Limit

1. Instrument Limit

This Limit is for maximum investment in any single category of instrument. The Institution shall endeavor to have a diversified portfolio to mitigate counterparty concentration risk. This limit would
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also be extended to maximum investment with a particular counterparty as defined in the policy on exposure limits.

2. Management Action Trigger (MAT)

The MAT represents the management’s tolerance for accepting the market risk related losses on a month-to-date basis (i.e. MTD realized and unrealized). The month-to-date profit and loss is calculated for the entire portfolio based on the current market rates. If the loss amount exceeds the MAT prescribed, it triggers management action as regards the decision to ‘Hold’ or ‘Sell’.

3. Duration Limit

This Limit is for maximum duration on all instruments issued by a Corporate/ Sovereign based on the underlying instrument rating. This limit would ensure that the Corporation’s exposure to a particular instrument over a period is a function of the instrument rating. Better the rating, longer the acceptable duration profile. This would also support the management of interest rate risk as the duration reflects the sensitivity of the instrument to a given change in interest rate.

c. Equity Portfolio

The equity portfolio shall be assessed both at individual and sector level to assess the maximum acceptable beta. The limit would ensure that any stock with a higher than acceptable beta would have to be liquidated on a priority basis.

The limits have been defined in Annexure B.

The limits defined in accordance with the limits framework would be monitored by the Resource Mobilisation Wing. The adherence to the same as well as overall risk profile related reports shall also be generated and reported to the ALCO. The types of reports prepared for the Board and for various levels of management shall vary based on criticality and relative importance from the perspective of decision making process. Accordingly, the market risk related reporting requirements to the Board/RMC would be as under:

- Summaries of Institution’s aggregate exposures (Duration Mismatches, Forex VaR, Equity Beta); and reports demonstrating Institution’s compliance with the policies and limits.
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- Results of stress tests including those assessing breakdowns in key assumptions and parameters;
- Adequacy of the market risk measurement systems, including any findings of internal and external auditors and consultants, if any. This report shall be submitted quarterly or else at the same frequency as that of audit.
- Failure to comply with the internal and regulatory policies as required should be noted.

These reports shall be sent to the various functionaries on a monthly basis.

In addition, the Resource Mobilisation Wing would monitor the market risk at the organisation through the generation of the following MIS (Annexure A):

1. Portfolio Holding Report (Investments)
3. Earnings at Risk Report (Investments)
4. Limit Breach Report

The RMD shall be primarily responsible for Limit Setting, Monitoring & Reporting & entails

1. Based on the daily reports received from Treasury, RMD shall benchmark the exposure as well as underlying losses (if any), with the set limits
2. A daily limit adherence and breach report shall be generated by RMD and submitted to the members of RMC
3. In case of limit breaches, RMD shall ensure that the breach is approved by the respective official from Treasury or other business units
4. In addition, other Risk Monitoring reports shall be generated by RMD at the agreed frequency and submitted to members of RMC and Board.
5. In addition, RMD shall review the limits on an annual basis or at the occurrence of major economic or Corporation-specific event thereby impacting market risk, whichever is earlier.
6. RMD shall also review reports in the light of NHB guidelines and/or Board/ RMC specific requirements.
ALCO will set out Liquidity Management Framework for the Corporation in terms of mix and maturity structure of the assets and liabilities, cost of liabilities and return from assets, acceptable time frame for liquidation of assets and raising of liabilities, within the overall parameters of regulatory compliance, cost and profitability trade off and reputation / brand image of the Corporation. This framework will be reviewed semi-annually or more frequently and shall ensure that the Corporation remains within the control of its liquidity at all times.

The primary sources of liquidity fall into two basic categories. The first category consists of assets in which funds are temporarily invested with the assurance that they will mature and be paid when liquidity is needed or will be readily tradable, without any substantial loss before maturity. The second category includes the various sources from which HUDCO can either borrow or otherwise obtain funds. The choice of the variety of the sources of liquidity will depend on a management philosophy encompassing:

- Reasons for which liquidity is needed.
- Access to resource markets.
- Costs and characteristics of the various liquidity sources.
- Interest rate forecasts.

The option to be considered for liquidity raising / management requires detailed analysis and deliberation. Such a choice has direct bearing on both the profitability of the corporation as well as the portfolio quality. In case, the Corporation strives to provide for all potential liquidity needs, it may end up holding primarily low earning liquid assets at the cost of profitability. The forecasting and funding of long term liquidity needs are critical from the point of view of determining the Corporation's appetite for assets and its mix.

The Corporation's liquidity management is subject to the limitations imposed by the depth and width of the market, i.e. the choice of options / instruments available and the liquidity in the markets for such options / instruments. The policy, therefore, focuses on creating appropriate responses to emerging needs while satisfying the following requirements:

- Strategies for meeting all cash flow commitments on an ongoing basis.
- Maintenance of adequate liquid assets / arrangement of stand-by facilities.
- Strategies for raising resources periodically at the cost that is appropriate as well as congruent to the returns on the assets in which these resources are / will be deployed.
Liquidity is assessed either through stock approach or cash flow approach. Stock approach assesses the liquidity condition based on certain liquidity indicators. Under the Cash Flow approach, gap between cash outflow and inflow in each time bucket and cumulative gaps across time buckets indicates liquidity condition on As-on-date basis. Cash flow approach is useful for measuring short-term liquidity and involves bucketing assets and liabilities into different maturity buckets. Details of the assessment methodologies under these approaches are as given below:

1. **Stock approach**

   Stock Approach classifies assets into categories, typically classified as L1, L2 and L3. A sound liquidity management practice requires maintaining an appropriate mix of these three categories to meet any stress on liquidity.
   - L1 are the most liquid assets, which are either in cash form or can be converted into cash instantaneously i.e., within a time horizon of one day.
   - L2 are the liquid securities with the Corporation, which can be liquidated with reasonable impact cost within a time span of 2-5 days. The horizon of 2 to 5 days has been taken, keeping in view the time period taken for realization of the securities. It takes 3 to 5 days for an emergency/crisis situation to unfold, during which these liquid securities can be liquidated to realize cash with least impact cost.
   - L3 comprises of the lines of credit available with the Corporation or the firm commitments made by other Institutions to HUDCO to meet the short-term requirements. It is the last line of defence.

As the stock approach does not take into account change in liquidity conditions due to changing market as well as the asset and liability profile of the institution, the following approaches should also be considered:

- Scenario Analysis
- Liquidity Ratio Analysis

**Scenario Analysis**

ALCO would need to undertake detailed exercise in scenario analysis covering different market factors, past trends, and behavioral studies on rate sensitive assets and liabilities particularly with embedded optionality, and build up dynamic liquidity gap statement based on different assumptions and future projections like seasonal factors, liquidity needs for new loans, un-availed credit limits, investment obligations, statutory obligations etc to obtain deeper assessment of liquidity conditions.

The analysis would be conducted on a quarterly basis or as advised by ALCO from time to time.
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- **Liquidity Ratio Analysis**

  ALCO should continuously monitor internal as well as external indicators of potential liquidity problems at the Corporation. These indicators may not warrant immediate corrective action but may prompt additional analysis.

  ALCO would use the following structural ratios for assessing the liquidity conditions from time to time:
  
  - Liquid assets / anticipated funding requirements (percent)
  - Liquid assets / total earning assets (percent)
  - Earning assets - greater than 3 years / external liabilities greater than 3 years (percent)
  - Earning assets - greater than 1 year / external liabilities greater than 1 year (percent)
  - Purchased Funds vis-à-vis Liquid Assets
  - Core Liabilities to Core Assets
  - Funding liabilities maturing within 3 Months to total Funding liabilities ratio

  These ratios would be monitored on a monthly basis or as advised by ALCO from time to time.

2. **Cash Flow Approach**

   The analysis of liquidity requires not only to measure the liquidity position of financial institutions but also to examine how funding sources are likely to evolve under various scenarios. In other words, it explains the “Flow Approach” to liquidity assessment. These reports need to be generated by ALCO Support Group on a monthly basis or as advised by ALCO from time to time.

   Liquidity gap analysis is the most fundamental tool to obtain a forward-looking view of the liquidity risk exposure. It provides a snapshot of the potential future funding mismatches so that the institution can assess its exposure to the mismatches and identify liquidity sources to mitigate the potential risks.

   The liquidity gap analysis is to be periodically undertaken using two approaches, viz; Maturity Gap Analysis and Dynamic Gap Analysis

**Maturity Gap Analysis**

Under this analysis, the assets and liabilities of the institution could be segregated into the following buckets based on their maturity profile as per NHB norms:

- 1 to 14 days
- Over 14 days to one month
- Over one month to 2 months
- Over 2 months to 3 months
- Over 3 to 6 months
The rationale for classifying the asset-liability portfolio into various maturity buckets as well as the template for reporting has been included in Annexure 1 and 3 respectively.

**Dynamic Liquidity Analysis**

The Dynamic Liquidity Analysis is the analysis of the maturity profile of short term assets and liabilities including business projections and impact of contingent liabilities (including loan commitments) likely to crystallize in the near future.

The analysis includes:
- Evaluation of forecasts for sources and uses of funds for 180 days hence;
- Evaluation of the past year's funding strategy and its performance, which forms the basis for the planning process;
- Review of existing liability profile, including major trends in market, customer, maturity and instrument distributions;
- Review of possible alternative funding sources; and
- Analysis of the liquidity position for alternative market scenarios, and any other factors that could impact the institution's liquidity position.

The above analysis could be extended to positions in foreign currency.

The template for reporting the dynamic liquidity statement has been included in Annexure 4.

ALCO will lay down guidelines for deciding on bucketing of different sources and uses of funds wherever such bucketing cannot be accurately identified. The ceiling for gaps between different maturities on individual gap basis and on cumulative basis as a percentage of liabilities in that ladder will be approved by ALCO. This will be based on the existing and projected profile of assets and liabilities and the liquidity conditions in the market. A review of the ceiling will take place at least once a year.
With the objective of ensuring that the liquidity risk at the Corporation is under control, the Risk Management unit would consider the nature of the HUDCO's strategies and activities, its past performance, the level of earnings and capital available to absorb potential losses, and the board's tolerance for risk. The Risk Management Unit would accordingly present its recommendations for overall limit setting to the BoD.

The limits would be approved by the BoD and delegated to ALCO for implementation after taking into account any regulatory and internal guidelines and Risk Management Committee recommendations. The Treasury should ensure that exposure is within these limits.

1. **Minimum Liquidity Level (MLL)**
   The Treasury shall measure and monitor the Minimum Liquidity Level (MLL) that the Corporation would strive to maintain at all times. The MLL is defined as the sum of four components, viz.

   (i) Projected net loan disbursements (loan disbursements less loan repayments) for one year;
   (ii) Projected debt service payments for one year;
   (iii) Undisbursed equity investments; and
   (iv) Estimated recurrent and capital expenditure for the year.

   **MIS reporting**
   The Treasury would ensure that on a rolling year basis the ratio between Available Liquidity and the MLL is always greater than 120%. The Treasury shall submit a monthly report on its calculation and outcome to the ALCO for deliberation and approval.

2. **Gap Limits**
   The limits for net cumulative negative mismatches (difference between cash inflows and cash outflows) for time buckets up to 1 year should not exceed prudential limit of 15% of the cumulative cash outflows up to one year. The gap can be financed from market borrowings (call / term), Bills Rediscoutrting, Repos, and deployment of foreign currency resources after conversion into USD. The individual gap limits for the first 2 buckets (1 - 14 days and 15 - 30 days) have been fixed at 15% of the cash outflows of each time bucket.

3. **Funding of long-term assets**
   Long-term assets must be funded for the major part i.e. not less than 80%, through long-term liabilities. In the event of long-term liabilities remaining below this level for a period exceeding six months, the structural imbalance need to be corrected within a time period not exceeding one year as per an approved action plan. The Corporation may choose either to increase long-term liabilities or to
reduce long term assets based on the dynamics of the market environment as and when such events occur.

4. **Proportion of Liquid assets**

   Liquid assets include such assets which help in meeting any liquidity requirements. The liquid assets should not fall below 10% of the Total Assets.

5. **Other liquidity risk related limits**

   In addition, to the limits defined above, the ALCO and Risk Management Unit may prescribe areas which need to be monitored and controlled taking into account various measures like historical volatility, prudential % exposure, VaR etc.

   Prudent liquidity management policies require above parameters to be reviewed on a daily basis. ALCO will be vested with powers to review and stipulate appropriate limits for liquidity gaps in alignment with action to be taken in respect of other ALM related areas such as interest rate risk management, profitability, market conditions, business plans etc. The responsibility for reporting the limit breaches, if any shall vest with Risk Management Unit.

### Liquidity Risk Mitigation

In addition to the assessment of extent of liquidity risk, it is also critical to implement the following measures to ensure effective Liquidity risk management

1. Deployment of a mechanism for monitoring and measuring funding requirements accurately and estimating the institution's cash flows on a daily, weekly and monthly basis. This will enable maintenance of adequate cash and liquid balances to meet the fund requirements at any point in time.

2. Diversification of liability base to avoid a concentration of funding needs at any one time or from any one source. In addition, the institution should seek to develop new funding sources to meet its funding needs. Liability diversification should consider an adequate distribution of market segments, instruments, maturities and customers.

3. Designing and deployment of contingency funding plan to address the following "emergency situations", such as:
   - Large unused lines of credit or commitments are expected to be utilised in the near future;
A Contingency Funding Plan is a cash flow projection and comprehensive funding plan that forecasts funding needs and funding sources under market scenarios including aggressive asset growth or rapid liability erosion. The intricacy and sophistication of a Contingency Funding Plan (CFP) should be commensurate with the institution's complexity and risk exposure, activities, products, and organizational structure. In this sense, a CFP is an extension of ongoing liquidity management and formalizes the objectives of liquidity management by ensuring:

- Maintenance of an appropriate amount of liquid assets.
- Measurement and projection of funding requirements during various scenarios.
- Management of access to funding sources.

The preparation of contingency funding plan would entail the following activities:

1. Definition of early warning indicators
2. Arranging suitable funding avenues to manage a contingency
3. Designing the process for managing a crisis situation

The contingency funding plan would be designed by Treasury and periodically reviewed by ALCO and Management Risk Committee.

1. Definition of early warning indicators

The Treasury and ALCO should anticipate all of the institution's funding and liquidity needs by:

- Analyzing and making quantitative projections of all significant on- and off-balance-sheet funds flows and their related effects.
- Matching potential cash flow sources and uses of funds.
- Establishing indicators

An incipient liquidity problem may first manifest in deteriorating liquidity risk ratios and excess cumulative negative mismatches in nearer time buckets.

Some of the Early Warning Indicators are:

- A negative trend or significantly increased risk in any area or product line.
- Undue concentrations in specific category of assets and liabilities.
- Indications of declining asset quality
Decline in earnings performance or projections
Rapid asset growth funded by volatile wholesale liabilities or bulk deposits
Market rumors on HUDCO's reputation
Drop in stock prices not in line with overall fall in stock indices
Overall increase in funding cost not in line with general increase in interest rates in the market
Correspondent Institutions eliminate or decrease credit line availability
Downgrade or announcement of potential down grade of rating by rating agencies.
The overall economy is experiencing tight liquidity position

ALCO Support Group will co-ordinate with the different departments of the Corporation in obtaining the quantitative and qualitative measures and advice ALCO accordingly on regular basis.

2. Arranging suitable funding avenues to manage a contingency

The contingency plan would be based on the ability to obtain additional resources from either domestic or external market whether in form of local or foreign currency. Upon occurrence of liquidity crisis, ALCO along with Risk Management Committee would set in this Contingency Plan in action and act under the direction of Risk Committee or Executive Committee of the Board. The Board of Directors will be kept advised of the developments in the matter.

Hence, it is necessary to have the following arrangements in place:

- Arrangements with local and correspondent Institutions: This will enable the Corporation to obtain short term or medium term stand-by facilities, in addition to short term deposit limits in order to offset any temporary deficit in liquidity.
- Arrangements with shareholders or other group Institutions: This will help to obtain subordinated loans in case of need.
- Part of HUDCO's investment in the portfolio of loans and borrowings and in investment portfolio must be of self-liquidating type.

During the course of contingency, ALCO will decide on the periodicity of reports to be put up by Treasury department on cash flows and to compare these with assumptions underlying the plan. The ALCO based on the assessment of liquidity position will direct at an appropriate time, culmination of contingency.

3. Management of Crisis Situations

Management of emergency liquidity crisis situation would involve the following stages:
Risk Management Policy and Operating Manual

- Treasury will call for an urgent meeting of the ALCO chaired by the CEO in order to review and discuss the situation and its impact on the Corporation and assess how liquidity crisis can be resolved.
- Liquidate the treasury bills and bonds portfolio.
- Arrange for liquidation of saleable assets.
- Securitization
- Renewal of as many as possible borrowings.
- Treasury would call for a meeting of the BoD should the situation needs urgent action.

The ALCO will remain in readiness to meet all the time in order to take any further urgent actions and to respond to any developments, as well as to analyze and review of updated information or feedback.

At the end of the Contingency, a report will be put up by ALCO to the BOD containing analysis of the crisis and lessons for the future for policy considerations of the Corporation.

The Risk Management Department shall be primarily responsible for Limit Setting, Monitoring & Reporting & entails

1. A limit adherence and breach report shall be generated by Risk Management Department and submitted to the members of RMC
2. In case of limit breaches, Risk Management Department shall ensure that the breach is approved by the respective official from Treasury or other business units
3. In addition, other Risk Monitoring reports shall be generated by Risk Management Department at the agreed frequency and submitted to members of RMC and Board.
4. RMD shall review the limits on an annual basis or at the occurrence of major economic or Corporation-specific event thereby impacting liquidity risk, whichever is earlier.
5. Risk Management Department shall also review reports in the light of NHB guidelines and/or Board/ RMC specific requirements.
There are series of approaches for measurement of interest rate risk. Each of the approaches has its own strengths and weaknesses based on the nature of the institution and the operating environment. Accordingly, the adoption and implementation of a given interest rate risk measurement approach should be in proportionate to the size and complexity of the institution as well as availability of relevant information. The Risk Management Department shall conduct necessary interest rate analysis and report the same to ALCO and Risk Management Committee and Board.

Based on the above principle, the measurement of interest rate risk should be conducted through one or more of the following techniques:\footnote{One or more of the proposed methodology may suitably be adopted by HUDCO based on the current balance sheet structure.}

1. Interest Rate Sensitivity analysis (Gap Analysis)
2. Duration Analysis on Economic Value of Equity
3. Static Simulation Analysis
4. Dynamic Simulation Analysis
5. Stress Testing & Scenario Analysis

\section{Interest Rate Sensitivity Analysis}

Interest Rate Sensitivity (or Interest Rate Gap) Analysis is commonly used to measure and manage interest rate risk exposure specifically, an institution's repricing and maturity imbalances. Gap reports stratify the institution's rate sensitive assets, liabilities, and off-balance-sheet instruments into maturity segments (time bands) based on the instrument's next repricing or maturity date. Balances within a time band are then summed (assets are reported as positive amounts and liabilities as negative amounts) to produce a net gap position for each time band. Risk is measured by the size of the gap (the amount of net imbalance within a time band) and the length of time the gap is open. Gap reports...
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can be particularly useful in identifying the repricing risk of an institution's current balance sheet structure before assumptions are made about new business or how to effectively reinvest maturing balances.

In the construction of Gap report, necessary position level data needs to be sourced from the institution's core financial software.

The interest rate gaps may be identified in the following time buckets in accordance with NHB norms:

i. 1 day to 14 days
ii. Over 14 days to one month
iii. Over one month to 2 months
iv. Over 2 months to 3 months
v. Over 3 months to 6 months
vi. Over 6 months to 1 year
vii. Over 1 year to 3 years
viii. Over 3 years to 5 years
ix. Over 5 years to 7 years
x. Over 7 years to 10 years
xi. Over 10 years
xii. Non-sensitive

The analysis would be conducted on a Quarterly basis or as advised by ALCO from time to time.

The rationale for classifying the asset-liability portfolio into various maturity buckets as well as the template for reporting has been included in Annexure 2 and 5 respectively.

2. Duration Analysis

A weighted maturity/repricing schedule can also be used to evaluate the effects of changing interest rates on an institution's economic value by applying sensitivity weights to each time band. Such weights are based on estimates of the duration of the assets and liabilities that fall into each time band.

Duration is a measure of the percentage change in the economic value of a position that will occur given a small change in the level of interest rates. It reflects the timing and size of cash flows that occur before the instrument's contractual maturity. Generally, the longer the maturity or next repricing date of the instrument and the smaller the payments that occur before maturity (e.g., coupon payments), the higher the duration (in absolute value). Higher duration implies that a given change in the level of interest rates will have a larger impact on economic value. Duration-based weights can be used in combination with a maturity/repricing schedule to provide a rough approximation of the change in an institution's economic value that would occur given a particular change in the level of market interest rates.
As the simple duration assumes a linear relationship between percentage changes in value and percentage changes in interest rates, the same could be replaced with modified duration. Modified duration is standard duration divided by $1 + r$, where $r$ is the level of market interest rates. As such, it reflects the percentage change in the economic value of the instrument for a given percentage change in $1 + r$.

Once the approach has been finalized viz. standard or modified duration, the next stage would be to estimate the duration for the portfolio. The estimation of duration could be based on:

a. **Average Duration per time band across portfolio:** Under this method, an "average" duration is assumed for the positions that fall into each time band. The average durations are then multiplied by an assumed change in interest rates to construct a weight for each time band.

b. **Average Duration per time band varying for assets & liabilities:** Under this method, different weights are used for different positions that fall within a time band, reflecting broad differences in the coupon rates and maturities (for instance, one weight for assets, and another for liabilities).

c. **Asset and Liability specific duration:** Under this method, an institution could estimate the effect of changing market rates by calculating the precise duration of each asset, liability, and Off-Balance Sheet (OBS) position and then deriving the net position for the corporation based on these more accurate measures. This would eliminate potential errors occurring when aggregating positions/cash flows.

Under the above three approaches, the impact on the institution's economic value could be estimated based on standard interest rate shocks across the portfolio. Alternatively, different interest rate changes are sometimes used for different time bands, generally to reflect differences in the volatility of interest rates along the yield curve. The weighted gaps are aggregated across time bands to produce an estimate of the change in economic value of the institution that would result from the assumed changes in interest rates.

d. **Effective Duration:** Under this method, risk weights could be designed for each time band on the basis of actual percentage changes in market values of hypothetical instruments that would result from a specific scenario of changing market rates. This approach would better capture the non-linearity of price movements arising from significant changes in market interest rates and, thereby, would avoid an important limitation of duration.

Based on the size and complexity of the institution and suitability of the approach to the institution, the following approach could be adopted for conducting Duration analysis.

- Identify variables such as principal amount, maturity date / re-pricing date, coupon rate, yield, frequency and basis of interest calculation for each item / category of asset / liability.
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- Generate the bucket-wise cash flows for each item / category of asset / liability/ off balance sheet item.

- Determine the yield curve for arriving at the yields based on current market yields / current replacement cost for each item / category of asset / liability/ off-balance sheet item.

- The mid-point of each time bucket may be taken as a proxy for the maturity of all assets and liabilities in that time bucket.

- The frequency of coupon payment could be annual, semi-annual or quarterly based on the nature of the instrument

- The basis for interest calculation for each time bucket could be based on the day-count convention adopted in accordance with local regulatory guidelines

- Calculate the Modified Duration of each category of asset / liability/ off balance sheet item using the maturity date, yield, coupon rate, frequency, yield, basis for interest calculation for each category of asset/ liability/ off balance sheet item.

- Determine the weighted average Modified Duration of all the assets (DA) and similarly for all the liabilities (DL), including off balance sheet items.

- The Modified Duration Gap is derived by the equation:

\[
DGAP = Modified \ DA - W \times Modified \ DL
\]

where

\[
W = \frac{RSL}{RSA} \text{ (Rate Sensitive Liabilities / Rate Sensitive Assets)}.
\]

\[
DA = \text{Weighted average Modified Duration of assets and}
\]

\[
DL = \text{Weighted average Modified Duration of liabilities}.
\]

- The institution may also estimate the modified duration of equity in addition to DGAP

\[
\text{Modified Duration of Equity} = DGAP \times \text{Leverage}
\]

where

\[
\text{Leverage} = \frac{RSA}{Equity} \text{ (which indicates extent to which equity has been leveraged to create assets)}
\]

- The Modified duration of Equity multiplied by the standard interest rate shock would reflect the change in economic value. Based on international best practices, a drop in the economic
value of equity by more than 20% on a 200 basis-point rate shock reflects high interest rate risk.

3. Static Simulation Analysis

Simulation techniques typically involve detailed assessments of the potential effects of changes in interest rates on earnings and economic value by simulating the future path of interest rates and their impact on cash flows.

Simulation approaches typically involve a more detailed breakdown of various categories of on- and off-balance sheet positions, so that specific assumptions about the interest and principal payments and non-interest income and expense arising from each type of position can be incorporated. In addition, simulation techniques can incorporate more varied and refined changes in the interest rate environment, ranging from changes in the slope and shape of the yield curve to interest rate scenarios derived from Monte Carlo simulations.

In static simulations, the cash flows arising solely from the institution’s current on- and off-balance sheet positions are assessed. For assessing the exposure of earnings, simulations estimating the cash flows and resulting earnings streams over a specific period are conducted based on one or more assumed interest rate scenarios. These simulations entail straightforward shifts or tilts of the yield curve, or changes of spreads between different interest rates. This would lead to the Earnings-at-risk (EAR), reflecting the maximum possible loss given a particular rate change scenario at a given confidence interval.

When the resulting cash flows are simulated over the entire expected lives of the institution’s holdings and discounted back to their present values, an estimate of the change in the institution’s economic value can be calculated. This leads to the Economic Value-at-risk (VaR) for the portfolio. The analysis would be conducted on a monthly basis or as advised by ALCO from time to time.

4. Dynamic Simulation Analysis

In a dynamic simulation approach, the simulation builds in more detailed assumptions about the future course of interest rates and the expected changes in an institution’s business activity over that time. For instance, the simulation could involve assumptions about an institution’s strategy for changing administered interest rates (on floating rate borrowings, for example), about the regulatory pressure as regards placements with institutions (e.g., minimum holding period and rollover stipulations), and/or about the future stream of business (new loans or other transactions) that the institution will encounter. Such simulations use these assumptions about future activities and reinvestment strategies to project expected cash flows and estimate dynamic earnings and economic value.
outcomes. These more sophisticated techniques allow for dynamic interaction of payments streams and interest rates, and better capture the effect of embedded or explicit options.

As with other approaches, the usefulness of simulation-based interest rate risk measurement techniques depends on the validity of the underlying assumptions and the accuracy of the basic methodology. The output of sophisticated simulations must be assessed largely in the light of the validity of the simulation’s assumptions about future interest rates and the regulatory demands.

The analysis would be conducted on an annual basis or as advised by ALCO from time to time.

5. Stress Testing & Scenario Analysis

The above approaches are primarily based on impact of observed historical scenarios on the earnings and economic value of the institution. In addition, stress testing should be designed to provide information on the kinds of conditions under which the institution’s strategies or positions would be most vulnerable, and thus may be tailored to the risk characteristics of the institution.

Possible stress scenarios might include abrupt changes in the general level of interest rates, changes in the relationships among key market rates (i.e. basis risk), changes in the slope and the shape of the yield curve (i.e. yield curve risk), changes in the liquidity of key financial markets, or changes in the volatility of market rates. In addition, stress scenarios should include conditions under which key business assumptions and parameters break down. The stress testing of assumptions used for illiquid instruments and instruments with uncertain contractual maturities is particularly critical to achieving an understanding of the institution’s risk profile. In conducting stress tests, special consideration should be given to instruments or markets where concentrations exist, as such positions may be more difficult to liquidate or offset in stressful situations. Institutions should consider "worst case" scenarios in addition to more probable events. Management and the board of directors should periodically review both the design and the results of such stress tests, and ensure that appropriate contingency plans are in place.

The analysis would be conducted on a monthly basis or as advised by ALCO from time to time.

As in the case of liquidity risk, Risk Management Department would consider the nature of the Corporation’s strategies and activities, its past performance, the level of earnings and capital available to absorb potential losses, and the board’s tolerance for interest rate risk in setting appropriate limits. The Risk Management Department would accordingly present its recommendations to the BoD.

The limits would be approved by the BoD and delegated to ALCO for implementation after taking into account any regulatory and internal guidelines and Risk Management Committee recommendations. The Treasury should ensure that the Corporation’s exposure is within these limits. ALCO Support
Group will prepare and monitor the gap reports and in case of alarming situations, advise ALCO accordingly.

1. **Earnings at Risk Sensitivity Limit**

Earnings-at-risk limits are designed to control the exposure of the institution's projected future reported earnings in specified rate scenarios. A limit is usually expressed as a change in projected earnings (in dollars or percent) over a specified time horizon and rate scenario.

Accordingly, the change in the Net Income as a percentage to the budgeted Net Income, should not exceed **10%** based on a scenario of parallel shift of 100 bps.

2. **Capital at Risk (EVE) Sensitivity Limit**

Capital at Risk limits are designed to control the reduction of the institution's capital base in specified rate scenarios. A limit is usually expressed as a reduction in Economic Value of equity (in percent) over a specified time horizon and rate scenario.

Accordingly, the impact on the Economic Value of Equity (EVE) as a percentage to the Equity, should not exceed **5%** based on a scenario of parallel shift of **100 bps**.

In addition, a limit of **15%** drop in equity value based on a scenario of parallel shift of **200** bps would be considered.

All the above limits would be monitored by Risk Management Department on a monthly basis and breaches if any would be reported to the members of ALCO and RMC.

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**Interest Rate Risk Mitigation**

In addition to the assessment and measurement of interest rate risk, it is also critical to implement the following measures to ensure effective Interest rate risk management:

1. Deployment of a mechanism for monitoring and reporting critical information regarding interest rate risk. These reports at the minimum should include:
   - Summaries of the Corporation's aggregate exposures;
   - Reports demonstrating the corporation's compliance with policies and limits;
   - Key assumptions, for example, non-maturity deposit behaviour and prepayment information;
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- Results of stress tests, including those assessing breakdowns in key assumptions and parameters; and
- Summaries of the findings of reviews of interest rate risk policies, procedures, and the adequacy of the interest rate risk measurement systems, including any findings of internal and external auditors and retained consultants.

2. The institution may contemplate use of off-balance sheet instruments such as futures, swap & options to hedge or alter the characteristics of on-balance sheet positions. The selection of the hedging strategy would be a function of the correlation of the derivative to the on-balance sheet instrument, relative liquidity and cost of contract.

Limit Setting, Monitoring & Reporting

The RMD shall be primarily responsible for Limit Setting, Monitoring & Reporting & entails

1. Based on the quarterly reports received from Treasury/ RMD shall benchmark the exposure as well as underlying losses (if any), with the set limits
2. A daily limit adherence and breach report shall be generated by RMD and submitted to the members of ALCO
3. In case of limit breaches, RMD shall ensure that the breach is approved by the respective official from Treasury or other business units
4. In addition, other Risk Monitoring reports shall be generated by RMD at the agreed frequency and submitted to members of ALCO and Board.
5. In addition, RMD shall review the limits on an annual basis or at the occurrence of major economic or Corporation-specific event thereby impacting interest rate risk, whichever is earlier.
6. RMD shall also review reports in the light of NHB guidelines and/or Board/ RMC specific requirements.
Appendix A: Report Templates

1. Portfolio Status Reports
   i) Borrower-wise Exposure Report

This report will have all the required details of each account in terms of sector, amount of sanction and disbursement, rating etc. This report would be prepared only for the corporate borrowers.

Report Format

<table>
<thead>
<tr>
<th>Name of the borrower</th>
<th>Sector / Industry</th>
<th>Zone of origination</th>
<th>Sanctioned Amount</th>
<th>Disbursements</th>
<th>% Total Utilisation</th>
<th>Date of sanction</th>
<th>Date of review / rating</th>
<th>Current rating</th>
<th>Interest charged (%)</th>
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Risk Management Policy and Operating Manual

The above report will be the master report for comprehensive information on the corporate borrowers and can be used to generate other customized MIS reports in future. This report could be made available to the Risk Management Committee on a monthly basis.

II) Top Ten Exposures Report

This report is required for specific monitoring for the top ten exposures in HUDCO's portfolio. The top ten exposures are tracked specifically because these will have significant impact on the overall portfolio of the organization and hence the top management should be informed about such exposures.

Report Format

<table>
<thead>
<tr>
<th>#</th>
<th>Name of the borrower</th>
<th>Sector / Industry</th>
<th>Promoter / Group</th>
<th>Zone of origination</th>
<th>Sanctioned Amount</th>
<th>Disbursements</th>
<th>% Total Utilisation</th>
<th>Date of sanction</th>
<th>Date of review</th>
<th>Current rating</th>
<th>Interest charged (%)</th>
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Risk Management Policy and Operating Manual

This report should be presented to the senior management on a monthly basis.

iii) Industry-wise Exposure Report

This report will aid in understanding the level of concentration of the portfolio in various industries.

Report Format

<table>
<thead>
<tr>
<th>#</th>
<th>Industry Sector</th>
<th>Exposure</th>
<th>% of total portfolio</th>
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The above report should be presented to the Risk Management Committee on a monthly basis.

iv) Group-wise Exposure Report

This report presents the top ten consolidated group exposures in the portfolio. This report enables the tracking of concentration of exposure in any group and acts as a signal for corrective action.

Report Format

<table>
<thead>
<tr>
<th>Group Name</th>
<th>Total Sanctioned Amount</th>
<th>Total Disbursement</th>
<th>% Utilisation</th>
<th>Sanctioned Amount Portfolio sanction (%)</th>
<th>Total</th>
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<td>Group 9</td>
<td></td>
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</tr>
</tbody>
</table>
v) Rating-wise Exposure Report

The report provides the grade-wise distribution of the portfolio with details of sanctioned amount and limit utilization.

**Report Format**

<table>
<thead>
<tr>
<th>Rating Grades</th>
<th>Total Sanctioned Amount</th>
<th>Total Disbursement</th>
<th>% Utilisation</th>
<th>Total sanctioned amount / Total sanctioned Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Grade 2</td>
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<tr>
<td>Grade 3</td>
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<tr>
<td>Grade 4</td>
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<tr>
<td>Grade 5</td>
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<td>Grade 6</td>
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<tr>
<td>Grade 7</td>
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<tr>
<td>Grade 8</td>
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<tr>
<td>Grade 9</td>
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</tr>
<tr>
<td>Grade 10</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

This report should be generated on a monthly basis for presenting to the Risk Management Committee.
vi) Low Rated Exposures Report

This report is required to closely track the exposures in the lower rating grades. The large accounts (preferably corporate accounts) rated below investment grade should be included in the report. These accounts need to be monitored for any "Early Warning Signals" of credit quality deterioration.

**Report Format**

<table>
<thead>
<tr>
<th>#</th>
<th>Name of the borrower</th>
<th>Sector / Industry</th>
<th>Promoter / Group</th>
<th>Zone of origination</th>
<th>Sanctioned Amount</th>
<th>Disbursements</th>
<th>% Total Utilisation</th>
<th>Date of sanction</th>
<th>Date of review / rating</th>
<th>Current rating</th>
<th>Interest charged (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

This report should be generated in quarterly intervals.
vii) Product-wise exposure

This report provides the portfolio exposure distribution in various products offered by the organization.

Report Format

<table>
<thead>
<tr>
<th>#</th>
<th>Product Description</th>
<th>Total Sanction</th>
<th>Outstanding Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Principal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This report should be generated and reported to Risk Management Committee on a quarterly basis.

2. Portfolio Monitoring Reports
   viii) Irregularity monitoring report

The report tracks the irregular accounts in terms of credit quality and possible slippage into non-performance. Irregularity includes:

1. Accounts which have seen significant rating downgrade.
2. The borrower shows deterioration of financial performance.
3. Delay in fulfilling repayment obligations.
Risk Management Policy and Operating Manual

4. Adverse site inspection report.
5. Any other reasons.

Report Format

<table>
<thead>
<tr>
<th>#</th>
<th>Name of the borrower/project</th>
<th>Limit sanctioned</th>
<th>Balance Outstanding</th>
<th>Overdue Amount</th>
<th>Rating Grade</th>
<th>Type of Irregularity</th>
<th>Irregular since (date)</th>
<th>Comments / Remarks</th>
</tr>
</thead>
</table>

This report should be presented to the Risk Management Committee on a monthly basis.

IX) Overdue bucketing report

This report provides the ageing analysis for overdue accounts in the portfolio.

Report Format

<table>
<thead>
<tr>
<th>No. of days of overdue status</th>
<th>Details of Overdue Accounts</th>
<th>Current Reporting Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Previous Reporting Period.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outstanding Amount</td>
<td>% of total accounts</td>
</tr>
<tr>
<td>&lt; 30 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 - 60 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61 - 90 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91 - 180 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>181 - 360 days</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This report is to be generated on a monthly basis by the Accounts Department and reported to the Risk Management Committee.

3. NPA Reports

The recommended reports in this section include:

1. NPA slippage report
2. NPA classification report
3. NPA & Provision movement report

x) NPA Slippage Report

This report will capture the details of all the corporate & large retail accounts that are in default during the current reporting period.

Report Format

<table>
<thead>
<tr>
<th>#</th>
<th>Borrower name</th>
<th>Industry Sector</th>
<th>Promoters / Group</th>
<th>Amount of Sanction</th>
<th>Outstanding Amount</th>
<th>Date of Default</th>
<th>Rating at time of default</th>
</tr>
</thead>
</table>

This report should be generated on a monthly basis for reporting to the Risk Management Committee.
xi) NPA Classification Reports

This report classifies the various overdue accounts as per standard classification, both at the gross and net level.

Report Format

<table>
<thead>
<tr>
<th>NPA classification</th>
<th>2008-09</th>
<th>2007-08</th>
<th>% change in Gross NPA</th>
<th>% change in Net NPA</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gross NPA</td>
<td>Net NPA</td>
<td>Gross NPA</td>
<td>Net NPA</td>
<td>Gross NPA</td>
</tr>
<tr>
<td>Substandard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doubtful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1 assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2 assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3 assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPA Ratio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Gross NPA Ratio is the ratio of Gross NPA to Gross Advances*
Risk Management Policy and Operating Manual

Net NPA Ratio is the ratio of Net NPA to Net Advances

The report should be generated on a quarterly basis for reporting to the Risk Management Committee.

xii) NPA & Provision Movement Report

This report compares the NPA and provision levels of the reporting period with the data of the corresponding period in the previous year. This indicates the increasing / decreasing trend of the NPA levels.

Report Format

<table>
<thead>
<tr>
<th>Movement of Gross NPA during the period</th>
<th>Provisions for NPAs</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of the period</td>
<td>Increase/ decrease</td>
<td>End of the period</td>
</tr>
</tbody>
</table>

This report should be prepared at quarterly intervals and reported to the Risk Management Committee / Board of Directors.

4. Recovery Reports

The recommended reports under this section include:

Risk Management Policy and Operating Manual

xiii) Account-wise Recovery Report

This report lists all the recoveries during the reporting period and provides details of interest and principal outstanding for such accounts.

Report Format

<table>
<thead>
<tr>
<th>Borrower Name</th>
<th>Principal Outstanding in the beginning of the period</th>
<th>Interest Outstanding in the beginning of the period</th>
<th>Total Outstanding</th>
<th>Principal Recovery during the period</th>
<th>Interest Recovery during the period</th>
<th>Total Recovery</th>
<th>Balance Outstanding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

The report should be prepared by the Recovery team on a monthly basis for reporting to the Risk Management Committee.

xiv) Budgeted Recovery v/s Actual Recovery Report

This report compares the zone-wise actual recovery to the actual recovery during the reporting period. This also provides information on the target recoveries in the subsequent months.
This report should be prepared by the Recovery team on a monthly basis.

5. Audit Report

<table>
<thead>
<tr>
<th>Borrower Name</th>
<th>Origination Zone as on last reporting date</th>
<th>Asset Category</th>
<th>Budgeted recovery for the month</th>
<th>Actual recovery for the month</th>
<th>Budget for the period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Month+1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Month+2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rest of year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>the year</td>
</tr>
</tbody>
</table>

Page 118 of 198
This section under Credit Risk Management purview includes only the internal audit report format. This report format summarises the findings of the audit in terms of accounts audited, discrepancies reported and reasons for the same.

Report Format

<table>
<thead>
<tr>
<th>Account Details</th>
<th>Audit Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the account audited</td>
<td>#</td>
</tr>
<tr>
<td>Amount Outstanding</td>
<td>Amount Sanctioned</td>
</tr>
<tr>
<td>#</td>
<td></td>
</tr>
</tbody>
</table>

This report should be prepared annually for presentation to the Risk Management Committee.
Appendix 1—BASEL Business Lines

The BASEL II guidelines for banks have suggested a scheme for classifying the various business functions of a bank. These are referred to as the BASEL Business Lines. The classification scheme is provided in the table below.

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Activity Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Finance</td>
<td>Corporate Finance</td>
<td>Mergers and Acquisitions,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Underwriting, Privatisations,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Securitization, Research, Debt</td>
</tr>
<tr>
<td></td>
<td>Municipal/Government</td>
<td>(Government, High Yield) Equity,</td>
</tr>
<tr>
<td></td>
<td>Finance</td>
<td>Syndications, IPO, Secondary</td>
</tr>
<tr>
<td></td>
<td>Merchant Banking</td>
<td>Private Placements</td>
</tr>
<tr>
<td></td>
<td>Advisory Services</td>
<td></td>
</tr>
<tr>
<td>Trading and Sales</td>
<td>Sales</td>
<td>Fixed income, equity, foreign</td>
</tr>
<tr>
<td></td>
<td></td>
<td>exchanges, commodities, credit,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>funding, own position securities,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lending and repos, brokerage, debt,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>prime brokerage</td>
</tr>
<tr>
<td>Retail Banking</td>
<td>Retail Banking</td>
<td>Retail lending and deposits,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>banking services, trust and estates</td>
</tr>
<tr>
<td>Level 1</td>
<td>Level 2</td>
<td>Activity Groups</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Private Banking</td>
<td></td>
<td>Private lending and deposits, banking services, trust and estates, investment advice</td>
</tr>
<tr>
<td>Card Services</td>
<td></td>
<td>Merchant/Commercial/Corporate cards; private labels and retail</td>
</tr>
<tr>
<td>Commercial Banking</td>
<td></td>
<td>Project finance, real estate, export finance, trade finance, factoring, leasing, lends, guarantees, bills of exchange</td>
</tr>
<tr>
<td>Payment and Settlement</td>
<td>External Clients</td>
<td>Payments and collections, funds transfer, clearing and settlement</td>
</tr>
<tr>
<td>Agency Services</td>
<td>Custody</td>
<td>Escrow, depository receipts, securities lending (customers)</td>
</tr>
<tr>
<td></td>
<td>Corporate Agency</td>
<td>Issuer and paying agents</td>
</tr>
<tr>
<td></td>
<td>Corporate Trust</td>
<td></td>
</tr>
<tr>
<td>Asset Management</td>
<td>Discretionary Fund Management</td>
<td>Pooled, segregated, retail, institutional, closed, open, private equity</td>
</tr>
<tr>
<td></td>
<td>Non-Discretionary Fund Management</td>
<td>Pooled, segregated, retail, institutional, closed, open</td>
</tr>
<tr>
<td>Retail Brokerage</td>
<td>Retail Brokerage</td>
<td>Execution and full service</td>
</tr>
</tbody>
</table>
Appendix 2 - RCSA Reporting Template

Name of Risk & Control Owner (business unit for RCSA):
Name of Unit Risk Supervisor.

<table>
<thead>
<tr>
<th>Column Heading</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr. No.</td>
<td>Process Specific Serial No.</td>
</tr>
<tr>
<td>Process Description</td>
<td>Broad description of the process and underlying sub-process</td>
</tr>
<tr>
<td>Risk Description</td>
<td>Broad description of the process specific risks and corresponding impact</td>
</tr>
<tr>
<td>Expected Frequency</td>
<td>Expected Likelihood of the risk event (As per scale)</td>
</tr>
<tr>
<td>Expected Severity</td>
<td>Expected Severity of the risk event (As per scale)</td>
</tr>
<tr>
<td>Control Description</td>
<td>Broad description of the process and risk specific controls and corresponding impact</td>
</tr>
<tr>
<td>Control Test Description</td>
<td>Ready Reckoner on the areas to be assessed to ensure control effectiveness</td>
</tr>
<tr>
<td>Control Effectiveness Rating</td>
<td>Assessment of effectiveness of the control in mitigating the risk</td>
</tr>
</tbody>
</table>
## Name of Risk & Control Owner (Risk Entity):

## Name of Unit Risk Supervisor:

## Centralized Source of Information:

<table>
<thead>
<tr>
<th>Column Heading</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr. No.</td>
<td>Process Specific Serial No.</td>
</tr>
<tr>
<td>Process Description</td>
<td>Broad description of the process and underlying sub-process</td>
</tr>
<tr>
<td>Risk Description</td>
<td>Broad description of the process specific risks and corresponding impact</td>
</tr>
<tr>
<td>Key Risk Indicator</td>
<td>List of indicators vis-à-vis the process and underlying risk</td>
</tr>
<tr>
<td>Threshold Value</td>
<td>Description of threshold value in units</td>
</tr>
<tr>
<td>KRI Value</td>
<td>KRI Value as on reporting date in units</td>
</tr>
<tr>
<td>Threshold Breach Indicator</td>
<td>Yes/ No</td>
</tr>
</tbody>
</table>
### Appendix 4 - KRI Reporting Template

#### KRI Valuation Report

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Formula</th>
<th>Valuation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violation of Counterparty Limits</td>
<td>Violation of Counterparty Limits [Number of cases where the counterparty specific exposure limits were breached.]</td>
<td></td>
<td>12/12/2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location-Unit</th>
<th>Value</th>
<th>Risk Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>BKC - Mid Office</td>
<td>3</td>
<td>40</td>
</tr>
<tr>
<td>Valuation Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/12/2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location-Unit</td>
<td>Value</td>
<td>Risk Score</td>
</tr>
<tr>
<td>BKC - Mid Office</td>
<td>3</td>
<td>40</td>
</tr>
<tr>
<td>Valuation Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/12/2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location-Unit</td>
<td>Value</td>
<td>Risk Score</td>
</tr>
<tr>
<td>BKC - Mid Office</td>
<td>4</td>
<td>16</td>
</tr>
</tbody>
</table>

#### KRI Breaching Report

<table>
<thead>
<tr>
<th>Classification</th>
<th>Unit</th>
<th>Date</th>
<th>Organisation</th>
<th>Location</th>
<th>Risk Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-generation/errorous generation of swift messages</td>
<td>BKC</td>
<td>16-Nov-10</td>
<td>Forex - BO</td>
<td>16</td>
<td>Green</td>
</tr>
<tr>
<td>Non-generation/errorous generation of swift messages</td>
<td>BKC</td>
<td>16-Nov-10</td>
<td>OTC Derivatives - BO</td>
<td>16</td>
<td>Green</td>
</tr>
<tr>
<td>Delay in deal ticket generation/post timing of deal</td>
<td>BKC</td>
<td>16-Nov-10</td>
<td>FX Interbank - FO</td>
<td>40</td>
<td>Amber</td>
</tr>
<tr>
<td>Deals left unverified in system even after T+1 business day</td>
<td>BKC</td>
<td>16-Nov-10</td>
<td>Forex - BO</td>
<td>16</td>
<td>Green</td>
</tr>
<tr>
<td>Imbalances in the accounts not resolved within 3 business days</td>
<td>BKC</td>
<td>16-Nov-10</td>
<td>RTGS - BO</td>
<td>16</td>
<td>Green</td>
</tr>
</tbody>
</table>
## Appendix 5 - Operational Loss Event Types

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3 (Activity Example)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Fraud</td>
<td>Unauthorized Activity</td>
<td>Transactions not reported (intentional)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trans type unauthorised (w/monetary loss)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mis marking of position (intentional)</td>
</tr>
<tr>
<td></td>
<td>Internal Fraud</td>
<td>Fraud / credit fraud / worthless deposits</td>
</tr>
<tr>
<td></td>
<td>Theft and Fraud</td>
<td>Theft / extortion / embezzlement / robbery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Misappropriation of assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Malicious destruction of assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forgery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check kiting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Smuggling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Account take-over / impersonation / etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tax non-compliance / evasion (wilful)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bribes / kickbacks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insider trading (not on firm's account)</td>
</tr>
<tr>
<td>External Fraud</td>
<td>Theft and Fraud</td>
<td>Theft / Robbery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forgery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check kiting</td>
</tr>
<tr>
<td></td>
<td>Systems Security</td>
<td>Hacking damage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Theft of information (w/monetary loss)</td>
</tr>
<tr>
<td>Employment Practices and Safe Environment</td>
<td>Employee Relations</td>
<td>Compensation, benefit, termination issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Organised labour activity</td>
</tr>
<tr>
<td></td>
<td>Safe Environment</td>
<td>General liability (slips and falls, etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Employee health &amp; safety rules events</td>
</tr>
<tr>
<td></td>
<td>Diversity and Discrimination</td>
<td>All discrimination types</td>
</tr>
<tr>
<td></td>
<td>Workplace Safety</td>
<td>Workers compensation</td>
</tr>
<tr>
<td>Level 1</td>
<td>Level 2</td>
<td>Level 3 (Activity Example)</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>Damage to Physical Assets</td>
<td>Disasters and Other Events</td>
<td>Natural disaster losses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human losses from external sources (terrorism,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>vandalism)</td>
</tr>
<tr>
<td>Business Disruption</td>
<td>Systems</td>
<td>Hardware</td>
</tr>
<tr>
<td>and System Failures</td>
<td></td>
<td>Software</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Telecommunications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Utility outage / disruptions</td>
</tr>
<tr>
<td></td>
<td>Suitability, Disclosure, and Fiduciary</td>
<td>Fiduciary breaches / guideline violations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suitability / disclosure issues (KYC, etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retail consumer disclosure violations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Breach of privacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aggressive sales</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Account churning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Misuse of confidential information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lender Liability</td>
</tr>
<tr>
<td></td>
<td>Clients, Products and Business Practices</td>
<td>Antitrust</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improper trade / market practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market manipulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insider trading (on firm's account)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unlicensed activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Money laundering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Product defects (unauthorised, etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Model errors</td>
</tr>
<tr>
<td></td>
<td>Selection, Sponsorship, and Exposure</td>
<td>Failure to investigate client per guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exceeding client exposure limits</td>
</tr>
<tr>
<td></td>
<td>Advisory Activity</td>
<td>Disputes over performance of advisory activities</td>
</tr>
</tbody>
</table>
## Risk Management Policy and Operating Manual

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3 (Activity Example)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transaction Capture, Execution, and Maintenance</strong></td>
<td></td>
<td>Miscommunication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data entry, maintenance or loading error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Missed deadline or responsibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Model / system misoperation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Accounting error / entity attribution error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other task misperformance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delivery failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collateral management failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reference Data Maintenance</td>
</tr>
<tr>
<td><strong>Monitoring and Reporting</strong></td>
<td>Failed mandatory reporting obligation</td>
<td>Inaccurate external report (loss incurred)</td>
</tr>
<tr>
<td><strong>Customer Intake and Documentation</strong></td>
<td>Client permissions / disclaimers missing</td>
<td>Legal documents missing / incomplete</td>
</tr>
<tr>
<td><strong>Customer/Client Account Management</strong></td>
<td>Unapproved access given to accounts</td>
<td>Incorrect client records (loss incurred)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negligent loss or damage of client assets</td>
</tr>
<tr>
<td><strong>Trade Counterparties</strong></td>
<td>Non-client counterparty misperformance</td>
<td>Misc. non-client counterparty disputes</td>
</tr>
<tr>
<td><strong>Vendors and Suppliers</strong></td>
<td>Outsourcing</td>
<td>Vendor Disputes</td>
</tr>
<tr>
<td>Event ID</td>
<td>Event Type</td>
<td>Event Status</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
## Event Loss Summary List

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Categories</th>
<th>Amount of Loss</th>
<th>Insurance Recoveries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Disruption and System failures</td>
<td>Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Systems Security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clients, Product and Business Practices</td>
<td>Suitability, Disclosures and Fiduciary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improper Business practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product Flaws</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selection, sponsorship &amp; Exposure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advisory activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damage to Physical Assets</td>
<td>Disaster and other Event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment practices and Workplace Safety</td>
<td>Employee Relations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diversity and Discrimination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Execution, Delivery and Transaction capture</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Process Management
- Execution, Maintenance
- Monitoring and Reporting
- Customer intake and documentation
- Customer client account management
- Trade Counterparties
- Vendors and Suppliers

## External Fraud
- Theft and Fraud
- System Security

## Internal Fraud
- Unauthorized Activity
- Theft and Fraud

### Appendix 8 - LDC Data Collection Template

<table>
<thead>
<tr>
<th>Data Field Name</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Event</td>
<td>Actual are loss events where Institution suffers financial loss. 'Near Miss' is the event where Institution did not suffer financial loss.</td>
</tr>
<tr>
<td>Event Status</td>
<td>Loss event may be treated as open if any further developments are expected or further losses/ recoveries are expected else the status should be marked as Closed.</td>
</tr>
<tr>
<td>Record Capture Date</td>
<td>The date when the loss event details were first captured.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Event</th>
<th>Event Status</th>
<th>Record Capture Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Near</td>
<td>Actual</td>
</tr>
<tr>
<td>Near</td>
<td>Miss</td>
<td>Near</td>
</tr>
<tr>
<td>Miss</td>
<td></td>
<td>Miss</td>
</tr>
<tr>
<td><strong>Date of Occurrence</strong></td>
<td>captured/reported (DD/MM/YYYY)</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Date of Detection</strong></td>
<td>The date on which the loss event was detected. (DD/MM/YYYY)</td>
<td></td>
</tr>
<tr>
<td><strong>Closure Date</strong></td>
<td>The date on which the status of the loss event is changed to Closed. It can be left blank if the Status is 'Open'.</td>
<td></td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Regional Office Code or Head Office Code</td>
<td></td>
</tr>
<tr>
<td><strong>Unit</strong></td>
<td>Department or Business function suffering loss, e.g. HUDCO Nivas</td>
<td></td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td>Process where the event has occurred</td>
<td></td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td>If the loss impacts only one single unit/department, the % is 100% by default. In case the loss impacts more than one departments, please specify the % allocation of losses across the departments e.g. Loss impact allocated to support departments like HR, Audit etc.</td>
<td></td>
</tr>
<tr>
<td><strong>Event Description</strong></td>
<td>Description of loss event along with all the relevant details.</td>
<td></td>
</tr>
<tr>
<td><strong>Loss Causes / Drivers</strong></td>
<td>Specify the most relevant cause for this loss event.</td>
<td></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Additional remarks if any to be inputted</td>
<td></td>
</tr>
<tr>
<td><strong>Loss Event type</strong></td>
<td>Loss event type as defined by Basel II guidelines</td>
<td></td>
</tr>
<tr>
<td><strong>Event Classification</strong></td>
<td>Broader classification of loss event in to people, process, system or external risk</td>
<td></td>
</tr>
<tr>
<td><strong>Initiator</strong></td>
<td>Specify the name of the user reporting the loss event.</td>
<td></td>
</tr>
<tr>
<td><strong>Reviewer</strong></td>
<td>Specify the name of the user who has reviewed the loss event</td>
<td></td>
</tr>
<tr>
<td><strong>Last Review Date</strong></td>
<td>Refers to the date when the loss event was last reviewed by the Reviewer.</td>
<td></td>
</tr>
<tr>
<td><strong>Financial Details</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Accounting Date</strong></td>
<td>Compulsory only if Fin Impact selected is actual loss</td>
<td></td>
</tr>
<tr>
<td><strong>Cost Centre</strong></td>
<td>Institution's cost centre code for the department for which loss is being reported. (Optional)</td>
<td></td>
</tr>
<tr>
<td><strong>Financial Impact</strong></td>
<td>Financial Impact type (Actual loss/ Loss Estimate)</td>
<td></td>
</tr>
<tr>
<td><strong>Write-Off</strong></td>
<td>Amount of loss actually written off</td>
<td></td>
</tr>
<tr>
<td><strong>Currency</strong></td>
<td>Currency in which loss was suffered</td>
<td></td>
</tr>
<tr>
<td><strong>Exchange Rate</strong></td>
<td>Exchange Rate of Currency for INR</td>
<td></td>
</tr>
<tr>
<td><strong>Loss Amount</strong></td>
<td>Loss amount (Actual/ estimate)</td>
<td></td>
</tr>
<tr>
<td><strong>Loss Amount (INR)</strong></td>
<td>Loss amount (Actual/ estimate) (INR)</td>
<td></td>
</tr>
<tr>
<td><strong>GL ID</strong></td>
<td>GL for Operational Losses or GL where loss amount has been booked</td>
<td></td>
</tr>
<tr>
<td><strong>Reference ID</strong></td>
<td>CBS/ Accounting system Transaction Ref. No. generated in system</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Recovery Details</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recovery Date</strong></td>
<td>Date of recovery</td>
</tr>
<tr>
<td><strong>Recovery Method</strong></td>
<td>Mode of recovery like recovery from insurance/ Recovery from Fraud dept.</td>
</tr>
<tr>
<td><strong>Accounting Date</strong></td>
<td>Date of accounting of recoveries</td>
</tr>
<tr>
<td><strong>Cost Centre</strong></td>
<td>Institution's cost centre code for the department for which loss is being reported. (Optional)</td>
</tr>
<tr>
<td><strong>Policy no</strong></td>
<td>Policy number under which claim is lodged</td>
</tr>
<tr>
<td><strong>Claim Amount</strong></td>
<td>Compulsory in case recovery is from insurance</td>
</tr>
<tr>
<td><strong>Currency</strong></td>
<td>Currency of recovery</td>
</tr>
<tr>
<td><strong>Exchange Rate</strong></td>
<td>Exchange Rate of Currency for INR</td>
</tr>
<tr>
<td><strong>Recovery Amount</strong></td>
<td>Actual amount of recovery</td>
</tr>
<tr>
<td><strong>GL ID</strong></td>
<td>GL for Operational Losses or GL where recovery amount has been entered</td>
</tr>
<tr>
<td><strong>Reference ID</strong></td>
<td>CBS/ Accounting system Transaction Ref. No. generated in system</td>
</tr>
</tbody>
</table>
Annexure A: Monitoring Reports

1. Portfolio Holding Report

This report will provide information on the current portfolio holding of treasury investments. The size of holding and the unrealized gain/loss can be obtained from this report. This report should be provided for each asset class in the investment portfolio.

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Current Market Value</th>
<th>Cost</th>
<th>Unrealized Gain/ (Loss)</th>
<th>% Gain/ (Loss)</th>
<th>Gain</th>
<th>Average Holding Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This report should be generated every month and submitted to the RMC.
For the foreign exchange exposure, the proposed report shall be as under:

2. **Instrument type-wise Exposure Report**

This report provides a break-up of the exposure along the various asset classes and compares it with the exposure limits set in the policy. The asset classes which should be included in the report are:
- Government Securities
- Fixed Deposits
- Certificate of Deposit
- State & Central Government Bonds
- Equity Investments

**Report Format**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Exposure</th>
<th>% of Total Portfolio</th>
<th>Exposure Limit</th>
</tr>
</thead>
</table>
3. Risk Monitoring Reports

These reports are designed to monitor the portfolio for potential downsides due to movement in market rates. The EaR analysis tools should be used and the results provided to the management for decision making.

They should be generated on a quarterly basis and be submitted to the RMC.

4. Earnings-at-Risk Reports

'Earnings at risk' report provides the deviation in earnings with a shift in market interest rates. The EaR analysis is done for interest rate sensitive assets in the portfolio. The report should provide EaR values for different interest risk movements; i.e., shifts in the yield curve.

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Earnings at Risk</th>
<th>50 basis points</th>
<th>100 basis points</th>
<th>200 basis points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Portfolio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following limit framework shall be adopted to monitor the net exposure to Foreign Exchange risk.

1.1. Overnight Exposure Limit
As there is no trading in foreign exchange, no specific limit is currently proposed.

1.2. Currency-wise Individual Gap Limit
As there is no trading in foreign exchange, no specific limit is currently proposed.

1.3. Management Action Trigger
The overall MAT for the FX portfolio would be set at 1% of the FX position at the beginning of the year.

Investment Portfolio
The following limit framework shall be adopted to monitor the net exposure to Interest rate risk.

Instrument Limit
Based on the current level of equity and underlying instrument specific risks, the net open position limit per instrument shall be as under:

<table>
<thead>
<tr>
<th>Investment</th>
<th>Maximum Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Securities</td>
<td>100%</td>
</tr>
<tr>
<td>Fixed Deposits</td>
<td>100%</td>
</tr>
<tr>
<td>Corporate Bonds</td>
<td>10%</td>
</tr>
</tbody>
</table>
Risk Management Policy and Operating Manual

1.4. Management Action Trigger

The overall MAT for the debt investment portfolio would be set at 1% of the debt holdings at the beginning of the year.

1.5. Duration Limit

Based on the underlying instrument specific risks, the net duration limit per rating grade shall be as under:

<table>
<thead>
<tr>
<th>Rating Bucket</th>
<th>Duration (in Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBB &amp; Below</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>AA – A</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>AAA</td>
<td>&gt; 5</td>
</tr>
</tbody>
</table>

2. Equity Beta Equivalent Limit

The minimum stock Beta shall be 0.5 and maximum beta shall be 2. On an overall portfolio level, it should be ensured that the portfolio beta is greater than 0.8. The portfolio would be benchmarked to BSE 30 or NIFTY.
## Annexure 1: Maturity Profile for Liquidity Statement

### A. OUTFLOWS

<table>
<thead>
<tr>
<th>Heads of Account</th>
<th>Time-bucket category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Capital funds</strong></td>
<td></td>
</tr>
<tr>
<td>a) Equity capital, non-redeemable or perpetual preference capital, Reserves, Funds and Surplus</td>
<td>The 'Over 10 years' time-bucket.</td>
</tr>
<tr>
<td>b) Preference capital - redeemable/non-perpetual</td>
<td>As per the residual maturity of the shares.</td>
</tr>
<tr>
<td><strong>2. Gifts, grants, donations and benefactions</strong></td>
<td>The 'Over 10 years' time-bucket. However, if such gifts, grants, etc., are tied to specific end-use, then these may be slotted in the time-bucket as per purpose/end-use specified.</td>
</tr>
<tr>
<td><strong>3. Notes, Bonds and debentures</strong></td>
<td></td>
</tr>
<tr>
<td>a) Plain vanilla bonds/debentures</td>
<td>As per the residual maturity of the instruments</td>
</tr>
<tr>
<td>b) Bonds/debentures with embedded call / put options (including zero-coupon/deep discount bonds)</td>
<td>As per the residual period for the earliest exercise date for the embedded option.</td>
</tr>
<tr>
<td>c) Fixed rate notes</td>
<td>As per the residual maturity</td>
</tr>
<tr>
<td><strong>4. Deposits</strong></td>
<td></td>
</tr>
<tr>
<td>a) Term deposits from public</td>
<td>As per the residual maturity</td>
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</tr>
<tr>
<td>b) Inter corporate deposits</td>
<td>These, being institutional/wholesale deposits, should be slotted as per their residual maturity</td>
</tr>
<tr>
<td>c) Certificates of deposit</td>
<td>As per the residual maturity</td>
</tr>
<tr>
<td>5. Borrowings</td>
<td></td>
</tr>
<tr>
<td>a) Term money borrowings</td>
<td>As per the residual maturity</td>
</tr>
<tr>
<td>b) From RBI, Govt., &amp; others</td>
<td>As per the residual maturity</td>
</tr>
<tr>
<td>c) Institution borrowings in the nature of WCDL, CC, etc.</td>
<td>As per the residual maturity</td>
</tr>
<tr>
<td>5. Current liabilities and provisions:</td>
<td></td>
</tr>
<tr>
<td>a) Sundry creditors</td>
<td>As per the due date or likely timing of cash outflows. A behavioral analysis could also be made to assess the trend of outflows and the amounts slotted accordingly.</td>
</tr>
<tr>
<td>b) Expenses payable (other than interest)</td>
<td>As per the likely timing of the cash outflow.</td>
</tr>
<tr>
<td>c) Advance income received, receipts from borrowers pending adjustment</td>
<td>In the 'over 10 years' time-bucket as these do not involve any cash outflow.</td>
</tr>
<tr>
<td>d) Interest payable on bonds/deposits</td>
<td>In respective time buckets as per the due date of payment</td>
</tr>
<tr>
<td>e) Provisions for NPAs</td>
<td>The amount of provision may be netted out from the gross amount of the loan portfolio and the net amount of NPAs be shown as an item under inflows in stipulated time-buckets.</td>
</tr>
<tr>
<td>f) Provision for investments portfolio</td>
<td>The amount may be netted from the gross value of investments portfolio and the net investments be shown as inflow in the prescribed time-slots. In case provisions</td>
</tr>
</tbody>
</table>
Risk Management Policy and Operating Manual

are not held security-wise, the provision may be shown in 'over 10 years' bucket.

g) Other provisions
To be bucketed as per the purpose/nature of the underlying transaction.

9. INFLOWS

<table>
<thead>
<tr>
<th>Heads of Account</th>
<th>Time-bucket category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cash</td>
<td>in 1 to 14 days time-bucket.</td>
</tr>
<tr>
<td>2. Remittance in transit</td>
<td>in 1 to 14 days time-bucket</td>
</tr>
<tr>
<td>3. Balances with Institutions:</td>
<td></td>
</tr>
<tr>
<td>a) Current account</td>
<td>The stipulated minimum balance be shown in 6 months to one year bucket. The balance in excess of the minimum balance be shown in 1 to 14 days time-bucket.</td>
</tr>
<tr>
<td>b) Deposit accounts/short term deposits</td>
<td>As per residual maturity.</td>
</tr>
<tr>
<td>4. Investments (net of provisions):</td>
<td></td>
</tr>
<tr>
<td>a) Mandatory investments</td>
<td>As suitable to the HFC</td>
</tr>
<tr>
<td>b) Non-mandatory listed</td>
<td>In '1 to 14 days', 'Over 14 days to one month', 'Over one month and upto 2 months' and 'over 2 months and upto 3 months' buckets depending upon the defeasance period proposed by the HFC.</td>
</tr>
<tr>
<td>c) Non-mandatory unlisted securities (e.g.)</td>
<td>Over 10 years</td>
</tr>
</tbody>
</table>

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### Heads of Account

<table>
<thead>
<tr>
<th>Heads of Account</th>
<th>Time-bucket category</th>
</tr>
</thead>
<tbody>
<tr>
<td>d) Non-mandatory unlisted securities having a fixed term maturity</td>
<td>As per the residual maturity</td>
</tr>
<tr>
<td>e) Venture capital units</td>
<td>In the 'over 10 years' time bucket</td>
</tr>
<tr>
<td>5. In case trading book is followed</td>
<td></td>
</tr>
<tr>
<td>Equity shares, convertible preference shares, non-redeemable perpetual preference shares; shares of subsidiaries/joint ventures and units in open ended mutual funds and other investments</td>
<td>(i) Shares classified as &quot;current investments&quot; representing trading book of the HFC may be shown in time buckets of &quot;1 day to 14 days&quot;, &quot;Over 14 days to one month&quot;, &quot;Over one month and upto 2 months&quot; and 'over 2 months and upto 3 months' depending upon the defeasance period proposed by the HFC.</td>
</tr>
<tr>
<td></td>
<td>(ii) Shares classified as &quot;long term investments&quot; may be kept in 'over 10 years' time bucket. However, the shares of the assisted units/companies acquired as part of the initial financing package, may be slotted in the relative time bucket keeping in view the pace of project implementation/time over-run, etc., and the resultant likely time-frame for divesting such shares.</td>
</tr>
<tr>
<td>6. Advances (performing) :</td>
<td></td>
</tr>
<tr>
<td>a) Bill of Exchange and promissory notes discounted and rediscounted</td>
<td>As per the residual usance of the underlying bills.</td>
</tr>
<tr>
<td>b) Term loans (rupee loans only)</td>
<td>The cash inflows on account of the interest and principal of the loan may be slotted in respective time buckets as</td>
</tr>
<tr>
<td>Heads of Account</td>
<td>Time-bucket category</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>c) Corporate loans/short term loans</td>
<td>per the timing of the cash flows as stipulated in the original/revised repayment schedule.</td>
</tr>
<tr>
<td>7. Non-performing loans: (May be shown net of the provisions and interest suspense held)</td>
<td>As per the residual maturity</td>
</tr>
<tr>
<td>a) Sub-standard</td>
<td>In the 3 to 5 year time-bucket.</td>
</tr>
<tr>
<td>i) All overdues and instalments of principal falling due during the next three years</td>
<td>In the time-bucket arrived at after adding 3 years to the respective due dates of various instalments of principal.</td>
</tr>
<tr>
<td>ii) Entire principal amount due beyond the next three years</td>
<td></td>
</tr>
<tr>
<td>b) Doubtful and loss</td>
<td>In the 5 to 7 year bucket.</td>
</tr>
<tr>
<td>i) All instalments of principal falling due during the next five years as also all overdues</td>
<td>In the time-bucket arrived at after adding five years to the respective due dates of various instalments of principal.</td>
</tr>
<tr>
<td>ii) Entire principal amount due beyond the next five years</td>
<td></td>
</tr>
<tr>
<td>8. Assets on lease</td>
<td>Cash flows from the lease transaction may be slotted in respective time buckets as per the timing of the cash flow.</td>
</tr>
<tr>
<td>9. Fixed assets (excluding leased assets)</td>
<td>In the 'Over 10 years' time-bucket</td>
</tr>
<tr>
<td>10. Other assets</td>
<td>In the 'Over 10 year' time-bucket</td>
</tr>
<tr>
<td>(a) Intangible assets and items not representing</td>
<td></td>
</tr>
</tbody>
</table>
Risk Management Policy and Operating Manual

<table>
<thead>
<tr>
<th>Heads of Account</th>
<th>Time-bucket category</th>
</tr>
</thead>
<tbody>
<tr>
<td>cash inflows</td>
<td></td>
</tr>
<tr>
<td>(b) Other items (such as accrued income, other receivables, staff loans, etc.)</td>
<td>In respective maturity buckets as per the timing of the cash flows.</td>
</tr>
</tbody>
</table>

C. CONTINGENT LIABILITIES

a) Letters of credit/guarantees (outflow through Devolvement) | Based on the past trend analysis of the devolvements vis-à-vis the outstanding amount of guarantees (net of margins held), the likely devolvements should be estimated and this amount could be distributed in various time buckets on judgmental basis. The assets created out of devolvements may be shown under respective maturity buckets on the basis of probable recovery dates. |

b) Loan commitments pending disbursal (outflow) | In the respective time buckets as per the sanctioned disbursement schedule |

c) Lines of credit committed to/by other Institutions (outflow/inflow) | As per usance of the bills to be received under the lines of credit |

NOTE

a) Any event-specific cash flows (e.g. outflow due to wage settlement arrears, capital expenses, income tax refunds, etc.) should be shown in a time bucket corresponding to timing of such cash flows.
b) All overdue liabilities be shown in the 1 to 14 days time bucket.
c) Overdue receivables on account of interest and instalments of standard loans/hire purchase assets/lease rentals should be slotted as below:
FINANCING OF GAPS

The negative gap (i.e., where outflows exceed inflows) in the first two time buckets, viz, '1-14 days' and 'over 14 days to one month' should not exceed the prudential limit of 15 per cent of the cash outflows of each time-bucket and the cumulative gap up to the one year period should not exceed 15% of the cumulative cash outflows up to one year period. In case these limits are exceeded, the measures proposed for bringing the gaps within the limit, should be shown by a footnote in the relative statement.
# Annexure 2: Interest Rate Sensitivity Profile

<table>
<thead>
<tr>
<th>Heads of accounts</th>
<th>Time bucket for rate sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. LIABILITIES</strong></td>
<td></td>
</tr>
<tr>
<td>1. Capital, Reserves &amp; Surplus</td>
<td>Non-sensitive</td>
</tr>
<tr>
<td>2. Gifts, grants &amp; benefactions</td>
<td>Non-sensitive</td>
</tr>
<tr>
<td>3. Notes, bonds &amp; debentures:</td>
<td></td>
</tr>
<tr>
<td>a) Floating rate</td>
<td>Sensitive; reprice on the rollover/repricing date, should be slotted in respective time buckets as per the repricing dates.</td>
</tr>
<tr>
<td>b) Fixed rate (plain vanilla) including zero coupons</td>
<td>Sensitive; reprice on maturity. To be placed in respective time buckets as per the residual maturity of such instruments.</td>
</tr>
<tr>
<td>c) Instruments with embedded options</td>
<td>Sensitive; could reprice on the exercise date of the option, particularly in rising interest rate scenario. To be placed in respective time buckets as per the repricing dates.</td>
</tr>
</tbody>
</table>
Risk Management Policy and Operating Manual

<table>
<thead>
<tr>
<th>4. Deposits:</th>
<th>Deposits/Borrowings</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Deposits:</td>
<td>Fixed rate Sensitive; could reprice on maturity or in case of premature withdrawal being permitted, after the lock-in period, if any, stipulated for such withdrawal. To be slotted in respective time buckets as per residual maturity or as per residual lock-in period, as the case may be. The prematurely withdrawable deposits with no lock-in period or past such lock-in period, should be slotted in the earliest/shortest time bucket.</td>
</tr>
<tr>
<td>i) Fixed rate</td>
<td>Floating rate Sensitive; reprice on the contractual roll-over date. To be slotted in the respective time buckets as per the residual period till the earliest ensuing re-pricing date.</td>
</tr>
<tr>
<td>ii) Floating rate</td>
<td></td>
</tr>
<tr>
<td>b) ICDs</td>
<td>Sensitive; reprice on maturity. To be slotted as per the residual maturity in the respective time buckets.</td>
</tr>
<tr>
<td>5. Borrowings:</td>
<td></td>
</tr>
<tr>
<td>a) Term-money borrowing</td>
<td>Sensitive; reprices on maturity. To be placed as per residual maturity in the relative time bucket.</td>
</tr>
</tbody>
</table>
## Risk Management Policy and Operating Manual

### b) Borrowings from others

<table>
<thead>
<tr>
<th>i) Fixed rate</th>
<th>Sensitive; reprice on maturity. To be placed as per residual maturity in the relative time bucket.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii) Floating rate</td>
<td>Sensitive; reprice on the roll-over/repricing date. To be placed as per residual period to the repricing date in the relative time bucket.</td>
</tr>
</tbody>
</table>

### 6. Current liabilities and provisions :

| a) Sundry creditors | |
| b) Expenses payable | |
| c) Swap adjustment a/c. | |
| d) Advance income received/receipts from borrowers pending adjustment | |
| e) Provisions | |
| f) Interest payable on bonds/deposits | Non-sensitive. |

### 7. Repos/bills rediscouned/forex-rupee swaps (sell/buy)

| Sensitive; re-price on maturity. To be placed as per the residual maturity of the underlying transaction in respective buckets. |

### B. ASSETS:

<table>
<thead>
<tr>
<th>1. Cash</th>
<th>Non-sensitive</th>
</tr>
</thead>
</table>
## Risk Management Policy and Operating Manual

### 2. Remittance in transit
- Non-sensitive

### 3. Balances with Institutions in India
   - **a)** In current account
     - Non-sensitive.
   - **b)** In deposit accounts, money at call and short notice and other placements
     - Sensitive; reprices on maturity. To be placed as per residual maturity in respective time-buckets.

### 4. Investments
   - **a)** Fixed income securities (e.g. govt. securities, zero coupon bonds, bonds, debentures, cumulative/non-cumulative redeemable preference shares, etc.)
     - Sensitive on maturity. To be slotted as per residual maturity.
     - However, the bonds/debentures valued by applying NPA norms due to non-servicing of interest, should be shown, net of provisions made, in the time buckets prescribed at items B.7(a) and B.7(b) in Annexure 1.
   - **b)** Floating rate securities
     - Sensitive; re-price on the next re-pricing date.
     - To be slotted as per residual time to the re-pricing date.
   - **c)** Equity shares, convertible preference shares, shares of subsidiaries/joint ventures, venture capital units
     - Non-sensitive.

### 5. Advances (performing)
   - **a)** Bills of exchange, promissory notes
     - Sensitive on maturity. To be slotted as per the
## Risk Management Policy and Operating Manual

<table>
<thead>
<tr>
<th>discounted &amp; rediscounted</th>
<th>residual usance of the underlying bills.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>b) Term loans/corporate loans/Short Term Loans (rupee loans only)</strong></td>
<td></td>
</tr>
<tr>
<td>i) Fixed Rate</td>
<td>Sensitive on cash flow/maturity.</td>
</tr>
<tr>
<td>ii) Floating Rate</td>
<td>Sensitive only when the risk premium is changed by the HFCs. The amount of term loans should be slotted in time buckets which correspond to the time taken by HFCs to effect changes in their PLR in response to market interest rates.</td>
</tr>
</tbody>
</table>

### 6. Non-performing loans:

(net of provisions, interest suspense and claims received from ECGC)

| a) Sub-standard | b) Doubtful and loss | |
|-----------------|----------------------| |

### 7. Assets on lease

The cash flows on lease assets are sensitive to changes in interest rates. The entire cash flows on leased assets should be slotted in respective time-buckets as per the timing of the cash flows.

### 8. Fixed assets (excluding assets on lease)

Non-sensitive

### 9. Other assets
### Risk Management Policy and Operating Manual

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Intangible assets and items not representing cash flows.</td>
<td>Non-sensitive.</td>
</tr>
<tr>
<td>b) Other items (e.g. accrued income, other receivables, staff loans, etc.)</td>
<td>Non-sensitive</td>
</tr>
</tbody>
</table>

10. **Reverse Repos/Swaps (buy/sell)/Bills rediscounted (Derivative Usance Promissory Notes)** Sensitive on maturity. To be slotted as per residual maturity of the underlying transaction.

11. **Other (interest rate) products**

   a) Interest rate swaps/FRAs Sensitive; to be slotted as per residual maturity in respective time buckets.

   b) Other derivatives To be classified suitably as and when introduced.
## Annexure 3: Statement of Structural Liquidity

**(as on: )**

**Name of the HFC:**

## A. OUTFLOWS

<table>
<thead>
<tr>
<th>Items/time buckets</th>
<th>1 to 14 days</th>
<th>Over 14 days to one month</th>
<th>Over one month to 2 months</th>
<th>Over 2 months to 3 months</th>
<th>Over 3 months to 6 months</th>
<th>Over 6 months to 1 year</th>
<th>Over 1 year to 3 years</th>
<th>Over 3 years to 5 years</th>
<th>Over 5 years to 7 years</th>
<th>Over 7 years to 10 years</th>
<th>Over 10 years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Capital</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>a) Equity and perpetual preference shares</td>
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<tr>
<td>b) Non-perpetual preference shares</td>
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<tr>
<td>2. Reserves &amp; Surplus</td>
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<tr>
<td>3. Gifts, grants, donations &amp; benefactions</td>
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<tr>
<td>4. Notes, bonds &amp; debentures</td>
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<tr>
<td>a) Plain vanilla bonds/debentures</td>
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<tr>
<td>b) Bonds/debentures with embedded</td>
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</tr>
<tr>
<td>Items/time buckets</td>
<td>1 to 14 days</td>
<td>Over 14 days to one month</td>
<td>Over one month to 2 months</td>
<td>Over 2 months to 3 months</td>
<td>Over 3 months to 6 months</td>
<td>Over 6 months to 1 year</td>
<td>Over 1 year to 3 years</td>
<td>Over 3 years to 5 years</td>
<td>Over 5 years to 7 years</td>
<td>Over 7 years to 10 years</td>
<td>Over 10 years</td>
<td>Total</td>
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<td>Options</td>
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<tr>
<td>c) Fixed rate notes</td>
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<tr>
<td>5. Deposits</td>
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<tr>
<td>a) Term deposits</td>
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<td>b) ICDs</td>
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<td>c) CDs</td>
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<tr>
<td>6. Borrowings</td>
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<tr>
<td>a) Term money</td>
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<td>borrowings</td>
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<tr>
<td>b) From RBI, Govt, &amp; Others</td>
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<td>d) Interest payable on bonds/deposits</td>
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### Risk Management Policy and Operating Manual

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<td>d) Outflows on account of forward exchange contracts, rupee/dollar swaps &amp; bills rediscounted</td>
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<td>B. Cumulative Outflows (B)</td>
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**B. INFLOWS**
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<td>2. Remittance in transit</td>
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<td>c) Money at call &amp; short notice</td>
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<td>5. Advances (performing)</td>
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<td>a) Bills of exchange and promissory notes discounted &amp;</td>
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<td>c) Corporate loans/short term loans</td>
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<td>6. Non-performing loans (net of)</td>
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Risk Management Policy and Operating Manual

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<th>Over 7 years to 10 years</th>
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<th>Total</th>
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<td>9. Other assets</td>
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<td>b) Interest and other income receivable</td>
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<td>10. Lines of credit committed by other institutions (inflows)</td>
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### Risk Management Policy and Operating Manual

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<td>D. Mismatch</td>
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<td>E. Mismatch as % to outflows (D as % to A)</td>
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<td>F. Cumulative Mismatch</td>
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<td>G. Cumulative Mismatch as % to Cumulative Outflows (F as % to B)</td>
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Annexure 4: Statement of short-term dynamic liquidity
(as on: __________________) (Amount in crore of rupees)

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<th>15-28 days</th>
<th>29 days to 3 months</th>
<th>3-6 months</th>
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<td>1. Increase in loans and advances</td>
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<td>2. Net increase in investments</td>
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<td>i. Government/approved securities</td>
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<td>ii. Bonds/debentures/shares</td>
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<td>iii. Others</td>
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<td>3. Net decrease in public deposits, ICDs</td>
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<td>4. Net decrease in borrowing from various sources/net increase in market lending</td>
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<td>5. Outflow on account of off-balance sheet items</td>
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<td>6. Other outflows</td>
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<td>TOTAL OUTFLOWS (A)</td>
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<td>B. INFLOWS</td>
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<td>1. Net cash position</td>
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<td>Particulars</td>
<td>1-14 days</td>
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<td>29 days to 3 months</td>
<td>3-6 months</td>
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<tr>
<td>2. Net increase in deposits, ICDs</td>
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<td>3. Interest inflow on investments</td>
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<td>4. Interest inflow on performing advances</td>
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<td>5. Net increase in borrowing from various sources</td>
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<td>6. Inflow on account of off-balance sheet items</td>
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<td>7. Other inflows</td>
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<td><strong>TOTAL INFLOWS (B)</strong></td>
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| C. Mismatch (B-A)                               |           |            |                     |            |
| D. Cumulative mismatch                          |           |            |                     |            |
| E. C as percentage to total outflows           |           |            |                     |            |
## Annexure 5: Statement of Interest Rate Sensitivity

(as on:)

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<th>Items/Time buckets</th>
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<th>Over 1 year to 3 years</th>
<th>Over 3 years to 5 years</th>
<th>Over 5 years to 7 years</th>
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<th>Non-Sensitive</th>
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<td>b) Non-perpetual preference shares</td>
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<td>3. Gifts, grants, donations &amp; benefactions</td>
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<td>Items/Time buckets</td>
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### Risk Management Policy and Operating Manual

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### Risk Management Policy and Operating Manual

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<td>D. Mismatch (C - A)</td>
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<td>Items/Time buckets</td>
<td>1 to 14 days to one month</td>
<td>Over 14 days to 2 months</td>
<td>Over 2 months to 3 months</td>
<td>Over 3 months to 6 months</td>
<td>Over 6 months to 1 year</td>
<td>Over 1 year to 3 years</td>
<td>Over 3 years to 5 years</td>
<td>Over 5 years to 7 years</td>
<td>Over 7 years to 10 years</td>
<td>Over 10 years to Non-Sensitive</td>
<td>Total</td>
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<td>Mismatch as % to outflows (D as % to A)</td>
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<td>F. Cumulative Mismatch</td>
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<td>G. Cumulative Mismatch as % to Cumulative Outflows (F as % to B)</td>
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