JSE Clear Pty Ltd Bond CCP Specification Overview

JSE | CLEAR

Contents

Document control

Document information

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Date	Version	Description
22 October 2024	1.0	Initial published version
23 June 2025	1.1	a) New sections included: • Default Management • Intraday Risk Management • Reporting (reference to the supplementary document created for CCP reports) b) Definitions, acronyms & abbreviations updated to include: • CSD • CSDP • GCMS and • IMC c) Expanded on P&L vectors in section 7.3 d) The securities collateral service referred to in section 8 and any other references to securities collateral will not be implemented in phase 1 of the project. The service will be implemented at a later date.

05 December 2025	1.2	The following updates were made to the document. a) Updated guaranteed flag to cleared flag. b) Prioritisation of cleared trades changed to prioritisation of ETP trades. c) Updated section 10.3 Managing trade rejections.

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Definitions, acronyms and abbreviations

Term/ Abbreviation/ Acronym	Description
API	An Application Programmable Interface is a component that exposes application functionality to a user-base, using encapsulation, abstraction principles, a standardised security layer and tools for building software applications, and it specifies how software components should interact and are used, consistent with the operating environment.
BTB	Back-to-back
CCP	A central clearing counterparty (CCP), also referred to as a central counterparty, is an organization that takes on counterparty credit risk between parties to a transaction and provides clearing and settlement services for trades. CCPs are highly regulated institutions that specialize in managing counterparty credit risk.
CH	Clearing House
CM	Clearing member
cVM	Contingent Variation Margin
CI	Confidence Interval A confidence interval displays the probability that a parameter will fall between a pair of values around the mean. Confidence intervals measure the degree of uncertainty or certainty in a sampling method.
CSD	Central Securities Depository e.g. Strate
CSDP	Central Securities Depository Participant
EOD	"End of day" is the period after trading hours, for business days, after all batches have run just prior to shutting down JSE trading and clearing systems. Business days exclude Saturdays, Sundays and any public holiday as gazetted by the government of the Republic of South Africa from time to time.
ETP	Exchange Central Order Book Market A JSE managed electronic trading platform (ETP) for government bonds that facilitates anonymous trading via a live central order book
GCMS	Global Clearing Management System
IM / IMR	Initial margin
IRD	Interest Rate Derivatives
IMC	Intraday Margin Call
JSEC	JSE Clear Pty Ltd
MPOR	Margin Period of risk A period of time prior to a default by a counterparty to a financial transaction when the counterparties cease to exchange the contractual margin or trade flows. This time period lapses between the last exchange of collateral (corresponding to a netting set of transactions) with a defaulting counterparty until the position involving the counterparty is closed out. A margin period of risk determines the period of time any close out is expected to take, at the end of which the market risk is neutralized.

OTC	Bilateral over-the-counter trading of bonds amongst offshore (non-residents) counterparties which are reported directly to the CSD (Strate)
PD	Primary Dealer
P&L	Profit & Loss
Repo	Repurchase agreement A form of short-term borrowing
SOD	Start of Day
TM	Trading member
VaR	Value at risk
VM	Variation Margin
rVM	Realised Variation Margin

Document purpose

The purpose of this document is to provide an overview of the clearing services for Bond securities provided by JSE Clear, the central counterparty (CCP) in the South African market. It describes the services offered and how market participants will interact with and utilise the services. The services described in this document are based on the new, changed and enhanced functions being implemented as part of the Bond CCP programme. This document will be a 'living' document and will be updated from time to time as new services are introduced, removed or modified.

This document is focused on the business process and functional level and not at the technical system level.

1. Overview

1.1. Bond CCP objectives

The development of the Bonds CCP clearing service has been driven by the unanimous support and desire from market participants and National Treasury to improve market protection, access and increased liquidity in the Bonds ETP market.

The primary objectives and market benefits of CCP clearing include:

- improved market protection and transparency.
- broadened access to the ETP and repo markets therefore increasing trade liquidity; and
- reduced counterparty credit risk and operational efficiency for banks.

CCP clearing is a vital service required to scale trading activity in the current Bonds ETP market by enabling trading access to all other trading participants i.e. IDBs, IBs, Clients (through client clearing services offered by clearing member banks).

CCP clearing strengthens our local financial market infrastructure and aligns to global best practices in clearing and risk management.

JSE Clear, a fully independent and internationally recognised CCP, and is well positioned to leverage its existing CCP clearing infrastructure and integration with clearing member banks to provide a timeous and cost-effective domestic bonds and repo CCP clearing service for South Africa.

1.2. Bond CCP implementation approach

The implementation of the CCP clearing service for Bond securities will be done in a phased approach with the aim of minimising market impact, reducing overall project delivery risk, and shortening time to market.

The first phase will focus on developing the CCP clearing service for JSE listed government bonds and repos that are executed between primary dealers via the JSE Bonds ETP and JSE Reported markets.

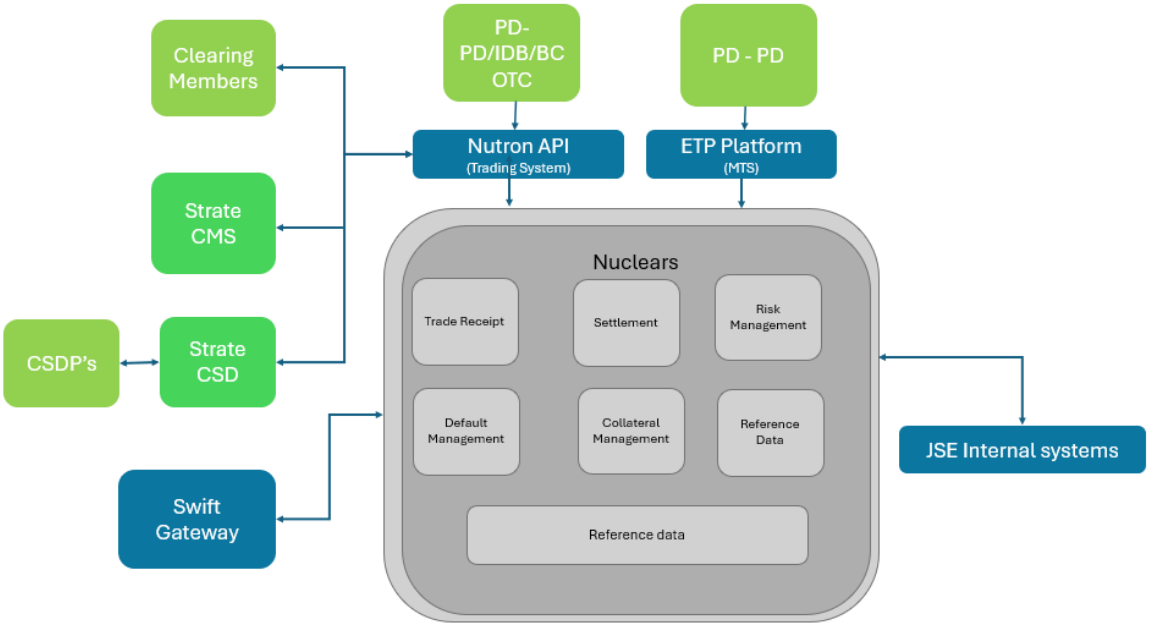
Leveraging off the foundational development done in phase one, the second phase will look to expand the CCP clearing service to institutional brokers and buy-side clients through client clearing services offered by JSEC clearing members.

	Phase 1	Phase 2
Description	CCP clearing of SA government bonds and repos executed between primary dealers via the JSE ETP and JSE Reported markets.	Expansion of the CCP clearing product set and participation to institutional brokers and buy-side clients through client clearing services offered by JSEC clearing members.
Execution markets	JSE ETP JSE Reported	JSE ETP JSE Reported

Trading participants	Primary Dealers	Primary Dealers Inter-dealer Brokers (IDBs) Institutional brokers Buy-side clients
Issuer segment	SA Government bonds	SA Government bonds State Owned Enterprises • Assessed on a case-by-case based on the risk characteristics of the bond. • Only government guaranteed SOE bonds will be considered Other
Product types	Cash bonds • Zero coupon • Nominal (fixed coupon and floating-rate coupon) • Inflation-linked Initial Settlement: from trade date (same day settlement) to any future date up to 12 months from trade date*. Bond Buy Sell Backs / Sell Buy Backs • Zero coupon • Nominal (fixed coupon and floating-rate coupon) • Inflation-linked Repo Rate type: Fixed repo rate Tenor type: Closed (i.e. Settlement Date is up to a maximum of 12 months from Trade Date) Initial Settlement: start date of BSB, which can be trade date (same day settlement) to any future date up to 12 months from trade date* Return Settlement: end date of BSB, which can be Initial Settlement date + 1 day to any future date up to 12 months from trade date*. Return Settlement date must be greater than Initial Settlement date by at least 1 day. *Settlement date cannot be greater than the maturity date of the underlying bond. In this case the settlement date is restricted to maturity date of the bond - 1 day.	All product types & rules in Phase 1 Repo Rate type: Fixed & Variable Classic Repos Switch trades (Collateral swap) General collateral (GC) baskets Open ended and evergreen repos

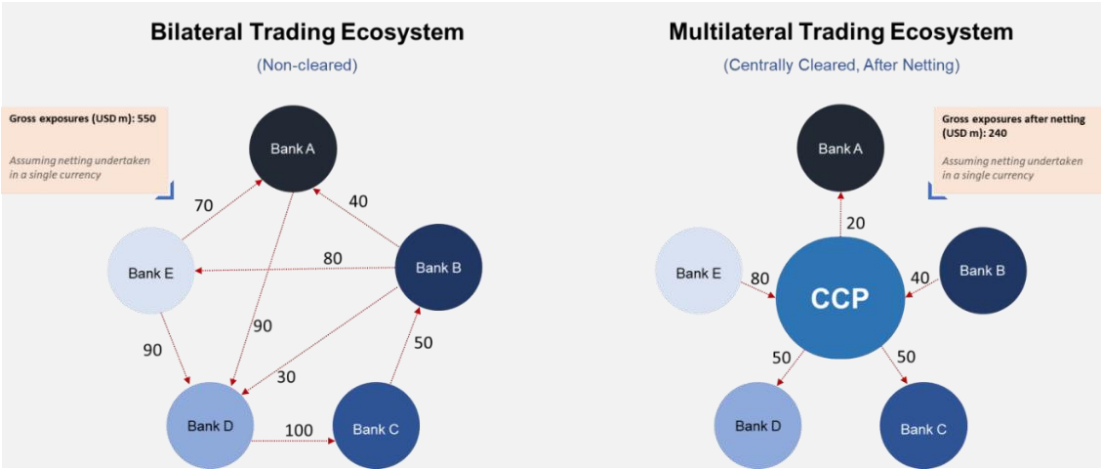
1.3. Bond CCP landscape

The following diagram provides a bird's eye view of the Bond CCP systems and market participant landscape.



2. Benefits of trade novation

When trades are novated at a CCP, the resulting multilateral netting benefits can increase operational efficiency and reduce counterparty credit risk, collateral requirements and liquidity needs of members, by converting the complex web of bilateral exposures into a single net exposure with the CCP.

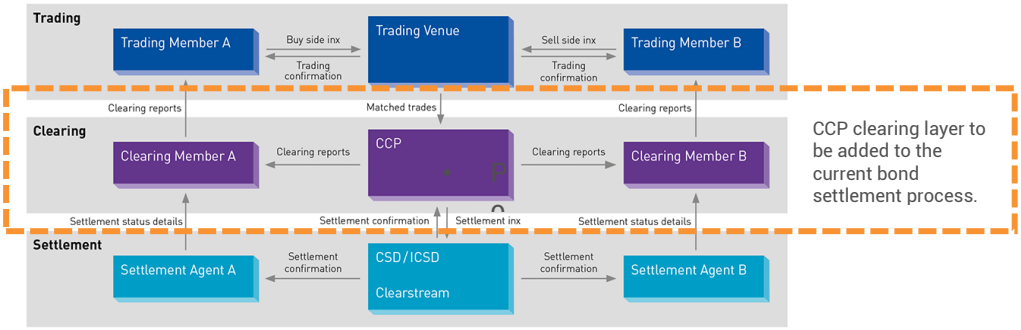


3. Changes to implement CCP clearing for cash bonds

The diagram below illustrates the layer which will be added for CCP clearing.

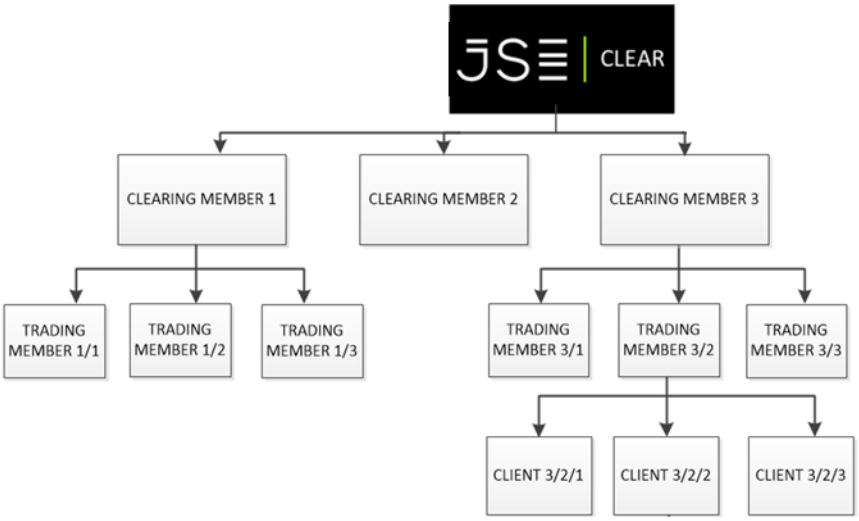
The CCP layer adds many benefits to the bonds markets, some of which are listed below.

- reduction of counterparty credit risk as the CCP becomes the buyer to the seller and the seller to the buyer.
- multilateral netting of exposure, which reduces exposure significantly
- default mitigation.
- management of a default using a structured default management process.



4. Risk management structure

The following diagram reflects the high-level risk market structure for clearing.



- The Clearing House (CH) represents the highest hierarchical level and is the CCP clearing business of JSE Clear.
- A Clearing Member (CM) is a direct member of the Clearing House and has legal and contractual responsibility to uphold the rules of the Clearing House.
- A Trading Member (TM) has a direct relationship with one or multiple CMs and has no responsibility to the CH other than through the CM.
- A Member Client is associated directly with one or multiple TMs.

5. Participant Account types and Structures

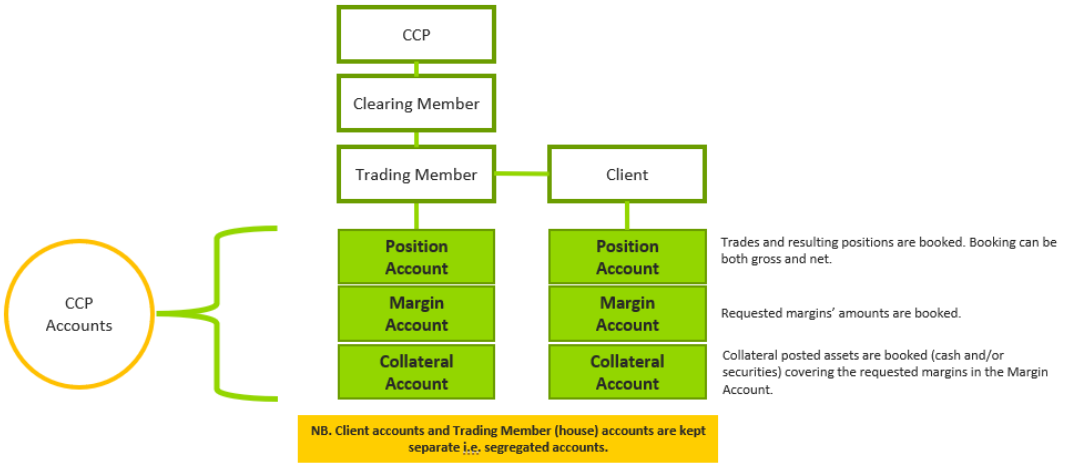
This section provides an overview of the various position and collateral accounts that are facilitated by the JSEC clearing system. These accounts can be defined as follows:

CCP accounts:

Margin accounts – risk exposures for all trading members and clients are calculated and margined for each account defined in the clearing system. This is the level at which portfolio margin is calculated and is defined by the owner of the risk and the risk hierarchy or path of risk underwriting in the entity and account structure.

Collateral accounts – Collateral accounts are used to track the various collateral types, i.e. ZAR cash and securities that are paid/pledged to JSEC against member and client margin requirements.

Position accounts – these are the accounts on which positions in derivative contracts are recorded and will include cleared bond trades. The various types of position accounts allow market participants to manage their trading business and segregate or group proprietary and client positions for accounting, regulation and user access purposes. The various account types are described below, with each having its own usage rules as defined by the JSEC.



House accounts:

Trading member main accounts

All trading members will have a separate house main account that is created automatically when the trading member is linked to a clearing member. This account is mainly used as the default account for all proprietary trading by the trading member. The name of the account is the same as the trading member. All positions in this account are rolled up to the trading member level. Note: It is not possible to add additional house main accounts.

Member branch main accounts

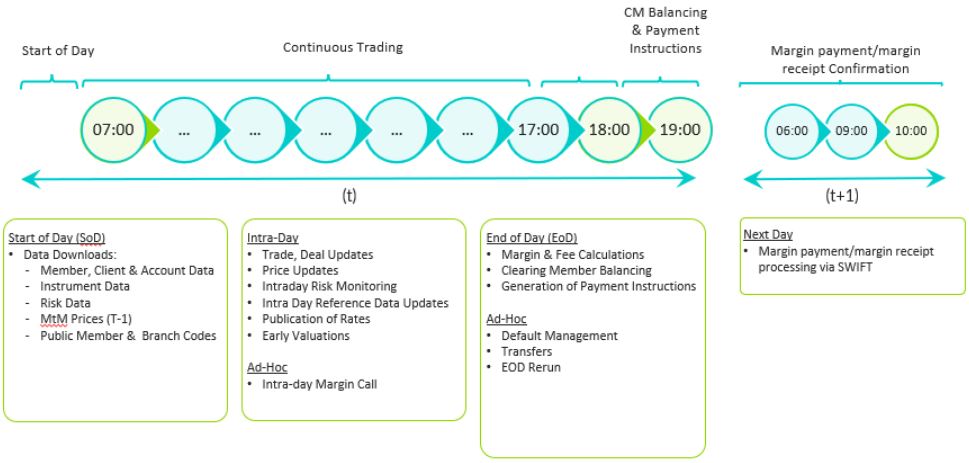
All trading member branches have a separate house main account that is automatically created when the trading member branch is created. This account is mainly used as the default account for all proprietary trading by the trading member branch. The name of the account is the same as the trading member branch. All positions in this account are rolled up to the trading member level and not separately at the branch level. Note: It is not possible to add additional house main accounts.

Member sub accounts

A trading member and a member branch may add various house sub accounts. The house sub accounts are included in the same risk structure as the trading member main accounts. Members may create and manage house sub accounts as desired.

6. Daily post-trade lifecycle

The following diagram and notes provide a high-level overview of the clearing house activities and processes in a typical business day. Refer to Annexure 'A' for further details.



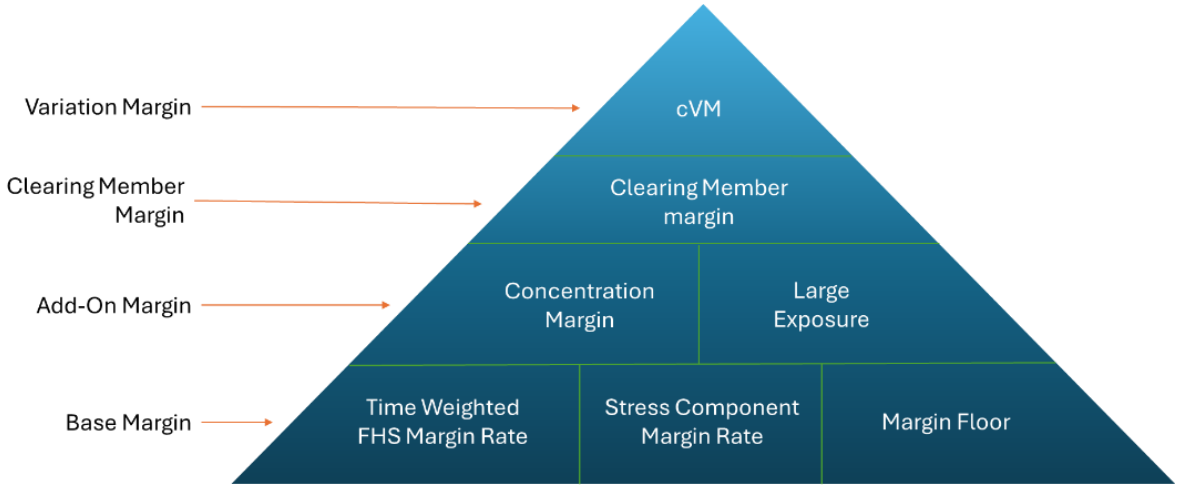
7. Risk management

7.1. Introduction

The following section focuses on the key post-trade risk management enhancements and changes to be delivered through the Bond CCP project. This includes the concept of intraday risk monitoring capabilities for IRD and Bond CCP, a new Initial Margin methodology that will be utilised and an introduction to Contingent Variation Margin (CVM).

7.2. Margin methodology

Bond CCP will be introducing new methods of calculating Initial Margin and Variation Margin.



- Base Margin on IRD and Bond markets will be calculated using Time Weighted Filtered Historical Simulation Portfolio VaR. This is an enhancement of the Portfolio VaR methodology currently used in the IRD and Bond ETP markets.
- The Variation Margin methodology for the IRD market will remain Realised Variation Margin (rVM) while the Bond market will use Contingent Variation Margin (cVM).
- The Concentration Margin Add-on caters for positions that could take longer to liquidate than assumed under the FHS model similar to the Liquidation Period Add-on for derivatives (albeit different calculation methodology).
- The Large Exposure Add-on caters for losses that could exceed margin held for Base Margin & Concentration Margin Add-on.

Clearing Member margin (Additional Margin) can be charged by the Clearing Member or Trading Member for all or selected entities (Trading Members and Clients) if required. This is done by applying a percentage to the initial margin calculated by JSE Clear. Additional margin is added onto the initial margin required by JSE Clear before the margin call is made.

The grid below compares the AS IS to the To Be for ease of reference.

	Current Bond ETP initial margin methodology	Proposed Bond CCP initial margin methodology
Model	Portfolio VaR (HS)	Filtered Hist Simulation (FHS) Portfolio VaR 75%*time-weighted FHS margin rate + 25%*stress component margin rate, floored at a 10Y HistVaR margin rate
Liquidation period	3 days	At least 2 days
Confidence level	Worst case scenario	99.5%
Lookback period	750-day rolling lookback (3Y) + 250-day stress period (1Y)	Time-weighted FHS: 3-year to 5-year rolling lookback, as determined per market stress component: 1Y stress period margin floor: 10Y rolling lookback (9Y rolling including 1Y stress period)
Variation margin	Indirectly via recovery cost component of total margin (nominal*trade price – MTM price)	Contingent VM model – CVM theoretical profits can offset IM requirement (IM floored to zero)
Total Initial margin	VaR(base margin) + conc margin + safety net (includes recovery cost)	VaR(base margin) + concentration margin + large exposure add-on margin
Maintenance margin	90th percentile of each participant's daily IM over the previous quarter	n/a – daily VM applied (CVM)
Default fund	No	Yes

Margin frequency	Calculated daily, margin top-up settled only when total margin exceeds maintenance floor amount	Calculated and settled daily
Margin investment management	SARB	JSE Clear
Collateral Type	ZAR cash only	ZAR cash and securities (initially specific liquid SA ZAR bonds only)
Position netting	Yes	Yes
Cross product margin offset	No	Possibility of offering cross product margin offset (between interest rate spot and derivatives positions) to be investigated for future phases

The section below explains the various components of the new margin methodology in detail:

7.2.1. Initial Margin

Initial margin (IM) represents the primary prefunded line of defence for JSE Clear (JSEC) in managing the risks associated with clearing financial instruments. IM is called at an individual account level, and the IM posted against the exposures held in a particular account can only be used to satisfy the losses incurred in liquidating the positions held in the particular account in the event of default. Account-level IM is made up of three distinct components, base margin, including concentration margin add on, and large exposure add on

Base Margin

A change to the methodology used for IRD and Bond markets will see a shift to a more responsive yet stable margin model. The Hybrid model is based on 3 key components:

- Time-weighted filtered historical simulation Value-at-Risk (FHS VaR), incorporating
- A distinct stress period component, and
- A margin floor based on historical simulation (HS) Value-at-Risk based on a long lookback period including a stress period.

$$\textbf{Base IMR} = \textbf{MAX}[75\% * \textbf{time weighted FHS margin rate} + 25\% * \textbf{stress component margin rate}, \textbf{HS margin floor}]$$

Time-Weighted FHS Portfolio VaR

Time-weighted margin component	
Component weight	Up to 75%
Method	Time-weighted filtered historical simulation Value-at-Risk (FHS – Boudoukh, Richardson and Whitelaw (BRW) method) • The BRW approach combines exponential smoothing and historical simulation, by applying exponentially declining probability weights (the decay factor or lambda(λ)) to past returns of the portfolio • After the probability weights are assigned, VaR is calculated from the empirical cumulative distribution function weighted by the modified probability weights • The historical simulation (HS) method can be considered as a special case of the more general BRW model in which the decay factor (λ) is set equal to 1.
Confidence interval	99.50%
Liquidation period (MPOR)	2 days
Lookback period	3-year to 5-year rolling lookback, as determined per market
Decay factor/lambda	Calibration of lambda should aim to optimise and balance responsiveness with pro-cyclicality Reviewed and recalibrated (considering qualitative and quantitative assessments e.g. Lopez (1998) test, Kupiec and/or Christoffersen independence (IND) tests) annually, and/or ad hoc as required, and approved by JSEC CRO and reported at the Group Model Committee and Risk Committee at the next sitting

Stress Component

Stress period margin component	
Component weight	At least 25%
Method	Average of the 5 most severe tail returns, or other appropriate number of tail returns assessed to ensure stability and avoid pro-cyclicality, considering the distribution of the tail returns, and conditional on approval by JSE Clear CRO
Lookback period	1-year stress period

Margin Floor

Margin floor	
Method	Historical simulation Value-at-Risk (HS)
Confidence interval	99.50%
Liquidation period (MPOR)	2 days

Lookback period	10-year rolling lookback period including a stress period Where the 10-year rolling lookback doesn't contain a stress period we apply a 9-year rolling lookback with a 1-year stress period taken prior to the 10-year lookback period

7.2.2. Concentration Margin Add-on

The concentration margin attempts to estimate the haircut (or hedging cost) needed to liquidate a specific position in an auction-based default management process. PV01 is calculated for all actively traded futures contracts, which reflects the change in the MtM price of the contract for every 1bps parallel shift in the underlying ZAR zero curve. Option contracts are treated as delta-equivalent futures.

PV01 for each contract is then:

- Multiplied by positions in the account (negative values for short positions); and
- Netted across contracts with the same underlying asset in the account.

This results in a net PV01 value per underlying asset in the account. The total hedge cost for each net PV01 position in the account is then derived by:

- Looking up the relevant hedge cost per unit PV01 from the hedge cost matrix; and
- Multiplying the relevant hedge cost by net PV01.

The hedge cost matrix is derived through a market survey whereby market participants provide an estimate of the bid/ask spread that would be applicable when executing a trade in a particular underlying asset, for a series of potential trade sizes (measured in terms of PV01), under stressed market conditions. Total hedge cost per underlying asset is then summed up to get the account-level concentration margin.

Refer to the Risk Management – JSE Clear for more details.

7.2.3. Large Exposure Add-on

Large Exposure Add-On captures a client's margin shortfall under stressed market conditions. All instrument prices are stressed based on several approved JSE stress scenarios which are designed to simulate extreme trading conditions. In the event of a default, losses suffered could exceed the margin already held.

Calculation steps

1. Determine client's position per instrument
2. Obtain stressed prices per scenario per instrument
3. Determine position P&L for each scenario
4. Aggregate position P&L per scenario
5. Determine scenario with the worst (negative) P&L
6. The Large Position Add-on is the degree to which this loss exceeds both the JSPAN and Liquidation Period Add-on values

Refer to the Risk Management – JSE Clear for more details.

7.2.4. Variation Margin

Variation Margin for the Bond CCP Cleared market will be a new concept that will need to be incorporated by the Market. Along with introducing Variation Margin as a concept, there will also be a deviation from methodology used in the derivatives market that uses Realised Variation Margin (rVM) to a more conservative Contingent Variation Margin (cVM).

The sections below will outline the Methodology and cashflow requirements as well as reflect the similarity and difference to rVM.

Introduction to cVM

Contingent Variation Margin (cVM) is a method not previously used in the South African markets. The derivative market in SA uses the traditional Realised Variation Margin (rVM) model. Though the outcome of rVM and cVM are similar to a large degree, there are distinct differences to the models. The decision to adopt the cVM approach has been made to safeguard the market in periods of high volatility and ensure trade economics are not impacted by Variation Margin (VM) flows.

The Initial Margin is sensitive to volatility over a 2-day period, however price movements in the Bond market can be gradual with a significant cumulative upwards or downwards movements over longer periods. Since the bond CCP clearable products scope includes bond buy sell backs with long tenors (Settlement Date is up to a maximum of 12 months from Trade Date), there is a risk of significant cumulative upwards or downwards movements in bond prices over the tenor leading to significant cumulative VM build-up. To avoid the change in trade economics, cumulative VM payments made (by VM loser) or received (to VM winner) on each trade should be returned or paid back to the counterparty that made or received the VM payments. This implies that there should be a mechanism in place to manage the risk and implications of the return of the cumulative VM payments made to the VM winner e.g. in case of a VM winner defaulting before settlement, will they be able to return the cumulative VM payments they received.

To avoid the need to manage the risk and implications of cumulative VM gain returns, it was decided to adopt a Contingent Variation Margin (cVM) methodology. Under the cVM methodology, theoretical profits and losses are calculated. In the case of losses, collateral is collected daily to cover these losses, while the profits are held as an asset (theoretical credit) for the account of the clearing member and is typically available for offset against other margin requirements of that member's account. Due to the fact that profits are held as an asset (i.e. theoretical credit for the VM winner) and not paid out to the VM winner, the need to manage the risk and implications of cumulative VM gain returns is avoided.

Additionally, market research showed a tendency towards cVM in markets with high concentration showing a more conservative approach to protect the market in periods of high volatility and increased risk of default.

Methodology and Cashflow

A key difference between cVM and rVM is that under cVM the need to manage the risk and implications of cumulative VM gain returns is avoided. This is possible due to cashflow differences between rVM and cVM. While the in the rVM case, the VM loser makes payment to the CCP and this paid on-ward to the VM winner, this is not the same with cVM. Under cVM, the VM loser makes

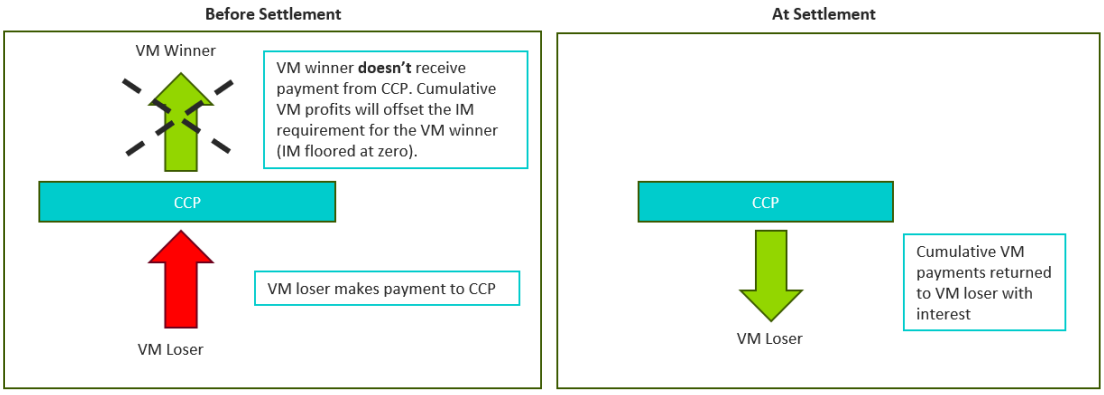
payment to the CCP, but the CCP keeps this payment i.e. VM winner **doesn't** receive payment from CCP. Cumulative VM profits will offset the IM requirement for the VM winner (IM floored at zero).

Effectively only the Loser in cVM is required to pay in their Margin utilising cash. This will reflect as an additional margin on top of the IM requirement. See image below. The additional VM payment will not affect the IM Cash vs Collateral split allocation.

The VM winner does not receive a cash payout, but rather a credit towards their Initial Margin requirement. This credit can be used in the place of either Cash, Collateral or both up to 100% of the IM requirement.

Total Margin - Winner	
Initial Margin	
+- VM Margin	
65% - Cash	35% - Collateral

At settlement, the cumulative VM payments are returned to the VM loser with interest. The figure below summarizes the cashflow movements for the cVM.



Total Margin - Loser		
Initial Margin		+- VM Margin
65% - Cash	35% - Collateral	+- Cash

Differences between rVM vs cVM

Cashflow differences

The difference between rVM and cVM come in the form of the cashflow and the theoretical credit. In the rVM model losses are paid into the CCP and gains or profits are paid out to members daily.

cVM requires losses to be paid into the CCP daily, but rather than paying out gains to the members, the gain is allocated as a theoretical credit towards the IM requirement (IM floored at zero). The VM loser that pays VM to the CCP will receive interest on the cumulative VM amount.

Reference price differences

The VM under rVM is calculated as the change in price between the previous closing price (or trade price on trade date(T0)) and the current closing price. This is then settled daily.

The calculation of VM under the cVM method is slightly different. The VM is calculated as the change in price between the original transaction execution price and the current market price.

Price Distortion

In cVM approach, trade economics are not impacted by VM flows and the need to manage the risk and implications of cumulative VM gain returns is avoided.

In an rVM approach, in the event the VM winner defaults, there is the risk that the VM payments made by the VM loser cannot be returned to them.

7.2.5. Clearing Member Margin (Additional Margin)

External participants can maintain additional margin percentages for their trading members and clients. Clearing members set global margin percentages for their trading members and trading members set global margin percentages for their clients. Clearing members may choose to set a specific stricter (higher) value on an individual trading member or client than the global value they set across their trading members. Trading members may set a stricter (higher) value on an individual client than the global value they set across their clients.

7.3. Data inputs for margin calculation replication

All data required to replicate margin - both the Base Margin and the add-on calculations - will be made available via the EMAPI or Information Delivery Portal.

These include:

- Base Margin parameters
- IMR
- CI
- MPOR
- Lookback Period
- Decay factor
- Instrument Reference data
- Bond Price Data
- Risk Arrays
- PnL Vectors
    - VaR PnL
    - CM PnL
    - CM Hedge Cost Matrix (HCM)
    - LEAO PnL
    - Options IM/PnL

8. Securities collateral service - Excluded from the go-live scope.

8.1. Service Offering

With the introduction of Bond CCP, JSE Clear will extend the securities collateral service to the Interest Rate

Derivatives market and to cleared bond trades. The JSEC clearing system will integrate to the Strate collateral management system for the management of securities collateral.

The acceptance of securities collateral by JSE Clear, will allow members to meet their initial margin requirements through a combination of ZAR cash and liquid South African fixed rate government bonds.

Eligible securities that will be accepted for the initial phase are liquid South African government bonds. Equities will be considered in later phases.

Obligations for which securities collateral will be accepted is initial margin (including margin add-on's).

Note

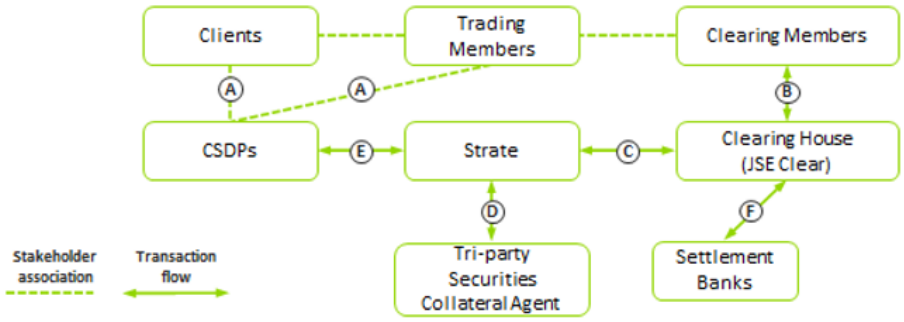
- Additional margin required by Clearing Members on top of the CCP margin call will not be covered by securities via the JSE Clear collateral solution.
- Variation Margin will remain payable in ZAR cash.

A minimum percentage of the initial margin obligation will be required to settle in ZAR cash. This amount is currently set at 65%, therefore 35% can be collateralized through securities. These values are reviewed quarterly.

8.2. Value Proposition

- Reduce liquidity pressures and funding costs for derivative market participants in an environment of increasing regulatory capital requirements and other cost pressures
- Alleviate liquidity pressures in times of market stress when margins inevitably increase
- Mitigation of the concentration risk that arises from the CCP investing the margins it receives from clearing members for derivative exposures back with the same institutions

8.3. Primary Stakeholders



Associations and transaction flows:

a. Clients and Trading Members to setup Segregated Depository Accounts (SDA) at Strate via their CSPDs for the pledging of securities collateral

b. Initial margin amounts confirmed by JSE Clear with Clearing Members as part of the daily end-of-day process

c. Allowable securities margin amount sent to Strate per Client and Trading Member for securities collateralisation

d. Strate will allocate or release securities as available in Client and Trading Member SDA accounts

e. CSDPs are required to commit to all security pledge and release requests in order for them to be valid

f. JSE to determine remaining cash amount required (i.e. total margin required less pledged securities) and once clearing members confirm the cash breakdown cash settlements are done via the settlement banks

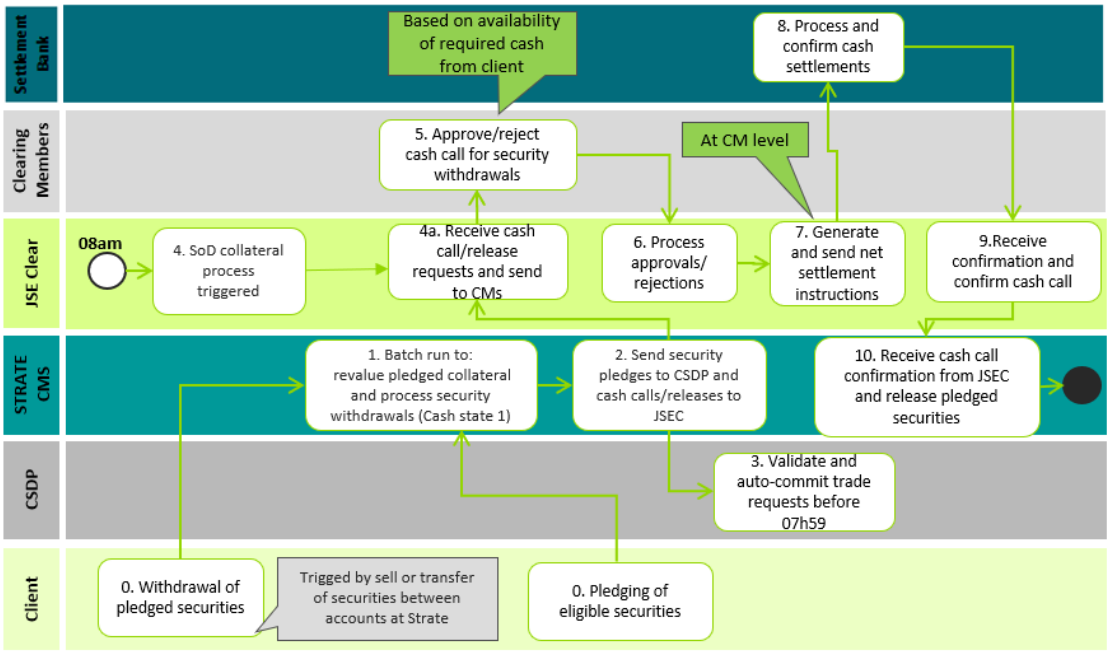
8.4. Pledging mechanism

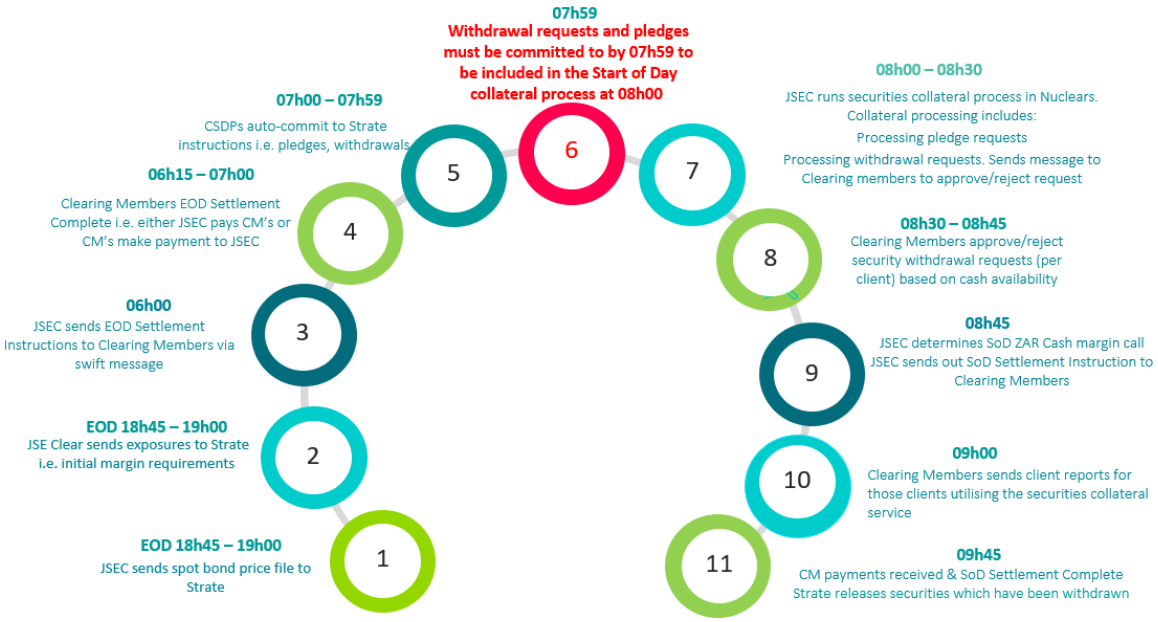
Trading members and clients will pledge securities directly to JSE Clear for their exposures. Pledging allows the collateral giver to retain ownership of the security and be entitled to all coupon payments.

Similar to the position if cash is posted for IM, the securities must remain the property of the market participant in question and not form part of the assets of JSEC

Start of day securities collateral process and indicative times

8.5. Start of day securities collateral process and indicative times





8.6. Key processes applicable to managing collateral

a. Pledging of securities against initial margin

Pledging of securities against initial margin is performed during the SoD securities collateral process.

b. Securities for securities substitutions

Substituting pledged securities for other eligible securities may be done at anytime during the business day.

c. Top-up of securities

Top-up of securities may be done at anytime during the business day provided that the maximum allowable securities limit has not been reached.

d. Withdrawal of securities for cash

Withdrawal requests will be processed once a day during the SoD securities collateral process. Clearing members will be required to approve/reject withdrawal requests. Securities on the back of the withdrawal request will be released only once the Clearing member's cash settlement including the cash covering the value of the security to be withdrawn is physically in JSEC's account. Thereafter, JSEC will instruct Strate to release the securities.

e. Revaluing of pledged securities

Revaluing of pledged securities resulting in top-ups/releases will be performed during the SoD securities collateral process.

8.7. Valuation and haircuts

In determining the sufficiency of the cash and securities posted to cover IM obligations, JSEC will value the securities pledged to JSE Clear at their market value less any haircut applicable.

JSE Clear will mark these securities to market on at least a daily basis and will adjust the amount of cash to be paid to (or from) JSE Clear from (or to) market participants to cover their remaining initial margin requirements.

The haircuts will be calculated to account for market volatility of each security. Haircuts will be reviewed at least quarterly for appropriateness and more frequently should JSE Clear so require. Market participants will be notified of applicable haircuts and any changes thereto.

8.8. Concentration limits

JSE Clear will impose limits on the aggregate amount of a particular security per clearing member and clearing members may set account level limits.

Limits are set for the following reasons:

i. to avoid undue concentration of collateral in a particular asset class, type of security, obligor, etc.

ii. to restrict the maximum amount of non-cash collateral a market participant may pledge to JSE Clear for its margin requirements in respect of its position

Limits will be based on liquidity of the security.

8.9. Default

In the event of a default, the securities pledged to JSEC will be liquidated into ZAR cash via a JSEC appointed, if necessary.

Securities collateral will only be transferred to a JSEC account and sold in the event of a default. Securities will be liquidated within a maximum of 2 days following the default.

Haircuts and concentration limits are quantified accordingly,based on this 2-day liquidation timeframe. The settlement cycle of the trades booked to liquidate securities may vary from same day settlement to T+3settlement. Proceeds from the sale of collateral may therefore be realised the day of default and up to four days thereafter.

9. Bond CCP trade flow

9.1. High-level trade flow

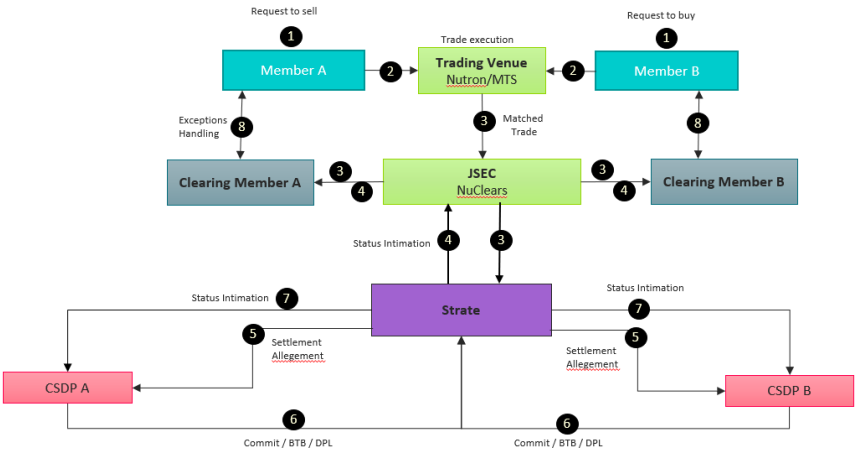
A cleared trade will be identifiable by the 'cleared' flag in the API. When the cleared flag = Y, it indicates that the trade is a cleared trade. This applies to all trades executed in the ETP market as well as PD-to-PD trades elected for clearing in the JSE Reported market.

Matched trades that meet the clearable criteria and have been successfully validated will be received by JSE Clear for clearing. JSE Clear will calculate the clearing consideration and transmit settlement instructions to Strate on a trade-by-trade basis. Strate will perform its validation checks, and upon successful validation, will generate Strate trade leg numbers for both ETP market and JSE Reported market trades.

The logic Strate uses to generate trade leg numbers for Reported market trades (e.g., 0920935702) will also apply to ETP market trades. Strate will transmit trades with the assigned trade leg number to the relevant CSDPs and simultaneously to JSE Clear.

CSDPs are required to prioritize all ETP trades.

JSE Clear will receive real-time status updates from Strate and will publish these updates to the relevant market participants and their associated Clearing Members.

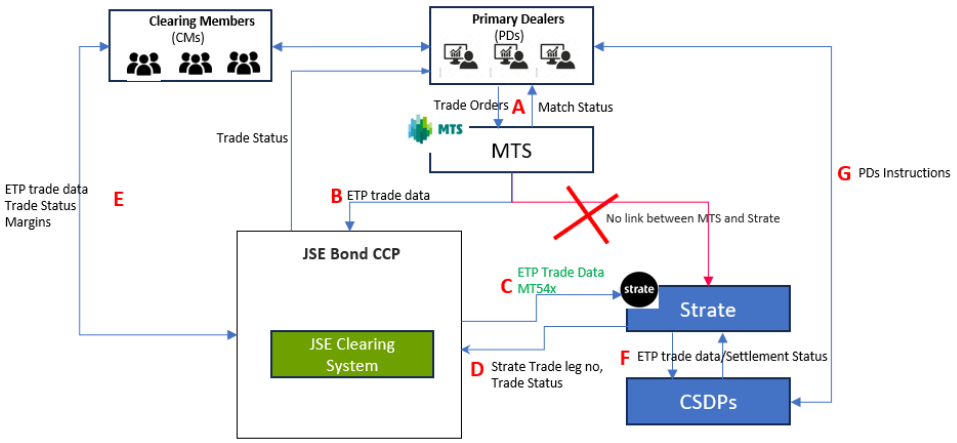


9.2. ETP trade flow changes

The current link between the ETP market and Strate will be discontinued.

JSE Clear will receive ETP trades directly from the ETP market. JSE Clear will forward the ETP trades to Strate using the same MT messages as is currently used for the reported market.

The new trade flow 'B' and 'C'' is depicted in the below diagram.

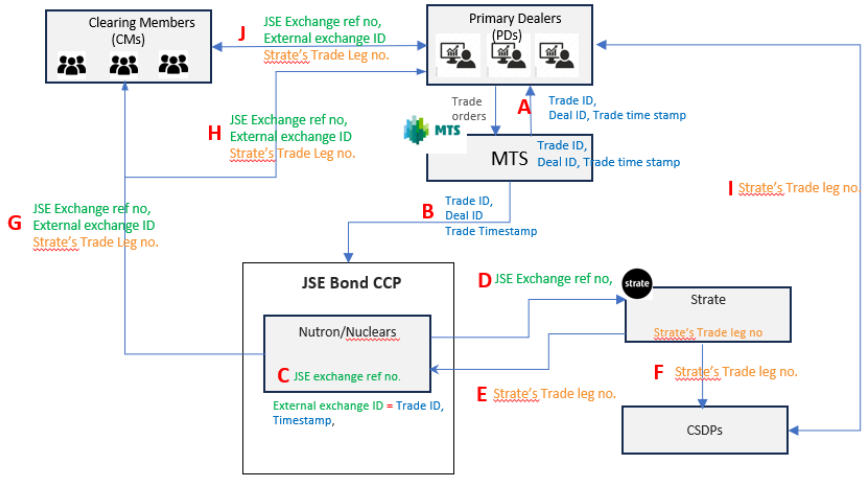


9.3. ETP trade flow - Trade ID's applicable for the recon process

The current trade recon process between JSE Clear, Strate & CSDPs will remain in place i.e. Strate's Trade leg number will remain the primary field in the reconciliation process.

The JSE clearing system will publish the below trade IDs in the trade data to Clearing members and Primary Dealers which can be used for reconciliation purposes:

- JSE exchange ref. no. (generated at JSE)
- MTS trade ID.
- Strate's Trade leg no.



10. Trade novation

10.1. Trade novation process

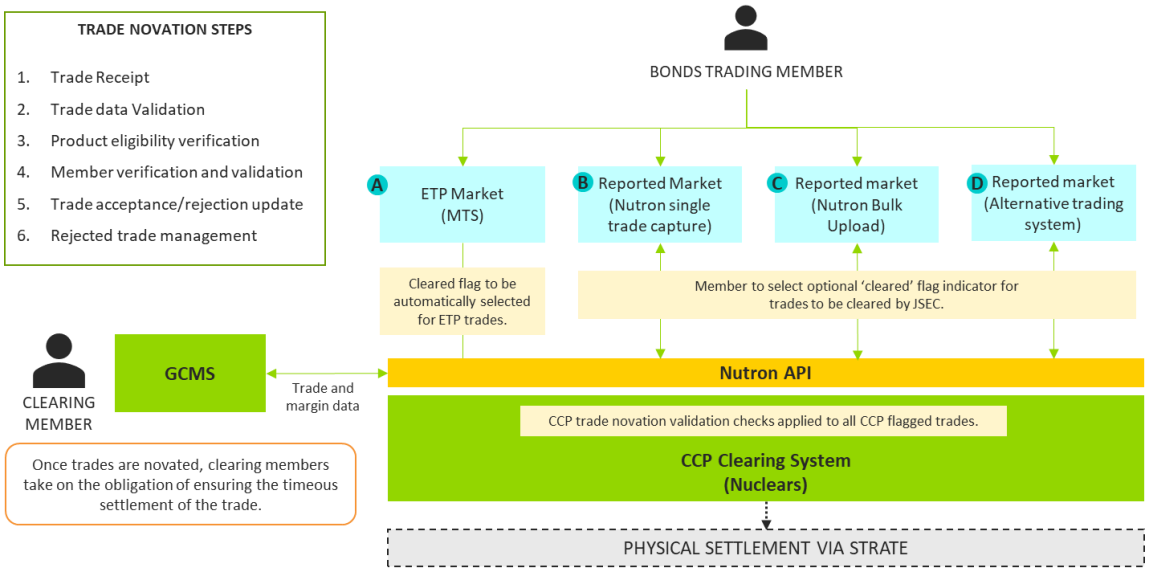
Through the process of novation, a bilateral contract between two market participants is replaced by two contracts between each of the original counterparties and the CCP.

The trade novation process represents the replacement of a cleared bond security transaction between trading participants with two separate CCP transactions between JSE Clear and each clearing participant for that transaction.

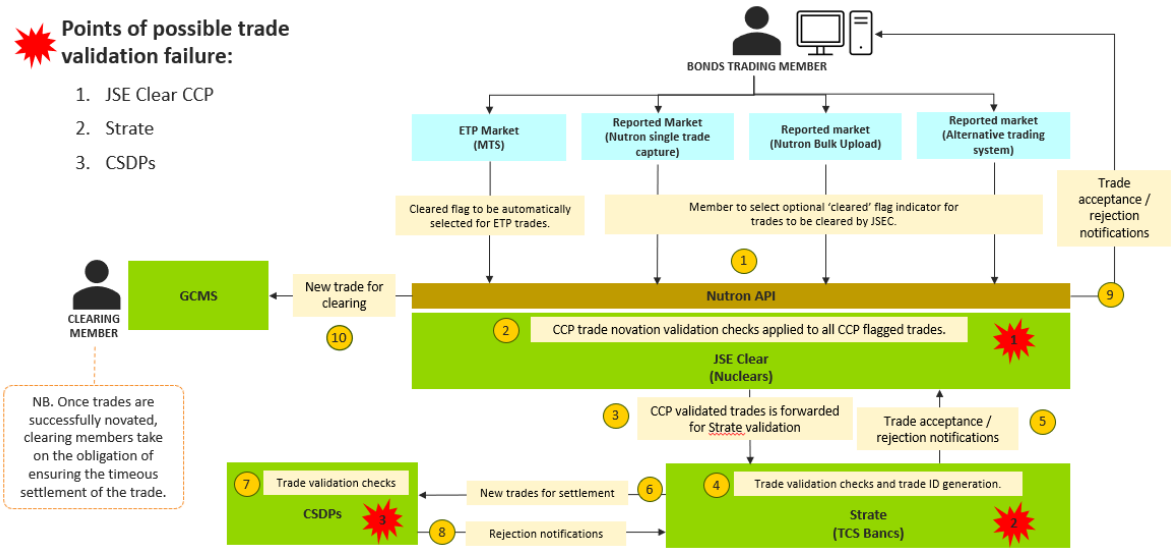
JSE Clear will receive trades from various sources, upon the receipt of trades, the CCP will perform various validations on the trade data, product eligibility and clearing membership validation of Primary Dealers submitting the trades. If the validations are successful, the trade is novated.

If the validations are not successful i.e. validation failed during the novation process these trades will not be cleared. Primary Dealers would need to manage any failures and resubmit the trades for clearing.

The below diagram depicts the trade novation process.



10.2. Points of possible trade validation failures



Common trade rejection reasons:

		Potential failure points		
No.	**Rejection reasons**	**JSE Clear**	**Strate**	**CSDP**
1	**Invalid trade data**			
1.1	Mandatory trade data field validation failure	✸	✸	✸
1.2	Invalid settlement date	✸	✸	
1.3	Invalid trade date	✸	✸	
1.4	Invalid repurchase date	✸	✸	
1.5	**Duplicate exchange reference number		✸	
2	**Invalid instrument ref data**			
2.1	Invalid ISIN/security ID	✸	✸	
2.1	*Security ID is not a clearable instrument	✸		
3	**Misaligned/Invalid Member/Client reference**			
3.1	**Member/Client has invalid Strate code	✸	✸	✸
3.2	**Member/Client has invalid Scrip/Cash accounts	✸	✸	✸
3.3	*Member is not eligible for clearing	✸		

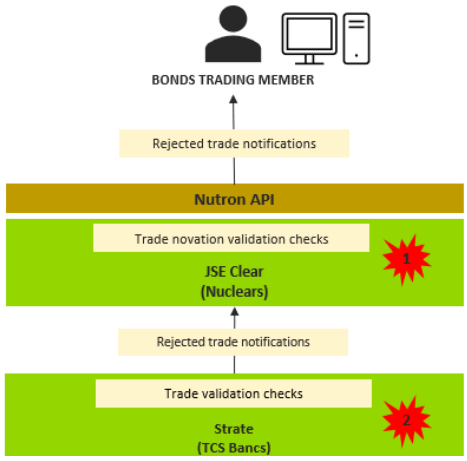
* *Validation failures can occur only if the Cleared flag = "Y"*

** *Validation failures will not be applicable during the trade submission validation check; these validation failures can only occur at Strate after JSEC sends the matched trade to Strate for validation.*

10.3. Managing trade rejections by JSE Clear and Strate

Example of rejected trades queue

No.	Trade ID	Trade Source	Rejection Code	Rejection Description	...
1	435245	MTS	30001	Invalid settlement date	...
2	353456	IRC	30001	Invalid settlement date	...
3	564634	IRC	40001	Security ID is not a clearable instrument	...
....	...	...	...	...	...



10.3.1. Managing Validation Failures of Cleared Reported Trades

Validation failures during trade submission can occur for the following reasons:

- Invalid trade data
- Clearable product validation (i.e., instrument is not a clearable product)
- Clearing membership criteria (i.e., participant submitting the trade is not allowed to clear trades

Rejection Notifications

- Alert error messages will be sent via the trading API with corresponding rejection codes.
- For bulk upload functionality (Excel uploads), an alert message will be generated for each individual trade and will include:
    - The row number of the rejected reported trade
    - The applicable rejection codes

When a reported trade is submitted successfully it may be rejected by Strate for settlement

- An alert error message will be published via the trading API.
  The trade will appear in the Nutron 'Unconfirmed' view with the rejection code displayed in the Strate Trade Number field.

Resolution

- Trades must be corrected and resubmitted
- Rejected trades in the unconfirmed view will be deleted at end of day.

Reference

- Rejection codes and their descriptions will be published in the Nutron API specification for mapping

10.3.2. Managing Validation Rejections of Cleared ETP Trades

This is highly unlikely to occur, as these trades are executed through a central order book.

Validation failures can occur during checks when trades are received by JSE Clear for the following reasons:

- Clearable product validation (i.e., the instrument is not a clearable product)
- Clearing membership criteria (i.e., the participant submitting the trade is not authorized to clear trades

Rejection at Strate for Settlement

- The trade will appear in the Nutron unconfirmed view with a rejection code in the Strate trade no. field

Resolution Process

- An equal and opposite trade must be submitted in the Reported market.
- Rejected trades in the unconfirmed view will be deleted at end of day.

11. Bond CCP settlement model

11.1. Settlement principles

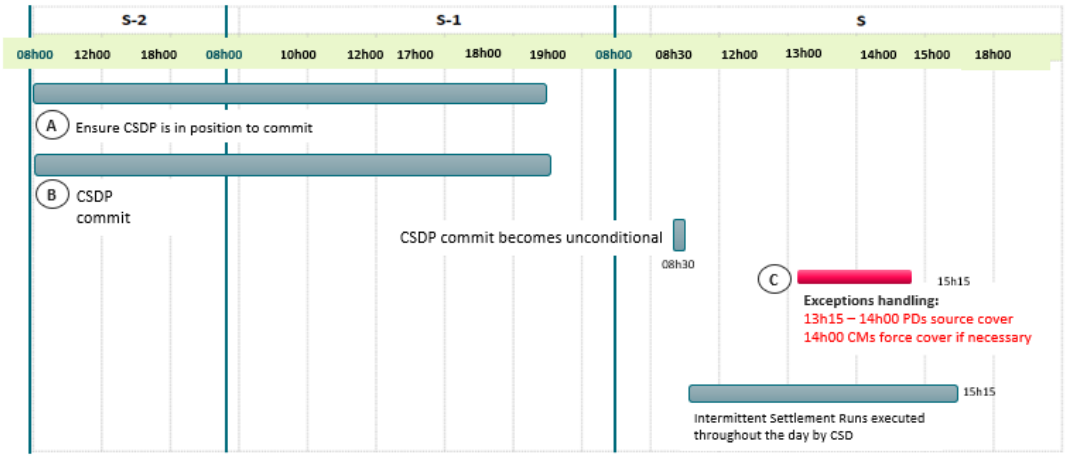
The current settlement model is based on gross settlement meaning individual trades are sent to Strate and CSDP's. This model will remain unchanged with the introduction of Bond CCP.

CSDP's will continue to link trades using back-to-back links, which will be applied across cleared, uncleared and OTC markets.

Clearing Members clearing bonds require access to National Treasury.

11.2. Daily settlement times

The daily settlement obligations, cut-off times and exceptions handling processes for cleared trades are summarised graphically below.



CSDP – Sentral Securities Depository Participant, CSD – Centra Securities Depository, PD – Primary Dealer, CM – Clearing Member

PDs have up until 19h00 on S-1 to ensure that their CSDP is in a position to commit to their trade. As activity will be limited to PD-to-PD trading only, client allocations are not applicable. PDs must ensure stock or cash is available in their custody account.

The JSE will provide PDs with uncommitted trade reports containing all uncommitted cleared and non-cleared trades at 15h00 and 17h00 on S-1.

JSE Clear will provide Clearing members with uncommitted trade reports, containing all uncommitted cleared trades, at 15h00 and 17h00 on S-1. However, Clearing Members will also receive real-time status updates via the API, which should be considered the most accurate source.

PDs need to ensure their CSDPs are in a position to commit to all cleared trades by 19h00 on S-1.

At 08h30 on S the CSDP commits become unconditional i.e. CSDPs are not allowed to un-commit to committed trades after 08h30 on S.

Strate will begin settlement runs from 09h30 on S and these will occur intermittently throughout the day until 15h15. In parallel, from 09h00 to 13h00, Strate, JSE, JSE Clear and Clearing members will monitor all uncommitted trades.

Where cleared trades exist in an unstable settlement group, and those cleared trades are not the problematic trades holding up settlement, CSDPs will notify the relevant PDs that their cleared

trades are in an unstable group and that cover may need to be sourced if back-to-back links are broken at 13h00. This communication should begin after the first settlement run and continue intermittently on S, until 13h00.

At 13h00, all remaining uncommitted trade legs (cleared, exchange reported, and OTC) will be subject to the settlement exceptions handling process.

11.3. Processes on settlement day (S)

From Start-of-day up to the settlement exceptions handling process at 1pm on S, every hour from 09h00 to 13h00, Strate will provide CSDPs with an unstable report. JSE will provide Trading members with an uncommitted trades report containing all uncommitted cleared and non-cleared trades at 08h30, 10h00 and 11h30. Clearing Members will receive real-time status intimations via their clearing system to monitor settlement.

Based on the uncommitted cleared trades report, JSE Clear will liaise with Clearing members. Affected Trading members will liaise with the JSE from 09h00, to drive resolution of all uncommitted trades by 13h00.

Clearing members will be actively monitoring the uncommitted cleared trades in GCMS and will liaise with affected members to drive resolution of all uncommitted cleared trades.

As a result of cleared trades being eligible for back-to-back linking across exchange reported (IRC) and OTC trades and being part of settlement groups, a scenario exists where even if a cleared trade is in a committed status, the group in which it finds itself may be unstable due to another trade in the group (cleared, IRC or OTC) not being committed to.

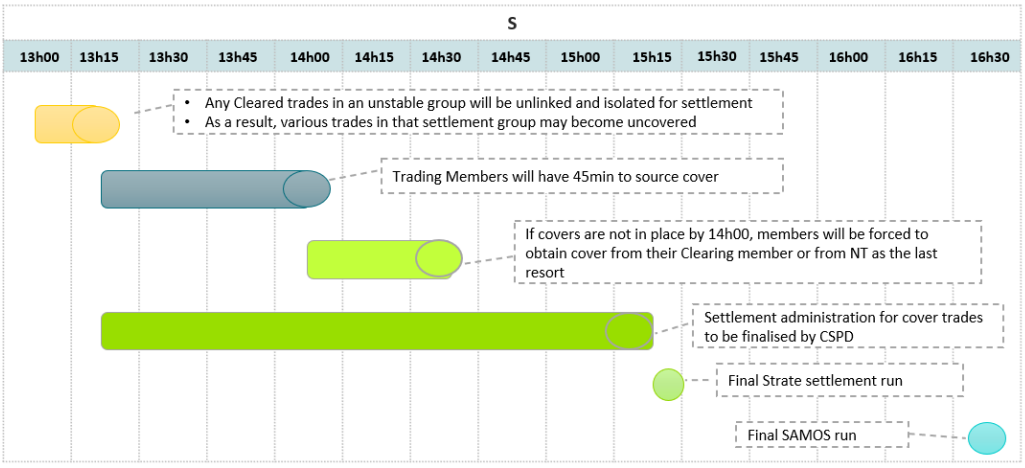
In addition to the uncommitted trades report, Strate will also provide the CSDPs, JSE Clear and JSE with a "Unstable Report" per PD listing all the PD's cleared trades that are part of unstable groups.

CSDPs are to inform or pass the report to their PDs who may proactively utilise this information to get the necessary arrangements in place to potentially source cover for their cleared trades. After 13h00 should the group not yet be resolved. An updated report will be distributed by Strate hourly which will enable CSDPs to confirm with PDs whether their trades are still in unstable groups or not leading up to the 13h00 cut-off.

Treatment of any groups not resolved by 13h00 will follow the principles and processes during the exceptions handling period as detailed in the following section.

11.4. Settlement exceptions handling process (from 13h00 to 15h15)

The daily settlement exceptions handling process and cut-off times are summarised graphically below:



a. 13h00 – 13h15:

- At 13h00, Strate, knowing which uncommitted trade(s) are holding up settlement of an unstable settlement group, will apply the below exception management principles:
  - If an OTC trade is the trade causing a group containing on market trades (cleared and non-cleared IRC trades) not to settle, the relevant links will be broken by CSDPs, on instruction from Strate
  - If a non-cleared IRC trade is the trade causing a group containing a cleared trade not to settle, the relevant links will be broken by CSDPs, on instruction from Strate
  - If an ETP cleared trade is the trade causing a group, containing other on market trades (cleared or non-cleared IRC trades) not to settle, then no links will be broken as the ETP cleared trade will be covered before the final settlement run occurs at 15h15 on S.
- The breaking of BTB links and removal of uncommitted trades from BTB linked groups may result in cleared trades becoming uncovered/uncommitted. CSDPs will need to inform their PDs of the change in commit status in order for them to initiate the next steps of the process.

NB. If the uncommitted cleared trade legs are not part of a linked settlement group, no breaking of links will be required and will proceed to the following step.

b. 13h15 – 14h00

- PDs that are uncovered/short of securities for their cleared trade legs will have 45 minutes to source cover in the market.

c. 14h00 – 14h30

- If the PD does not manage to cover their positions by 14h00, members will be forced to obtain cover from their Clearing member.

d. 14h30 – 15h15

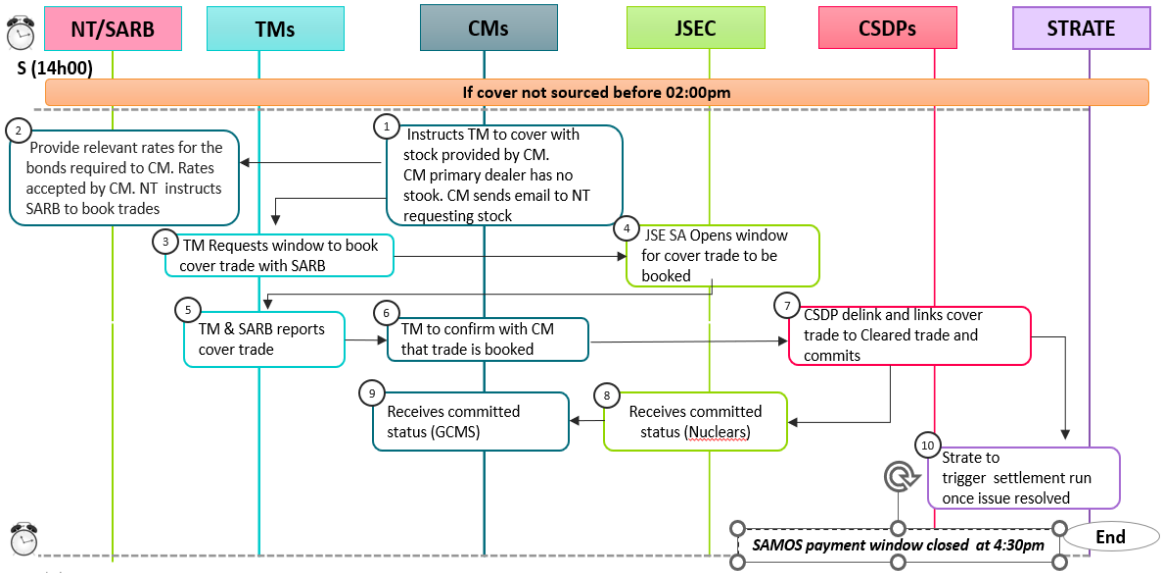
- All resulting settlement administration for the capturing and linking of cover trades, to be performed during this period, i.e. booking of cover trades in the exchange reported market (IRC) and CSDP performing BTB links to commit trade legs.

e. 15h15

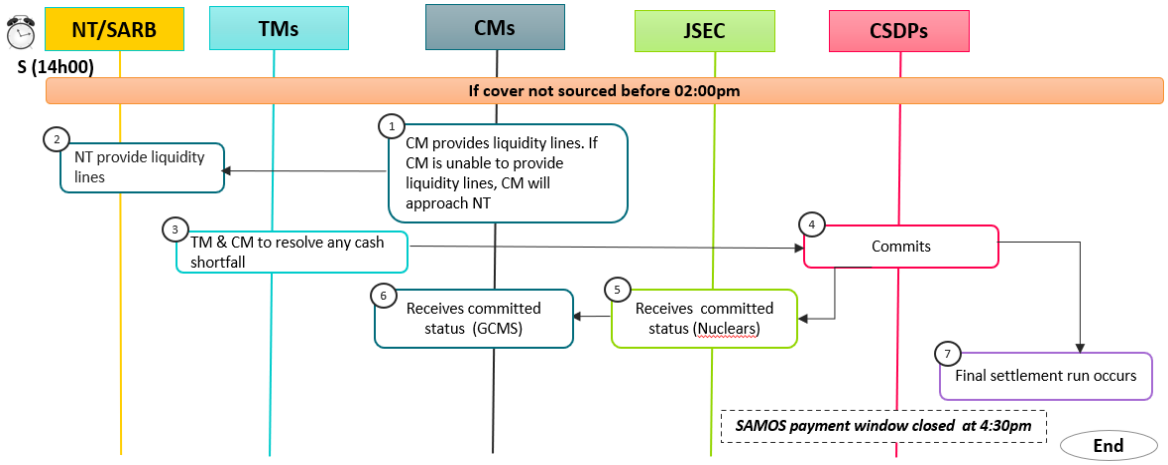
- Strate initiates the final settlement run for the day.

11.5. Clearing member exceptions handling processes

11.5.1. Clearing member force cover for stock at 14h00 on S



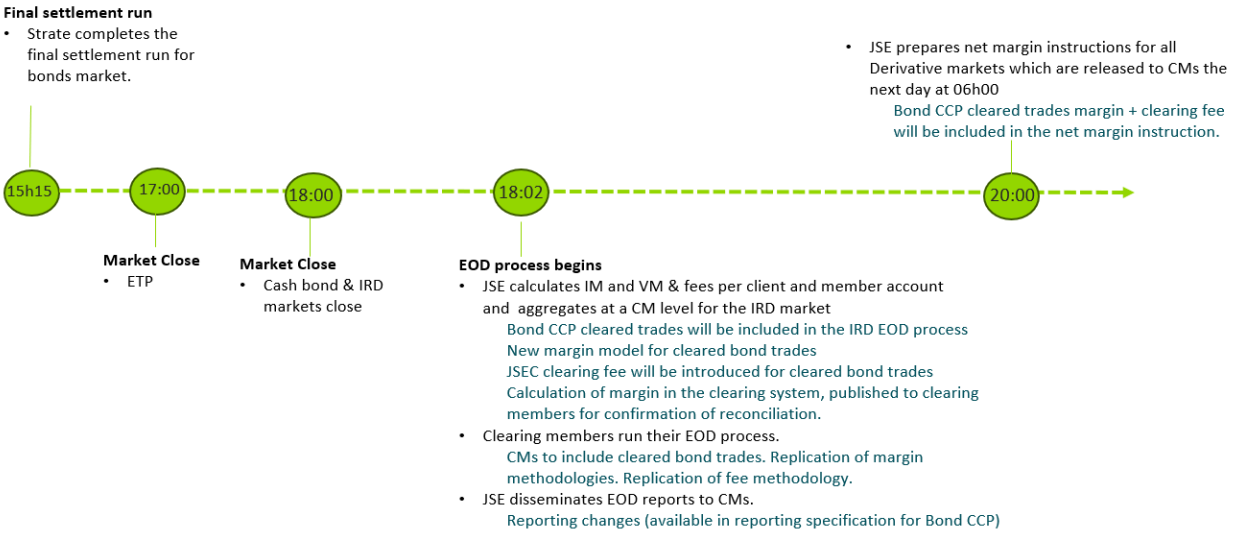
11.5.2. Clearing member force cover for cash at 14h00 on S



12. End of day processing

There will be a single EOD margin and fees run for the Interest Rate derivatives market and cleared bond trades in the JSEC clearing system. A single margin amount and fee amount will be calculated per participant based on exposures for the Interest Rate derivatives market and cleared bond trades.

A net margin amount will be calculated for all derivatives markets and cleared bond trades.



13. Daily cash flows

Margin payments due to or from Clearing members occur at start of day on T+1.

During the EOD run on trade date (T), margins, fees and interest is calculated and reconciled between JSE Clear and Clearing Members. Net margin payment instructions consolidating ZAR cash, fees and other cash movements are generated – a single instruction is created per Clearing Member. The payment of these instructions by Clearing Members to JSE Clear occurs on the next day i.e. on T+1. Payment confirmations must be received by 10am on T+1.

The clearing system manages margin payments of the following:

- Initial margin (IM)
- Variation margin
- Fees
- Interest on cash collateral - Interest is calculated daily and settled monthly.

14. Reference data

Reference data and clearing related market data, is made available to trading and clearing members daily. The data may be retrieved and managed via the API. Reference and market data will also be available via the JSE information dissemination portal (IDP) for information subscribers.

A full set of reference data will be provided daily before the start of trading during the 'download only' period. Certain elements of the reference data will be managed by trading and clearing members and the rest by the JSE/JSEC.

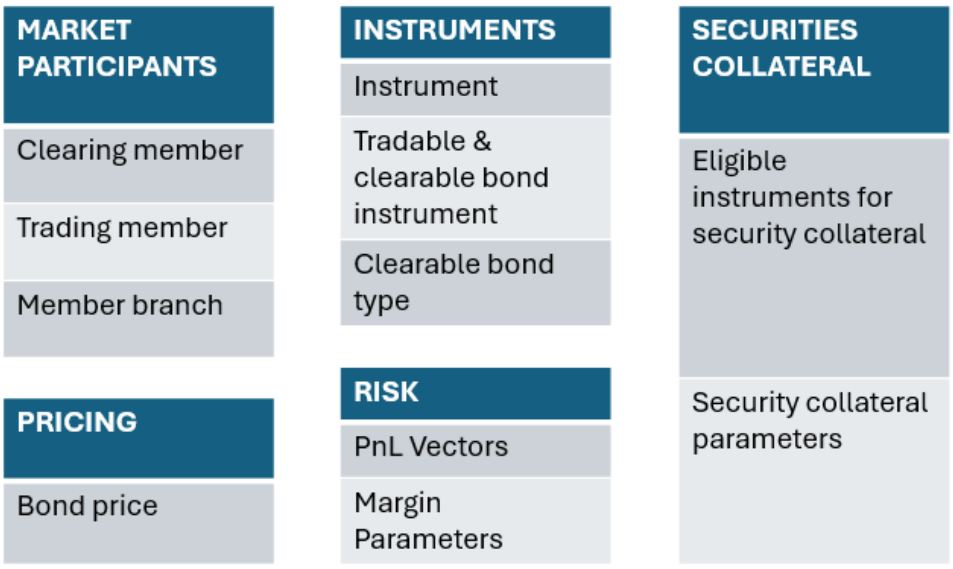
Instrument reference data, market participant data, pricing etc. will be made available for download from the API. Other non-live market data will be made available on the JSE Web portal.

14.1. Reference and market data elements

The post-trade reference and market data elements can be divided into the following key categories:

- Market Participants – information relating to clearing member, trading member and member clients
- Markets and instruments – reference information of the JSE derivative markets and instruments
- Risk parameters – margin grouping and risk parameters, as defined by the JSE, required for calculating initial margin
- Pricing and reference instruments – supporting market data required to perform the daily mark-to-model and margin calculations

Reference data elements managed by the JSE, e.g. Instruments, trading member and clearing member, are updated/modified post the final end-of-day processes are completed. Clients may download the updated reference data set thereafter or before the start of the following business day.



14.2. Reference data managed by market participants

The following reference data elements are to be managed directly by market participants via the JSEC clearing system:

Member client and sub-accounts

Member clients and sub-accounts are maintained by trading members or by clearing members on behalf of their trading members. The following functions are allowed in order to manage member client reference data:

- Adding of a new member client (NB. the JSE will have to verify the details of foreign clients before the client is enabled)
- Editing of a member client
- Adding a sub-account
- Editing of a sub-account

15. Reporting

Additional reporting information is made available to clearing members in support of their daily reconciliation with JSE Clear. If clearing members are not able to reconcile based on the reporting provided, further detailed breakdown reports may be requested from the JSE Clear. Reporting examples and changes are available in the reporting supplement document.

16. Portfolio Web Calculator

JSE Clear will be enhancing the existing IRD Margin Calculator to incorporate cleared cash bonds.

Details regarding specific changes to the calculator will be provided in a subsequent version of this document.

17. Intraday Margin Call

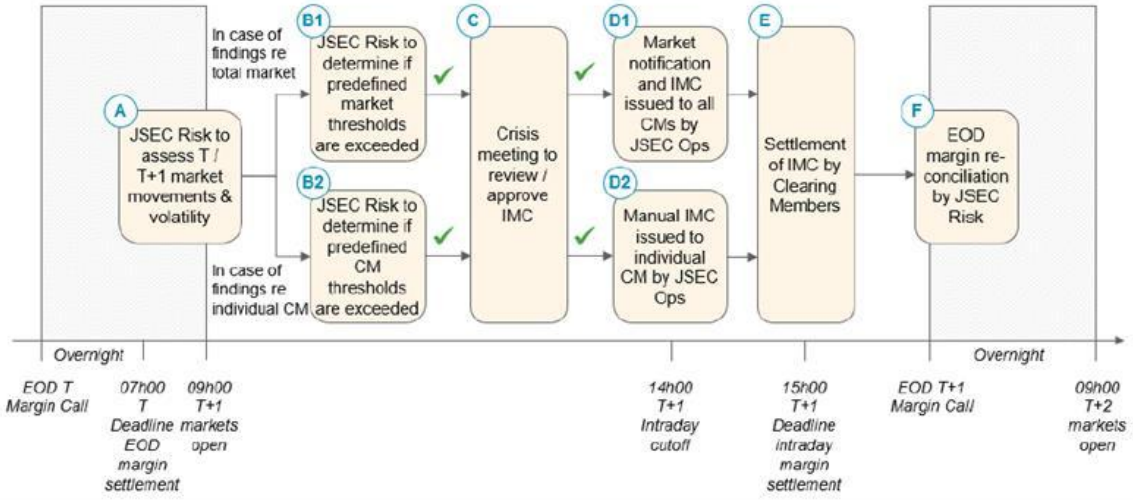
Intraday margin calls (IMC) are a critical component of risk management in financial markets, particularly for central counterparties (CCPs). These calls ensure that market participants maintain sufficient collateral to cover their positions throughout the trading day, thereby mitigating the risk of default and promoting market stability.

JSEC reserves the right to execute an IMC whenever it is deemed necessary. JSEC will assess the need for an intraday margin call to safeguard the CCP and market participants by ensuring that exposures are sufficiently collateralized, while also giving due consideration to the funding and liquidity implications for clearing members and market participants of invoking an intraday margin call.

JSEC will employ various Risk monitoring functions to perform Intraday Margin Shortfall assessment. In case of breach of any of the predefined thresholds (refer to the Intraday Margin Call policy), an ad-hoc Intraday margin call will be issued.

The below figure depicts a typical IMC process:

Figure 1: *Indicative trading day timeline for a routine Intraday Margin Call approach*



In the event of an Intraday Margin Call, JSEC will employ the same methodology as per our End Of Day Margin calculation process for both IRD & Cleared Bonds. However, there will be the following exceptions:

- No fees will be included in the intraday margin settlement amount.
- The settlement of the intraday margin will be in CASH only i.e. No Collateral can be pledged.

Automated settlement instructions will be sent to the Clearing members during the day and the amount will need to be settled as per the Intraday Margin Call policy process shown above. The clearing members will have the intraday margin call data available to them via the GCMS system and/or through IDP.

Once the EOD processes are run, JSEC will offset any margin posted intraday against margin requirements identified during the EOD Margin Call. Clearing Members must then settle the residual margin requirement at end of day. The clearing members will have the opportunity to rebalance cash vs collateral in accordance with the EOD processes.

18. Default Management

18.1. Introduction

Default management in financial markets is essential for maintaining stability and minimizing the impact of defaults on the broader financial system. It serves several key purposes:

Firstly, it mitigates the risks associated with a counterparty failing to meet its obligations, ensuring that the remaining parties are protected, and the financial system remains stable. Secondly, it involves procedures to liquidate the defaulting party's assets in an orderly manner, preventing panic and further financial instability. Additionally, default management includes mechanisms like default

funds, where all members contribute to cover losses, ensuring that the impact of a default is shared and minimized. It also ensures that financial institutions comply with regulations designed to protect the market from the effects of defaults. Lastly, effective default management maintains confidence in the financial markets, reassuring participants that robust systems are in place to handle defaults.

A detailed step by step approach to default management for all cleared markets can be viewed in the Default Management Process Document. Below we will provide an overview of the default management process for cleared bonds.

18.2. Default Management Process Overview

#	Step	Trading member default	Clearing member default
1	Suspension	• Take control of members trading capabilities	• Take control of trading capabilities of the clearing member and its trading members
2	Fail trades	N/A	• Inform CSD and CSDPs of default. • All uncommitted trades between the defaulter and the original counterparties to the defaulter are failed. • IM and cumulative VM payments are returned to the original counterparties of the failed trades
3	Prevent outgoing payments to defaulter	• Defaulter's VM and collateral is retained by JSEC until all exposure associated with the defaulter has been fully closed out.	• All outgoing payments and collateral releases to the defaulting clearing member are blocked.
4	Close-out strategy	• The defaulter's trades will be transferred to its clearing member at the original traded price by booking equal and opposite trades between the trading member and its clearing member. • Refer to the Trading Member Close Out Process below, section 18.3, for more details on the process	• The trades will be replaced through the default auction, and if necessary, through compensation at the make-up price or the counterparty re-transacting. • Refer to the Clearing Member Close Out Process below section 18.4 for more details on the process
5	Invoke liquidity lines	N/A	N/A
6	Defaulter's obligations	• The clearing member settles the obligations of the defaulter while the exposure is being transferred. • Refer to Trading Member Close Out Process below, section 18.3, for more details on the process including trading member's compensation	• Immediate obligations to counterparties fall away as original trades fail. • Profits realized by counterparties from the auction and Initial margin can be applied to the defaulter's obligations after all close-out trades are concluded. • Refer to the Clearing Member Close Out Process below section 18.4 for more details on the process including counterparty's compensation
7	Healthy TMs/Porting	N/A in phase 1	• Healthy TMs are requested to settle IM and VM obligations to JSEC directly and to secure another CM to be transferred to within a short space of time. • TMs inability to settle and/or to be ported will result in their positions being closed out together with the defaulter's portfolio. • JSEC will attempt to allocate TMs to other non-defaulting CMs with their consent. • TMs that secure another CM are ported with their clients

8	Liquidate securities collateral	• Instruct Strate and client's CSDP to freeze contracts and transfer pledged securities to JSEC account • Instruct an executing broker to liquidate securities held as collateral, if necessary (dependent on sufficiency of margin in cash to cover obligations)	
9	Recon	• Initial margin is released to the CM after all obligations have been settled • CM calculates the losses it suffers • CM recovers costs from the defaulter's IM • Any surplus IM is returned to the defaulter • Any costs not covered by the IM is claimed from the defaulter.	• Surplus IM is returned to the clearing member only once the default is resolved. • Shortfall in IM will result in further layers of the waterfall (default fund) being utilized. • If losses exceed prefunded resources, the shortfall will be apportioned across the different markets and counterparty losses will be haircut proportionately.

18.3. Close Out Process – Trading Member

The defaulter's trades will be transferred to its clearing member at the original traded price.

The clearing member will be able recover the costs associated with taking on the defaulter's trades at the original price from the defaulter's initial margin. This would be the cost to trade out (or possibly hedge the trades) i.e., difference in original and trade out prices.

If the clearing member profits from the trade-out (if the market were to move in its favour), the profits will be owed to the defaulter.

Any loss that cannot be covered by the initial margin and any disputes on the determination of the loss (or profit) will be claimed and resolved as a civil matter..

The CM will return any residual margin to the defaulter (after deducting all amounts owed and crediting any profits resulting from the close-out of the defaulter's portfolio).

18.4. Close Out Process – Clearing Member

All uncommitted trades between the defaulter and the original counterparties to the defaulter will be failed, with the intention to replace these trades through the default auction.

The links between the original counterparties on all transactions will be maintained for the purposes of efficiently identifying affected counterparties in the event of a clearing member default, to effectively manage the default.

JSEC will auction off the defaulter's leg of each trade to restore a matched book. The failed trades may be bucketed into auction sets based on their settlement date being within a certain range. Each bucket will be assigned a settlement date for the auction trades that will be concluded, optimized for trades within the auction bucket. Therefore, replacement trades may settle on a different date than the original trade. Counterparties with onward delivery may enter into a repo/loan, if required, due to their trades not settling on the original settlement date1.

New trades will be concluded between the auction winners and the original counterparties of the defaulter's trades, at the auction price.

JSE Clear will repeat the auction exercise until all trades are sold.

If the auction is unsuccessful for one or more trades i.e., auction bids are not received or bids received are such that a reasonable price, as determined by JSE Clear, is not obtained, JSE Clear will either, determine compensation amounts payable to and profit amounts payable by the non-failing, affected counterparties, based on fair prices that JSEC determines in relation to the failed trades; or request the affected counterparties to re-transact and will determine

the compensation amounts payable to and profit amounts payable by the affected counterparties, based on the re-transaction prices.

Non-failing counterparties that benefit from the closeout process will be required to settle the profit to the CCP. For counterparties whose trades were replaced through the auction, this is determined based on the difference between the original trade price and the auction price. For counterparties whose trades were not replaced through the auction, this is determined based on the difference between the original trade price and the JSEC-determined price or re-transaction price (as applicable)

Non-failing counterparties that realise a loss from the close-out process will be settled using the pooled profits and the default waterfall.

If the pooled profits and waterfall are insufficient to cover the losses of the counterparties, the shortfall will be apportioned across the markets on a pro-rata basis, based on the total obligations in each market relative to total obligations in all loss-making markets.

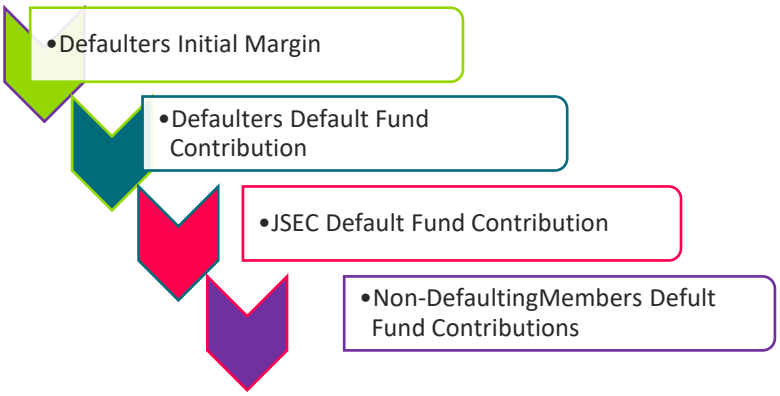
The losses of counterparties in the bonds will be haircut by the apportioned shortfall for the market, in proportion to the total loss in the market.

18.5. Compensation Determination Factors

Factors that JSE Clear may consider in determining the compensation in relation to a failed trade include:

- the price at which the bonds were originally transacted.
- The prevailing market conditions at the time the bonds were originally transacted.
- The circumstances of the original transaction.
- The nature and pattern of trading in the bond since the original transaction.
- The current market conditions; any publicly available information regarding the bond or the issuer of the bond.
- any corporate action which the bond is subject to from the day of the original transaction.
- any expenses incurred or income foregone by the member or the client as a consequence of the failed trade, including interest; and
- any other factors deemed relevant.

18.6. Default Waterfall



Annexure A – Daily processing times

Time	Description
Start of Day	
04h55	Announcement Market online
05h00	JSE Trading and JSEC Clearing System Online
06h01	JSE Clear releases EOD margin instructions to Clearing members via swift message (net margin + fees for all derivative markets + cleared bonds)
06h01 to 10h00	EOD margin received/paid i.e. either Clearing members pay JSE Clear or JSE Clear pays Clearing members
06h55	Announcement Market open for Trading
07h00	Reported Cash bond and repo market open for trading
07h00	TRADE NOVATION PROCESS BEGINS
07h59	Security Collateral Process: Withdrawals, pledges, de-pledges, substitutions & top-up requests must be committed to by CSDP's to be included in the Start of Day collateral process at 08h00
08h00	Bond ETP market opens for trading
Intraday	
08h00 to 08h30	Security Collateral Process: JSEC runs SOD securities collateral process in Nuclears The SOD securities collateral process includes the processing of pledges, de-pledges, withdrawals, substitutions & top-ups.
08h31 to 08h45	Security Collateral Process: Clearing Members approve/reject security withdrawal requests (per client) based on cash availability
08h45	Strate onus settlement run (Free of value)
08h45	Security Collateral Process: JSEC determines SOD ZAR cash margin call JSEC disseminates SOD settlement instruction to Clearing members
09h00	Security Collateral Process: Clearing Members disseminate client reports (only applicable for clients utilising the securities collateral service)
09h30	Strate First Settlement run
09h45	Security Collateral Process: Clearing member payments received & SOD settlement complete Strate releases securities which have been withdrawn
11h00	Publication of rates e.g. JIBAR, STEFFI, Overnight Deposit.
12h00	Same Day Settlement Window Close.
15h00	Publish Early Valuations
15h15	Strate Final settlement run
17h00	Publish Late Valuations
17h00	ETP Market Close
17h45	Receive Bond Price file from JSE valuations team.
17h55	Market Close (Admin Period) Announcements
17h56	Market Online (Download only) Announcements

Time	Description
18h00	Cash bond Market Close (Admin Period)
18h01	Market Online (Download only)
End of Day	
18h01 to 18h30	End of day procedures begin: Calculation of margin, calculation of fees, collateral calls, Clearing Members EOD process is started.
18h30	Security Collateral Process: JSEC transmits spot bond price file to STRATE
18h30	Security Collateral Process: JSEC transmits exposures to STRATE i.e. maximum value of securities that can be pledged per TM/client
19h00	Clearing members EOD process is complete
On request from a Clearing member and Trading member transfers will be processed	
A rerun of the EOD process could occur post the completion of the initial EOD process	

Overview of daily post-trade processes

Overview of start of day processes

a. **Reference data**

Clients can connect to the JSE Trading system and download reference data.

b. **Release of EOD settlement instructions**

JSE Clear releases EOD settlement instructions to Clearing members via swift message. This is a net margins & fees for all derivative markets and cleared bonds.

c. **Trade Novation**

On receipt of a cleared bond trade, the CCP performs various validations on trade data, product eligibility and clearing membership. If the validations are successful, the trade is novated.

Overview of intraday processes

a. **Risk monitoring**

To be advised in the next update

b. **Intraday margin call**

Ad-hoc process

c. **Securities collateral process**

At 08h00 the automated security collateral process is kicked off with the Strate collateral management system. During the securities collateral process, JSE Clear will receive from Strate the portion of the total IM that has been met with securities collateral per Trading member and client. The JSEC clearing system then determines the IM amount to be settled in ZAR cash on the back of the securities collateral process.

Cash withdrawals which is the release of cash by pledging securities, can only occur during the securities collateral process at 08h00 and therefore any withdrawal requests must be committed to by Trading member or client CSDP before 08h00.

d. **Collateral management**

During the course of the day various collateral management activities may be performed by trading members and clients:

- Substitutions – substitute one security for another
- Security withdrawals – release securities by posting cash
- Top-ups – pledge additional securities if value of securities already pledged falls below a specified threshold as market prices change

e. **Publication of rates and early valuations**

To replicate daily margin calculations, benchmark rates are published via the clearing system daily at 11h00 e.g. JIBAR rates, interest on margin rates, rand overnight deposit rates. Early valuation prices for the Interest Rate Derivatives markets are made available at 15h00 daily.

Overview of end-of-day (EOD) processes

a. Final closing prices

At the end of each trading day, the clearing system receives the final closing prices for all instruments from the JSE valuations system.

b. Clearing system calculations

Closing prices are used in determining initial and variation margins. The clearing system determines all other cash amounts e.g. booking fees, clearing fees and collateral calls. These cash amounts are published to clearing members for confirmation of reconciliation.

Post balancing with clearing members, the JSE clearing system nets all derivatives and cleared cash bond settlement amounts per Clearing Member for final settlement via SWIFT.

c. Transfers

On completion of EOD balancing any position adjustments due to transfers are processed. Trade and position updates resulting from these actions are published during this period.

d. Reruns

Post reconciliation between JSE Clear and Clearing members, a rerun may be required as a result of an erroneous price or other incorrect inputs that were identified.

Before the rerun decision is confirmed and executed, careful consideration is applied by JSE Clear in terms of the impact of the error. These considerations include:

- the magnitude of the margin differential
- the number of market participants impacted
- the time of the detection

If the error is not material, it will be rectified the following day through appropriate manual adjustments. The aforementioned factors will be considered in context of JSE Clear guidelines and JSE Clear will in consultation with Clearing members decide whether to proceed with the rerun. A rerun may be performed on the same trading day or before the start of the business day on T+1.

Annexure B – Back-to-back links and settlement groups

BTB is a risk mitigation tool used by the CSDPs to link transactions with the dependencies.

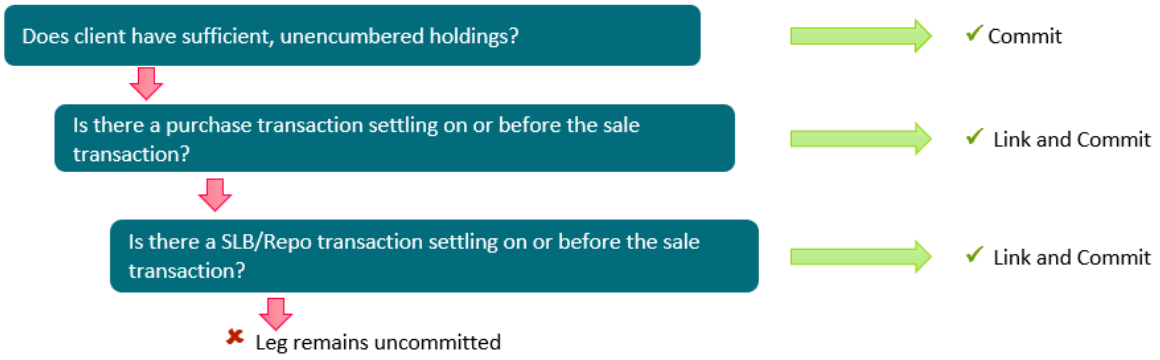
The following transactions can be linked by the CSD Participants:

	Cleared (ETP & IRC)	IRC Uncleared	Off-market	SLB
Cleared (ETP & IRC)				
IRC Uncleared				
Off market				
SLB				

To apply back-to-back links, all trade legs need to be part of the same:

- Custody account
- ISIN
- Settlement date

CSDP logic for linking and committing to a sale transaction follows these basic principles:

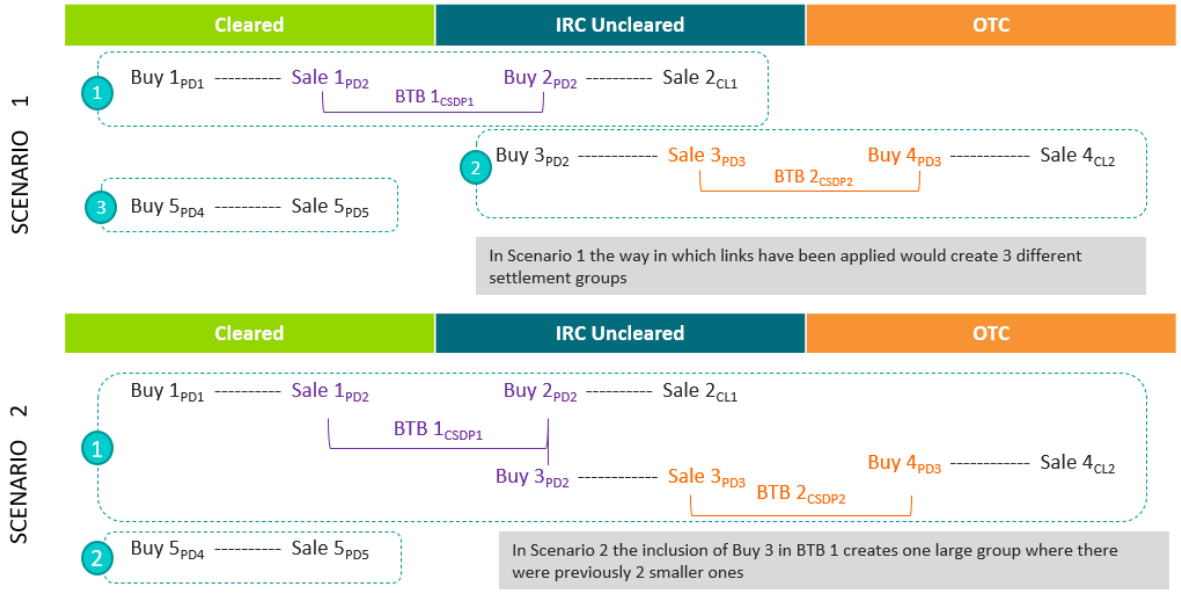


Once CSDPs have created the back-to-back links necessary to conditionally commit to the settlement of trades, Strate's system automatically creates settlement groups for more efficient settlement.

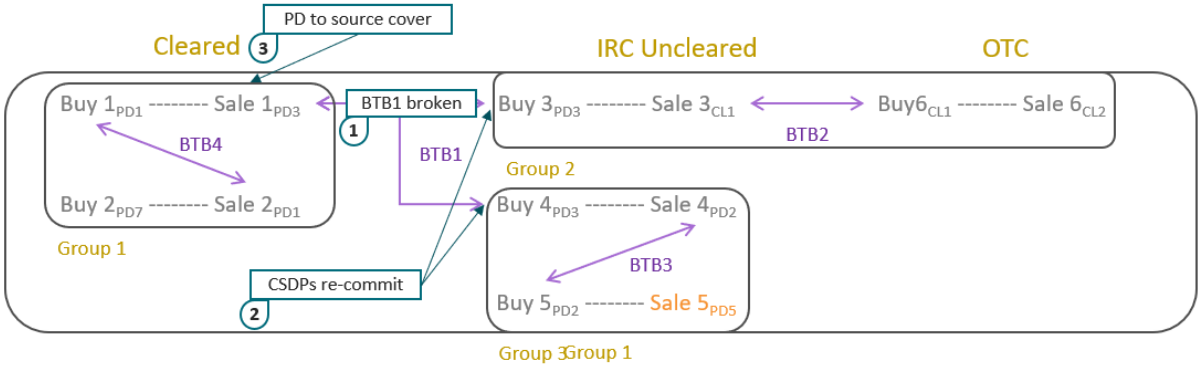
Settlement groups consist of all trade legs that have back-to-back links applied to them within a specific ISIN for a particular settlement date.

Unlike back-to-back links that can only be applied to one custody account, settlement groups can span across members or clients and CSDPs as it is possible for settlement groups to have multiple back-to-back links within the groups, thus settlement groups can get quite large.

Only when all transactions within a group are committed and total deliveries matches total receives (Cash and Securities), will the group move forward for settlement

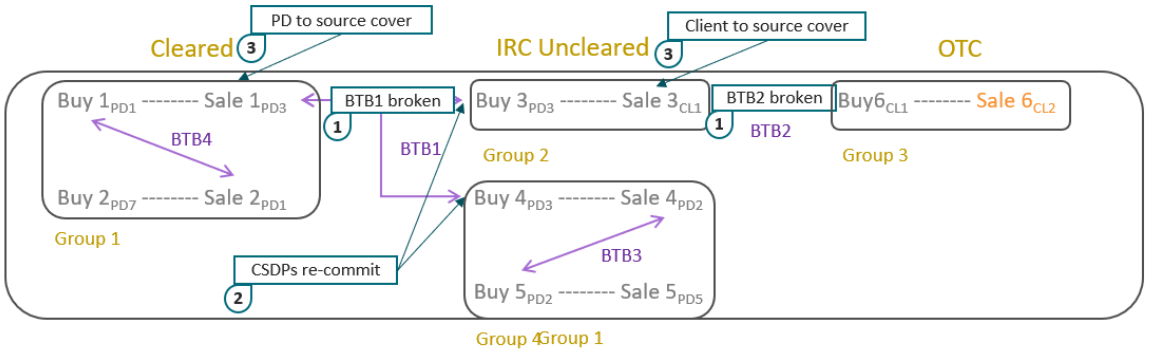


Scenario 1: IRC uncleared trade holding up group



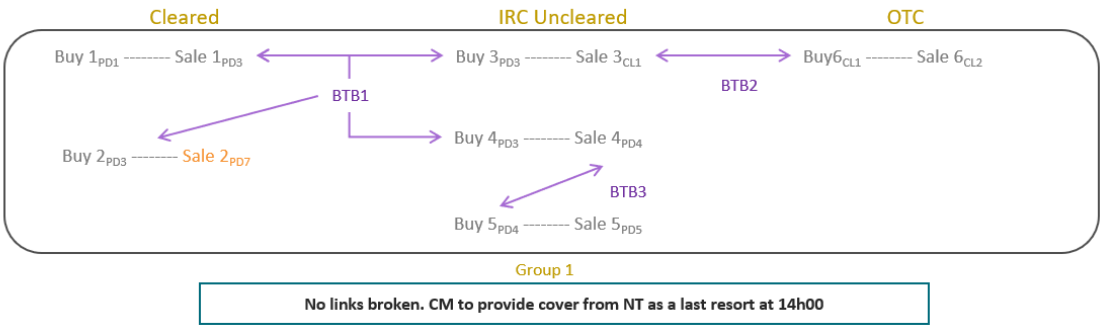
- At 13h00, IRC Uncleared Sale 5 is still uncommitted to, thus Strate will instruct PD3's CSDP to break BTB1, which will result in the breaking up the settlement group, Group 1
- Once links are broken, CSDPs will then re-commit to Buy 3 and Buy 4, assuming all the necessary funds are in place and available
- PD3 will then need to source cover for Sale 1 from their CM, if stock is not available, in order for enable settlement for all Cleared trades
- Cleared trades will not be linked to any trades other than dedicated cover trades booked to enable settlement of all Cleared trades

Scenario 2: OTC trade holding up group



- At 13h00, OTC Sale 6 has still not been committed to so Strate will instruct PD3 and Client1's CSDPs to break BTB1 and BTB 2 respectively
- Once links are broken, CSDPs will then re-commit to Buy 3 and Buy 4, assuming all the necessary funds are in place
- PD3 will then need to source cover from their CM for Sale 1 in order for enable settlement for all Cleared trades
- Client 1 will also need to source cover for Sale 3, however since the NT facility is not available to non-PDs Trade 3 the possibility exists that Trade 3 may fail

Scenario 3: Cleared trade holding up group



- At 13h00, group has not settled due to uncovered Cleared Sale 2
- Since the trade holding up the group is an Cleared trade, the CM will be responsible to provide the TM with cover either through available stock or through their access to NT to ensure that settlement of the trade occurs, hence no links will be broken.
- Settlement should be finalised by Strate's final settlement run at 15h15