



CHES Replacement: Proposed changes to netting and settlement workflow

Consultation Paper

February 2021



Invitation to comment

ASX is seeking submissions in response to this consultation paper by 18 March 2021.

Submissions should be sent to:

E chessreplacement@asx.com.au

ASX Limited

20 Bridge Street

Sydney NSW 2000

PO Box H224

Australia Square NSW 1215

Attention: Keith Purdie

ASX prefers to receive submissions in electronic form.

If you would like your submission, or any part of it, to be treated as confidential, please indicate this clearly. All submissions will be provided to the relevant regulatory agencies.

Contacts

For general enquiries, please contact:

Keith Purdie

Senior Manager, Equity Post

Trade Services

T 02 9227 0159

E keith.purdie@asx.com.au

Media enquiries, please contact:

David Park

Senior Adviser, Media and

Communications

T 02 9227 0010

E david.park@asx.com.au

Contents

Executive Summary	4
Overview	4
Impacted stakeholders	5
Stakeholder feedback requested by ASX	6
Next steps.....	6
1. Introduction	7
1.1. Background	7
1.2. Key drivers	8
1.3. Snapshot of proposed key changes.....	8
2. High level overview	9
2.1. High level: current business process	9
2.2. High level: proposed business process.....	11
3. Proposed changes to clearing and settlement workflow	14
3.1. Trade registration	14
3.2. Netting and generated net broker obligation	14
3.3. Un-netting.....	16
3.4. Margin calculations.....	17
3.5. Trade cancellation.....	17
3.6. Batch settlement.....	18
3.7. Cancellation of batch settlement	20
3.8. Corporate actions	21
3.9. mFund settlement	22
4. Summary of key changes	23
4.1. Summary of message changes	23
5. Other considerations	24
5.1. Migration	24
5.2. Other solution designs considered.....	25
5.3. Comparison with other international clearing and settlement facilities	27
5.4. Ledger API considerations.....	27
6. Operating Rule Amendments	28
6.1. Rule amendments	28
7. Stakeholder engagement	29



Disclaimer

This document provides general information only. ASX Limited (ABN 98 008 624 691) and its related bodies corporate (“ASX”) makes no representation or warranty with respect to the accuracy, reliability or completeness of the information. To the extent permitted by law, ASX and its employees, officers and contractors shall not be liable for any loss or damage arising in any way (including by way of negligence) from or in connection with any information provided or omitted or from anyone acting or refraining to act in reliance on this information.

Executive Summary

Overview

This consultation paper outlines proposed modifications to the CHES replacement system (“CHES replacement”) to support the registration and clearing and settlement of significantly greater trading volumes than had been anticipated at the commencement of the project. The proposed changes are being made in response to the extreme record trading activity in March 2020 and the feedback subsequently received from the market that the post-trade processing capacity of the new system should not constrain trading activity.

The proposed changes will allow the replacement system to be scaled to much higher volume levels post go-live than previously envisaged. Additionally, the proposed changes seek to facilitate faster overnight processing, make batch settlement more efficient, de-risk critical settlement processes and allow trade legs to persist in the system on an individual basis until batch settlement (which can support trade cancellation after trade date).

ASX is proposing changes to the design of both the netting and settlement confirmation workflows. These changes will remove the creation of the net broker obligation (NBO)¹ (as part of overnight processing on each trade date) notified for settlement in respect of each clearing participant. This will deliver processing efficiencies and reduce subsequent messaging volumes as part of the overnight end-of-day process and daily batch settlement.

CHES today provides for a high volume of messages related to both netting and settlement processes, which can be more efficiently managed so as to reduce the processing times of these activities.

An outline of the proposed changes is provided below:

- Redesign of the netting process, including to remove creation of the NBO settlement instruction
 - The creation of the NBO and associated message flow forms part of overnight processing. The design of the current netting process is a constraint on system scalability - as the trade count increases, the netting process takes longer, and at significantly higher volume levels would at some point exhaust the time available for overnight processing. In order to provide much greater system scalability and avoid the need for imposing limits on higher levels of trading activity to manage processing windows, it is proposed that the creation of the NBO and associated messaging be discontinued.
 - ASX Clear and ASX Settlement will continue to provide the benefits of netting, with the calculation of cash market margin being on the netted position and settlement occurring on a net basis. Under the proposal, the system will no longer offset gross market trades with an NBO instruction, avoiding the routine substitution of transactions notified for settlement as part of the netting process by ASX Clear. This removes processing activity that increases proportional to transaction count, and will provide for greater system scalability.
 - Under the proposal, a new process to calculate a clearing participant’s net payment and delivery obligation or net receipt position across its novated market trades in a security (for each settlement account (HIN)² per user identification code (UIC) operated by the participant) – referred to as the novated net delivery position (NNDP), will occur in the new system. The NNDP will be calculated and updated on a continuous basis as trades are registered and novated to ASX Clear and will be used as part of batch settlement calculations on the relevant settlement date. It is proposed that the NNDP will also incorporate novated

¹ The NBO represents the net payment and delivery obligation or entitlement of a clearing participant across its novated market trades in a security (other than for trades excluded from netting) due for settlement on a relevant settlement date. The NBO is notified by ASX Clear to ASX Settlement for settlement on the relevant settlement date and referred to as a CCP Net Batch Instruction under the ASX Clear Operating Rules and ASX Settlement Operating Rules. Where a clearing participant operates more than one UIC, separate NBOs will be created in respect of the novated market trades recorded to each UIC.

² This is also referred to as an entrepot settlement account (HIN), but will be referenced in this document as a settlement account.

trades currently excluded from the NBO on a security or individual trade basis (e.g. trades not netted due to certain corporate actions and 'as at' trades).

- Under the proposal, clearing participants will be provided with their net position via a new report called the NNDP report. It is proposed that the NNDP report will be provided unsolicited to all clearing participants at the end of each trading day. It will report the net position for all future settlement days per settlement account, security, and basis of movement. It is envisaged that this report may be used for reconciliation purposes. Clearing participants should note that the NNDP could be subject to change on the morning of settlement (e.g. for a CCP cancellation or removal of a trade from settlement, where permitted).
- Redesign of settlement message confirmations
 - CHES performs settlement on a DvP Model 3³ basis, whereby both securities and funds settle on a net basis across participants. In current CHES, settlement is communicated to participants via a suite of messages including confirmation of holding movements per account (whether a direct, sponsored or entrepot HIN)⁴, security, and basis of movement for the settlement date. CHES also provides individual settlement notifications via messaging for every instruction that formed part of the advised net settlement values for both securities and funds. Importantly, the current DvP Model 3 basis for settlement and the associated netting efficiencies will be retained under the proposal.
 - It is proposed that CHES will move to an exception only reporting model. Individual settlement confirmation messages for instructions that settle successfully will not be sent to participants. The replacement system will notify all participants of the total funds settled, as well as those individual instructions that have failed (in full or in part). Confirmation for each net holding movement will continue to be sent but in a new format. Each individual net holding movement confirmation will now include the net funds value of the individual net movement, together with a count of the instructions that make up the net movement of securities and funds.
 - It is also proposed that CHES will provide a new demand settlement statement report. Under the proposal, participants will have the ability to request the details of the underlying instructions that formed part of settlement for a specified account, security, basis of movement, and settlement date. The purpose of this report is to assist participants in their exception management processes.
 - Settlement risk is reduced by decoupling the critical process of the performance of batch settlement⁵ from reporting of the performance of the individual settlement instructions.

This paper provides a comparison of how CHES operates today and the proposed changes for each process in the trade lifecycle (see section 3).

Impacted stakeholders

The changes being proposed will impact clearing and settlement and settlement only participants (herein referred to as 'participants', unless otherwise specified), software providers (third party vendors and those developing in-house) and approved market operators (AMOs). All other stakeholder groups, such as issuers (and their service providers), product issuer settlement participants (PISPs), and payment providers, are not impacted by the proposed changes.

ASX acknowledges the impact of making these changes to the design of the replacement system at this point in the project for affected stakeholders. After considering the events of March 2020 and the range of options for providing additional

³ DvP Model 3: Delivery-versus-payment Model 3 – transfer instructions for both securities and funds (across novated and non-novated transactions) are settled on a net basis with finality at the end of the processing cycle.

⁴ For the purposes of this paper, references to 'account' includes a direct, sponsored or entrepot HIN (as applicable).

⁵ The single daily settlement process provided by CHES whereby obligations or entitlements to pay/receive funds and deliver/receive securities across Settlement Participants are performed at the same time, either on a DvP or FoP basis.



system scalability, ASX considers that accommodating the proposed changes now, rather than undertaking further software development in the near to medium term following go-live of the replacement system, is the preferred and lowest cost option.

On 1 October 2020, the RBA and ASIC also publicly set out their expectations that the CHES replacement system achieve a significant uplift in intraday trade processing capacity and end-of-day processing performance⁶. The agencies also noted that the Australian financial system requires contemporary clearing and settlement infrastructure that is efficient, resilient, reliable and scalable to meet existing and future needs of the market and participants.

ASX made provisions for additional time in the finalised replan published on 28 October 2020 to enable ASX to consult with affected stakeholders and to accommodate the additional software development necessary.

Stakeholder feedback requested by ASX

ASX is seeking the following feedback from impacted stakeholders on the proposed changes to netting and settlement workflows:

1. For impacted participants, what impacts do the proposed changes have on your overall business processes, operations, and systems (e.g. cessation of NBO, introduction of NNDP, and/or the settlement confirmation changes)?
2. For impacted participants and software providers (third party vendors and those developing in-house), can the proposed solution design be enhanced or supplemented to assist with the implications of the proposed changes for existing business processes, operations and systems?
3. For impacted participants and software providers, what impacts do the proposed changes have on your organisation's technical readiness activities for accreditation commencing from late April 2022 and/or operational readiness activities commencing from September 2022?
4. For AMOs, do you see benefit in allowing for trade cancellation after trade date for trades executed on your market?

Next steps

Written submissions in response to this consultation paper are due by 18 March 2021.

If you would like your submission, or any part of it, to be treated as 'confidential', please indicate this clearly in your submission. Submissions marked 'confidential' will be provided to the relevant regulatory agencies.

ASX will host an Implementation and Transition Working Group webinar on 23 February 2021 to present the proposed changes set out in this paper. All impacted stakeholders are also invited to attend a focus group session to discuss the changes and provide feedback in early March 2021.

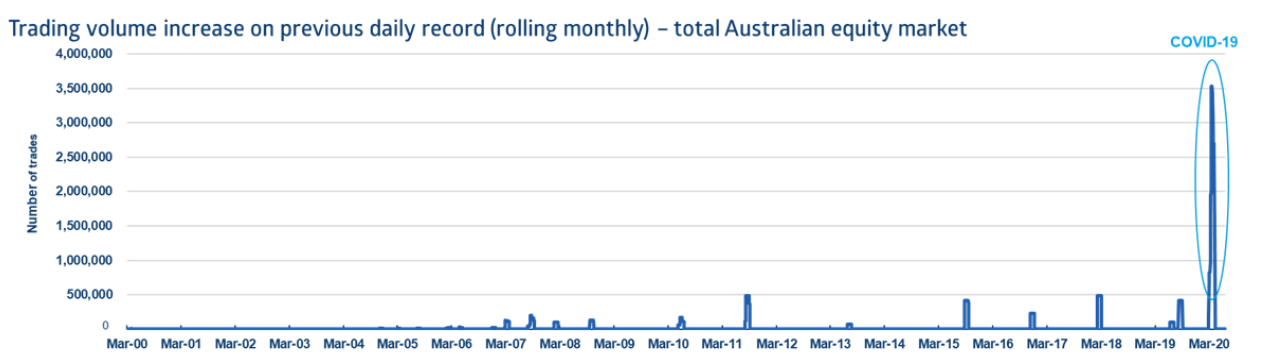
ASX will consider all feedback with an aim to publish the functional specifications and messaging requirements relevant to the proposed changes at the end of March 2021. ASX intends to release a formal response to consultation feedback ahead of the functional code release planned for end June 2021.

⁶ ASIC and RBA Joint Media Release '[ASIC and RBA announce expectations for CHES replacement](#)', 1 October 2020.

1. Introduction

1.1. Background

In March 2020, there were extreme trading volumes with increases in trading activity which were more than 7 times greater than previous increases caused by events such as Brexit and the 2016 US election. When ASX made the decision in December 2017 to proceed with replacing the CHES system, the record trade volume was 2.1 million trades. In August 2019, the daily record was 3.3 million trades across ASX and Chi-X markets, and this more than doubled to 7.0 million trades on 13 March 2020. This volume increase is unprecedented, as shown in the chart below.



To ensure the continued resilient operation of its market infrastructure, ASX has prioritised resources to deliver further scalability within the existing CHES system. Progressive uplifts in capacity and performance were delivered in 2020 and further improvements are planned for 2021. CHES now has the capacity to cater for 7 million trades per day over multiple consecutive days. However, the implications of the 13 March 2020 trading record has led to a reset of industry and regulators’ expectations for the CHES replacement system relating to volume processing and scalability. Consequently, the key considerations for the CHES replacement project are:

- The new trading record means that the requirements for the replacement system should be enhanced to provide for significant additional capacity on Day 1 implementation
- The unprecedented nature of the increase has led trading participants to form the view that possible future volume increases should not lead to post-trade processing capacity putting a constraint on trading activity. This means that the replacement system is expected to be able to scale to much higher capacity levels than envisaged when the requirements for the system were being determined at the commencement of the project
- That addressing scalability related issues shortly following CHES replacement go-live would be sub-optimal and result in greater change, cost and risk for participants than implementing the re-design prior to go-live.

These key considerations were taken into account in the recent CHES replacement project replan. Additional time was built into the project timeline to ensure additional capacity is provided to allow the processing of significantly higher trading volumes on Day 1, and that the new system can scale to significantly higher capacity levels post-Day 1.

The Day 1 trade processing capacity requirement has been significantly increased to accommodate ‘bursting’ trade registration activity during the day. However, in order to achieve additional capacity uplifts more quickly post-Day 1, changes to the messaging associated with netting and settlement workflows are required to complete the necessary overnight and settlement processes in a timely manner at high trading volumes.

1.2. Key drivers

The key drivers for changing the workflows associated with netting and settlement are:

- **Increased trade processing capacity:** to allow for an increase in the number of trades-per-day without constraining trading activity and to provide a future path that is unencumbered
- **Simplified overnight processing:** the netting calculation and associated message flow forms part of overnight processing. The time to complete this process is linear to transactions, and is therefore not scalable. As the transaction count increases to significantly higher volume levels, the netting process would at some point exhaust the time available for overnight processing. By removing the messages associated with the calculation and dissemination of the netting information, the linear relationship with transactions is removed
- **Improved batch settlement efficiency:** securities and funds transfers to be performed in batch settlement for novated transactions will be determined on a single net basis for each clearing participant (other than for limited exceptions) rather than on the basis of an aggregate of a net settlement instruction and a number of gross settlement instructions, as happens under the current CHES system. As movements of securities are locked during the processing of the CHES settlement batch, it is important that the batch runs as efficiently as possible and in the shortest possible timeframe
- **De-risked settlement process:** currently, CHES performs individual transaction status reporting in conjunction with the performance of batch settlement. By removing the individual transaction status reporting from batch settlement, it removes the risk of delays to timely batch settlement completion
- **Removal of non-scalable processes:** by allowing market trade legs to persist in the system until batch settlement on an individual basis, it avoids their aggregation into a single NBO settlement instruction notified for settlement at the end of each trade day by ASX Clear. This removes any processing, such as offsetting each individual trade leg every day, which will increase proportional to transaction count and therefore removes 'non-scalable' processes. It can also support the processing of trade cancellations occurring after the trade date.

1.3. Snapshot of proposed key changes

The following key changes for participants are proposed to address the key drivers identified above:

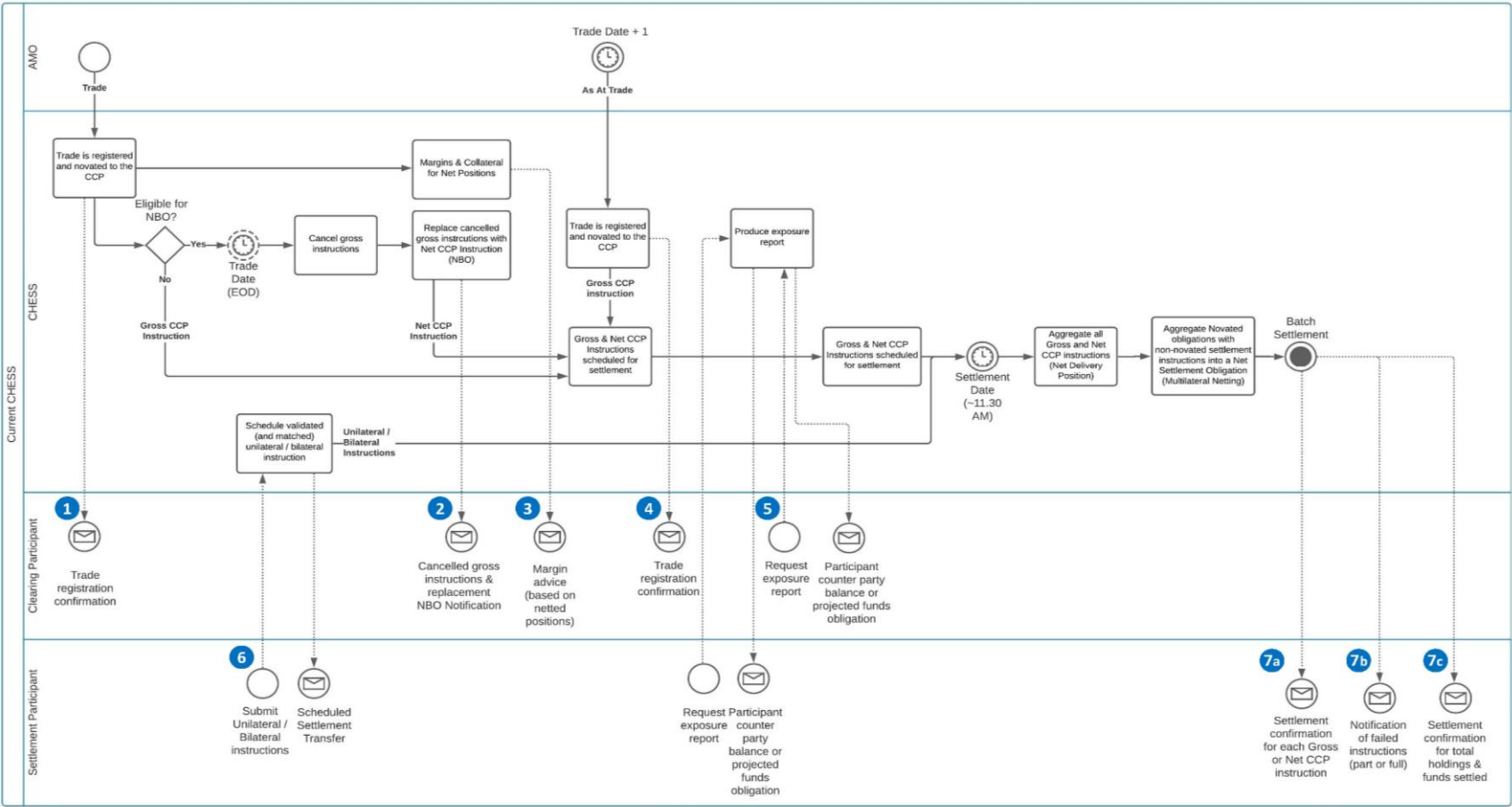
- NBO creation and the subsequent dissemination of netted broker-broker trade messages on trade date will no longer be undertaken
- Unlike an NBO, the new NNDP calculation process will enable a clearing participant's net position to be updated in the replacement system up to the settlement date⁷ (e.g. to include trade cancellations and 'as at' trades)
- A new NNDP report will be made available at the end of each business day for all future settlement dates
- A new settlement statement report will be made available on demand at a single security level that may be used for reconciliation purposes
- Modification to the way settlement is notified by retaining confirmation of net holding adjustments but removing line-by-line settlement notifications, with the exception of settlement failures
- For partial settlement, two notifications will be sent - one for the securities that have settled and one for the re-scheduled securities that have failed.

⁷ The relevant cut-off time is yet to be determined.

2. High level overview

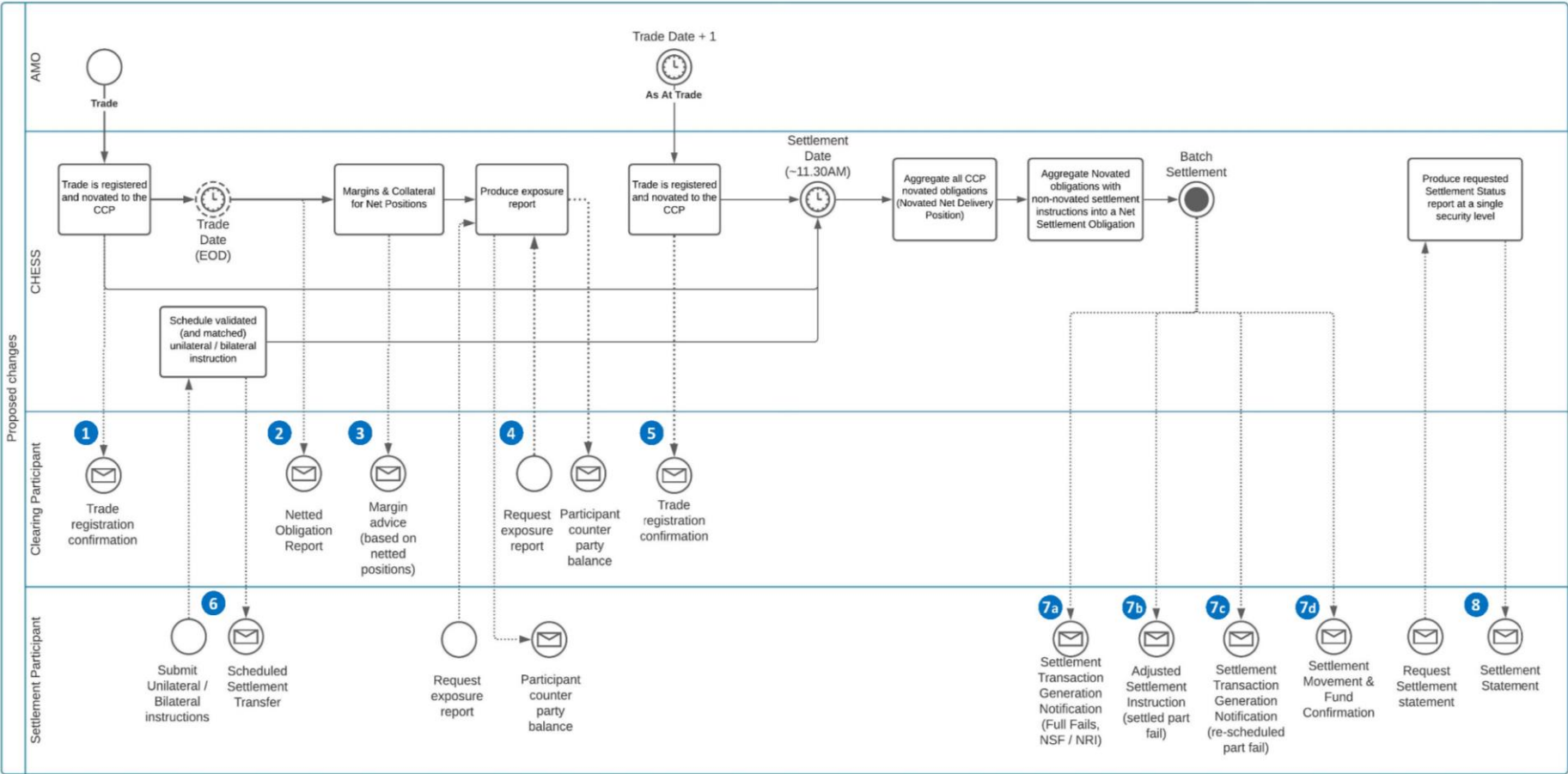
This section provides a high level overview of the key clearing and settlement workflows from trade registration through to batch settlement. It includes diagrams and explanatory material setting out the workflows as they are currently and how they will operate under the proposed changes. The table following each diagram provides a description of each key process in the post-trade lifecycle to assist with a comparison of the key changes.

2.1. High level: current business process



Step	Description	Date	CHESSEIS
1	Trade Registration: AMOs (ASX Trade, Chi-X and NSX) report trades to CHESSE for the purpose of clearing and settlement. Each trade is legally novated and registered in the CHESSE system. Clearing participants are notified via CHESSE messaging.	Trade Date (TD)	EIS 164 EIS 116
2	Net Broker Obligation: CHESSE runs an end of day netting process, this process reduces the number of settlement obligations to be taken into the CHESSE settlement batch. The netting process nets eligible trades and replaces them with a single NBO. The NBO is created for each clearing participant, settlement account, security, basis of movement, and settlement date combination. Clearing participants are notified of netted trades and the NBO via CHESSE messaging (e.g. for a cancellation or removal of a trade from settlement (where permitted) on the morning of settlement).	TD	EIS 134 EIS 138 EIS 136 EIS 140
3	Margin Calculations: Cash market margins are calculated based on the clearing participant's total unsettled novated cash market transactions. These transactions cover all cash market products: equities, warrants and interest rate securities. CHESSE notifies clearing participants of their daily margin obligations via CHESSE messaging.	TD to Settlement Date (SD)	EIS 942
4	Trade Registration ('as at' trades): AMOs can report trades to CHESSE one day after the agreed trade date ('as at' trades). Each eligible trade is legally novated and registered in the CHESSE system. 'As at' trades are scheduled into the settlement batch on a gross basis for the next business date.	TD+1	EIS 164 EIS 116
5	Reporting: A participant can request reports detailing its current funds obligation. The funds obligation is calculated using all settlement instructions scheduled for future settlement cycles or for the next settlement cycle. Settlement participants are notified of their funds obligation via CHESSE messaging.	TD to SD	EIS 503 EIS 150 EIS 158
6	Unilateral & Bilateral Settlement Instructions: Settlement participants schedule settlement instructions for the purpose of facilitating client side obligations.	Prior to SD	EIS 101 EIS 105 EIS 107
7	Batch Settlement: CHESSE determines if there are sufficient securities in the relevant participant accounts to satisfy all scheduled settlement obligations. In the event of unit failure (i.e. the unit amount of scheduled instructions exceeds the amount of available securities), CHESSE invokes the settlement algorithm to determine which instructions to reschedule. Subject to outcomes from the settlement algorithm, CHESSE produces the following output messages to settlement participants: <ul style="list-style-type: none"> a) Settlement confirmation message for each individual fully settled instruction b) Notification of any rescheduled instructions, either in part or in full c) Effected net movement including number of securities settled in batch per account, security, and basis of movement, together with funds movement per payment facility 	SD	EIS 156 EIS 192 EIS 124 EIS 146 EIS 170

2.2. High level: proposed business process



Step	Description	Date
1	Trade Registration: AMOs (ASX Trade, Chi-X and NSX) report trades to CHES for the purpose of clearing and settlement. Each trade is legally novated and registered in the CHES system. Clearing participants are notified via CHES messaging.	TD
2	Netting: CHES maintains an up-to-date calculation of net positions covering novated market trades (referred to as the NNDP) which takes into account any updates to positions (new registrations, cancellations, etc). This represents a net view of all gross market trades at a settlement account, security, and basis of movement per clearing participant for all future settlement dates. At the end of each business day, CHES will provide a report (summary netted obligations report) to clearing participants, containing their net obligations, or 'NNDP', for each future settlement date at the time the report was created. The NNDP could be subject to change prior to settlement (e.g. for a cancellation or removal of a trade from settlement (where permitted) on the morning of settlement).	TD
3	Margin Calculations: Cash market margins are calculated based on the clearing participant's total unsettled novated cash market transactions. These transactions cover all cash market products: equities, warrants and interest rate securities. CHES notifies clearing participants of their daily margin obligations via CHES messaging.	TD to SD
4	Reporting: A participant can request a report detailing its current funds obligation. The funds obligation is calculated by using all settlement instructions scheduled for future settlement cycles. Settlement participants are notified of their funds obligation via CHES messaging.	TD to SD
5	Trade Registration ('as at' trades): AMOs can report trades to CHES one day after the agreed trade date ('as at' trades). Each eligible trade is legally novated and registered in the CHES system. 'As at' trades update the NNDP and are included in the summary netted obligations report.	TD+1
6	Unilateral & Bilateral Settlement Instructions: Settlement participants schedule settlement instructions for the purpose of facilitating client side obligations.	Prior to SD
7	<p>Batch Settlement: CHES determines if there are sufficient securities in the relevant participant accounts to satisfy all scheduled settlement obligations, including all market trades in the NNDP calculation and scheduled settlement Instructions.</p> <p>In the event of unit failure (i.e. the unit amount of scheduled instructions exceeds the amount of available securities), CHES invokes the settlement algorithm to determine which instructions to reschedule.</p> <p>Subject to outcomes from the settlement algorithm, CHES produces the following output messages to settlement participants:</p> <ul style="list-style-type: none"> a) Notification of any novated market fails b) Notification of partial failures via an adjusted settlement instruction (providing details of the settled component) c) Notification of new settlement transaction generation for the portion being re-scheduled d) Effected net movement including number of securities and funds settled in batch per account, security, basis of movement, and net funds movement per payment facility. 	SD

8	Reporting: A settlement statement will be available as an ad hoc report that can be requested by settlement participants. This report provides the underlying settlement instructions settled for a requested business day per security, and can be used for reconciliatory or investigative purposes.	SD
---	---	----

3. Proposed changes to clearing and settlement workflow

This section provides further details on the proposed changes to the netting and settlement confirmation workflows. A table for each process in the trade lifecycle sets out the proposed changes between how CHES currently operates, the code already delivered to the customer development environment (deployed to CDE), and how CHES will operate under the proposed changes. The refactoring of any software development will depend on whether software providers have developed to the code delivered to CDE.

3.1. Trade registration

Current process

CHES produces trade registration confirmation to the clearing participant for any trade successfully registered.

Proposed solution

There is no change to trade registration. The proposed target state will continue to generate a trade registration confirmation to the clearing participant as per the current process.

Key process changes

Process	CHES (Current)	CHES Replacement (Deployed to CDE)	CHES Replacement (Proposed)
Trade registration	Trade registration confirmation upon successful registration of a trade	No change	No change

3.2. Netting and generated net broker obligation

Current process

CHES currently applies netting eligibility criteria for any registered market trade novated⁸ to ASX Clear. Netting eligibility is currently determined by:

- Security eligibility - securities can be eligible or ineligible for netting. Securities are routinely marked as 'ineligible' for complex corporate action event processing purposes⁹.
- Condition codes on the trade - there are 4 condition codes which make a trade ineligible for netting (regardless of the security eligibility). These include:
 - OR - Overseas Resident (Foreign to Foreign)
 - P1 - Put through trade report \$1M
 - P2 - Put through trade report \$0.5M
 - PR - Prompt Rebooking

⁸ When the same clearing participant is on the buy and sell side of a market trade, the trade is notified to the clearing house but is not eligible for novation.

⁹ Namely where the securities are subject to a corporate action for which diary adjustments (i.e. redress mechanisms for a settlement fail) are not supported by ASX Settlement.



Subject to meeting the above eligibility criteria, the eligible market trades that have been novated are offset against each other (relevantly, payment and delivery obligations on each trade are offset) and incorporated in the NBO.

Novated trades (relevantly, payment and delivery obligations on the trades) may also be excluded from netting in certain circumstances:

- If requested by the relevant clearing participants under the ASX Clear Operating Rules¹⁰
- For novated transactions arising from the exercise of option contracts and registered with ASX Clear for settlement on the following day (also referred to as T+1 trades with an 'as at' date of T (being the date on which the exercise notice was allocated)).

Delivery and payment obligations on novated market trades which are not netted are notified by ASX Clear to ASX Settlement for settlement by way of a CCP gross batch instruction.

During the end of day process, CHES performs netting of all eligible novated market trades and creates a new settlement instruction called the NBO (referred to as a CCP net batch instruction under the ASX Clear Operating Rules and ASX Settlement Operating Rules). This is generated per clearing participant, security, and basis of movement, with a settlement date of T+2.

In conjunction with this process, CHES generates reporting (scheduled NBO and netted broker-broker trade reports), which provides the ID ('unique identifier') of the NBO, and the underlying trades that have been offset and now form part of the NBO.

Proposed solution

Existing netting eligibility criteria will be removed as all novated trades will be eligible for netting.

Gross market trades will no longer be offset and represented for settlement through the NBO. As a result of no longer generating the NBO, associated scheduled NBO and netted broker-broker trade reporting will no longer be produced and disseminated to clearing participants in the overnight batch.

A new report will be provided to clearing participants, which sets out an end of day view of the NNDP per settlement account, security and basis of movement for each future settlement date. This new report will be provided at the end of each trading day.

The NNDP will facilitate the inclusion of additional novated transactions currently excluded from the NBO, including:

- Those currently excluded from netting on the basis of:
 - Security eligibility, or
 - Trade condition code
- Trades registered with ASX Clear for settlement on the following day (also referred to as T+1 trades), e.g. for settlement of transactions arising from the exercise of option contracts.

However, the NNDP will not include prior settlement fails on instructions notified for settlement.

¹⁰ Refer to ASX Clear Operating Rule 12.7.3.

It is envisaged that this report may be used by clearing participants for reconciliation purposes.

Clearing participants will need to give consideration to the impact of the proposed changes on their own systems and workflows, including how they plan to use the NNDP report for reconciling net obligations for settlement.

Key process changes

Process	CHESS (Current)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (Proposed)
Netting eligibility criteria	Security and trade condition code eligibility	No change	All novated trades eligible for netting
Generated NBO	Scheduled NBO and netted broker-broker trade reports containing NBO and underlying netted trades	Netted obligation report containing NBO and underlying netted trades	Process is removed
NNDP report	Does not exist	Not in scope	Summary netted obligation report providing the netted position per settlement account, security and basis of movement

3.3. Un-netting

Current process

'Un-netting', which refers to the unwinding of the NBO and the re-instatement of the underlying gross market trades, can currently be triggered by ASX Operations for the whole market or for a single security for a specific settlement date. When this process is invoked, a re-instated broker-broker trade report is sent to participants.

Proposed solution

As a consequence of not generating the NBO, 'un-netting' (which unwinds the NBO) and associated reporting will no longer be relevant business processes.

Key process changes

Process	CHESS (Current)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (Proposed)
Un-netting	Re-instated broker-broker trade report	Un-netted obligation report	Process is removed

3.4. Margin calculations

Current process

Cash market margins are calculated based on the clearing participant's total net position, including all unsettled novated cash market transactions. These transactions cover all cash market products: equities, warrants and interest rate securities.

CHESS notifies clearing participants of their daily margin obligations via a margin settlement advice message, which is available for collection during the overnight batch. The margin settlement advice includes all cash balance, collateral and margin components.

Proposed solution

Cash market margin will continue to be performed on the clearing participant's netted position, with margin settlement advices to be generated and provided to participants during the overnight batch, as per the current process set out above.

Key process changes

Process	CHESS (Current)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (Proposed)
Cash market margin	CMM on netted position, margin settlement advices during overnight batch	No change	No change

3.5. Trade cancellation

Current process

Market trades can currently only be cancelled by an AMO on the day of registration, otherwise the netting process offsets eligible trades and replaces them with a single NBO on the night of trade date.

Proposed solution

Given trades will persist in the system on an individual basis until batch settlement and that they will no longer be aggregated into a single NBO, trade cancellation can now be supported for all novated trades beyond the trade date. Changes to the operating rules to support cancellation after trade date will be required and are subject to regulatory clearance.

Key process changes

Process	CHESS (Current)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (Proposed)
Trade cancellation	AMOs only have the ability to cancel trades on trade date	No change	AMOs will have the ability to cancel trades after trade date

3.6. Batch settlement

Current process

Upon the commencement of batch settlement, the system will determine if there are sufficient securities in the relevant participant accounts to satisfy all scheduled settlement obligations including NBOs, non-netted gross market trades, bilateral scheduled settlement instructions, unilateral scheduled settlement instructions and previous fails.

In the event of a security shortfall (i.e. the unit amount of scheduled instructions exceeds the amount of available units), CHES invokes the settlement algorithm to determine which instructions to settle and which instruction to reschedule (whether in part or in full). Subject to outcomes from the settlement algorithm, CHES produces the following output messages to settlement participants:

1. Settlement confirmation message for each individual fully settled instruction (EIS 156)
2. Notification of any partly settled instructions showing both the rescheduled (failed) portion and the settled portion of the instruction (EIS 192)
3. Notification of any fully failed and therefore fully rescheduled instructions (EIS 124)
4. Effected net movement of i) number of securities settled in batch per account, security and basis of movement (EIS 146); and ii) effected net funds movement per payment facility (EIS 170).

Proposed solution

Under the proposal, the CHES replacement system will move to an exception only reporting model. The system will no longer generate individual settlement confirmations for each fully settled instruction.

The system will continue to provide two settlement confirmation messages each at a net level:

1. A single funds movement message for total funds settled per payment facility (sett_137, to replace the EIS 170)
2. A settlement movement confirmation message for each account, security and basis of movement (sett_136, to replace the EIS 146).

The settlement movement confirmation message will be enhanced to include both settled number of securities and settled funds per account, security and basis of movement.

It is expected that participants can use the enhanced settlement movement confirmation message to reconcile the total of settled securities and the value of the net funds movement confirmation against scheduled instructions that successfully settled for that day.

Settlement reporting for full and partial failures relating to novated gross market trades will generate a novated settlement failure (NSF) and novated rescheduled instruction (NRI), as per the functionality currently available in CDE.

Settlement reporting will remain unchanged for full failures relating to unilateral or bilateral scheduled instructions and NRIs. The whole instruction will be rescheduled to the next batch settlement.

Settlement reporting will be revised for partial failures relating to unilateral or bilateral scheduled instructions and NRIs. In these circumstances, two new messages will be generated:

1. A message called the 'adjusted settlement instruction', which provides information on the portion of the instruction that failed and is being rescheduled
2. A message called the 'settlement transaction generation notification', which provides information on the portion of the instruction that did settle.

To assist settlement participants with their exception management processes, they will be able to request a demand report on an ad hoc and per security basis. The report provides the requestor with a list of all settled instructions corresponding to the account, security, basis of movement and settlement date combination requested by the participant. This report is intended to assist in reconciliation breaks or for investigative purposes.

The following processes remain unaffected under this proposal (and are not elaborated on further in this paper):

- settlement funds processing
- client trust payment notifications
- settlement cut-off
- back-out algorithm relating to a unit fail or funds fail
- standard settlement price
- isolate counterparty¹¹
- default management.

Key process changes

Process	CHESS (Current)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (Proposed)
Settlement confirmation (fully settled instruction)	Settlement notification for each settled instruction (NBO, non-netted gross market trade, unilateral and bilateral scheduled instructions)	No change	Settlement statement (demand report post completion of settlement providing the breakdown of the net settlement per account, security, basis of movement, and date combination, including all fully settled instructions)
Settlement notification (fully failed instructions)	Message notifying settlement participant of fully failed settlement instructions	Message notifying settlement participant of fully failed unilateral, bilateral and NRI settlement instructions	No change to CDE
		Failed and re-scheduled novated trades via the NSF and NRI processes using the settlement transaction generation notification message	No change to CDE

¹¹ The scope of the isolate counterparty function will be extended to a wider range of corporate action accruals.

Settlement notification (part failed instructions)	Message notifying settlement participant of part failed settlement instructions	No change	Two messages notifying settlement participant of part failed settlement instructions: <ul style="list-style-type: none"> Adjusted settlement instruction, relating to portion of the instruction being rescheduled Settlement transaction generation notification, relates to portion of the instruction being settled
Net settlement movement	Effectuated net settlement movement including number of securities per account, settlement instruction count, security, and basis of movement	No change	Settlement movement message, including number of settled securities and funds per account, security, and basis of movement

3.7. Cancellation of batch settlement

Current process

On the very rare occasion that the settlement process is cancelled or fails to complete, CHESS cancels the funds obligations, notifies participants and reschedules all settlement obligations (NBO, non-netted gross market trades, NRIs, unilateral, and bilateral scheduled settlement instructions) to the next business day.

Proposed solution

Under the proposed solution, all non-novated obligations (non-novated gross market trades, unilateral and bilateral scheduled settlement instructions) and NRIs will be rescheduled to the next business date (in full). The replacement system will communicate this via a settlement instruction generation notification (sett_130).

For novated gross market trades, which are captured in the calculated NNDP, an NSF will be created to 'offset' the securities which cannot be settled and a corresponding NRI will be scheduled for settlement for the next business date.

Key process changes

Process	CHESS (Production)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (To Be)
Settlement cancellation	All obligations (NBO, non-netted gross market trades, unilateral and bilateral scheduled instructions) are rescheduled to the next business date using settlement instruction rescheduling message	No change	NRIs, unilateral and bilateral scheduled instructions are rescheduled to the next business date using a settlement instruction generation notification. Novated gross market trades included in the NNDP value are re-scheduled with the creation of NSF and NRI (one NRI/NSF per NNDP calculation)

3.8. Corporate actions

Current process

The CHESS system performs a number of corporate action related processes in the overnight batch, such as security code changes, diary adjustments for reconstructions, rights offers, calls and processing of application monies for rights offers. Where such processes take effect, CHESS sends a diary adjustment, code change or class merger (EIS 128) message to the participant for each changed obligation (NBOs, gross market trades not included in NBO and unilateral/bilateral settlement instructions).

Proposed solution

The system will generate an adjusted settlement instruction (sett_139) message for each settlement instruction and for each gross market trade to the participant for securities subject to these corporate action events. The message itself and other value adjustments and accruals resulting from corporate actions on failed obligations are expected to remain unchanged.

Key process changes

Process	CHESS (Current)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (Proposed)
Diary adjustment, code change or class merger	Diary adjustment, code change or class merger message to the participant for each changed obligation (NBOs, gross market trades not included in NBO and unilateral/bilateral settlement instructions)	No change	Adjusted settlement instruction message for each settlement instruction (including gross market trades)

3.9. mFund settlement

Current process

In CHESS, mFund applications and redemptions settle in batch using dedicated payment facilities to avoid contagion risk to cash equities.

Proposed solution

Under the proposal, mFund orders will continue to settle in batch as per existing functionality.

Key process changes

Process	CHESS (Current)	CHESS Replacement (Deployed to CDE)	CHESS Replacement (Proposed)
mFund settlement	Application and redemption orders settle in batch using dedicated payment facilities	No change	No change

4. Summary of key changes

This section summarises the key changes to the software already released to CDE (CDE 1 – 9) and the changes to messaging.

Function	CHES CDE (Release candidate 9)	CHES Replacement (incorporating changes in this document)
Trade registration	Software released	No further changes
NBO	Software released	Functionality removed
Un-netting	Software released	Functionality removed
Margin calculations	Software released	No further changes
Novated trade fails	Software released	No further changes
Settlement confirmations	Software released	Functionality re-factored
Reporting (NNDP)	Not in original scope	New report
Reporting (settlement statement)	Not in original scope	New report

4.1. Summary of message changes

The following table provides a summary of the message changes resulting from the proposed solution design¹².

Business Process	CHES Production	CDE	Solution Proposal
Trade registration	EIS 164	sett_101	sett_101
Trade cancellation	EIS 116	sett_104	sett_104
NBO and net novated position	EIS 134 EIS 138	sett_102	New message: summary netted obligation report
Un-netting (NBO removal)	EIS 136 EIS 140	sett_103	Removed
Cash market margin	EIS 917 EIS 940	pldg_309	pldg_309
Settlement (fully settled instructions)	EIS 156	sett_119	New message: settlement statement
Settlement (part failed instructions)	EIS 192	sett_119	sett_119 New message: adjusted settlement instruction
Settlement (fully failed instructions)	EIS 124	sett_130	sett_130
Net settlement movement	EIS 146	sett_136	sett_136 (enhanced to include both settled securities and funds)
Settlement cancellation	EIS 124	sett_130	sett_130
Diary adjustments, code change and class merger	EIS 128	sett_139	sett_139

¹² Tentative, subject to stakeholder engagement via focus groups and ISO 20022 Technical Committee.

5. Other considerations

This section outlines other considerations relevant to the proposal, including migration considerations, other solution designs considered to address additional system scalability, and other international markets that operate on a DvP Model 3 basis.

5.1. Migration

Maintaining data integrity is critical to the success of CHES replacement and migration activities need to be carefully planned. Two webinars were held during 2020 specifically focused on the various aspects of data to be migrated on the cut-over weekend including holdings and sub positions, inflight corporate action events and inflight settlement instructions. This section outlines the migration approach as presented at the Implementation and Transition Working Groups webinars and documented in the technical documentation portal, and the approach to migration under the proposal.

Current migration approach for novated settlement instructions

Settlement Obligation Type	CHES User Type	Migration Approach	CHES User Requirement
NBOs	Clearing participant	Migrated as original transaction type	Clearing participants are required to support new obligation ID of migrated transaction
Partial or fully failed NBOs	Clearing participant	Migrated as an NRI transaction type with settlement date from the NBO	Clearing participants are required to support new obligation ID of migrated transaction
Non-netted gross market trades	Clearing participant	Migrated as original transaction type	Clearing participants are required to support new obligation ID of migrated transaction

Proposed migration approach for novated settlement instructions

Under the proposal, the NBOs and non-netted gross market trades scheduled for settlement for the first two settlement days of the replacement system will be migrated as NRIs, with a fail count of zero, and obligation IDs of the migrated novated obligations will be mapped to the obligation ID of the resultant NRI.

Non-netted gross market trades scheduled for settlement on the third or subsequent settlement days of the replacement system will be migrated as gross market trades. This will allow these novated obligations to be incorporated into the proposed settlement process outlined in this consultation paper.

No changes are proposed to the documented migration approaches for scheduled unilateral settlement instructions and bilateral settlement instructions.

Un-netting will only be supported until migration. The resultant novated rescheduled instructions will not be able to be un-netted post migration within the replacement system.

Settlement Obligation Type	CHESS User Type	Migration Approach	CHESS User Requirement
NBOs	Clearing participant	Migrated as an NRI transaction type with settlement date from the NBO and fail count = zero	Clearing participants are required to support new obligation ID of migrated transaction
Non-netted gross market trades scheduled for settlement on first two settlement days of the CHESS replacement system	Clearing participant	Migrated as an NRI transaction type with settlement date from the original trade and fail count = zero	Clearing participants are required to support new obligation ID of migrated transaction
Partial or fully failed NBOs and non-netted novated market trades	Clearing participant	Migrated as an NRI transaction type with settlement date and fail count from the NBO or non-netted market trade	Clearing participants are required to support new obligation ID of migrated transaction
Non-netted gross market trades scheduled for settlement on the third and subsequent days of the CHESS replacement system	Clearing participant	Migrated as gross market trades transaction type with a novation indicator of true and settlement date of the non-netted gross market trade	Clearing participants are required to support new obligation ID of migrated transaction

5.2. Other solution designs considered

In addition to the proposal set out in this paper, a number of other solution designs were considered. These designs were assessed based on their ability to support future trade growth in the Australian equities market, the ability to scale the settlement processes noting near term changes to business processes, and impacts to CHESS users and software providers.

Design 1: Retain current solution design (status quo)

Under this design, the replacement system would retain currently consulted on, designed and released processes in relation to netting and settlement. This design would introduce no change for CHESS users and software providers at this point in the project, but it would not future-proof netting and settlement processes. While the system was always designed to be horizontally scalable, the record trading volumes in March 2020 led stakeholders to provide feedback that the system should be enhanced for significant additional capacity on Day 1 and be able to scale post-Day 1 to much higher capacity levels. Under this design, substantial changes would be required to settlement processes post the go-live of the replacement system to provide for higher capacity. Stakeholders have also indicated little appetite for a post-Day 1 release to address capacity related matters.

For these reasons, this design is not preferred by ASX.

Design 2: Retain current solution, change netted obligation report

This design is largely the same as design 1, with one change relating to the netted obligation report. Whilst this design contemplates retaining the NBO and the netted obligation report itself, the report would no longer include references to the underlying trades that form part of the NBO. Beyond the challenges that this design might pose in reconciling the NBO to the underlying trades where those references are no longer provided, this design only considered changes to netting in order to minimise impacts to CHESS users and software developers. Under this design, the netting processes would continue to be linear and non-scalable business processes. As such, significant changes would still be required to settlement processes post replacement system go-live.

For these reasons, this design is not preferred by ASX.

Design 3: Remove NBO, remove individual settlement confirmations except for Unilateral Scheduled Settlement Instruction (USSI) and Bilateral Scheduled Settlement Instruction (BSSI)

This design contemplated changes to both netting and settlement processing, but seeks to minimise changes to settlement only participants. At a high-level, the design sought to:

- Remove the creation of the NBO, which is a linear, non-scalable business process
- Remove the generation and dissemination of individual settlement confirmations for all settlement obligations, except for unilateral and bilateral settlement instructions
- Change the treatment of part failed settlement instructions, where the settled vs re-scheduled portion of the part failed instruction are carried in two separate messages.

Although this design removes one linear business process (creation of the NBO), it only partially removes the linear process related to the generation of individual settlement confirmation messages. To better enable client protection, participants are transitioning to scheduling securities directly from/to their client's account into the settlement account for settlement. This uptake would significantly increase the number of individual settlement confirmation messages required to be generated by the replacement system (which would further impact settlement processing capacity).

For this reason, this design is not preferred by ASX.

Design 4: Remove NBO, generate settlement confirmations post batch settlement

This last design considered a combination of several components discussed in designs 1-3 above. At a high-level, it proposed to:

- Remove the creation of the NBO, which is a linear, non-scalable business process
- Disseminate settlement confirmations for fully settled instructions for all settlement obligation types, post batch completion.

The key concern associated with this design is that the dissemination of settlement confirmations for fully settled instructions for all settlement obligation types following batch settlement would compete with the completion of other post batch settlement activities. The delayed timing of these confirmations would also not provide for timely holding updates and reconciliation by participants.

For these reasons, this design is not preferred by ASX.

5.3. Comparison with other international clearing and settlement facilities

ASX held a number of discussions with international clearing and settlement facilities operating in other markets to further understand how their settlement models compared with those of CHESS. The organisations were selected as a point of comparison as they each operate on a DvP Model 3 basis and represent the primary clearing facility in their respective countries. Common across all organisations are: T+2 settlement; market novation; netting and reporting; and adoption of ISO 20022 messaging. There are some key differences, including market trades being registered directly against end investor accounts on receipt of the trades into the clearing facility, the timing and frequency of batch settlement runs, and the central depository nature of how securities were registered.

Within the solution design proposed by ASX, the characteristics of net novated trade reporting and settlement confirmation at a net holding movement only level have a degree of commonality with some of the organisations reviewed. However, although there are shared market characteristics between ASX and the international clearing and settlement facilities considered, it is not possible to conduct an effective 'like-for-like' comparison as there is no common model in the way central counterparty netting practices are conducted.

5.4. Ledger API considerations

The changes proposed in this document require updates to ISO 20022 messages as outlined in section 4.1 of this paper. These changes are applicable to the messages sent via the AMQP or SWIFTNet connectivity channels, as well as the ISO equivalent commands for those connecting via Ledger API. In addition to submitting commands, Ledger API users will also have access to 'state' information on the CHESS ledger. The changes to workflow will have a corresponding change to how settlement obligations are represented on the ledger. Currently in CDE, gross trades are archived as part of the NBO overnight process. Given the NBO process will be removed, gross trades will remain on the ledger until settlement date and will be archived at some time following settlement. Archiving of gross trades does not form part of a business process and should not be considered in any business workflow. ASX will provide further details on changes to state as part of the technical documentation release, which will accompany the changes proposed in this paper.

6. Operating Rule Amendments

6.1. Rule amendments

The redesign of existing netting and settlement processes referred to in this paper will require further amendments to the ASX Clear Operating Rules (**ASXCOR**) and ASX Settlement Operating Rules (**ASXSOR**). This includes:

- Operating rules addressed as part of the earlier tranche 1 rule amendments (which covered netting and un-netting functionality relating to the existing NBO process¹³)
- Operating rules to be addressed as part of the tranche 3 rule amendments (which are to cover batch settlement and reporting functionality).

The relevant ASXCOR and ASXSOR changes will be incorporated as part of the tranche 3 rule amendments.

Consultation on the tranche 3 rule amendments as well as on a consolidated rules package across the three tranches of rule amendments supporting the new system will commence in early August 2021, with a 15 week consultation period concluding in mid-November 2021.

ASX will provide its response to consultation in mid-May 2022, ahead of formal lodgement of the combined rules package with ASIC in late August 2022.

¹³ Referred to in section 1.7 of the Tranche 1 Rule Amendments Consultation Paper and rows 32 to 36 of Attachment A to that Consultation Paper available [here](#) as updated and referred to in rows 21 to 24 of Attachment A to the Tranche 1 Rule Amendments Response to Consultation Paper available [here](#).

7. Stakeholder engagement

ASX plans to hold a number of stakeholder engagement forums as part of its consultation process with impacted stakeholders. This will include hosting Implementation and Transition Working Groups to present the key changes in advance of more interactive engagement with impacted stakeholders through focus group sessions. The focus group sessions will discuss the proposed solution design prior to the close of the consultation period for this paper on 18 March 2021.

ASX will also reconvene the ISO 20022 Technical Committee to review and offer a forum for impacted stakeholders to provide input on the ISO 20022 messages subject to change and as discussed in the focus groups.

ASX is aiming to publish the new functional specifications and messaging requirements relevant to the changes proposed in this paper by the end of March 2021. The relevant functional code changes are expected to be provided in CDE 10, which is planned for release at the end of June 2021.

ASX intends to release a formal response to consultation feedback ahead of the functional code release planned for end June 2021.