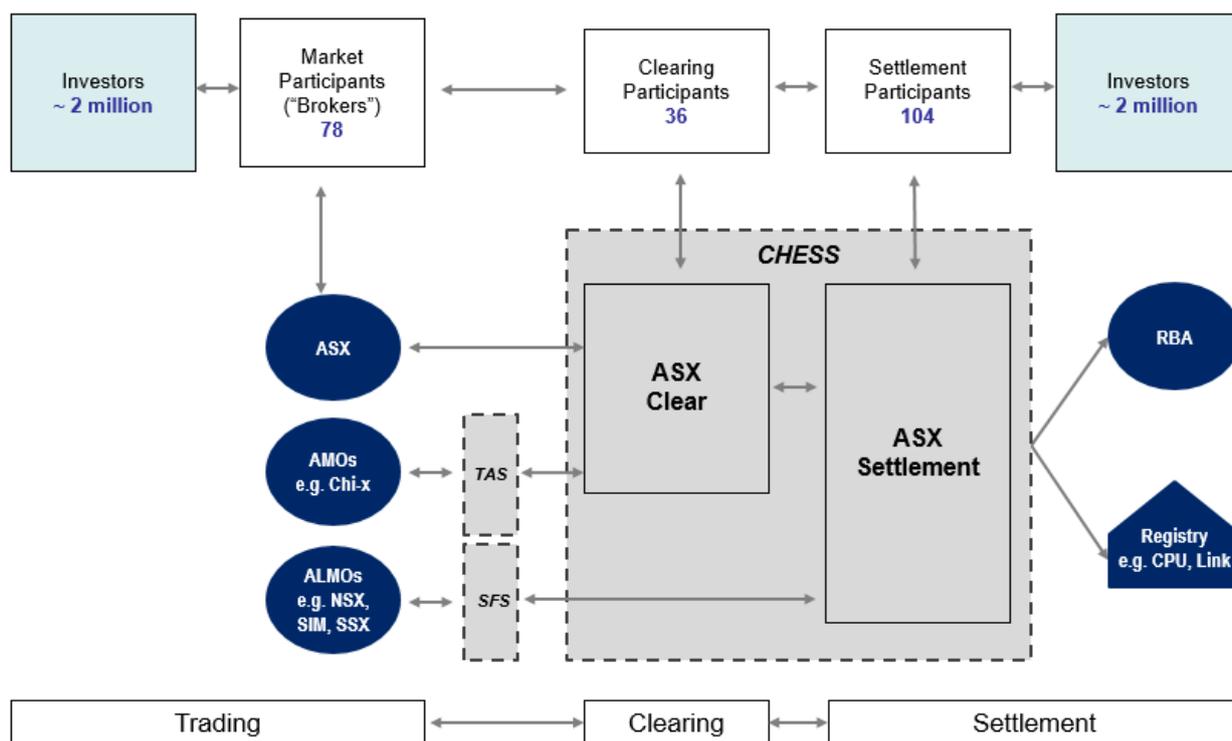


BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 1A	
Topic	Cash market clearing and settlement services - Operational performance
Date	30 November 2017
Purpose of this paper	To report on key performance metrics for ASX's clearing and settlement services.

OVERVIEW

Market Structure Overview



The clearing and settlement of equities performs a critical role in the operation of Australia's financial markets, helping to reduce counterparty and systemic risk, and provide transaction efficiency and certainty for end investors.

Core processes that provide these benefits include novation, netting and settlement.

Novation

Through a contractual process known as novation, ASX Clear becomes the seller to every buyer and the buyer to every seller, making it liable for completing all cleared transactions on the relevant market.

Novation performs two important functions:

- it replaces the clearing participants' credit exposures to other clearing participants by substituting the clearing house as the central counterparty; and
- it maximises capital efficiency for clearing participants by permitting a single net exposure to be calculated and collateralised between the clearing house and each clearing participant.

Through novation, ASX Clear provides protection to non-defaulting clearing participants (and, indirectly, their clients) from the inability of a defaulting clearing participant to meet its obligations.

A key metric for monitoring novation is the percentage of on and off market trading that is novated.

Trades submitted for clearing and settlement by any market operator are verified prior to registration by ASX Clear. If the verification conditions are not satisfied then trades are rejected. Once a trade is registered it is novated. Novation is deemed to be effective from the matching of bid/offer (on market trades) or recording of the trade (reported trades) for all trade execution venues.

Netting

ASX Clear is approved as a 'netting market', and ASX Settlement is an 'approved netting arrangement', for the purposes of the Payment Systems and Netting Act. This gives legal certainty to the netting of settlement obligations. Settlement on a multilateral net basis maximises market efficiency by reducing participant transaction and funding costs.

A key metric for monitoring netting is the percentage by which novated value is netted down for settlement. This metric is termed "netting efficiency".

Settlement

ASX's model for settlement maximises efficiency, while minimising the risk of settlement failure. It does this by simultaneously transferring the legal ownership of shares and facilitating the transfer of money for those shares. This is done through a Model 3 multilateral net batch settlement mechanism with irrevocable settlement finality at the end of the processing cycle. The transfer of money occurs across the Exchange Settlement Accounts of payment providers in the RBA's Information and Transfer System (RITS).

A key metric for monitoring settlement is the percentage of scheduled settlement that successfully settles (i.e. the opposite of the "fail rate"). This metric is termed "settlement efficiency".

Service availability

ASX's critical processes of novation, netting and settlement and are supported in ASX's core system CHES. It is critical for market operations, that CHES remains stable and available for processing. A key metric for monitoring systems availability is the percentage of systems uptime as measured against target availability times. The service availability target for CHES is 99.80%.

For the December 2017 quarter¹, the average monthly system availability was 100% for CHES. The average monthly availability of CHES has been 99.99% between November 2011 and October 2017.

¹ Up to 31 October 2017

Trade Acceptance Service

ASX Clear and ASX Settlement's Trade Acceptance Service (TAS) provides a mechanism for Chi-X to submit trades into CHES. The CHES system performs the clearing and settlement functions.

The Trade Acceptance Service availability target for TAS is 99.80% (the same as CHES).

For the December 2017 quarter², the average monthly system availability was 100% for the TAS. The average monthly availability of the TAS has been 99.99% between November 2011 and October 2017 (which is the same as CHES).

Reporting on clearing and settlement service performance

The key metrics noted above on novation, netting efficiency and settlement efficiency for the December 2017 quarter are reported in Attachment A. They are also supported by charts demonstrating a longer reporting period in Attachment B.

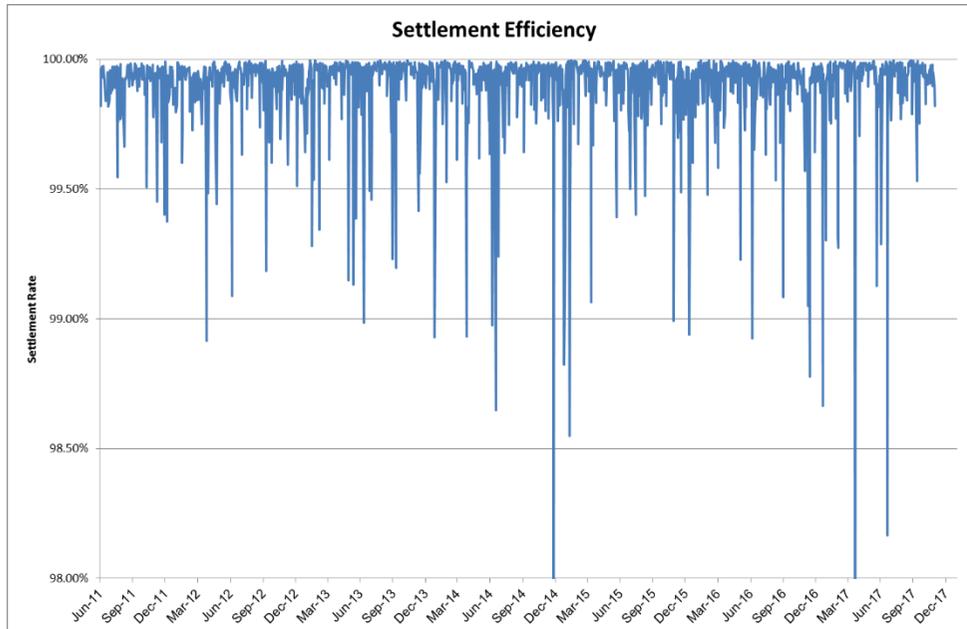
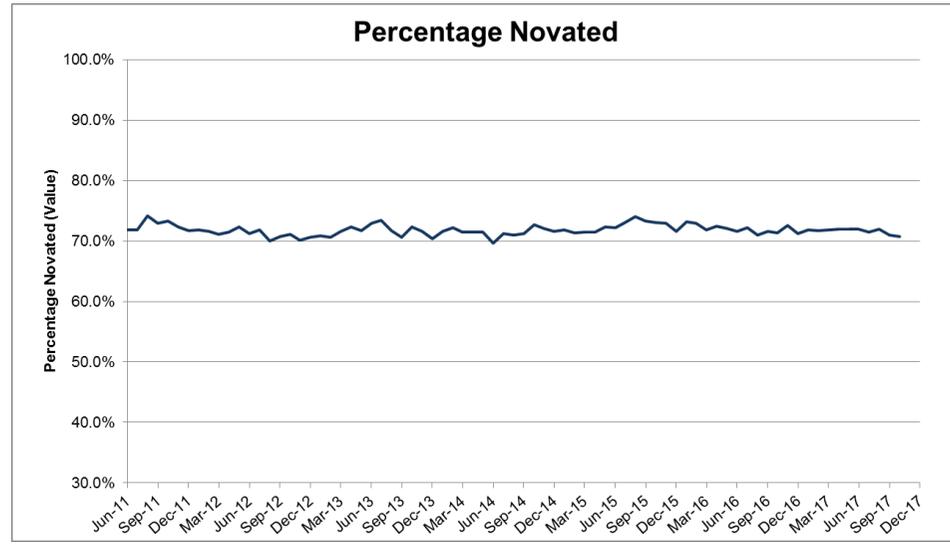
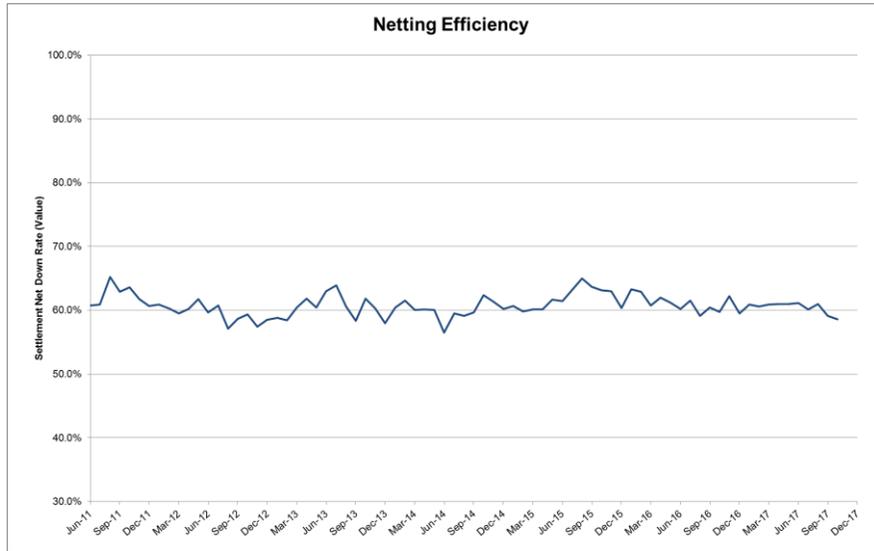
² Up to 31 October 2017

ATTACHMENT A – SUMMARY METRICS RELATING TO THE PERFORMANCE OF ASX’S CLEARING AND SETTLEMENT SERVICES

	December 2017 Quarter³	September 2017 Quarter	June 2017 Quarter
System Availability (CHESS)	100%	100%	100%
System Availability (TAS)	100%	100%	100%
Total Trades Accepted (ASX)	25,278,129	74,837,425	72,787,681
Total Trades Rejected (ASX)	0	4	12
Total Trades Accepted (Chi-X)	10,175,149	29,338,189	27,136,357
Total Trades Rejected (Chi-X)	0	0	0
Total Settlements (SSX)	0	0	3
Total Value of Settlements (SSX)	\$0	\$0	\$0
Total Settlements (NSX)	151	505	649
Total Value of Settlements (NSX)	\$524,262	\$1,078,305	\$1,539,537
Daily Average Traded Value (On and Off Market)	\$6.1 billion	\$6.3 billion	\$6.8 billion
Daily Average Cleared Value	\$4.32 billion	\$4.47 billion	\$4.92 billion
Percentage Novated	70.7%	71.5%	72%
Daily Average Cleared Value Post-Netting	\$1.79 billion	\$1.79 billion	\$1.92 billion
Netting Efficiency	58.6%	60.1%	61%
Daily Average Settled Value (Including Non-Novated)	\$8.1 billion	\$9 billion	\$9.9 billion
Settlement Efficiency	99.93%	99.94%	99.89%

³ Up to 31 October 2017

ATTACHMENT B – PERFORMANCE OF ASX'S CLEARING AND SETTLEMENT SERVICES FROM JUNE 2011 TO OCTOBER 2017



BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 2A

Topic	CHES Replacement - Business Requirements Working Groups
Date	30 November 2017
Purpose of this paper	Members will be provided with an update on the Business Requirement Working Groups

OVERVIEW

The series of CHES Replacement Working Groups gathering input to the business requirements from industry stakeholders concluded on 1 November 2017.

The Settlement Enhancements Working Group, which was in progress at the time of the last Business Committee meeting, generated input on 15 high level business requirements.

The Data Storage, Delivery & Reporting Working Group provided input on 4 high level business requirements.

The Non-Functional Requirements Working Group provided input on 5 business requirements. These business requirements are currently being reviewed by the Working Group participants.

The CHES Replacement Working Groups have been convened on a fortnightly basis over a 6 month period from 3 May to 1 November 2017. Engagement from the core group of 27 organisations remained high throughout the process. In total, there were 13 working group meetings, 10 pre-reading papers issued and 40 'functional' business requirements identified and a further 5 'non-functional' business requirements.

The business requirements developed from the working groups have undergone several iterations of review before a final set were presented to the participating organisations of the working groups for prioritisation (see Agenda Item 2B for further information). All feedback collected as part of the working groups' review has been recorded for reference in the solution build phase.

Key Themes – Settlement Enhancements

At the time of writing the papers for the last Business Committee update, only one of the three Settlement Enhancements Working Group meetings had occurred. The first meeting focussed on settlement optimisation (how to promote efficiencies in the settlement process including reducing settlement risk) and settlement optionality (the option to settle earlier than the current default T+2 settlement batch). The key themes emerging on these two topics were presented in the papers for the October Business Committee meeting.

The Settlement Enhancements Working Group held two further meetings. The second meeting focussed on settlement efficiencies e.g. bilateral settlements and CHES processing during the time the batch is running. The third meeting focussed on a range of miscellaneous topics such as deferred settlement trading (a topic carried forward from the discussions on corporate actions), give ups/take ups and multi-currency settlements.

Key themes emerging from the problems statements identified during the final Settlement Enhancement Working Group meetings include:

- limited data fields available for optional and / or mandatory matching;
- bottlenecks in processing non-settlement related message post the daily batch cycle;

-
- complex and confusing deferred trading and settlement conventions; and
 - no ability to opt out of receiving messages that participants consider to be optional.

Key themes emerging on the inputs to the business requirements from the final Settlement Enhancements working group meetings include:

- reviewing the matching criteria for bilateral settlements and dual entry transfers to reduce the number of mismatches;
- providing the ability for all non-settlement related messages to continue processing while the daily settlement cycle is running.
- reviewing the three-tiered model for settlement tolerance to accommodate additional flexibility for matching; and
- providing the ability to guarantee settlement by linking bilateral settlements with the option to lock the associated underlying securities.

All 15 settlement enhancement business requirements have been provided in Attachment A (pp27-42). The pre-reading material for the Settlement Enhancement Working Group was included in the papers for the October Business Committee meeting.

Key Themes – Data Storage, Delivery & Reporting

Key themes emerging from the problem statements identified during the Data Storage, Delivery & Reporting Working Group include:

- no ability to prioritise post trade messages;
- no ability to run reports real-time; currently some reports are only available overnight;
- duplication in capturing and storing common data; and
- limitation of real-time data for issuers to reconcile their share register.

Key themes emerging on the inputs to the business requirements for Data Storage, Delivery & Reporting include:

- providing customers with the ability to configure the prioritisation of their Post Trade messages;
- providing the capability for a “Self Service” API enabling access to real-time data and customisation of data request;
- investigating the feasibility of a centralised depository for the capture and storage of static data relating to end investors and the ability to distribute to permissioned users; and
- providing real-time notification of holding balance movements to issuers.

A summary of the business requirements for data storage, delivery & reporting can also be found in Attachment A (pp43-47). The pre-reading material is provided in Attachment B.

Key Themes – Non-Functional Requirements

Key themes emerging from the problem statements identified during the Non-Functional Requirements Working Group include:

- various limitations with the current test environments;
- no ability to upload messages in bulk (e.g. via a file or browser) when participants systems are down; and
- no encryption of data at rest or access logs.

Key themes emerging on the inputs to the business requirements for non-functional requirements include:

- providing flexible test environments which includes a self-service capability;
- ensuring that from a business continuity plan perspective ASX can provide facilities to upload bulk transactions via file format and/or provide a facility to input settlement transactions via an internet browser;
- allowing an IP address validation mechanism to accommodate ranges of IP addresses (not just a single address); and
- providing customers with format and transport options that support best practice authentication and encryption with consideration for potential re-use capability.

A summary of the draft business requirements for Non-Functional Requirements have also been provided in Attachment A. The pre-reading material is provided in Attachment C.

Next Steps

The 26 organisations that participated in the CHES Replacement Working Groups have provided their views on the priorities for the 40 functional business requirements identified. See Business Committee agenda item 2B for further details.

ASX will continue to undertake bilateral meetings, where relevant, to gain a deeper understanding of some of issues raised during the Working Groups prior to issuing a public consultation paper around the end of March 2018. The consultation paper will set out the 'Day 1' functional scope of the system that will replace CHES and a proposed migration and implementation plan.

ASX will be engaging with a broad cross section of issuers in late November and again in late February/early March 2018 to help inform ASX decisions on the 'Day 1' functional scope of the replacement system.

ATTACHMENTS

Attachment A – ASX CHES Replacement High Level Functional and Non-Functional Business Requirements

Attachment B – Data Storage, Delivery & Reporting Pre-reading material

Attachment C - Non Functional Requirements Pre-reading material

ASX CHESS Replacement

High Level Functional & Non Functional Business Requirements

November 2017

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Account Structure & Participation Models

High Level Business Requirement Input

Flexible Account Structure Hierarchy

Req #	Priority	Description	Stakeholders
AS.1	TBD	<p><u>Requirement</u></p> <p>To ensure system flexibility that supports and enhances the current omnibus / custody model that is currently achievable within the direct legal name on title model.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Retain the existing legal name on title account structure• Ensure the existing legal name on title can be used to facilitate an omnibus model i.e. today's current state of Name on Register can facilitate an omnibus model• Increase timely transparency of ownership and control of securities• Continue to support a range of various account structures that exist today across multiple participants• Legal designation of the owner e.g. HIN• Alternative designations e.g. omnibus/nominee, sub custodian, fund/SMSF, domestic/overseas• Separation of registered ownership and control• Asset servicing facilitation• Account Structures must facilitate portability <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Separation of Clearing and Settlement

Req #	Priority	Description	Stakeholders
AS.2	TBD	<p><u>Requirement</u></p> <p>To have the ability to separate the Clearing, Settlement and Sponsorship functions for ASX participants to perform:</p> <ul style="list-style-type: none">• Self-clearing functions (clearing and settlement)• Settlement only functions• Clearing only functions• Sponsorship only functions• Trading and settlement functions (without clearing function) <p><u>Rationale</u></p> <p>To enable more opportunities for ASX participants to choose different trading, clearing and settlement models with a view to:</p> <ul style="list-style-type: none">• Improved capital management capabilities• Reducing onerous client account maintenance activities• Reducing third party clearing concentration risk <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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Corporate Actions

High Level Business Requirement Input

Standardised notification of Corporate Action Events and Term Sheet

Req #	Priority	Description	Stakeholders
CA.1	TBD	<p><u>Requirement</u> Provide a “Golden Source of Truth” for the timely, complete, consistent and accurate capture of electronic announcement for all events on all Australian listing markets, in a standardised form and inclusive of any updates.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Consistent format for the announcement of corporate action event information e.g. ISO20022• All information required by industry stakeholders to be available & accessible• Information to be available as soon as practicable including timely delivery of any incremental updates• Standardisation around defining beneficial owner and Sophisticated Investors• Provide a fully electronic solution <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	Australian Listing Markets ASX CS Facilities Trading Participants Clearing Participants Settlement Participants Custodians Issuers Share Registries Holders and Investors Regulators

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High Level Business Requirement Input

Standardised Electronic Election for Dividend Reinvestment Plans (DRP) and Bonus Share Plans (BSP)

Req #	Priority	Description	Stakeholders
CA.2	TBD	<p><u>Requirement</u> Provide a standardised electronic process for electing DRP & BSP.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Consistent cut-off date and time• Provide real time electronic acknowledgement of receipt of election• Allow for multiple elections per HIN (and per currency)• Provide the option for part election per holding• Ability to store standing instructions (even for zero holdings) <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Standardised Electronic Acceptance Process

Req #	Priority	Description	Stakeholders
CA.3	TBD	<p><u>Requirement</u> Provide a standardised electronic process for the acceptance of corporate action events.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Optimise submission of instructions (centralized where possible) to the issuer's registry • Provide real time electronic acknowledgement of receipt of elections, including changes and cancellations • Ability for multiple elections per holding with cumulative tracking against total registered holding <p><u>Pre-conditions</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Payments for Acceptances and Entitlements

Req #	Priority	Description	Stakeholders
CA.4	TBD	<p><u>Requirement</u> Provide a real time electronic multi-currency aware payment process (including acknowledgement and confirmation of payment) available to entitled holders as part of an entitlement and acceptance process.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Improve and standardise the process for electronic payments to the Registry / Issuer associated with an Acceptance and Entitlement application• Evaluate RTGS, NPP and other payment capabilities (including CHES) on payment date• Allow for multi-currency payment routing capability• Allow for consistent electronic confirmation of payments and notification of failures• Ability to send acceptance and payment instructions separately <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Issuer Distribution of Payments

Req #	Priority	Description	Stakeholders
CA.5	TBD	<p><u>Requirement</u> Provide a real time electronic multi-currency aware payment process from issuers to entitled “Broker Sponsored” holders.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Allow Issuers to electronically distribute payment instructions to Broker Sponsored holders• Allow for alternatives such as RTGS, NPP or other payment capabilities on payment date• Allow for multi-currency payment routing capability• Allow for banking instructions to be provided with a takeover acceptance to allow the offeror to pay takeover consideration electronically <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Distribution of Securities (Pre- allotment notification)

Req #	Priority	Description	Stakeholders
CA.6	TBD	<p><u>Requirement</u> Provide a timely, complete, consistent and accurate electronic notification process of the distribution of securities (include confirmation of entitled allocation and completed allocation made) by issuers/share registries for all relevant events in all Australian listing markets, in a standardised form inclusive of any changes.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Allow for consistent electronic confirmation of allocation of securities • Minimise operational risk by providing real time electronic acknowledgement of receipt of distribution <p><u>Pre-conditions</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Transparency on Corporate Actions Progress

Req #	Priority	Description	Stakeholders
CA.7	TBD	<p><u>Requirement</u> Provide timely, transparent information on the progress, changes or amendments of a corporate action.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Inconsistent updates by issuers or listing markets on the progress, success of a corporate action, introduction of scale back / claw back, changes to the event timetable (e.g. early close, extension, delay to or cancellation of an event)• Greater level of information to keep all stakeholders informed• Minimise impact to other activities as a result of the absence of up-to-date information <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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Takeover Offer

Req #	Priority	Description	Stakeholders
CA.8	TBD	<p><u>Requirement</u> Enhance the existing process for the acceptance of an off-market takeover offer to ensure Sponsoring Brokers respond, in a timely fashion, to any takeover acceptance messages (MT711).</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • During a takeover offer period the registry will quite often receive the takeover offer paperwork direct from broker sponsored clients. However actions for broker sponsored clients (including accepting takeover offers) must be actions by the sponsoring broker. Accordingly the Registry will send a MT711 to the sponsoring broker requesting them to action the takeover on behalf of their clients. However quite often these messages are not being actioned and end up being “house kept” via a MT432 message. This can then impact the action the registry takes • Reduce the risk of an entitled holder missing the takeover offer • Ensure consistent response from participants (e.g. brokers) to the offeror takeover acceptance (MT711) from share registries <p><u>Pre-conditions</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Ability to Transfer CEB through the Settlement System

Req #	Priority	Description	Stakeholders
CA.9	TBD	<p><u>Requirement</u> Provide the ability to transfer a “CUM” entitlement balance from one counterparty to another through the settlement system.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Removal of the Settlement Risk and Counterparty Exposure Risk from having to transfer the parent holding outside the settlement system <p><u>Pre-conditions</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancement 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

ISIN Non-Renounceable Issues

Req #	Priority	Description	Stakeholders
CA.10	TBD	<p><u>Requirement</u> Provide a market ISIN for non-renounceable issues for the application money period between the “Ex” date and the close of the issue.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• For a Renounceable Issue the code change sequence is: Parent / Rights Trading / New / Parent• For Non-Renounceable Issues the code goes directly from Parent to New: Parent / New / Parent, this is because there is no trading of the entitlement• The industry requires a separate code (even though there is no trading) in order to obtain an ISIN for which they can then use to seek their clients instructions as to whether or not the client wants to accept the entitlement and pay the application money or allow the entitlement to lapse. <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Spin-Offs (entitlement to shares in foreign jurisdictions)

Req #	Priority	Description	Stakeholders
CA.11	TBD	<p><u>Requirement</u></p> <ul style="list-style-type: none"> Provide the ability for Retail Clients to be able to action (sell) securities that have been issued in a foreign jurisdiction Provide a Corporate Action event that adjusts the “Head” securities from a portfolio perspective <p><u>Rationale</u></p> <ul style="list-style-type: none"> Where there is an entitlement resulting in shares being issued in a foreign jurisdiction that are not dual listed in Australia, then this has an impact on retail clients who do not have custodial arrangements in the foreign jurisdiction <p><u>Pre-conditions</u></p> <ul style="list-style-type: none"> Consultation and agreement with regulators, issuers and other industry stakeholders Change relevant rules and regulations to accommodate required system and process enhancements Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Share Purchase Plans

Req #	Priority	Description	Stakeholders
CA.12	TBD	<p><u>Requirement</u> Provide an electronic mechanism for notifying beneficial holder details to the Registry for Share Purchase Plans.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Remove the requirement for advising Registries via excel spreadsheet of clients (normally in a Nominee Company) who wish to participate in a Share Purchase Plan• Remove or reduce the need for paper to respond to section 672 requests• More timely transparency over Scale Backs and Rounding <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Accelerated Entitlements

Req #	Priority	Description	Stakeholders
CA.13	TBD	<p><u>Requirement</u> Bring Accelerated Entitlement into line with all other Corporate Action event types</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Standard Schedule (Date and Time) across the market• Treat like standard Corporate Actions (include protection process) <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p> Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Electronic Claims Process

Req #	Priority	Description	Stakeholders
CA.14	TBD	<p><u>Requirement</u> Provide an electronic mechanism for processing claims and the associated franking credits where relevant.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Ability to electronically claim between counterparties• Ability to electronically pass on the franking credit for dividend claims <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holdings and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Proxy Voting

Req #	Priority	Description	Stakeholders
CA.15	TBD	<p><u>Requirement</u> Provide the ability for electronic proxy voting for all relevant issuer meetings.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Standardise record cut-off date vs. meeting date• Ability to vote for beneficial holders vs. Registered holders <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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Transfers and Conversions

High Level Business Requirement Input

Standardised Registration Details

Req #	Priority	Description	Stakeholders
TC.1	TBD	<p><u>Requirement</u> Application of a consistent and standardised structure for the input and maintenance of holder's registration details by all relevant industry stakeholders.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Consistent application of validation rules at the source of entry / account opening • Standardisation of abbreviations e.g. Ave versus Av • Additional rejection codes for greater transparency as to the exact cause of the rejection • Standardisation on how holders full names are entered e.g. full middle names vs initial only • Validation of holder records created from company corporate events e.g. demutualisations and IPOs • Support multiple legal names on registration details e.g. more than three legal names on a trust account <p><u>Pre-conditions</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Custodian Off Market Transfers

Req #	Priority	Description	Stakeholders
TC.2	TBD	<p><u>Requirement</u> Remove the requirement for Custodians to lodge paperwork with Share Registries for off-market transfers.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Introduce an alternative form of Investor protection that could be adopted by Custodians (such as Professional Indemnity and / or Security Bonds) that would allow Registries to be able to accept electronic transfer without any follow up paperwork <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Broker to Broker Transfers

Req #	Priority	Description	Stakeholders
TC.3	TBD	<p><u>Requirement</u> Remove the requirement for Brokers to send Client (Paper) authority between brokers before a transfer can be processed.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Improve the timing of Client transfers• Reduce the amount of paper being sent between Participants <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Change of Controlling Participant

Req #	Priority	Description	Stakeholders
TC.4	TBD	<p><u>Requirement</u></p> <p>Provide flexibility to the change of controlling participant process whereby:</p> <ul style="list-style-type: none">• A reversal option is available for bulk transfers• Consistent rules for individual and bulk transfers• Partial bulk transfers to be supported by contemporary means of notification and record keeping (i.e. removal of spreadsheet)• All participants to transfer clients in a bulk fashion without processing dual entry messages• Holdings associated to a PID or multiple HINs can be transferred to a single HIN (e.g. omnibus)• Electronic process where possible <p><u>Rationale</u></p> <ul style="list-style-type: none">• Introduce ability to interrupt and reverse bulk transfer processing prior to completion of processing, returning all stakeholder systems to the same previous state• Introduce ability to systemically control participants connection and message collection when bulk transfer processing is complete• Introduce an alternative to notifying partial transfers via spreadsheet <p><u>Pre-conditions</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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Settlement Enhancements

High Level Business Requirement Input

Issuer Sponsored SRN Transparency

Req #	Priority	Description	Stakeholders
SE.1	TBD	<p><u>Requirement</u></p> <p>Provide a single point of access to view the Issuer Sponsored subregisters in order to facilitate transparency for Clearing and Settlement Participants to readily identify Shareholder Reference Numbers (SRNs) associated to holdings.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Improved lead time for participants to identify their clients SRN details• Reduce settlement risk with early confirmation of a clients Issuer Sponsored holding• Improve settlement certainty <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Locking Retail Securities

Req #	Priority	Description	Stakeholders
SE.2	TBD	<p><u>Requirement</u></p> <p>Provide the ability to validate and lock:</p> <ol style="list-style-type: none">1. Broker Sponsored securities (due to be delivered against a sell transaction) and deliver them into the Participants Settlement Entrepot Account on settlement day as part of the batch processing;2. Issuer Sponsored securities (due to be delivered against a sell transaction) and deliver them (early) into the Participants Settlement Entrepot Account on the morning of settlement day <p><u>Rationale</u></p> <ul style="list-style-type: none">• Improved investor protection, especially in a default situation• Provides settlement certainty• Improved settlement process efficiencies• Elimination of the requirement to reconcile the Accumulation Entrepot Account• Potential reduction in Cash Market Margins• Potential reduction in Counterparty Exposures (Issuer Sponsored transactions)• Potential reduction in the number of Corporate Actions claim <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p> Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Shorter Settlement Cycles

Req #	Priority	Description	Stakeholders
SE.3	TBD	<p><u>Requirement</u></p> <p>Provide real-time notification to Settlement Participants and their Payment Providers on the funding amount to expedite the Settlement approval process.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Reduce the duration of the daily settlement cycle • Reduce the time Payment Providers require to approve batch payments • Facilitate Payment Provider “limit breach” approval sooner • Allow Settlement Participants greater control on their cash flow requirements <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Early Settlement (Clients)

Req #	Priority	Description	Stakeholders
SE.4	TBD	<p><u>Requirement</u></p> <p>Allow for Clearing and Settlement Participants to be able to elect an early settlement for any of their clients sell or buy transactions by seeking the off-setting transaction or making use of ASX facilitated Stock Lending and / or Financing arrangements.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Facilitate early settlement for clients • Potentially reduce Cash Market Margins • Potentially reduce Counterparty Risk Exposures • Improved settlement certainty • Reduce potential settlement risk <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Exchange Traded Options - Collateral

Req #	Priority	Description	Stakeholders
SE.5	TBD	<p><u>Requirement</u></p> <p>Ability to release Exchange Traded Options (ETO) collateral (cash equities) directly into the Participants Settlement Entrepot Account as an offset to the exercised (equity contract) ETO position.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Remove the requirement to fund the Cash Market Margin with cash between the exercise and settlement dates• Improve settlement efficiency following the exercise of an ETO position <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Bilateral DvP Settlements Outside of “Batch”

Req #	Priority	Description	Stakeholders
SE.6	TBD	<p><u>Requirement</u></p> <p>Provide the ability for Participants to settle Bilateral DvP Settlements (on a line for line basis) outside of the Settlement batch utilising RTGS, NPP or another real-time payment capability.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Improved funding requirements for Participants• Facilitate client settlements more efficiently• Improved Corporate Actions experience (buyers name on register by record date)• Reduce Settlement risks• Reduce Counterparty Exposures <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

“Pre” Matching Bilateral Transactions

Req #	Priority	Description	Stakeholders
SE.7	TBD	<p><u>Requirement</u></p> <p>Allow for Bilateral transactions to be “pre” matched prior to making a commitment to Settlement which would be confirmed as a subsequent step.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Confirm that the correct counterparties have been identified• Provide auditability• Allow mismatches (value, transaction basis etc.) to be identified and corrected earlier <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Tolerance Model

Req #	Priority	Description	Stakeholders
SE.8	TBD	<p><u>Requirement</u> Review the three-tiered model for settlement tolerance to accommodate additional flexibility for matching.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Ability to nominate tolerance thresholds at the message level• Investigate consolidating the three tiered model to one or two tiers• Consider updating the tolerance monetary (\$) value thresholds <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Linking Bilateral Settlements

Req #	Priority	Description	Stakeholders
SE.9	TBD	<p><u>Requirement</u></p> <p>Provide the ability to guarantee settlement by linking bilateral settlements with the option to lock the associated underlying securities.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Introduce greater settlement certainty • Improve investor protection, especially in a default situation • Improve settlement process efficiencies • Potential reduction in cash market margins and counterparty exposures • Improve corporate actions experience <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Enhanced Matching Criteria for Bilateral Settlements

Req #	Priority	Description	Stakeholders
SE.10	TBD	<p><u>Requirement</u></p> <p>Review the matching criteria for bilateral settlements and dual entry transfers to reduce the number of mismatches.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Additional fields for optional and/or mandatory matching e.g. trade date • Improve the levels of matching by increasing the scope of data available • Improve matching for IPO processing <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Additional Processing During the Daily Settlement Cycle

Req #	Priority	Description	Stakeholders
SE.11	TBD	<p><u>Requirement</u></p> <p>Provide the ability for all non-settlement related messages (where relevant) to continue processing while the daily settlement cycle is running. This includes, but is not limited to:</p> <ul style="list-style-type: none"> - Holder management e.g. applying holder locks - Receipt of trade registration - Corporate action processing - CHES to Issuer and Issuer to CHES transfers and conversions <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Help smooth out peaks in the daily workflow by eliminating any bottlenecks • Avoid tasks queuing up for processing post the daily settlement cycle • Ensure any new enhancements (not associated with settlement) can be processed in a similar manner <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Streamline Deferred Trading and Settlement Processes

Req #	Priority	Description	Stakeholders
SE.12	TBD	<p><u>Requirement</u></p> <p>Contemporise current Deferred Trading and Settlement conventions, including:</p> <ul style="list-style-type: none"> • Shorten and standardise time frames (where relevant) • Eliminate Deferred Trading and Settlement conventions no longer relevant • Simplify the use of different ISIN / security codes for deferred periods <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Reduce complexity of current processes via standardisation and simplification • Allow for simpler client education and communication <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Give Up and Take Up Functionality

Req #	Priority	Description	Stakeholders
SE.13	TBD	<p><u>Requirement</u></p> <p>Provide the ability to transfer a clearing obligation from a Market Participants default Clearing Participant to another client nominated Clearing Participant via a give up and take up mechanism.</p> <p><u>Rationale</u></p> <p>Support Institutional and high net worth Retail Clients needs to transfer clearing obligation to a client nominated Clearing Participant (currently facilitated via manual workaround)</p> <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Support Multi-Currency Settlements

Req #	Priority	Description	Stakeholders
SE.14	TBD	<p><u>Requirement</u> Provide the ability to settlement bilateral transactions in multi-currencies.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Allow participants to facilitate the settlement of Australian Cash Equities in multi-currencies with the value pre-determined by a foreign exchange transaction already executed by the participant. • Reduce the number of settlements settled outside of the Settlement System (e.g. through Euroclear or Clear Stream etc.) <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Settlement Message Management

Req #	Priority	Description	Stakeholders
SE.15	TBD	<p><u>Requirement</u></p> <p>Support participants internal reconciliation requirements by: Allowing certain Settlement messages to become “Optional” instead of “Mandatory” for Participants Allowing other means of collecting and reviewing notifications (MT164, MT138, MT134, MT156), such as secure FTP</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Allow Participants to only subscribe for settlement messages their systems require • Reduce message processing queues <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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Data Storage, Delivery and Reporting

High Level Business Requirement Input

Message Delivery Priority

Req #	Priority	Description	Stakeholders
DS.1	TBD	<p><u>Requirement</u> Provide Customers the ability to configure the prioritisation of their Post Trade messages.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Ensure critical messaging is not delayed due to queuing behind messages of less importance • Improves Customer processing capabilities and reduce settlement risk • Enhance and reduce risk related to corporate action processing for issuers and their shareholders <p><u>Pre-Condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

API – Reporting Capabilities

Req #	Priority	Description	Stakeholders
DS.2	TBD	<p><u>Requirement</u></p> <p>Provide the capability for a “Self Service” API enabling access to real-time data and customisation of data request.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Flexibility over the timing of information requests• Flexibility in only receiving the fields requested• Improved customer data analytics• Ability to validate currency of data requested (e.g. version control)• Potential for being able to manage Risk exposures on a real-time basis <p><u>Pre-Condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Centralised Data Capture and Storage

Req #	Priority	Description	Stakeholders
DS.3	TBD	<p><u>Requirement</u></p> <p>Investigate feasibility of a centralised depository for the capture and storage of static data relating to end investors and the ability to distribute to permissioned users.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Remove duplication in capture and storage and the subsequent cost associated with common sets of data • Reduce the effort/cost of client on-boarding • Create potential to generate innovation in regulatory reporting and KYC <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Real-Time Holding Balances

Req #	Priority	Description	Stakeholders
DS.4	TBD	<p><u>Requirement</u> Provide real-time notification of holding balance movements to issuers.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Ability for issuer to reconcile share register <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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Non Functional Requirements

High Level Business Requirement Input

Connectivity

Req #	Priority	Description	Stakeholders
NF.1	TBD	<p><u>Requirement</u></p> <p>Provide customers with generally accepted global standards message format and transport options that support best practice authentication and encryption with consideration for potential re-use capability.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none"> • Ensure protection of all communications • Align to commonly accepted global industry standards • Futureproof for support of other systems <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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Test Environments

Req #	Priority	Description	Stakeholders
NF.2	TBD	<p><u>Requirement</u></p> <p>Provide flexible test environments which includes, but not limited to:</p> <ul style="list-style-type: none"> • End to end “self service” capabilities • Multilateral testing with other user or simulators in on demand test environments • Non-functional testing supporting production equivalent volume testing • Ability to refresh masked data from production in a way that still facilitates reconciliation <p><u>Rationale</u></p> <ul style="list-style-type: none"> • To optimise performance and efficiency of testing • To be able to simulate or rehearse production style scenarios • To provide independence to customers when testing <p><u>Pre-condition</u></p> <ul style="list-style-type: none"> • Consultation and agreement with regulators, issuers and other industry stakeholders • Change relevant rules and regulations to accommodate required system and process enhancements • Ability of all stakeholders to be able to accommodate the required system and process enhancements 	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Business Continuity Plan

Req #	Priority	Description	Stakeholders
NF.3	TBD	<p><u>Requirement</u></p> <p>Ensure that from a Business Continuity Plan ASX can:</p> <ul style="list-style-type: none">• Provide a facility to be able to securely upload/download bulk transactions via file when customer systems are unavailable• Provide a facility to input transactions via a secure browser based interface <p><u>Rationale</u></p> <ul style="list-style-type: none">• To provide alternative channels and methods for submitting transactions during a BCP event <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p> Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Privacy and Security

Req #	Priority	Description	Stakeholders
NF.4	TBD	<p><u>Requirement</u></p> <p>Provide Privacy and Security processes to ensure:</p> <ul style="list-style-type: none">• IP address validation mechanism to accommodate for ranges of IP addresses (not just a single address)• Log all access attempts (even if read only) to sensitive data (for example HIN related data) <p><u>Rationale</u></p> <ul style="list-style-type: none">• To provide IP address validation where hosts may be virtualised and have dynamic IP addresses• To provide the relevant data access logs to support strong data access controls <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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High Level Business Requirement Input

Availability, Reliability and Performance

Req #	Priority	Description	Stakeholders
NF.5	TBD	<p><u>Requirement</u></p> <p>Support the ability to send and receive message as close to 24x7 as possible and support transaction type level configurable processing windows for transaction processing.</p> <p><u>Rationale</u></p> <ul style="list-style-type: none">• Supports global organisations• Expand participants processing capabilities• Potential to support customer requirements outside of normal business hours <p><u>Pre-condition</u></p> <ul style="list-style-type: none">• Consultation and agreement with regulators, issuers and other industry stakeholders• Change relevant rules and regulations to accommodate required system and process enhancements• Ability of all stakeholders to be able to accommodate the required system and process enhancements	<p>Australian Listing Markets</p> <p>ASX CS Facilities</p> <p>Trading Participants</p> <p>Clearing Participants</p> <p>Settlement Participants</p> <p>Custodians</p> <p>Issuers</p> <p>Share Registries</p> <p>Holders and Investors</p> <p>Regulators</p>

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CHES Replacement – Data Storage, Delivery and Reporting Working Group

PRE-READING MATERIAL

OCTOBER 2017



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1.0 Purpose of this Paper

The purpose of this paper is to set out the key topics to be discussed at the forthcoming Data Storage, Delivery and Reporting workshops.

Agenda topics have been determined after careful consideration on the feedback obtained from stakeholders as part of the Consultation Process conducted late last year. This paper therefore seeks to provide information on these topics to help set the focus and manage stakeholder expectations. It is not intended to serve as an education process.

Stakeholders have been asked to nominate a representative with the appropriate knowledge and expertise in the topics outlined in section 3.

The workshops will facilitate further discussion on the topics presented in this paper.

2.0 Unattributed Feedback from the Consultation process

The below table details stakeholder responses as it relates to the topic of Data Storage, Delivery and Reporting. It is not intended to be an exhaustive list but rather a sample only.

#	Topic	Sample of Unattributed Consultation responses
1	Delivery	<ul style="list-style-type: none"> The benefit realised would depend on the API – what would it support and how would it be accessed. Methods and costs of access should also be clarified e.g. per report, per API function usage etc. The ability to retrieve data in real time would provide registries with the opportunity to provide Issuers with reporting and analytics, delayed by end of day batch processing Supportive of functions and enhancements identified, including real time access to data through an API A significant amount of order flow comes in via API clients and we would welcome a move by the ASX to provide participants with the ability to access data via API's ASX has stated that it may provide issuers with real-time access to the register and we would like to understand further, including how this will interact with the register of members Access to real time data is not viewed as a key requirement Enhancing access to data through real time API's will improve reporting and risk monitoring by all participating in the settlement cycle Creates a platform for better access to client data faster which will make for a better end client experience Real-time data services could enhance risk management
2	Reporting	<ul style="list-style-type: none"> Moving all sponsored clients to paperless statements will involve the provision of the email addresses to CHES Need to collect email addresses to facilitate digital holding statements Paper-based CHES statements are inefficient, confusing and not timely Collect holder contact details to enable it to default to electronic dissemination of CHES holding statements. Such electronic contact details should be considered part of the security holder registration details and by corollary should be included in register updates to the issuer's agent The issuer should be entitled to appoint any agent to send CHES holding statements, including ASX, based on the issuer's right to receive full transaction data for all security holders CHES statements in electronic form, only paper based if requested

#	Topic	Sample of Unattributed Consultation responses
		<ul style="list-style-type: none"> Real time account holding reporting - Currently a number of CHES demand holding report requests are only available overnight. We would like to have the ability to run and receive reports in real time rather than have to wait until the following day. This would eliminate delays when report requests are rejected and have to be resubmitted the following day
3	Centralised Capture and storage information	<ul style="list-style-type: none"> Support centralised capture and storage of information that could provide efficiencies in regulatory reporting requirements The capture and storage of information for regulatory purposes should be considered at an earlier implementation stage. We are also of the opinion that consideration should be given to the capture and storage of data to support foreign tax requirements Consideration should be given to the ATO Transaction Reporting obligations so that this information can be accessed by the ATO seamlessly through CHES rather than annually by the Participant. CHES messages to and from client holdings could be mandated to include the necessary information required by the ATO including the client identifier, trade date and price Centralised capture and storage of information for regulatory reporting purposes, such as KYC, AML/CTF, FATCA, and CRS Do not support mandatory capture of KYC and AML information through CHES. Not core to C&S and would duplicate that done by participants. A whole of market utility solution that meets a wide variety of needs is preferred to an equity-only solution provided by ASX Centralized capture and storage of information for KYC and AML purposes. A mutualized industry body to facilitate this with a focus on Cyber Security to ensure that information has the highest possible security measures These potential enhancements and new services identified would be beneficial, in particular the centralised capture and storage of information for regulatory reporting purposes Support Multi-asset-class Capability and Centralised Capture and Storage of Regulatory Data if embraced by the participant community Centralised capture and storage of AML/CTF and KYC documents would also go a long way towards reducing AML/CTF risk and driving greater industry collaboration in data sharing Central storage of KYC is a large benefit but not sure ASX is best placed to solve this as it goes beyond listed securities A centralised database of required regulatory client information would be a huge benefit to participants and the industry in general

3.0 Scope

The workshop **will focus** on the following topics as it relates to examining any potential enhancements to the settlements process:

1. Delivery

Explore the following three channels for the delivery of data:

- a) **Standardised messages** – structured electronic messages e.g. ISO 20022
- b) **Bulk files** – the exchange of data that is not practical for standard messages e.g. large downloads
- c) **Application Programming Interface (API)** – the replacement system could have the ability to query data in real time via an industry standard application programming interface (API)

2. Reporting

Investigate reporting requirements for the following:

- a) **Regulatory** – e.g. ASIC & RBA
- b) **ATO** – including how information can be accessed directly by the ATO rather than accessing data via the Participant
- c) **Client static data**
 - CHESS statements – security holders will be updated on their holdings through the provision of **holding statements**. It is proposed that holding statements will be provided in **electronic form**. ASX will need to collect and record holder's email addresses, or other electronic destinations, for this purpose
 - **Tax, Bank Accounts & DRP elections** stored at the HIN level

3. Centralised capture and storage of information

The centralised capture and storage of information such as:

- a) KYC – **Know Your Client** obligations
- b) AML – **Anti-Money Laundering**
- c) CTF - **Counter Terrorism Financing Act**
- d) FATCA - **Foreign Account Tax Compliance Act**

4.0 Structure of working groups

ASX is proposing to hold one workshop covering all topics outlined above.

The questions raised in this paper are intended to be central to facilitating discussion in the working group meeting. This is in contrast to previous working group meetings where the questions outlined in the pre-reading materials may not necessarily be raised in the workshop but instead were more for the purpose of generating thoughts for discussion. Therefore, **Participants should come prepared to present their organisations point of view to the questions posed in this paper.**

5.0 Delivery

There are two primary channels for the delivery of data / report distribution that ASX uses today for the delivery of CHES data to Participants – CHES messaging and Secure FTP.

Post CHES Replacement, it is anticipated that ASX will also offer an API that allows authorised parties to access selected real time data from the CHES Replacement database.

This section outlines the current methods employed today as well as providing a brief overview on how the API could work in the future. ASX will provide further details on the potential API solution during the Working Group meeting.

5.1 Standardised Messaging

Today, the primary method for the delivery of data / report distribution is CHES messaging.

Reports can be implicit in the form of output messages from daily processes such as netting and settlement but can also be explicit in the form of messages sent in response to a previously submitted "503 Reporting Request" message.

To request an explicit report, a Participant submits a "503 Reporting Request" message with the required parameters which, amongst other things, include the report type, processing period and processing frequency. The processing frequency can be daily, weekly, fortnightly, monthly, yearly or one-off. If the processing period is set to end of day the report is processed overnight, otherwise it is processed immediately. Depending on the type of report requested, the output messages may consist of one or more CHES message types.

Reports delivered overnight, including implicit (e.g. netting, settlement projections) and explicit report output messages can result in a significant number of CHES messages being sent to the Participant's CHES output message queue. These messages must be cleared out by the Participant before they can receive the messages in response to subsequently executed CHES transactions. That is, the channel for report delivery is the same and ranks equally in terms of priority as the channel for transaction processing.

For CHES replacement, we expect that reporting via messaging will continue, but with ISO20022 format messages instead of CHES messages. The available message transports are yet to be confirmed but may include SWIFT and at least one non-SWIFT option.

5.2 Bulk Files

A secondary method for the delivery of data / report distribution used today in special cases where the reports are very large and not well suited to CHES messages. This method involves making the files available for download from a Participant specific directory on the ASX Secure FTP server.

For CHES replacement, we expect that reporting via transmission of files will continue and most likely extended to remove more bulk reporting off the main messaging channel. The available message transports are yet to be confirmed but may include SWIFT FileAct and Secure FTP.

5.3 Application Programming Interface (API)

The new system is anticipated to offer the ability for **authorised** parties to query selected data and perform selected functions via an industry standard application programming interface (API). This is intended to complement existing channels and facilitate innovation by making data available to new applications and users.

6.0 Reporting

This topic will investigate:

- Reporting to regulators including collection and presenting of data
- Reporting to ATO including collection and presenting of data
- Reporting via electronic means related to CHES Holding Statements (including associated notifications)
- Reporting of static data to issuers and other authorised bodies

6.1 Regulatory reporting

Currently CHES does not offer standardised data extracts or reporting on behalf of participants to regulators, e.g. ASIC and the RBA, or other external bodies.

The working group will therefore explore what regulatory reporting requirements participants are obligated to deliver and if there are benefits in the new system supporting these needs.

Questions to prepare for and discuss in the working group

1. What regulatory reporting do you currently provide and to whom?
2. Where is this information sourced from?
3. Are your requirements related to domestic and/or foreign regulations?
4. Would it benefit your organisation if the new system could support your regulatory reporting requirements?
5. If yes, what data would the system need to access and/or store?

6.2 ATO reporting

Currently CHES does not offer standardised data extracts or reporting on behalf of participants to the ATO.

The working group will therefore explore what ATO reporting requirements participants are obligated to deliver and if there are benefits in the new system supporting these needs.

Questions to prepare for and discuss in the working group

1. What ATO reporting do you currently provide?
2. Where is this information sourced from?
3. Would it benefit your organisation if the new system could support your ATO report requirements?
4. If yes, what data would the system need to access and/or store?
5. Do you have a requirement to provide similar reporting to other tax jurisdictions?

6.3 CHES Holding Statements

Today, CHES facilitates the provision of monthly CHES Holding Statements to investors to notify any changes to their holdings that have taken place on the CHES Subregister.

CHES Holding Statement are currently only issued in paper format via mail. CHES Holding Statements are similar to a bank statement whereby it details those transactions that occurred in the previous calendar month and progressively calculates the holding balance from that brought forward to the closing balance. CHES Holding Statements are issued per security and only if there has been movement (such as a buy, sell or transfer) during that calendar month.

In addition to holding statements, the following list of notifications are also sent to CHES holders via mail:

New CHES Holder
Change of name and/or address details in CHES
Change of address details in CHES
Change of email details in CHES
Change of CHES sponsor
Suspension of holding statements
Reinstatement of holding statements
Change of CHES account from sponsored to direct
Change of CHES account from direct to sponsored
Reservation of securities for collateral
Release of securities from collateral
Reconstruction of securities – collateral update
Adjustment of securities – collateral update
Release of securities from collateral (sponsor)
Offer acceptance
Reversal of offer acceptance
Reconstruction of securities – offer acceptance update
Adjustment of securities – offer acceptance update
Release of securities from offer acceptance
Application of CHES holding lock
Removal of CHES holder status
Change of CHES holder status
Change of residency details in CHES
Cancellation of CHES account

For the month of September 2017:

- more than 1.2 million CHES Holding Statements were issued, and
- an average of 3,000 Notifications were sent out daily

An alternative to issuing paper statements and notifications to investors via the mail could be an email to notify and direct investors to connect to an electronic interface for viewing and printing.

Questions to prepare for and discuss in the working group

Notwithstanding any relevant rules and regulation changes, please consider the following questions:

1. Would it benefit your client to be offered an alternative to receiving paper statements and notifications in the mail?
2. If yes, would your organisation provide client email addresses to support this?
3. Should the frequency of monthly statements be reviewed (e.g. quarterly) for investors wishing to continue to receive statements and notifications via the mail?

6.4 Static Data (e.g. Tax, Bank Accounts and DRP Elections)

Currently, CHES can act as a conduit to pass through information (such as TFNs/ABNs, bank account details and email details) to the relevant stakeholder. Today this information is not stored by CHES. When a holding is reduced to nil or transferred to another participant, the previously sent information may need to be re-sent.

There is the potential for the new system to retain static data at the HIN / Security level and for this information to be re-issued to the relevant stakeholders, as required.

Questions to prepare for and discuss in the working group

Notwithstanding any relevant rules and regulation changes, please consider the following questions:

1. Would you or your client benefit from providing static data to be stored and reported on?
2. If "No," why not?
3. If "Yes", would you consider storing all elements (tax, bank account details and standing DRP elections)?

7.0 Centralised Capture and Storage of Information

The replacement of CHES provides opportunities to build a system that could include the centralised capture and storage of information that is currently duplicated across the industry for regulatory reporting purposes.

As part of the on-boarding process, stakeholders are required to capture certain information to satisfy the following requirements. This list is not intended to be exhaustive.

7.1 Know Your Client (KYC)

The process of obtaining information about the customers regarding their identity, address, risk profile and other details.

7.2 Anti Money Laundering (AML) and Counter Terrorism Financing (CTF)

AML/CTF refers to a set of procedures, laws or regulations designed to stop the practice of generating income through illegal actions. AML/CTF checks are an essential part of KYC policies.

7.3 Foreign Account Tax Compliance Act (FATCA)

FATCA is a United States legislation that primarily aims to prevent tax evasion by US taxpayers by using non-US financial institutions and offshore investment instruments.

Questions to prepare for and discuss in the working group

1. What type of information is captured for the above mentioned checks?
2. Does your organisation link to any external databases to validate the information captured?
3. What benefits would you see being provided to your organisation by the centralised capture of this information?
4. Would your organisation have confidence in a centralised source for verification of KYC, AML, CTF and FATCA?
5. Are there other checks that your organisation could benefit from the centralised capture and storage of information?

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CHES Replacement – Non-Functional Requirements Working Group

PRE-READING MATERIAL

OCTOBER 2017



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10.0	Current	10
10.1	Requirements	10

1. Purpose of this Paper

The purpose of this paper is to set out the key topics to be discussed at the forthcoming Non-Functional Requirements workshop.

Agenda topics have been determined after careful consideration on the feedback obtained from stakeholders as part of the Consultation Process conducted late last year. This paper therefore seeks to provide information on these topics to help set the focus and manage stakeholder expectations. It is not intended to serve as an education process.

Stakeholders have been asked to nominate a representative with the appropriate knowledge and expertise in the topics outlined in section 3.

The workshop will facilitate further discussion on the topics presented in this paper.

2. Unattributed Feedback from the Consultation Process

The below table details stakeholder responses as it relates to the topic of Non-Functional Requirements. It is not intended to be an exhaustive list but rather a sample only.

#	Topic	Sample of Unattributed Consultation responses
1	Connectivity	<ul style="list-style-type: none"> Standard interface technology should be introduced that applies equally to all trading platforms Connectivity models should contemplate wholly remote connectivity to CHES In the instance where global applications are to be utilised we will need the ASX to ensure non-functional requirements are supportive of applications which may be hosted outside of Australia Support of JMS or other similar queue based connectivity over the selected network would ensure a robust delivery model using an industry standard paradigm. In order to reduce the cost to participants, the usage of open source components where possible, compared with proprietary components The new platform should support multiple competitive connectivity options as a means of controlling costs In principle support the ability to retrieve real time data, however this is dependent on functionality and associated costs Require clarification on the exact purposes of this proposed API and whether it would be restricted to non-sensitive reference data such as corporate actions and market prices. The concern is if there is no clear delineation between the functions of ISO 20022 and this proposed API then neither will be consistent An API to check settlement status etc. could be of use, depending on the information available, but if mostly market related seems more relevant to trading system interfaces Access to ASX stress testing scenarios via API would be useful A significant amount of order flow comes in via API clients and we would welcome a move by the ASX to provide participants with the ability to access data via API's The API being a BCP solution in the unlikely event that our proprietary platform is not functioning as expected, we would propose that the API is able to cover all the functionality and processes expected of an interaction with ASX' clearing and settlement platform Common standards of connectivity across multi-asset platforms Explanation of the optional election of the node and how the model contemplates API/FIX or ISO interfaces

#	Topic	Sample of Unattributed Consultation responses
2	Test environments	<ul style="list-style-type: none"> Provision of multiple end-to-end integrated test environments, including synchronisation with ASX Reference Point and with the ASX Trade test environments. At least one test environment would be refreshed regularly from production keeping it current and reducing the cost to participants of maintaining test environments Facilitate out-of-hours development and testing via a 24x7 end-to-end integrated test environment; to assist participants in leveraging off-shore resources more effectively thereby reducing the cost of keeping pace with changes Provide a facility for volume testing such as MT164s with CHES. This is currently limited to the trade file and prevents participants from conducting realistic simulations to ensure the robustness of production solutions
3	Business Continuity Plans	<ul style="list-style-type: none"> One key factor that is important is a clear business continuity plan as well as clear business continuity requirements for participants. These must continue to be valid for any replacement solution The facility to replay messages from a point or – if the replay would be large – provide a file of items for replay; this would enable faster and less costly recovery in Disaster Recovery scenarios
4	Privacy and Security	<ul style="list-style-type: none"> Serious consideration should be given to ensure that all Client and Participant information stored in the ledger has the highest possible security measures to avoid any breaches Security of information, infrastructure and clients' assets is of paramount importance
5	Availability, Reliability and Performance	<ul style="list-style-type: none"> The expansion of nodes to participants needs to ensure no disruption to C&S should technology failure occur. The incumbent system has been reliable, so any replacement to the incumbent needs to show the same resilience Like to minimise system downtime to enhance flexibility and service standards – particularly for those with global-facing investors Any replacement system must be able to demonstrate that it can meet increased performance and volume benchmarks while ensuring that current and future security issues are well managed
6	Operating Hours and Supportability	<ul style="list-style-type: none"> Flexibility for the system to be open to participants upon request on non-business days (e.g. weekends). The current CHES system does not have this flexibility, therefore inhibiting all integration and verification testing activity until Monday. This raises the risk of interruption to / failure of market operations in general as participants have limited time to react if system issues are only discovered on Monday morning 24 hr availability would allow for more efficient resourcing

3. Scope

The workshop **will focus** on the following topics as it relates to examining any potential Non Functional Requirements:

1. Connectivity

Review options for the connectivity stack such as:

- a) **Message content** – global standards message formats – FIX and ISO 20022
- b) **Message/File/API transports** – message transports such as FIX, SWIFT InterAct/FileAct, AMQP, Secure FTP, REST API
- c) **Network** – ASX Net, SWIFTNet, Internet

2. Test Environments

Investigate test environment requirements such as:

- a) **Type of environments** – communications testing, functional (current/next version)
- b) **Features** – trade inputs, counterparty simulation / automation, daily cycle

3. Business Continuity Plans

The provision of features that support Participants in creating their own business continuity plans that address events posing a significant risk of disrupting operations, such as:

- a) **Alternate connectivity paths** – ability to have fault tolerant connectivity to the ASX
- b) **Browser based interface** – ability for all Participants to use an ASX browser based facility for manual transaction entry

4. Privacy and Security

The provision of features that support high levels of privacy and security such as:

- a) **Encryption and authentication** – strong for all connectivity channels
- b) **Non-repudiation** – use of ISO20022 message signature for ISO20022 messages
- c) **Authorisation** – controls on access to data and functions

5. Availability, Reliability and Performance

The provision of features that support high levels of availability, reliability and performance in Participant systems such as:

- a) **FSS compliance** – ASX compliance with Financial Stability Standards
- b) **Performance** – Connectivity options are performant, message priority

6. Operating Hours and Supportability

An assessment of the demand for any changes to current operating hours.

4. Structure of the Working Group

ASX is proposing to hold one workshop covering all topics outlined in section 3.

The questions raised in this paper are for the purpose of generating thoughts for discussion and to help Participants solicit feedback from colleagues to ensure attendees are prepared to represent their organisation's point of view. The questions may not necessarily be raised in the workshop.

5. Connectivity

5.0 Current

Today, CHES relies on a proprietary message format and transport protocol defined in the CHES EIS to deliver messages securely over a range of underlying networks. Whilst this may potentially be offered during a transition to the new system, it is considered legacy and will be discontinued at some point.

5.1 Principles

The following general principles are guiding the replacement options for connectivity:

- Message formats should be based on open and commonly accepted global industry standards.
 - FIX 5.0 is a potential standard for trading venues to report trades for clearing and settlement. The proposed use of FIX 5.0 will be explored further in the AMO working groups.
 - The use of ISO20022 has been endorsed by COFA and the Business Committee and the Technical Committee is reviewing outcomes of the ISO20022 mapping exercise being carried out by ASX in conjunctions with SWIFT standards consultants.
- Transports should be based on commonly accepted global industry standards.
 - FIX 5.0 messages can potentially be transported using the FIX 5.0 protocol for which there are range of vendor based solutions and libraries. The proposed use of FIX 5.0 as a message transport will be explored further in the AMO working groups.
 - SWIFT InterAct and SWIFT FileAct support the transport of ISO20022 and could be a suitable option for some Participants.
 - The Advanced Message Queuing Protocol (AMQP) is an open standard with a specific focus on the financial services industry which can be used royalty free. Participants can choose the platform and programming language for their client applications. Some AMQP platforms support a JMS API which some Participants have indicated a desire for.
 - A REST API interface based on HTTP/JSON is a recognised standard for web service APIs. This is a potential message transport as well as a new way to access data real time. Being synchronous in nature, this option is not likely to be as fast as a queue based message transport such as SWIFT or AMQP.
 - Secure FTP is a standard method for file delivery
- All communications must be protected by strong authentication and encryption.
- Ideally, the transports are reusable for other ASX initiatives such as the Derivatives Clearing system replacement.

5.2 Options

The below table summarises the connectivity options currently under consideration (excluding DLT). Note that potentially more than one option will be offered.

	Message Standard			Message Transport				API Transport	File Transport		Network			
	Fix 5.0	ISO20022	CHES EIS	Fix 5.0	SWIFT InterAct	AMQP	CHES Protocol	REST API (HTTPS/JSON)	SWIFT FileAct	Secure FTP	ASX Net	SWIFT Net	Internet VPN	Co-location
Trading venue interface	x			x							x			x
SWIFT interface		x			X				x			x		
AMQP interface		x				X					x		x	x
Legacy interface (CHES EIS)			x				x				x		x	x
API interface		x						x			x		x	x
File interface									x	x			x	x

Questions to prepare for and answer in the Working Group

1. Do you have a technical preference between SWIFT Interact, AMQP or REST API?
2. What other factors would influence your preference, such as performance or cost?

6. Test Environments

6.0 Current

CHES has the following test environments and features today.

Environment	Purpose	Features
Communication testing	To provide an environment to develop and accredit to the CHES Protocol.	<p>Communications protocol testing only.</p> <p>All data messages sent receive 518 (rejected transaction) messages.</p> <p>Hours of availability = by request</p>
Unscripted test x 2 (current version)	To provide an environment to test business functionality against the existing Production CHES version.	<p>Participant specific test kits.</p> <p>Daily cycle including date roll, netting and settlement.</p> <p>Not synchronised with Trading systems test bed.</p> <p>Automatic replies available for certain specified scenarios.</p> <p>Hours of availability = 08:30 to 23:45 but supported from 09:00 to 17:00 AEST only.</p> <p>Generally open on weekend but unsupported.</p>
Unscripted test (next version)	To provide an environment to test business functionality against the next Production CHES version.	<p>Participant specific test kits.</p> <p>Daily cycle including date roll, netting and settlement.</p> <p>Not synchronised with Trading systems test bed.</p> <p>Automatic replies available for certain specified scenarios.</p> <p>Based on Production Issuers and Securities but not synchronised with ASX security reference data. Refresh is performed on an ad hoc basis.</p> <p>Hours of availability = 08:30 to 23:45 but supported from 09:00 to 17:00 AEST only.</p> <p>Generally open on weekend but unsupported.</p>

6.1 Requirements

The below list summaries test bed requirements collected from the consultation paper.

- Synchronisation with ASX Reference Point
- Ability to source trades from ASX Trade test environment
- Environment refreshed from Production data
- Access to environments outside of ASX business hours
- Facility for volume testing realistic Production scenarios

Questions to prepare for and answer in the working group

1. What data needs to be refreshed when refreshing from Production into Testing?
2. Given non-public data would be subject to masking, is this still valuable?
3. What specific features are you looking for that are not listed above?

7. Business Continuity Plans

The CHES Replacement system will be built in compliance with the Financial Stability Standards (FSS), which are based largely on the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organization of Securities Commissions (IOSCO) Principles for Financial Market Infrastructures (PFMI) for Operational Risk.

The below list summaries test bed requirements collected from the consultation paper.

- Clear business continuity requirements for Participants
- A facility to replay messages from a point

Questions to prepare for and answer in the working group

1. What specific features are you looking for that are not FSS requirements or that are not listed above?
For example, would the provision of a browser based interface at the ASX that Participants could use in an emergency (or in the course of normal business) be of use?

8. Privacy and Security

The CHES Replacement system will be built in compliance with FSS guidelines for Operational Risk which require comprehensive audited internal controls including for physical and data security.

"A central counterparty should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives. These policies include, but are not limited to, having: exacting targets for system availability; scalable capacity adequate to handle increasing stress volumes; and comprehensive physical and information security policies that address all potential vulnerabilities and threats."

As noted in the connectivity section, all communications must be protected by strong authentication and encryption.

Major projects at ASX are all subject to a 3rd party security review prior to go-live.

Questions to prepare for and answer in the working group

1. What specific features do you require to meet your internal privacy and security requirements?

9. Availability, Reliability and Performance

The CHES Replacement system will be built in compliance with FSS guidelines for Operational Risk (refer above).

The target availability is 99.95% (the same as all ASX mission critical systems implemented post 2016).

The target performance metrics are generally 100% headroom of current Production peak. These targets are validated through non-functional testing.

Questions to prepare for and answer in the working group

1. What specific features do you require to meet your internal availability, reliability and performance requirements?

10. Production Operating Hours and Supportability

10.0 Current

The current CHES Operating hours are 6:00am to 19:00. Selected applications are available earlier than 6:00am.

Transaction processing is suspended (with some exceptions during batch settlement processing). Participants can send and receive messages overnight but any messages sent will be queued and processed only during operating hours. The same applies for messages sent on non-business days.

10.1 Requirements

Some feedback has been received in the consultation regarding extended operation hours, specifically:

- Support transaction processing through the settlement batch
- Make the system available for transaction processing on non-business days (including weekends)
- Extend operating hours to 24 hours

Questions to prepare for and answer in the working group

1. Do you have a requirement for transaction processing on non-business days or outside of current operating hours? If so, why?

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BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 2B	
Topic	CHES Replacement – Working Groups’ Input on Business Requirements
Date	30 November 2017
Purpose of this paper	Members will be provided with an update on the Working Groups’ prioritisation of business requirements input, including the results of the online survey

OVERVIEW

Following consultation with all industry stakeholders regarding the replacement of CHES in late 2016, ASX embarked on a series of working groups based on the feedback received from that consultation. This process was designed to develop a deeper understanding of the issues encountered by the various stakeholder groups and to create a problem statement that would then be turned into a business requirement for evaluation and potential inclusion in the CHES replacement system.

The working groups were made up of a broad cross-section of industry participants based on their areas of interest and expertise including:

- Industry associations (AIRA, ASA, GIA etc.)
- Approved Market Operators
- Custodians
- Institutional brokers
- Retail Brokers (Including third party clearers and wealth management)
- Registries

The table below lists the topics covered, number of meetings held and the number of business requirements raised.

Topic	# meetings	# Business Requirements
Account Structure and Participant model	2	2
Corporate Actions	5	15
Transfers and Conversions	1	4
Settlement Enhancement	3	15
Data Storage, Delivery and Reporting	1	4
Total	12¹	40²

¹ excludes 1 working group meeting for Non Functional Requirements

² excludes 5 draft Non-Functional Requirements

In addition, there was an additional working group held to cover non-functional requirements, however the business requirements raised from this Working Group are currently out for stakeholder review and therefore were not included in the survey ranking process.

It was agreed with the Working Group participants to collect their views on the prioritisation of business requirements at the conclusion of the process. This paper provides details on how the participants ranked their preferences of the business requirements identified.

Methodology

ASX invited 29 organisations to prioritise the relative importance of the 40 business requirements through the completion of an online survey.

Each participant had the option to assign one of the following values – high, medium, low and ‘not relevant to my organisation.’ Participants were also asked to ensure their response represents, as best as possible, an organisation wide view of the relative priorities. Each organisation was only eligible to submit one response.

Of the 29 organisations invited to participate, ASX received 26 responses as follows:

AMOs	Associations	Custodians	Registries	Insto Brokers	Retail Brokers
CHI-X Australia IR Plus NSX SSX	AIRA	BNP Paribas Citi HSBC JP Morgan	Boardroom Computershare Link Registries	ABN AMRO BAML Credit Suisse Goldman Sachs Macquarie Morgan Stanley UBS	Bell Potter CommSec Morgans Financial Pershing ANZ (Share Investing) NAB (Wealthhub) Netwealth

Following discussions with AFMA and SAFAA, it was agreed that both associations would leave it to their respective members to complete the survey.

The paper refers to the business requirements only by their short name and reference number. A full description of each of the full set of 40 business requirements can be found in Attachment A to the paper for Agenda Item 2a.

The survey on the prioritisation of business inputs provided another opportunity for ASX to gauge the relative importance different stakeholder groups and all stakeholders place on each of the identified business requirements. This will form another input into the ‘Day 1’ business requirement decision.

In order to facilitate Business Committee discussion, the paper groups the business requirements into three broad categories: ‘high level support’, ‘mid-level support’ and ‘low-level support’ based on volume weighted aggregate responses received across all groups. Where possible this has also been supplemented with commentary that provides some insight into that assessment, particularly when some stakeholder groups may have different rankings for particular business requirements.

HIGH LEVEL SUPPORT - TOP 10 BUSINESS REQUIREMENTS

Business requirements where there was a high level of support are as follows:

- CA.3 Standardised electronic acceptance process
- CA.1 Standardised notification of corporate actions
- CA.2 Electronic election for DRPs and BSP
- CA.4 Payment for acceptances and entitlements
- CA.7 Transparency on corporate actions progress
- DS.2 API - reporting capabilities
- TC.1 Standardised registration details

-
- CA.12 Share purchase plans
 - SE.1 Issuer-sponsored SRN transparency
 - AS.1 Flexible account structure hierarchy

Key Observations

Six out of a total of 15 business requirements for **corporate actions** fall into the top ten. This is consistent with the feedback from the consultation process in late 2016 where participants are looking for CHES replacement to bring about efficiencies and additional automation in corporate action processing.

The custodian, retail and institutional broker cohorts collectively assigned a high priority for these corporate actions business requirements.

There was a varied level of response across all industry stakeholders for **AS.1 Flexible account structure hierarchy**. Custodians unanimously identified it as a high priority. Conversely, registries unanimously said it is a low priority.

Only one out of 4 business requirements for transfers & conversions fell into the top 10, **TC.1 Standardised registration details**. There was a high level of support across all industry stakeholders for this, with the exception of custodians.

Only one out of 15 business requirements for settlement enhancements fell into the top 10, **SE.1 – Issuer sponsored SRN transparency**. There was a high level of support particularly from the retail brokers. Registries did not have a consistent views with a mix of high, medium and low priorities assigned.

Only one out of four business requirements for data storage, delivery & reporting, fell into the top 10, **DS.2 – API – reporting capabilities** with varied levels of responses across different cohorts. Interestingly, this requirement scored the largest number of medium votes across all 40 requirements.

MID LEVEL SUPPORT – 15 BUSINESS REQUIREMENTS

Business requirements where there was a mid (i.e. mixed) level of support are as follows:

- DS.4 Real-time holding balances
- CA.6 Distribution of securities (pre-allotment notification)
- SE.11 Additional processing during batch
- CA.15 Proxy voting
- CA.5 Issuer distribution of payments
- SE.12 Streamline deferred trading and settlement
- TC.2 Custodian off-market transfers
- CA.13 Accelerated entitlements
- AS.2 Separation of clearing and settlement
- TC.3 Broker-to-broker transfers
- CA.14 Electronic claims process
- SE.6 Bilateral DvP settlements outside of "batch"
- SE.8 Tolerance model
- SE.2 Locking retail securities
- CA.9 Ability to transfer CEB through batch

Key Observations

The mid-level still produced a lot of support for many of the remaining corporate action and settlement enhancement business requirements.

In addition, all four custodians scored **TC.2 Custodian off-market transfers** as a high priority as this is a very manual process for them at the moment. As this is not specific to the CHESSE Replacement Project, ASX is looking at actioning this business requirement as a “business as usual” exercise.

SE.8 Tolerance models was a higher priority for institutional brokers than any other cohort, with 5 out of 7 rating this as a high priority.

For most of the above business requirements, there were no discernible trends, with mixed opinions expressed as to the relative priority.

LOW LEVEL SUPPORT – 15 BUSINESS REQUIREMENTS

Business Requirements where there was a low level of support are as follows:

- SE.13 Give up and take up functionality
- SE.7 Pre-matching bilateral transactions
- SE.3 Shorter settlement cycles
- CA.8 Takeover offer
- CA.11 Spin-offs (in foreign jurisdictions)
- SE.5 Exchange-traded options – collateral
- SE.9 Linking bilateral settlements
- DS.1 Message delivery priority
- SE.10 Enhanced matching for bilateral settlements
- DS.3 Centralised data capture and storage
- CA.10 ISIN non-renounceable issues
- SE.15 Settlement message management
- SE.14 Support multi-currency settlements
- TC.4 Change of controlling participant
- SE.4 Early settlement (clients)

Key Observations

The low-level contains the majority of items that while relevant to one industry stakeholder or another, did not draw support across the broader range of stakeholders.

It is important to note, all three Registries scored **CA.8 Takeover offer** as a high priority, however the lack of support from other cohorts has resulted in the requirement being ranked as low level.

There was very little support for ‘shorter settlement cycles’, ‘early client settlement functionality’, ‘give-up and take-up functionality’ and ‘pre-matching bilateral transactions’.

OTHER POINTS OF NOTE

Approved Market Operators (AMOs)

There were a wide range of individual responses from AMOs with between 5 and 40 of the business requirements inputs coming out of the working groups being classified as ‘not relevant to my organisation.’ There was also a general comment from one AMO that the questions did not address the concerns and requirements of AMOs.

Of those business requirements that were considered relevant in the responses one submitter considered around 10 were high priority while another thought that 35 were high priority.

Further discussion on the concerns and issues raised by the AMOs will be tabled at the separate AMO working group meetings, which have been running in parallel to the broader stakeholder engagement working group meetings.

SUMMARY OF NEXT STEPS

Candidates for STP Phase 2 Project

Some of the business requirements are being considered for inclusion in the Corporate Actions STP Phase 2 project. For example:

- Part CA.1 Standardised notification of Corporate Action Events and Term Sheet
- Part CA.2 Standardised Electronic Election for Dividend Reinvestment Plans and Bonus Share Plans
- CA.7 Transparency on Corporate Actions progress
- Part CA.11 Spin-Offs (entitlement to shares in foreign jurisdictions)
- Part CA.12 Share Purchase Plans
- SE.12 Streamline Deferred Trading and Settlement processes

Candidates for Business-As-Usual Activity

There is also potential for some of the business requirements to be actioned as part of ASX's business as usual activities. Some of those being considered are:

- AS.2 Account Structures and Participation models
- CA.10 ISIN – Non-Renounceable Issues
- TC.2 Custodian Off Market Transfers
- Part SE.2 Name on Register Locking

Candidates for Day 1 CHES Replacement

Notwithstanding the business requirements that could be considered as part of Corporate Actions STP Phase 2 Project or business-as-usual activity, ASX will also give careful consideration to which business requirements should be included as part of Day 1 CHES Replacement versus in further phases.

To this end, ASX will consult with issuers, clearing & settlement participants, investors and other industry stakeholders including regulators, as part of the market consultation around the end of March 2018. This will enable ASX to assess the ability of stakeholders to accommodate the required system and process enhancements as well as to take into account relevant rules and regulations to understand what can be achieved for Day 1.

It should also be noted many respondents provided additional comments in their responses. Management is in the process of following up bilaterally to respond to each comment.

BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 2C	
Topic	Technology Assessment Process
Date	30 November 2017
Purpose of this paper	Members will be provided with an update on ASX's assessment process for the DLT based system

OVERVIEW

ASX is nearing the completion of its comprehensive assessment of Digital Asset (DA) and their distributed ledger technology (DLT) based system. The purpose of this assessment is to enable ASX to determine the suitability of DA and their technology for the replacement of CHES.

ASX has performed a comprehensive technology assessment of DLT and has conducted a comprehensive industry engagement process to capture users input on the desired features and functions of a replacement solution.

At the 11 October 2017 Business Committee meeting, ASX presented a paper detailing the ASX and DA development teams, the agile ways of working, some details on the software development and the functional and non-functional testing outcomes achieved.

This paper provides a summary of the overall assessment objectives and the process ASX is applying to assess DA and their technology against ASX's requirements and DA's technology security claims.

Technology Assessment Objectives

Primary objectives

There are two key technology assessment objectives that ASX has for choosing its software vendor. These are: the appropriateness of the vendor, and the technology solutions that they provide. These are applied for all technology vendor selection processes that ASX undertakes.

Software vendors must be able to satisfy ASX that they are a going concern. Management quality, human resource calibre, relevant skills, experience and capacity must be sufficient and the business must be well funded. ASX also requires vendor firms to have healthy corporate cultures aligned to that of ASX.

Post trade systems tend to have relatively long technology life spans so these systems must be able to accommodate change well and ideally facilitate further anticipated innovation over the long term.

Technology risk management objectives

Minimizing risks in the provision of high availability critical services underpinned by complex software systems is a key and ongoing objective for ASX. One of these risks relates to the application of newer technologies and this is particularly relevant for the assessment exercise ASX is performing on DLT.

A significant portion of the solution architecture that DA provide is made up of proven technology. For example, PKI (public key infrastructure) for the management of digital certificates and public key encryption, Java & Scala general purpose computer programming languages and RESTful APIs (application programming interfaces) for system interoperability. This is also true of DLT innovations such as the Bitcoin and Ethereum blockchains.

Benefits of DLT for capital markets

DLT and blockchain technology continues to capture media interest and often generates hype based on misunderstandings of the technology's possible applications. ASX has identified opportunities where the application of certain DLT architectures can provide real benefit to the post trade functions of markets and create innovation opportunities. The benefits from these opportunities vary for different types of participants. As such, it was important for ASX that the system is architected in a manner that would enable participants to interact in a manner similar to today (through message based reconciliation) if they wish to.

The system provided by DA for ASX's assessment is specifically designed to address a problem that is the root cause of many capital market inefficiencies. This problem is the duplication (and latency) of data that should be identical. This data duplication and the requirement to constantly reconcile different data stores of what should be identical information causes many of the operational inefficiencies found in markets.

DA makes a series of claims about their system's ability to address these inefficiencies by eliminating the need to reconcile data through the provable synchronisation of data across separate data stores (nodes) while preserving users' data privacy and confidentiality. It is these technology claims and the enabling underlying software that ASX has been assessing.

The technology also provides for the opportunity for innovation and the development of new services that could be offered by service providers by leveraging the availability of real-time data, standard database structures, and common APIs across multiple market users.

Assessment Structure and Process

The technology assessment and vendor selection process for the services provided by ASX is a core part of ASX's regulatory compliance and license obligations.

The 'acid test' for any technology and vendor assessment is being able to review working code (software). Accordingly, ASX structured a program of work to perform assessments and assess risk. An increasingly complex series of assessments for the selection and analysis of DLT based solution providers was undertaken. The following sections summarise these phases of assessment.

Vendor selection

In late 2015, ASX conducted a search of companies from Australia and overseas who claimed to have expertise in DLT. A candidate vendor list was identified from which a shortlist was developed. These companies were presented with some equity capital markets use cases (problem statements). From the responses to the use cases, ASX chose to discuss DLT in more depth with six companies. All of these companies had impressive technology and capital market credentials.

In depth on-site workshops were conducted with each company to discuss the application of DLT to capital market problems, their visions for DLT and their business strategy. ASX then invited three of these companies to ASX's Sydney offices to develop working software DLT proofs of concept (POC) with ASX. The duration of each company's visit was 5 days. The style of software development was similar to that of a 'hackathon' characterised by co-located software engineers with product people, developing software through day and night. Each DLT company presented their working software to ASX's Executive team at the end of the 5 days.

From the above exercise, DA was chosen to progress to the next stage of technology assessment.

Prototype development and hypothesis testing

From January to July 2016 ASX and DA built a working prototype of the core functions of CHES. The prototype was designed to prove (or otherwise) the application of a DLT based solution to the requirements of the Australian equity market. Functions such as trade registration, name on register, the sub-register itself and DvP Model 3 over a T+2 settlement timeframe were built. The prototype also needed to evidence that DA had a DLT solution design that addressed problems inherent in blockchain technologies.

As a rule, public blockchains are very slow and typically require a sharing of all data to all users to achieve the benefit of data synchronicity without trusted intermediaries. Public blockchains are also computationally intensive, requiring powerful computers that have large electricity demands.

For the application of DLT in equity post-trade processes, ASX is not attempting to solve a trust issue with DLT. ASX aims to solve a data inconsistency and associated reconciliation problem. Additionally, ASX also discarded as commercially unviable the notion that a DLT solution would require participants to have extremely powerful computing infrastructure that is expensive to operate.

It was important for ASX to establish early in the DLT assessment process that the processing speed and data privacy characteristics of DA's DLT solution would meet the current and future requirements of the market it serves.

The prototype also needed to provide a way for ASX to explain and visualise the DLT software to its stakeholders. This was achieved with the prototype demonstration that Business Committee members and several hundred other CHESSE stakeholders have seen in the acceler8 suite.

The objectives of the prototype were successfully achieved and ASX commissioned DA to develop a DLT based system that could form the foundation to replace CHESSE.

Industrial strength software build

The solution build was based on detailed requirements from ASX covering clearing, settlement and other post trade functions to a level of rigour and completeness that would be required to become a production ready system.

The objective of the solution build was to assist ASX in its vendor and technology selection process for the system to replace CHESSE.

Development Process

The scope of items included in this software build were the business requirement categories detailed in the October Business Committee meeting paper *4B – Technology Assessment of Digital Asset's platform*.

In summary, the functional requirements of the software build are in the areas of:

- **Participant and security definition** – the creation and maintenance of the legal entities required to facilitate the activities of a clearing and settlement system.
- **Trade registration** – to accept, register and confirm receipt of trades from market operators.
- **Pre-settlement netting** – netting all market trades in each security per participant under model 3 DvP. This includes managing exceptions such settlement failures and rescheduling.
- **Settlement (DvP)** – to effect irrevocable settlement finality and the resultant adjustment of investor holdings through the DvP mechanism.
- **Corporate actions** – the creation of any relevant cum entitlement balances, their management and any resultant changes to the holdings of impacted investors.
- **Default management** – the management of participant defaults and the back-out of liabilities and/or positions to maintain an orderly market.

The functional build of the 2017 in-scope items has been completed. A number of critical non-functional requirements were also identified, and a high level summary of these is as follows:

- **Security** – demonstrate strong encryption and authentication for internode communication and achieve satisfactory results from two 3rd party expert reviews of DA platform security claims regarding authorisation, authentication, privacy, confidentiality, integrity and non-repudiation (see below).
- **Performance/capacity** – demonstrate maximum settlement batch duration and minimum transaction throughput and latency targets based on multiples of current peak load, including soak testing.

-
- **Stability/resilience** – 100% stability under consecutive days of Production simulated load and recoverable without data corruption or loss after simulated hardware failure scenarios.
 - **Scalability** – demonstrate node configurations under production simulated trade load.

Testing

ASX has performed a detailed review of system documentation, available code, coding practices, and has interviewed DA system architects and software engineers. ASX is also performing hundreds of test scenarios to assess the performance of the software.

Functional testing was performed against the business requirements developed as a part of the software build outlined above. Results of the functional testing have met or exceeded ASX's acceptance criteria.

Non-functional testing is currently being performed. These are tests to validate that the software can meet acceptance criteria associated with throughput capacity, resilience, scalability and security.

DA performs their testing on AWS (Amazon Web Services) infrastructure. ASX's testing of DA's system inclusive of non-functional testing is being performed on ASX's infrastructure located in Australia.

Independent third party technology security assessments

To complement ASX's own technology assessment of DA's DLT, two separate independent third party expert technology security assessments were commissioned. Details of these are contained in a separate Business Committee Agenda Item 2D – *Third Party Security Assessments*.

Technology assessment process conclusion

The structured execution of the above selection and assessment phases over 22 months will provide ASX with sufficient information to make a well informed technology decision on the vendor and system to replace CHES.

Finally, it should be noted that the system developed to date does not have all the functions required to replace CHES. Any progression into 2018 and beyond will require additional software development and testing to complete a CHES replacement.

BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 2D	
Topic	Third-Party Security Assessments
Date	30 November 2017
Purpose of this paper	Members will be provided with a summary of the process and an update on the two third party security reviews of the DLT-based system.

OVERVIEW

ASX has performed its own analysis and assessment of the technology provided by Digital Asset (DA). ASX has been able to perform a high quality assessment by working closely alongside DA for the last 22 months. Over this period, ASX has assessed DA's software and their complete SDLC (software development lifecycle) process through iterative ideation, requirements definition, design, development, testing and deployment.

If ASX makes a positive decision, the software will go through further assessments in the future as the Day 1 functionality is developed and prior to implementation.

As part of this process, ASX commissioned two additional assessments by third party experts. This is because:

- information security is a highly specialised, complex and dynamically changing domain;
- the implementation of some security requirements can be difficult to fully validate through conventional testing methods;
- while the underlying cryptographic principles and techniques used in DA's system are established and proven, it should still be determined that these have been assembled and implemented in a way that achieves the overall security requirements of the system; and
- the heightened interest in DLT and blockchain technologies generates misinformation on the unique features of the technology that is best addressed through a detailed review.

The two firms commissioned to perform these assessments were the NCC Group (NCC) and KPMG.

In Scope Design Claims and Engagement Process

DA provided 50 specific claims about the inherent security capabilities and related characteristics of their system. These claims were categorised into the following areas:

- Trust
- Identity, authentication and authorisation
- Regulatory and auditor features
- Confidentiality and privacy
- Integrity
- Non-repudiation
- Replay detection and prevention
- Logging
- Cryptographic functions
- Security threats addressed

These claims were used as the scope of both NCC's and KPMG's work. Both NCC and KPMG compared and sought to validate the veracity of each security claim.

Each assessment was conducted by reviewing DA's DLT-based system design, architecture and software code, particularly those components that are unique to distributed ledger technologies, such as, the application of cryptographic methods.

The NCC and KPMG assessments were performed independently of ASX and each other. Assessments were conducted sequentially and neither NCC nor KPMG communicated with each other, shared any data, knowledge or personnel for the purposes of performing their respective assessments.

Third Party Assessment Reports

ASX and DA have received the NCC Group and KPMG assessment reports. They are commercial in confidence. ASX has provided a copy of the reports to the RBA, The Treasury, ASIC and ACCC.

ASX is continuing to review the content in these reports and will provide an update at the meeting.

BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 2E	
Topic	ISO20022 Technical Committee Report and Minutes
Date	30 November 2017
Purpose of this paper	To provide Business Committee members with a copy of the report and minutes from two recent meetings of the ISO 20022 Technical Committee.

OVERVIEW

The ISO 20022 Technical Committee met on 10 October 2017 and 21 November 2017.

A copy of the Technical Committee's report and minutes for the October meeting are provided in Attachment A. There will also be a verbal summary of the discussion at the November meeting.

ATTACHMENTS

Attachment A – ISO 2022 Technical Committee Report and Minutes 10 October 2017 meeting.



ISO 20022 TECHNICAL COMMITTEE REPORT TO THE BUSINESS COMMITTEE

ISO 20022 TECHNICAL COMMITTEE MEETING 10 OCTOBER 2017

The Technical Committee met on 10 October in Sydney.

MEETING AGENDA (NON STANDARD ITEMS)

Business and Technical Matters for Consideration:

- ASX participation in ISO 20022 Standards Evaluation Group (SEG);
- Additional report candidates for descope;
- MyStandards Community – usage guideline feedback;
- Achieving ISO compliance – Technical Committee feedback;
- Transaction id models, extending the framework;
- Settlement parties – local market practice;
- Reporting methods – guidelines for demand reporting;
- Stamp Duty provisions – recommendation to remove related fields;
- ISO-required data - Introduction of 'new data requirement' annotation;
- Precision of timestamps - recommendation to include sub-seconds;
- Further ISO 20022 usage guidelines available for member review; and
- A discussion regarding noted action items and next steps for the Committee.

KEY ISSUES DISCUSSED

- The Chair noted that of ten open action items, four had been actioned and were noted as closed, or for discussion at the meeting and subsequently closed. Six action items remained open.
- ASX sought committee endorsement for ASX's nomination as a Standards Australia IT-005 committee member, and as a member of the international Securities Standards Evaluation Group (SEG). This nomination was considered necessary by ASX, and welcomed by ISO, in order to support and promote the Australian market's change requests to existing ISO 20022 messages, and registration of new messages. The committee endorsed the nomination with a noted action for ASX to provide a draft governance model for ASX and Technical Committee members to review changes, and contribute to decisions prior to SEG meetings.



- ASX presented on a number of topics at the meeting that highlighted the tensions between employing a best practice vs. pragmatic and local market practice approach to adopting ISO 20022 standards. The committee members were asked to consider the topics raised and provide feedback on the options presented by ASX. Each option carries pros and cons for adoption and need careful and consistent consideration by the committee. ASX noted that where it was waiting for members to provide responses to such topics it was adopting an 'as-is' approach to the mapping.
- The committee agreed a number of enhancements to be included in the ISO 20022 messages, compared to current EIS message. These included the allowance for sub-seconds in timestamps, and the definition of a new unique id to be carried through a chain of related messages. The committee also agreed that the message definition should be flexible to allow the inclusion of settlement "party 2" in the future, if required.
- The committee agreed to descope two additional reports from the current EIS demand reports, and to the removal of fields related to stamp duty provisions.

AGREED ACTIONS

Five new action items were noted from the meeting, with a total of eleven open action items. The action items are detailed in full in the Minutes from the meeting.

Minutes from the meeting are attached.

TECHNICAL COMMITTEE MEETING 21 NOVEMBER 2017 - MELBOURNE

The final meeting of the year will be held in Melbourne.

MEETING AGENDA (NON-STANDARD ITEMS)

Business and Technical Matters For Consideration:

- Review of member feedback on the draft usage guidelines published on SWIFT MyStandards;
- New ISO 20022 messages – samples (in payment/funding business area);
- Precision of amounts, units, prices, rates elements;
- Reporting – simple vs. complex;
- Re-release 2017 CHES Replacement ISO 20022 collection for Technical Committee;
- Further ISO 20022 usage guidelines available for member review; and
- A discussion regarding noted action items and next steps for the Committee, including the Technical Committee plan for 2018.

A report and minutes from the meeting will be provided at the next Business Committee meeting.



MINUTES OF THE ISO 20022 TECHNICAL COMMITTEE

Tuesday 10 October 2017

ASX Offices, Bridge Street, Sydney; Webinar

-
1. **Welcome, Agenda**

 2. **Minutes from last meeting, open actions**

 3. **CHES Replacement project update by ASX**

 4. **ISO 20022 project update by ASX**
ASX participation in ISO 20022 Standards Evaluation Group (SEG)

 5. **Update from Business Committee**

 6. **Matters for Consideration (Business and Technical Matters)**
 - a) Additional report candidates for descope
 - b) MyStandards Community – usage guideline feedback
 - c) Achieving ISO compliance – Technical Committee feedback
 - d) Transaction id models, extending the framework
 - e) Settlement parties – local market practice
 - f) Reporting methods – guidelines for demand reporting
 - g) Stamp Duty provisions – recommendation to remove related fields
 - h) ISO-required data - Introduction of 'new data requirement' annotation
 - i) Precision of timestamps - recommendation to include sub-seconds
 - j) Usage guidelines for review

 7. **Next Meeting** - Tuesday 21 November 2017, 3.00pm to 5.00pm



Technical Committee Members

Company	Name	Job Title	Apologies
Australian Payments Network Limited	Andy White	Chief Operating Officer	Apology
Australian Payments Network Limited	Paul Creswick	Security Standards Manager	
Bank of America Merrill Lynch	Andree Hindmarsh	Head of GMOT Australia	
Bank of America Merrill Lynch	Jimmie Alam		
Bell Potter Securities	Dean Surkitt	Managing Director Retail	
BNP Paribas Securities	Narelle Rutter	Head of Local Custody & Clearing Operations	
BNP Paribas Securities	Wayne Murphy	Project Manager	
Boardroom Limited	Tony Robinson	Senior Software Engineer	
Boardroom Limited	Michael Mullins	CIO	
Broadridge (Australia)	John Greenhow	General Manager, Australia	
Broadridge (Australia)	Manoj Mathew	Business Analyst	
Broadridge (Australia)	Mabel Chow	Development and Support Manager	
CBA Equities	Joel Cox	Technical Business Analyst	
CBA Equities	Carolyn Webb	Test Manager	
CBA Equities	Ben Lowe	Manager Settlements	
Chi-X Australia	Mike Aikins	Head of Solution Development	
Chi-X Australia	Suketu Adhvaryu	Senior Solution Architect	
Citicorp	Miles O'Connor	Director, Direct Custody & Clearing Securities Markets & Securities Services	Apology
Citicorp	Brett Dennis	Head of Operations – Party Clearing	
Citicorp	Lyall Herron		
Citicorp	Janice O'Brien	Markets & Securities Services Technology	
Citicorp	Matthew Warner		
Citicorp	Ashok Kumar Balusa		



Company	Name	Job Title	Apologies
Citicorp	Glenn Pahilan		
Citcorp	Stephen Rylands	Product Manager	
Computershare	Paul Walton	Senior Manager, Corporate Actions & New Business Development – Investor Services	
Computershare	Leanne Bailey	Senior Business Analyst Product & Innovation	
Computershare	Laik Tan		
Deutsche Securities	Kevin Novini		
Dion Global Solutions	Craig Gray	Product Manager – Australia and New Zealand	
Dion Global Solutions	Nikki Gleisner	Account Manager	
GBST	Andrew Murdoch	Product Specialist, GBST Capital Markets	
GBST	Sue Schafer	Product Owner	
Goldman Sachs	Darrel Schwarz	Technology Vice President	
Goldman Sachs	Nichole Alexander	Operations Vice President	
HSBC Securities Services	Gregory Wilkin	Head of HSBC Operations	
HSBC Securities Services	Salih Kulic	Manager Custody	
HSBC Bank Australia Limited	Michael Macintosh	Senior Client Account Manager, Global Liquidity and Cash Management	
HSBC Bank Australia Limited	Anna Fratini	Senior Product Manager – High Value Payments, Clearing and Financial Institutions,	
JP Morgan	Ed Lawson	Settlements Manager	
JP Morgan	Danny Ng	Middle and Back office AD Manager	
JP Morgan	Scott Oakland	Direct Custody Product Manager Australia	
JP Morgan	Daniel Smith	VP, Network Management	
JP Morgan	Lesley Henderson	Technology Product team	
Link Group	Ian Batterham	Business Applications Architect	



Company	Name	Job Title	Apologies
Link Market Services	Sue Julian	National Manager, Corporate Actions	
Macquarie Group	Paul Bragg	Senior Manager Equities Clearing ANZ	
Macquarie Group	Merrilyn Auton	Manager Operations	
Morgans Financial	Matt Neaubauer	Team Leader, Service Management Team	
Morgans Financial	Ed Strike	IT Manager	
Morgan Stanley	Dorothy Wilson	Executive Director Morgan Stanley Wealth Management, ISG Technology	
Morgan Stanley	Kirsty Venters	VP, Prime Brkrng Funding & Fin Tech	
Morgan Stanley	Oscar Dela Cruz		
Morgan Stanley	Andrew Fielder		
Morgan Stanley	Gordon Davies	VP/Firmwide Ops	
NAB Asset Management	Suresh Chinnappa	Head of Custody Service Operations	
National Stock Exchange	Lina Lim	Head of Technology	
Nomura Research Institute	John Ryan	Senior Consultant	
Securitease	Anton Smith	Director	
Securitease	Chris Werry	Business Analyst	
Share Investing	Phil Barnes	Senior Manager, Platforms	
SWIFT Standards	Nicole Jolliffe	Senior APAC Standards consultant	
SWIFT Standards	Mieko Morioka	Senior APAC Standards consultant	
SWIFT	Chermaine Lee	SWIFT Project Coordinator	
Sydney Stock Exchange	Leo Zhang	Business Analyst	
Sydney Stock Exchange	Jason Shen	Market Operations Officer	
UBS	Phillip Drury	Phillip Drury, Executive Director, Equities IT	
UBS	Duncan Earl	Executive Director, Head of Change, UBS Group Operations	
Wealthhub Securities	James Channon	Manager, Capital Markets Trading	



ASX Management

Name	Job Title	Apologies
Tim Hogben	Chief Operating Officer (Chair of the Technical Committee)	
Cliff Richards	Executive General Manager, Equity Post Trade	
Brendon Luscombe	General Manager, Product Owner, CHES Replacement Project	
Karen Webb	Senior Manager, Equity Post Trade Services	
Russell Eyre	Enterprise Architect	
Anne-Marie Fisher-Taylor	Team Lead, Application Development	
Darcy Wright	Senior Business Analyst, Equity Post Trade	
Priscilla Ferri de Barros	Senior Business Analyst, Equity Post Trade	
Gary Hobourn	Senior Economic Analyst, Regulatory and Public Policy	



The meeting commenced at 3.00pm.

Agenda item 1: Agenda overview

The Chair welcomed Technical Committee members to the meeting including members attending by webinar.

The Chair outlined the Agenda for this meeting, referring to the presentation slides prepared by ASX. The agenda included an overview of the proposed forward plan of meeting topics, as outlined on slide number 3 of the ASX presentation.

Agenda item 2: Minutes from last meeting, open actions

The Chair noted that the minutes from the last meeting held on 22 August 2017 had been finalised with some minor changes. Noted that one member had suggested separate working group to discuss whether supplementary data usage is valid. The Chair confirmed that such discussions would remain within the Technical Committee, and this would extend to decisions regarding valid change requests. The Chair asked for any other views. A member asked if post trade practices Australia were that different to other jurisdictions. The Chair noted that Australia was probably ahead of the curve in relation to settlement automation practices considering our market structure. The member agreed that was probably the case for settlement, but corporate actions were different, acknowledging the output from the working groups. The Chair noted that Australia has a heavy percentage of retail market, with name on register that makes us different to more traditional CSD models.

The ASX Senior Business Analyst noted that so far the usage guidelines didn't have heavy usage of supplementary data where over 85% of initial 130 guidelines had 1 supplementary data element or none.

The Chair noted that ASX would add upstream/downstream considerations to later agenda topics (per forward agenda).

The Chair noted the outstanding actions from the last meeting as outlined on slide number 4 and 5 from the ASX presentation.

Action item 17 was for ASX to provide further information on party identification for issuers – UIC or BIC and proposed process. The Chair invited the Senior Manager, Equity Post Trade Services to provide an update on this action. The senior manager noted that the members had previously agreed in principle that the identification of participants would be via a BIC in place of the current UIC. The senior manager confirmed that further investigations with SWIFT had been made on the process for allocation non-connected BICs to issuers (in place of UIC). ASX had determined that the current process was unlikely to meet current turnaround minimum times for set up of an issuer, and it added additional administrative burden via upfront, ad hoc changes and annual reviews. ASX recommended the usage guideline include the option for either a UIC or BIC. A member asked about the impact to Transaction ids given the use of BIC for some user types and the process for transferring between the use of BIC and UIC. This was noted by ASX. The members agreed with the recommendation. The Chair noted that **this item was closed** with any further changes to be managed via the share registries.

Action item 19 remains open and on hold.



Action item 20 was for ASX to provide a proposed plan for the remaining training webinars. The Chair noted that ASX was considering training closer to implementation. **This item remains on hold.**

Action item 23 was for ASX to continue a review of reports and provide further candidates for descope at meetings. The Chair noted that this item would be addressed under the topics of Matters of Consideration during the meeting. **This item remains open.**

Action item 37 was for ASX and SWIFT to provide comparisons to other market implementations of transaction ids. The Chair noted that this item would be addressed under the topics of Matters of Consideration during the meeting. **This item was closed.**

Action item 38 was for ASX to add an item to upstream/downstream considerations log re the use of UTC for Trade Date confirmations from AMOs (with flow on impact to EIS 164 equivalent). The Chair noted that an item had been added to the upstream/downstream register and the **item had been closed.**

Action item 39 was for the Chair to contact members seeking feedback on the approach of the Technical Committee, any suggestions to improve the process. The Chair noted that the timing of this was still to be determined, but he had conducted ad hoc discussions. Feedback was positive on the committee and that the agenda, although complex, was delivering the right value. **This item remains open.**

Action item 40 was for ASX to provide a list of CHES EIS messages in scope for detailed mapping during 2nd half of 2017, including identification of descoped messages. The Chair noted that a scope document had been provided to members, and the **action item was closed.**

Action item 41 was for ASX to conduct bilateral discussions with share registries and mailing houses regarding structuring of registration details and associated static data. Refer action item 42 notes below.

Action item 42 was for ASX to conduct bilateral discussions with share registries regarding current holding balance changes associated with corporate actions and proposed withdrawal of EIS 421. The ASX Senior Manager, Equity Post Trade services noted that bilateral discussions had been held off for now, pending outcomes of working group meetings, and further detailed investigation by ASX on the usage of EIS 421 and EIS 425 and particular trends and reasons for usage. Preliminary analysis demonstrated that about 130,000 EIS 421 per year, compared to about 2 million EIS 425.

Both action items 41 and 42 remain open.

Agenda item 3: CHES Replacement project update by ASX

The Chair invited the Executive General Manager (EGM), Equity Post Trade to provide an update on the project. The EGM confirmed that the working groups were continuing to proceed well, with good opportunities for shared learning. Two business requirements had been captured from the Transfers and Conversions working group; and a number from the Settlement Enhancements working group. To date ASX had completed 4 of the 6 working group topics. The 5th working group would focus on Reporting, and the 6th group on non-functional requirements. The EGM noted a query had been received from a Technical Committee member regarding whether the non-functional discussion should be held earlier than the ASX decision on whether to adopt DLT to ensure requirements are included in assessment. The EGM explained that the working group discussions would capture participant and other member future requirements particularly around interfaces and availability and would not influence ASX's own requirements for the



technical build underway this year. Tests were already being conducted by ASX and Digital Asset to ensure whether certain thresholds were being met – throughput capacity, burst loads, latency and so on.

The EGM noted a shift of focus from functional to non-functional testing over the next 2-3 months. Generally Digital Asset were delivering high quality code. ASX had also commissioned 2 external third party reviews – in order to review claims of the technology made by Digital Asset. Details would be provided to the Business Committee. To date the project was on track with ASX still expecting to make a well informed decision in December this year.

Agenda item 4: ISO 20022 project update by ASX

The ASX Senior Manager, Equity Post Trade Services provided an overview of the ISO 20022 progress, with further business areas now mapped in draft and progress at the end-of September with mapping the remaining 346 messages in second half of 2017. SWIFT and ASX had also developed 10 new messages and would provide further information at the next meeting on the new messages. ASX had also provided a list of the EIS messages in scope to members, and that list also identified those messages that had been descope.

Referring to presentation slide number 8, the senior manager outlined that ASX was seeking nomination to participate in the ISO 20022 Standards Evaluation Group in order to support and promote own change requests and new message registration. ASX may also have the opportunity to review and opine on other requests that may be of interest or impact our message set. ASX recommend that the Technical Committee endorse ASX nomination as IT-005 member; and endorse ASX nomination as a member of Securities SEG.

A member noted that members should be included in any review and any decisions and asked if there was any proposed governance for industry engagement pre and post discussed changes. The Chair noted that ASX would propose a method for governance at the next meeting. **(Matters Arising 1, Action item 43)** The members endorsed the recommendation.

Agenda item 5: Update from Business Committee

The Chair outlined the key topics to be discussed at the Business Committee meeting to be held on 11 October. These topics included, an overview of the ASX customer engagement survey results with key points raised from customers being requests to simplify processes, and good feedback re NTP deployment and engagement through the delivery. The Business Committee had recommended that the AMOs be included in the CHES Replacement working groups and this had been endorsed by the Clearing and Settlement Boards with AMO members now involved. The agenda also included an update by ASX on MIFID II - impact re trade, post trade id of securities, with no immediate impact, concerns.

Agenda item 6: Matters for Consideration

a) Additional report candidates for descope

ASX presented a recommendation to descope 2 further reports from CHES Replacement – FLN and RAC (refer ASX presentation slide number 11). The FLN report related to the redundant securities lending service, and the RAC report was not functional in its current format.



A member asked about the housekeeping process for rights that expire worthless – and whether this could be improved. ASX agreed to take this to the project team for consideration. **(Matters Arising 2 – Action item 44)**

Members agreed with the recommendation to descope FLN and RAC reports, taking the number of descoped reports to 7 (PFD, PFH, USD, USH, OSL, FLN, RAC).

b) MyStandards Community – usage guideline feedback

The ASX Senior Business Analyst noted that comments had been received from 5 firms including vendor, registry and participant, and noted some concern by the project team at the low level of feedback.

A member noted that his firm was relying on vendors to review the usage guidelines for now, and would wait for the vendor to summarise any changes applicable to his firm's operations. Largely expect as-is so no great concerns, and would be more concerned if there was no vendor input. The Senior BA agreed it would be more valuable when any changes were identified by new business requirement or forced change, but otherwise it was a good exercise to increase familiarity and as a training opportunity.

Referring to slide number 12 and 13 of the ASX presentation, the ASX Senior Business Analyst noted some minor corrections were needed to the usage guideline set, and that ASX were to review comments provided in further detail. The ASX Senior Business Analyst also noted for single sided events for securities movement type ASX would apply the value DELI consistently, and this agreed with SMPG guidance.

c) Achieving ISO compliance – Technical Committee feedback

Referring to ASX presentation slide number 14, the ASX Senior Business Analyst re-presented a topic raised at the last Technical Committee meeting, seeking community agreed approach to ISO best practice exceptions.

The Chair asked if members needed more time to review the recommendations, and the members agreed. **(Matters Arising 3, Action item 45)**. In summary the Pros of the ASX recommendations were that this would map as-is to CHES messages. The cons were that we would need to maintain 2 schemas – the base message and supplementary data. The alternate to the recommendation (map per standard) is likely to mean multiple messages for a business flow and increased message volumes. A member noted that the impact likely depended on the vendor and technically a participant probably didn't want to manage too many schemas, but at the same time wanted to apply best practice. The ASX Senior Business Analyst noted that ASX needed to make a decision to move forward, and that supplementary data would be used as a placeholder for logical equivalents for now (Option 1 of the recommendation). A member representing a vendor stated they were agnostic on the outcome – but did like the current process as they get reconciliation for free. If the reconciliation message was separate and fee based (e.g. provision of balances), then likely this wouldn't be used. A member asked if there was any impact from processing supplementary data. The vendor member said there may be some extra volume, and additional implementation considerations.

d) Transaction id models, extending the framework

A SWIFT consultant provided an overview of the model used for transactions ids by T2S in Europe, with the left hand diagram on ASX presentation slide number 15 showing an overview of the flows, and the diagram on the right hand side showing the transaction reference and ids carried through T2S.



The key points were that there was no unique ID carried through the sample transaction flow, and is this something of use – to introduce an event identifier.

Referring to ASX presentation slide number 16, the ASX Senior Business Analyst elaborated on the topic – where if there was a requirement to extend the id over what we have today, then we could use the MITI id. A member asked if this would be a positive change and put us ahead of the curve, otherwise would defer to vendor for their view. ASX confirmed that consequence could be that the source of a message (e.g. a participant) would also need to generate the id. A vendor member and ASX agreed that the inclusion of the id allows the clear display of a conversation to a user, with good chain visibility. Another member confirmed it seemed a good idea. The Chair asked committee members to respond to ASX if they thought it was a worthwhile change. **(Matters Arising 4, Action item 46).**

e) Settlement parties – local market practice

The ASX Senior Business Analyst presented a recommendation to confirm that the local market practice does not need the identification of Party2 or more in settlement instructions, per ASX presentation slide number 18. More than one member expressed the opinion that this could be of interest in the future. The Chair asked for the implications to be spelled out – for now ASX was assuming as-is so no requirement to include this information. If we consider future 'to-be' then for example, the party chain needs to be known at the generation of an equivalent 101 message, and would need to be clear on expectations around validating this information. The data flows for party identification are currently outside the CHES universe. The Chair noted that there had been some conversation on this at the working group meetings where members thought the information could add to the settlement process and allow richer messaging, where for example the allegation could be passed to a client for action.

While ASX had mapped 'as-is' the Chair noted his preference to leave this option open for 'to-be', and noted that regulators may have a view re identifying where assets are held. This matter to be discussed further with working group. **(Matters Arising 5, Action item 47)**

f) Reporting methods – guidelines for demand reporting

The ASX Senior Business Analyst presented an overview of some options for demand reporting. The initial analysis with SWIFT had identified two classes of reports. Firstly, report requests where a single ISO 20022 base message could be defined with all reporting output contained in that single message. Secondly, report requests that generated complex outputs across a number of base messages and/or business areas – where the future solution could be multiple messages nested in a Business File header, or consider other 'pull' delivery mechanisms apart from 'push' messaging.

A member noted that the delivery of files rather than messages would need consideration of factors such as sequencing, how to check files have been processed and so on. These considerations should be discussed at the working group meetings.

A member noted the 'FHT' Full Holding Transaction report was considered complex (since multiple base messages from different business areas applied), and if delivered by a 'pull' mechanism this would have system process impacts.

It was noted that reporting would be discussed at the working group meeting.



g) Stamp Duty provisions – recommendation to remove related fields

The ASX Senior Business Analyst noted that the current as-is mapping to ISO 20022 included stamp duty fields including duty type, duty payable and stamping consideration. ASX considered these fields a legacy and recommended the removal of the stamp duty related fields from CHES Replacement.

A member asked if ASX should check if there was any potential to have duty applicable again before removing. A vendor member noted they ignored these fields in current implementation.

The Chair noted that ASX would proceed to remove these fields and members agreed.

h) ISO-required data - Introduction of 'new data requirement' annotation

The ASX Senior Business Analyst noted that as a matter of course ASX and SWIFT would use the annotation function in MyStandards to clearly state when a new data requirement was present in the ISO 20022 usage guidelines, compared to the CHES EIS. The new data requirement may be a mandatory and/or SMPG required value. The annotation is available in online view or usage guidelines exported from MyStandards.

i) Precision of timestamps - recommendation to include sub-seconds

The ASX Senior Business Analyst referred to ASX presentation slide number 23 noting that ISO 20022 allowed for the optional inclusion of sub-seconds in the DateTime fields. ASX considered it worth including sub second information and therefore recommended to the committee that seconds with 3 fractional digits be included going forward. This would future proof the messages for any future requirements.

Committee members agreed with the recommendation.

j) Usage guidelines for review

The ASX Senior Business Analyst noted 13 new Usage Guidelines were being published for member review, with comments requested by 14 November 2017. It was also noted that ASX would republish all usage guidelines shared with the committee members after the November meeting, taking into account all feedback, and other changes.

A member asked if the republished guidelines would be the final versions. The Senior Business Analyst noted that for now it was premature to make that assumption, but the usage guidelines were a mature set of ISO 20022-based guidelines for the as-is requirements.

Agenda item 7: Next meeting

The Chair summarised the key action items from the meeting and noted that draft minutes from the meeting would be circulated to members for review.

The Chair confirmed that the next meeting would be held on Tuesday 21 November in Melbourne, with thanks to Suresh at NAB for hosting the group, and otherwise by webinar. Details would be provided to members.

The Chair noted the planned agenda for the 21 November meeting as outlined on slide number 26 of the ASX presentation, including a list of the usage guidelines to be published by ASX for review by committee members (per Agenda item 6j).



The Chair thanked members for their input, and for participating in the meeting. The meeting closed at 5.00pm.

Signed as a correct record of the meeting.

A handwritten signature in black ink, appearing to be 'A. W.', written over a horizontal line.

20 NOVEMBER 2017

Technical Committee Chair

Date



ACTION ITEMS

No.	Meeting Date	Open Action Items	Owner	Due Date
19	2 May 2017	Provide sample of demonstration of comparison between ISO 20022 and ISO 15022 messages.	Scott Oakland, JPM	On hold
20	2 May 2017	Provide details of a proposed plan including potential topics for the remaining training webinars for feedback, standard training provided by SWIFT, and including identification of business vs. technical topics.	ASX	On hold
23	2 May 2017	Further review of the ASX CHES demand reporting summary and responses to questions contained in that summary. ASX to continue review of reports and provide further candidates for descope at meetings.	Members / ASX	21 November 2017
39	22 Aug 2017	Chair to contact members seeking feedback on the approach of the Technical Committee, any suggestions to improve the process.	ASX	21 November 2017
41	22 Aug 2017	Conduct bilateral discussions with share registries and mailing houses regarding structuring of registration details and associated static data.	ASX	21 November 2017
42	22 Aug 2017	Conduct bilateral discussions with share registries regarding current holding balance changes associated with corporate actions and proposed withdrawal of EIS 421.	ASX	21 November 2017
43	10 Oct 2017	Provide a proposed governance method for Technical Committee input to and review of all matters tabled at the Standards Evaluation Group (SEG), including any matters raised by ASX on behalf of community.	ASX	21 November 2017
44	10 Oct 2017	ASX project team to consider effective housekeeping of rights that expire worthless – and whether this could be improved.	ASX	21 November 2017
45	10 Oct 2017	Review recommendations put to committee in Agenda item 6c) – approach to ISO best practice exceptions and provide feedback to ASX.	Members	21 November 2017



No.	Meeting Date	Open Action Items	Owner	Due Date
46	10 Oct 2017	Review recommendation put to committee in Agenda item 6d) – inclusion of unique event id in Market Infrastructure Tx id (MITI) field.	Members	21 November 2017
47	10 Oct 2017	Allow for future use of Party2+ identification in messages, and ensure discussion on same point at working group meetings re business requirement.	ASX	21 November 2017

No.	Meeting Date	Closed Action Items	Owner	Closed Date
1	13 December 2016	Amend the Charter to reflect that the Chair “will” (instead of “may”) forward copies of the minutes to the Business Committee for endorsement. ASX to publish and distribute final Charter.	ASX	13 December 2016
2	13 December 2016	Provide members with information on how to access SWIFT MyStandards.	ASX	14 March 2017
3	13 December 2016	Provide members with an overview of ISO 20022 training options.	ASX/SWIFT	7 February 2017
4	7 February 2017	Provide members with list of current scope of messages for detailed mapping during first half 2017.	ASX	14 March 2017
5	7 February 2017	Schedule training webinar for the attendance by members and seek and review feedback after the initial webinar.	ASX / SWIFT	14 March 2017
6	7 February 2017	Add link to relevant ISO 20022 information websites to the CHES Replacement web page.	ASX	14 March 2017
7	7 February 2017	Provide more details on access to online education available at swift.com.	SWIFT	14 March 2017
8	7 February 2017	Provide members with the current list of Market Identification Codes (MICs)	ASX	14 March 2017
9	7 February 2017	Provide members with more information on the use of BIC vs. UIC as the party identification code.	ASX / SWIFT	14 March 2017



No.	Meeting Date	Closed Action Items	Owner	Closed Date
10	7 February 2017	Market Operators to advise the preferred MIC to be presented in trade related messages as the "Place of Trade".	ASX, Chi-X, NSX, SSX	6 June 2017
11	7 February 2017	ASX to conduct analysis on whether the identification of a financial instrument is a fixed value or true value of the proprietary code issuer.	ASX	14 March 2017
12	7 February 2017	Provide list of proposed code (i.e. condition or BOM) in ISO 20022 format (4 character) mapped against CHES codes.	ASX	14 March 2017
13	7 February 2017	Add a general CHES Replacement update to the standing agenda for meetings.	ASX	14 March 2017
14	7 February 2017	Check the next Technical Committee meeting date planned for March and advise members of any change.	ASX	14 March 2017
15	14 March 2017	Schedule future agenda item to discuss transition arrangements, including any changed values (e.g. party identifiers).	ASX	2 May 2017
16	14 March 2017	Create register of matters that may impact upstream, downstream systems or processes, including codes, identifiers and ISO 15022.	ASX	2 May 2017
18	14 March 2017	ASX to draft procedures for change requests to usage guidelines and code lists.	ASX	2 May 2017
21	2 May 2017	Provide a list of standard training topics to share. Noted this action item is combined with action item 20.	SWIFT	6 June 2017
22	2 May 2017	Provide members with a copy of the presentation material from the trial training webinar held on 27 April 2017.	ASX	6 June 2017
24	2 May 2017	Resolve issue with Comments function on MyStandards and advise members when fixed.	ASX/SWIFT	6 June 2017
25	2 May 2017	Provide samples of the proposed consolidation and rationalisation scenarios for EIS 138 and EIS 134.	ASX	6 June 2017
26	2 May 2017	Provide proposal to broaden the engagement and method to seek feedback on key concepts such as consolidation/rationalisation.	ASX	6 June 2017
27	6 June 2017	Publish list of comments received on MyStandards with ASX responses regularly, around the time of each meeting.	ASX	18 July 2017



No.	Meeting Date	Closed Action Items	Owner	Closed Date
28	6 June 2017	Re-publish ISO 20022 equivalent of EIS 138 with corrected default value INFO for issuer of financial instrument code.	ASX	18 July 2017
29	6 June 2017	Review EIS 102 mapped equivalent message with Scott Oakland, JPM – optional inclusion of HIN.	ASX	18 July 2017
33	6 June 2017	Provide a presentation of CHES EIS mapping to ISO 20022, and typical ISO 20022 flows to assist committee discussion of key topics (e.g. rationalisation, consolidation, descope of certain processes like allegement modify). ASX would also seek input from key members about the best process going forward.	ASX	18 July 2017
34	6 June 2017	Add the overview of transaction ids to the July meeting agenda.	ASX	18 July 2017
31	6 June 2017	Sample consolidated (EIS 138) and rationalised (EIS 138 and 134) messages published in the MyStandards community – in a separate collection "Sample Message Review". Members to review and provide further comments via MyStandards, email.	Members	22 August 2017
32	6 June 2017	For Cancel/Correct & Modify, ASX recommendation revised to only do cancel/correct for bilateral modifications (and not allow modify – removal of EIS 121). ASX to contact users of EIS 121, and action remains open until all members confirmed their agreement with the recommendation.	ASX, Members	22 August 2017
30	6 June 2017	Obtain international usage comparisons on the use of UTC time format. Members to provide input from international offices where possible.	ASX, members	22 August 2017
35	18 July 2017	ASX to publish all final draft usage guidelines in MyStandards and highlight to members those usage guidelines that need their review. SWIFT to advise if a flag is available in MyStandards to indicate particular review items.	ASX, SWIFT	22 August 2017
36	18 July 2017	Provide members with details of feature in MyStandards to affirm a comment.	ASX, SWIFT	22 August 2017
17	14 March 2017	Provide further information on party identification for issuers – UIC or BIC and proposed process.	ASX	10 October 2017
37	18 July 2017	Provide comparisons to other market implementations of transaction ids.	ASX, SWIFT	22 August 2017



No.	Meeting Date	Closed Action Items	Owner	Closed Date
38	22 Aug 2017	Review consistency of the application of UTC date, date and time, zulu format, and add item to upstream/downstream considerations log re the use of UTC for Trade Date confirmations from AMOs (with flow on impact to EIS 164 equivalent).	ASX	10 October 2017
40	22 Aug 2017	Provide list of CHES EIS messages in scope for detailed mapping during 2 nd half of 2017, including identification of descoped messages.	ASX	10 October 2017

BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 3A	
Topic	Minutes from 11 October 2017 Business Committee Meeting
Date	30 November 2017
Purpose of this paper	To provide Business Committee members with the minutes and Business Committee report to the ASX Boards from the 11 October 2017 meeting.

OVERVIEW

Draft minutes and the draft report to the Boards of ASX Clear and ASX Settlement from the 11 October 2017 Business Committee meeting were emailed to all members of the Business Committee on 30 October 2017 for comments by 6 November 2017. The Secretariat did not receive any comments from members.

The Business Committee report and minutes will be formally presented to the next meeting of the ASX Clear and ASX Settlement Boards.

ATTACHMENTS

Attachment A – Business Committee Report and Minutes from the 11 October 2017 Meeting.

Business Committee Report to the Boards of ASX Clear and ASX Settlement

Business Committee Meeting

At its 11 October 2017 meeting, the Business Committee was updated on the:

- operating performance of CHES for the September Quarter 2017;
- outcomes of this year's ASX customer survey;
- activities being undertaken to assist firm's compliance with MIFID II obligations;
- two reports required as part of CFR's regulatory expectations;
- progress of the business requirements for CHES replacement working groups;
- ASX assessment of distributed ledger technology (DLT); and
- Technical Committee's progress in mapping CHES messages to the ISO20022 standards.

KEY ISSUES DISCUSSED

The Committee discussed the processes in train for Australia to seek regulatory equivalence decisions from the European authorities in relation to certain MIFID II obligations and the work ASX is undertaking with regard to its role as the National Numbering Agency for Australia.

The Committee was provided with copies of two reports required as part of CFR's regulatory expectations. The first was an annual report on clearing and settlement service developments which highlighted the CHES replacement work. The second was the external audit report prepared by PwC on ASX's compliance with CFR's Regulatory Expectations. Discussion focused on if, and how, ASX would respond to any feedback from Business Committee members received through the audit process. ASX noted that it would be appropriate to review existing consultation processes when time allows following the upcoming decisions on CHES replacement.

The Committee was briefed on the process being undertaken by ASX to assess the capability of DLT and ASX's upcoming decision whether to use DLT as the base technology for CHES replacement.

Agreed Actions

1. ASX will contact the firms involved in the CHES replacement working groups to identify the appropriate contact to respond to the survey seeking views on the relative priority of the business requirements identified.

Minutes from the meeting are attached.

Minutes

Business Committee Meeting

Date	11 October 2017	Time	12.00pm – 2.00pm
Location	ASX Offices – Level 1, 20 Bridge Street, Sydney		

1. **Lunch served on arrival**
2. **Service Performance**
 - a. Cash Market Clearing and Settlement - Operating Performance
 - b. ASX Customer Service Survey Results
3. **Regulatory Matters**
 - a. Markets in Financial Instruments Directive (MIFID II)
 - b. Response from the Boards of ASX Clear and ASX Settlement
 - c. Annual Cash Equities Clearing and Settlement Reports
4. **CHES Replacement Project**
 - a. Business Requirements Working Groups
 - b. Technology Assessment of Digital Asset's DLT Platform
 - c. ISO 20022 Technical Committee Report and Minutes
5. **Administration**
 - a. Minutes from the 3 August 2017 Business Committee Meeting
 - b. Forward work program
 - c. Other matters

Next Meeting: 30 November 2017

Business Committee Members

Company	Name	Job Title	Apologies
ABN AMRO Clearing	Barry Parker	Chief Executive Officer	
AFMA	David Lynch	Chief Executive Officer	
ANZ	Andrew Koudrin (delegate)	Head of Execution Assurance and Middle Office	Peter Mullin
ASX	Peter Hiom	Business Committee Chair, Deputy CEO	
BAML	Rhys Cahill	Global Markets COO	
Bell Potter Securities	Dean Surkitt	Managing Director Retail	
BNP Paribas	Luc Renard	Head of Clearing & Custody	
Chi-X Australia	Mike Aikins	Chief Operating Officer	
Citi	Miles O'Connor	Director, Direct Custody & Clearing Securities & Funds Services	
CBA	Sheridan Thompson	Head of Strategic Development, CommSec	
Credit Suisse	Winston Loke	Australia Equities COO	
Deutsche Bank AG	Geoffrey Plaisted	Chief Operating Officer, Equities	
Goldman Sachs	Jeremy Follett	Executive Director Operations	
HSBC	Peter Snodgrass	Head of Direct Custody and Clearing	
J.P. Morgan	Steve Hacker(delegate)	Markets Operations	Jon Evans
Macquarie Group	James Indge	Cash Equities Business Manager	
Morgans	Daniel Spokes (delegate)	Manager, Transactional Services & Settlement	Peter Chisholm
Morgan Stanley	Craig McGuire	Head of Operations	
National Australia Bank	Greg Bowrey	GM, Self-Directed Wealth Products & Markets	
NSX	Ann Bowering	Managing Director	
Pershing Securities	Rob Forbes	Chief Executive Officer	
SAFAA	Andrew Green	Chief Executive Officer	
Sydney Stock Exchange	Tony Sacre	Chief Executive Officer	
UBS	Conor Foley	Chief Operating Officer	

ASX Management

Name	Job Title
Tim Hogben	Chief Operating Officer
Hamish Treleaven	Chief Risk Officer
Daniel Moran	Acting General Counsel
Eloise Wett	Executive General Manager, Operations
Cliff Richards	Executive General Manager, Equity Post Trade Services
Nick Wiley	Deputy General Counsel, Post-Trade
Diane Lewis	Senior Manager, Regulatory and Public Policy
Gary Hobourn	Senior Economic Analyst, Regulatory and Public Policy
Katie McDermott	General Manager, Post Trade & Issuer Services Operations
Natalie Hewitt	Legal Counsel, ASX Legal
Jane Peter	General Manager, Customer Experience

AGENDA ITEM 1: INTRODUCTION

The Chair welcomed members and delegates to the fifth meeting of the year and noted that there were a few delegates representing members who were unable to attend: Andrew Koudrin (ANZ); Steve Hackers (JP Morgan); and Daniel Spokes (Morgans).

Four members dialled in to the meeting: Dean Surkitt (Bell Potter); Winston Loke (Credit Suisse); Geoff Plaisted (Deutsche) and Daniel Spokes (Morgans).

AGENDA ITEM 2: SERVICE PERFORMANCE

a) Operating Performance Report

The ASX Executive General Manager, Operations spoke to the September quarter performance report (up to end August) noting that:

- Availability across CHES and the TAS was 100% for the period.
- ASX (+4.5%) and Chi-X (+8%) saw increases in the number of trades processed through the settlement facility compared to the June quarter, NSX (-10%) experienced a decline, while there no settlements for SSX.
- Overall trade value (on and off-market) decreased 7% to a daily average of \$6.3bn.
- Daily average cleared value fell 7% to \$4.55bn with netted value down 6% to \$1.8bn. Netting efficiency was steady at 99.94% on volume and 60% on value.
- The average daily settlement value was \$9.9 billion.
- ASX had a four trade rejections and Chi-X had none in the period.
- Failed trade rates remained very low around 0.24% for the period, down from the average fail rate of 0.33%. This equated to around 194 fails a day.
- There were two extensions to the batch settlement cut-off time during the quarter. Since the batch was moved to 11.30am the incidence of extensions has been very low, a total of three this year, generally relating to a participant technical issue.
- Daily average cash market margin was \$132m over the quarter, with a high of \$181m.
- There were no instances of delays in margin payments during the quarter.
- There were 4,500 transactions (up 35%) worth \$122m (up 18%) through the mFund service in the quarter. There are currently 182 funds on the platform across 56 fund managers with FUM of \$419m.

Members had no questions on the performance report

b) ASX Customer Service Survey Results

The General Manager Customer Experience provided members with feedback from the 3rd annual ASX customer survey conducted earlier this year.

She noted the encouraging results reflected ASX's continued focus on customer service improvement and building better relationships with customers. The results highlighted areas that have improved in the last year, in particular support from the technical account management team and the focus on assisting customers with the transition to the new futures trading platform.

There will be continued focus in these areas as well those where feedback indicated improvement was needed. For example: developing stronger relationships with customers at a strategic, whole of business level; understanding and addressing key pain points; and continuing to improve service levels, particularly online services.

She encouraged customers to reach out and provide direct feedback to her on the things that ASX is doing well and areas where we may be able to things to help them add value to their business.

In response to questions from members it was noted that ASX had received 219 responses out of a total of 2,400 online surveys sent out to individuals that had interacted with the ASX in the previous 12 months. Responses were

received from a cross-section of trading, clearing and settlement participants from both the cash equities and futures markets. Customers remain focused on ASX improving the consistency of their day-to-day interactions and the need to get quick answers to questions.

A member asked about any specific feedback on the introduction of the new trading platform, particularly given some features such as options filters have yet to be implemented. In response, it was noted that there was generally positive feedback on the implementation and that communication with customers had improved from the early days of the project. There had been some feedback around what was going to be in the next service release.

AGENDA ITEM 3: Regulatory Matters

a) Markets in Financial Instruments Directive (MIFID II)

Members were briefed by an ASX Legal Counsel and the General Manager, Post-Trade and Issuer Services Operations on ASX's activities in relation to the Markets in Financial Instruments Directive (MiFID) II and Markets in Financial Instruments Regulation (MiFIR) which come into effect on 3 January 2018.

ASX, as a non-EU trading venue and CCP, does not itself have any compliance obligations under the MiFID II legislation. However, ASX has been assisting customers in respect of their compliance obligations. These activities have been focused on providing input to assist in achieving equivalence decisions in relation to a number of obligations (share trading, derivatives trading, etc) and ASX's role as the National Numbering Agency (NNA) for Australia.

The effect of the share trading obligation is that EU investment firms will be unable to trade ASX shares (with limited exceptions) that are cross-listed on European trading venues unless ASX is recognised as an equivalent non-EU trading venue. This will apply from 3 January 2018. ASX's assessment is that just under 10% of ASX 200 listed shares are cross-listed on European trading venues.

ASIC is seeking an equivalence decision from the European Commission in relation to the share trading obligation, covering all relevant Australian trading venues. A decision is expected before the end of the year.

ASX is not aware of any significant issues that would prevent the equivalence decision being granted, but will need to wait for the actual decision. In this regard, it was noted that the equivalence assessment is not a line-by-line assessment against the entirety of the MiFID regime. It is a material equivalence test that will examine broad criteria such as the rules around effective supervision of the market, fair and orderly trading, investor protection and market integrity.

The derivative trading obligation is different in that EU investment firms will be unable to trade derivatives that are subject to the trading obligation on non-EU trading venues, unless the trading venue is recognised as an equivalent non-EU trading venue. Derivative products may only be determined to be subject to the derivative trading obligation if they are: subject to the EMIR clearing obligation; admitted to trade on at least one EU trading venue; and sufficiently liquid to trade on any EU trading venue. ESMA will publish a register of derivatives that are subject to the derivative trading obligation. ASX's assessment is that the derivative trading obligation will not apply to any ASX derivative products when MiFIR comes into force on 3 January 2018 because they're not currently subject to the EMIR clearing obligation. So there is no day one impact in the same way as there is for the share trading obligation. Nevertheless, ASIC is seeking an equivalence decision in relation to the derivative trading obligation, covering all relevant Australian trading venues, which is expected before the end of the year.

There is a second category of equivalence decisions which do not go to whether particular products can be traded by EU investment firms, but they do have the potential to make the products more commercially attractive. In particular, the MiFID II post-trade transparency regime does not apply to trades on non-EU trading venues with equivalent post-trade transparency regimes. The MiFID II commodities position limits regime does not apply to commodity derivatives traded on equivalent non-EU venues.

The application for these two equivalence decisions are made by an EU national regulator on request from an EU investment firm. The Dutch financial regulator is seeking an equivalence decision from ESMA for ASX and ASX 24, for both the post-trade transparency and commodities position limit regimes. It is expected that the application will be considered in the first tranche of applications by ESMA. These two equivalence applications are venue specific.

ASX as the NNA for Australia is supporting the Association of National Numbering Agencies (ANNA) in the provision of security identifiers required for MIFID II transaction reporting and post trade transparency obligations.

ASX is responsible for issuing International Security Identification Numbers (ISINs) for each security issued in Australia. There are also new security identifiers required, the Classification of Financial Instrument (CFI) provides additional detail on the classification of the product and the Financial Instrument Short Name (FISN) provides a standard and consistent description of the product across different venues.

For the existing cross-listed securities, ASX will create the additional identifiers and provide them to ANNA prior to 3 January 2018. ASX has also established a project to provide security identifiers for the full suite of securities we currently provide ISINs for by the end of Q1 2018.

In its role as NNA for Australia, ASX will also facilitate Australian issuers providing Legal Entity Identifiers (LEIs) on a voluntary basis to ASX to provide to ANNA. This is intended to assist issuers in connection with international reporting regimes where the issuer LEI is mandated.

A member asked about the scope of cross-listed securities that ASX will provide identifiers for prior to 3 January 2018. ASX invited Business Committee members that have assessed the cross-listed securities to be wider in scope to provide details of those securities (with the underlying rationale) for further consideration by ASX.

b) Response from the Boards of ASX Clear and ASX Settlement

The Deputy General Counsel, Post-Trade advised members that at its last meeting the ASX Clear and ASX Settlement Boards had considered and accepted the recommendation from the August Business Committee meeting on the inclusion of AMOs in the CHES Replacement Working Groups. He noted that the Board's formal response was included in the meeting papers.

Members had no questions or comments.

c) Annual Cash Equities Clearing and Settlement Reports

The Chair noted that the meeting pack for the meeting includes a clearing and settlement service developments report and a copy of the external audit on ASX's compliance with CFR's Regulatory Expectations.

The Executive General Manager Equity Post-Trade Services spoke to the services development report, identifying that the CHES replacement project had consumed a considerable amount of industry and ASX time and resources. However there had also been other service enhancements including: improvements to the process for transferring tax file numbers through CHES messages; introduction of a payment providers report; and establishing the ability to clear and settle transferrable custody receipts.

Members had no comments or questions on the clearing and settlement service developments report.

In relation to the audit report, the Senior Manager, Regulatory and Public Policy noted that ASX commissioned PwC to do the external audit of ASX's compliance with CFR's Regulatory Expectations, for the period October 2016 to June 2017. She reminded members that the Business Committee had considered the draft audit terms of reference in the May 2017 meeting.

The audit involved an assessment of documentation from ASX, including policies and procedures, as well as feedback sought by PwC from members of the Business Committee. The auditors undertook a reasonable assurance audit, which had a positive form of opinion in accordance with Australian Auditing and Accounting Standards.

PwC provided an unqualified audit opinion that found that ASX had complied in all material respects with the Regulatory Expectations. The full audit report has also been provided to the CFR regulatory agencies.

The auditors also made two recommendations around ASX appropriately documenting the annual review of Business Committee membership and putting in place separate accountability arrangements for the area responsible for the compliance framework and the area responsible for the internal assessment of ASX's compliance with the framework.

A member asked how the comments received from the Business Committee were incorporated into the audit report as he didn't see them reflected in the conclusions or in the analysis as to whether the policies are effective. He noted that the audit report indicated that the auditor would be discussing some issues raised with ASX management. Two members commented that there did not seem to be a formal channel for reporting back on ASX's response to these comments to the Business Committee.

In response, it was noted that the feedback from Business Committee members that was within the scope of the audit was tested to reach their conclusions around ASX's compliance with the relevant Regulatory Expectations. PwC also included a high level summary of the themes from the feedback received from nine members in the audit report. However, the auditors were not required to assess the operation of the Business Committee.

It was noted that ASX did not have access to all of the survey responses as some had been submitted in confidence. It was also noted that on particular issues, divergent views were provided from different respondents making it difficult to draw conclusions. ASX's Senior Manager, Regulatory and Public Policy, did indicate that ASX was willing to have bilateral meetings with interested members to discuss their feedback on the Business Committee.

The Chair confirmed that to the extent that the discussion with the auditor raised issues that should be conveyed to the relevant ASX Boards, then ASX management would do that.

ASX's Acting General Counsel noted that once the upcoming milestones on the CHES Replacement Project had been met, it might make sense to review how the Business Committee process is working, including the topics raised by members during the audit process, and considering whether changes could be made to improve the processes for getting industry input.

A member suggested that, as an example, it may be worth considering whether next year the auditor should attend the Business Committee meeting to discuss their process and conclusions.

AGENDA ITEM 4: CHES Replacement Project

a) Business Requirements Working Groups

The Executive General Manager, Equity Post-Trade Services indicated there has been continuing active engagement by working group attendees which have made the sessions very productive. The participants have said they find the process useful, particularly the sharing of information and perspectives between different stakeholder groups.

The Transfers and Conversions and the Settlement Enhancements working groups have completed their work and the overall working group process is running ahead of schedule. There are two remaining working groups: Data storage, Delivery and Reporting; and Non-Functional Requirements.

Following the last of the functional working groups ASX will be asking working group participants to assign a high, medium or low ranking to the 40-odd business requirement inputs likely to be come out of the working groups.

Many excellent business requirements have been identified but some of them may eventually sit outside of Day 1 CHES replacement, as they will require significant industry and/or regulatory consultation before being progressed.

The themes coming out of the transfers and conversions groups were: the significant appetite for the standardisation of formats and structure of information and the elimination of, or significant reduction in, paperwork in the process and replacing it with standardised electronic notifications.

The settlement enhancements working group highlighted: customer demand for a single point of access to view the issuer sub-register to identify SRNs associated holdings; and facilitating the option to elect for early settlement. Although it was acknowledged that different groups place different priorities from some of these enhancements.

The Chair referred members to significant detail in the meeting pack on each of the business requirements. He suggested that this material will assist members to prepare for the November Business Committee meeting where the relative priorities of the business requirements will be discussed.

The Executive General Manager Post-Trade Services advised the Committee that an electronic survey will be sent out to working group participants to get their feedback on the relative priorities. This prompted a discussion about who might be the appropriate people within firms to receive the survey and whether there were benefits in having a single person coordinate the response for each firm.

The Chair committed to ASX communicating with all the organisations who took part in, or expressed interest in attending, any of the working groups so they could nominate the appropriate person within their organisation.

He emphasised that while the survey is an important input, ASX will take into consideration a broad set of stakeholder views before it determines the final Day 1 functionality for CHES replacement.

A member asked about how the prioritisation process would operate for functional requirements that can deliver benefits outside of CHES replacement. As an example, it was noted that for issues which are likely to be classified as a high priority, such as corporate action STP, these would be de-coupled from CHES replacement and pursued separately.

b) Technology Assessment of Digital Asset's DLT Platform

The Executive General Manager, Equity Post-Trade Services addressed the process that ASX has been undertaking to assess distributed ledger technology (DLT). He noted the process fits within ASX's normal governance framework for assessing technology projects and follows best-practice used to make decisions on the choice of technology and vendor.

There is a schedule of 12 software deliveries for this year. So far there have been nine high quality software releases with very low defect levels, with those resolved within the service level agreements agreed with the vendor.

To date the focus of the software deliveries has been the functional requirements around: trade registration; pre-settlement activities; the creation of securities, participants and other users in the system; and executing workflows associated with DVP settlement and selected corporate actions (rights issues and dividend payments). Modelling those two corporate actions allows an assessment of the system's ability to handle examples of complex workflows (rights issues) and high frequency events (dividend payments).

The focus will shift in the next couple of months to the non-functional assessment of that software. It is important to test, in a production-like environment, how the system performs under heavy transaction volumes and executing complex real-life transactions. For example, assuming double the volumes of the busiest day ever experienced on the market and assessing if the system performs better, or at least as well, as the existing CHES system

The resilience of the system also needs to be tested. For example, how the system is recovered following a component failure and if that can be achieved without interrupting system performance or if the system can be recovered quickly and efficiently. Another scenario to be tested relates to if there is a critical site outage how long does the system take to failover and failback and does it do so efficiently. It was noted that such tests would be conducted regardless of the technology being used.

In terms of DLT specific testing, ASX has commissioned two reviews by external experts of the cybersecurity and privacy features of the cryptography that underpins the distributed ledger component of the technology. Once the reviews have been completed, ASX will present the Business Committee with the high level outcomes.

A member asked series of questions regarding the DLT assessment process including whether the:

- replacement system will be cheaper to run than CHESSE system; if ASX is commissioning a third-party assessment of those costs; and how ASX is managing any conflicts of interest given their investment in the vendor, Digital Asset?
- non-functional working group will examine system capacity, resilience, and the structure of the DLT solution?
- representatives of the third-party reviewers of the security aspects of the technology would present to the next Business committee meeting?

The Chair noted that ASX would be assessing the costs of CHESSE replacement and had no plans to conduct a third-party assessment of those. The Executive General Manager Equity Post-Services stated that the investment in Digital Asset did not raise any conflict of interest issues. It was also confirmed that the two external reviewers of the security aspect of the DLT assessment would not be available for the next Business Committee meeting.

The Executive General Manager Equity Post-Trade Services noted that the non-functional working group would focus on the feedback raised in response to the earlier consultation processes, including system resilience. However, if there are other items that participants want included they should let ASX know, recognising that the workshops are designed to identify problem statements.

He explained that, for security reasons, if ASX proceeds with a DLT-based solution, participants that connect through a node would not have a (encrypted) copy of the entire database that exists within ASX. However they would have access to a copy of information relevant to their customer transactions. That is, effectively the same situation that a participant would find itself under existing CHESSE arrangements. The DLT distribution model would not be discussed at the non-functional working group as that would presuppose a positive decision on DLT.

c) ISO 20022 Technical Committee Report

The ASX Chief Operating Officer noted the high levels of engagement by members of the technical committee with around 60 to 80 people participating in each meeting. The input of participants has been important in what is a highly complex area and will be critical in reaching a solution of benefit to the industry.

The Committee is now focused on mapping the second tranche of messages. The first tranche focused on mapping 133 CHESSE messages to an ISO standard and the committee is now working on the balance of the CHESSE messages. The work is proceeding at a rapid pace, about 30 messages a fortnight, in consultation with SWIFT.

The Committee is focused on matters such as: transaction IDs; timestamps; delivery of reporting; settlement instructions; layers of identification needed on settlement messages; use of supplementary data; etc.

The mapping work remains on track to be completed by the end of February 2018. The business requirement inputs coming out of the working groups will also need to be factored in to the mapping exercise at the appropriate time.

The technical committee met on 10 October and endorsed ASX participating in a global ISO standards securities evaluation group. Both SWIFT, the ISO registration authority, and Standards Australia have endorsed ASX's participation.

It is important that Australia has a seat at the ISO standards table to enable us to have an input to decisions that are made around securities transaction services. It will provide a voice for Australia in the decisions that will shape any changes to global ISO 20022 schemas or fields in the messaging structures that will impose costs on industry.

ASX has undertaken to advise the technical committee and the broader industry of the proposed governance arrangements to capture industry views prior to our attendance at those meetings and to advise industry of the outcomes of those discussions. This will be discussed at the November technical committee meeting.

A member asked about the estimated 10 per cent of CHESSE messages which don't map neatly to ISO messages and how these would be handled. In response, it was noted that 10 new messages developed so far don't fit into an ISO standard or current schema. These messages are currently being reviewed and the intention is to test them with the

technical committee. At that point we will make a decision, based in-part on advice from SWIFT, on whether to seek registration with the ISO authority given the rigorous process and an assessment of the probability of success.

AGENDA ITEM 5: Administration

a) Forward work program updated

The Chair noted that there would be more focus on the forward work program for 2018 at the next meeting particularly given the focus for CHES replacement will shift to implementation during the period. Progressing Corporate Action STP Phase 2 is one area that has already been identified. He also reminded members to advise ASX if they had any additional items to suggest for the work program.

b) Minutes from the 3 August 2017 meeting

The minutes of the 3 August meeting were approved without change.

c) Other matters

The Chair noted that the 3 August Business Committee minutes would be placed on the ASX website and the FY17 Management Accounts have already gone up on the website.

Next meeting

The next meeting is scheduled to be held on Thursday 30th November 2017.

The meeting closed at 1.40pm.

Signed as a correct record of the meeting.

Chairman

Date

BUSINESS COMMITTEE MEETING PAPER AGENDA ITEM 3B	
Topic	Forward Work Program
Date	30 November 2017
Purpose of this paper	To update Members on the forward work program of the Business Committee for 2018.

OVERVIEW

Subject to input from members who wish to add additional items, the forward work program of the Business Committee for calendar year 2018 will be focused on CHES replacement.

Assuming that ASX makes a positive decision relating to DLT, the meeting in late March will focus on the Day 1 business requirements for CHES replacement and, importantly, the transition arrangements to the new platform. This will draw on the wide range of stakeholder feedback already received and what can feasibly be delivered on Day 1. At that meeting, ASX will identify other business requirements which it proposes to implement later to enable either further detailed consultation and/or where those requirements require regulatory rule changes. A final consultation on the business requirements will commence around the end of March 2018.

A second major stream of work will be Corporate Action STP Phase 2. As discussed at the August Business Committee meeting, a working group drawing on a range of stakeholders will commence work in early 2018 and the project would run for around 18-24 months.

By the March meeting, when there is more certainty on the technology decision and the business requirements, ASX will be better placed to propose a forward work program around CHES replacement implementation.

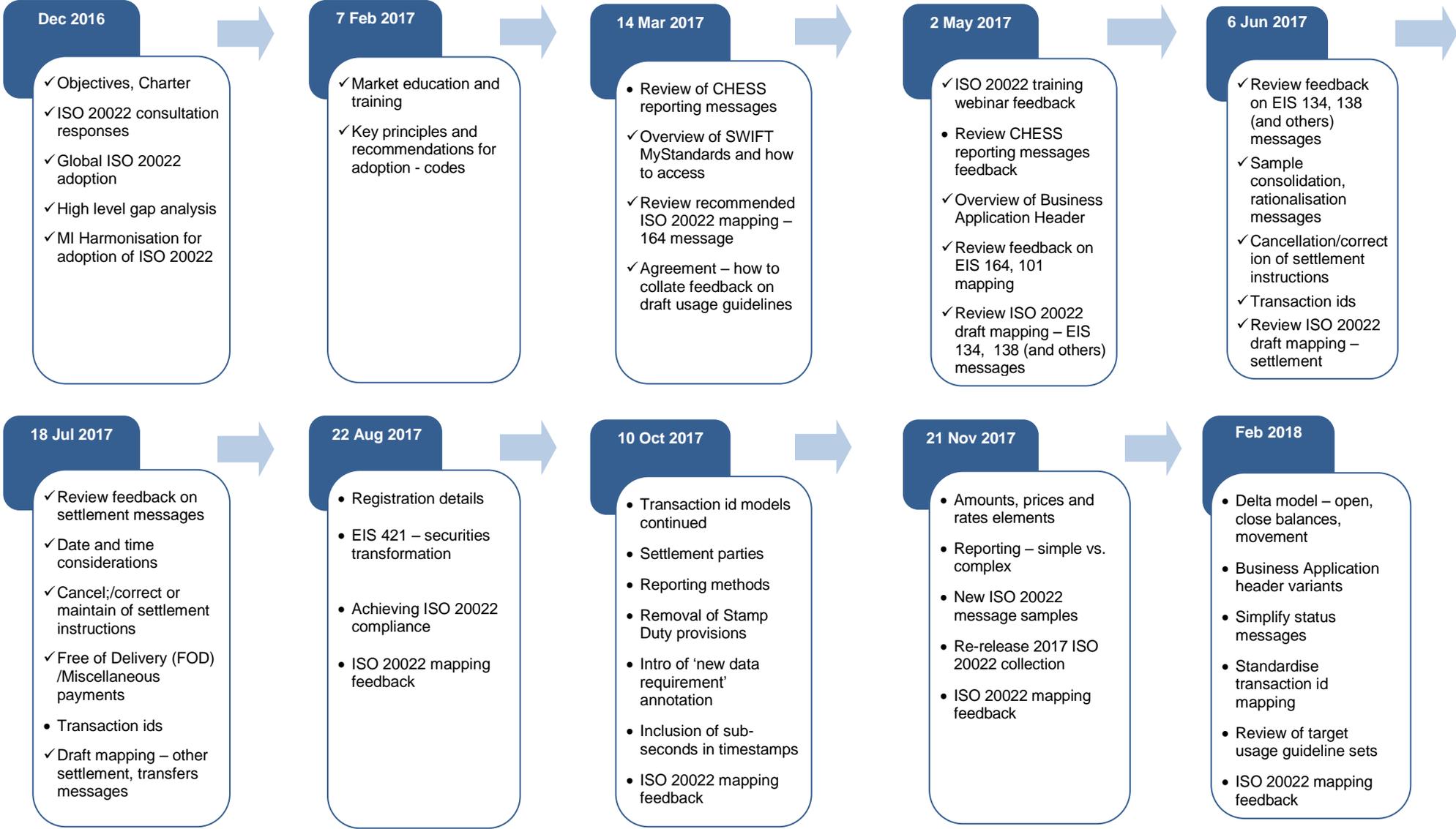
Attachment A outlines the proposed forward work program for the Technical Committee on CHES Messaging and ISO 20022 for 2018, to be discussed at the Technical Committee meeting on 21 November 2017. The scope and timeline for the ISO 20022 Technical Committee work is also subject to change, pending further definition of the Day 1 business requirements for CHES replacement.

Members of the Business Committee are invited to suggest any topics for inclusion in the forward work program for 2018. Business Committee Members are able to suggest additional items for the forward work program at any time by contacting the Business Committee Secretariat.

ATTACHMENTS

Attachment A: Technical Committee on CHES Messaging and ISO 20022 Proposed Forward Work Program

Attachment B: Technical Committee on ISO 2022 Forward Work Plan (matters for consideration @ 16 November 2017)



Note: Items with a 'tick' have been discussed and all actions have been completed. Items from previous meetings that do not have a 'tick' have been discussed, but there are outstanding actions. The Forward Work Program is an evolving document and is presented above as at November 2017.