

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

Business Committee Meeting

At its 29 November 2018 meeting, the Business Committee was updated on:

- the operating performance of CHESSE for the December Quarter 2018 to date;
- ASX's technology governance and operational risk management ;
- the CHESSE replacement and Corporate Action STP Phase 2 projects; and
- the ISO 20022 Technical Committee's progress in developing the new message standards.

KEY ISSUES DISCUSSED

At a member's request, the Committee was updated on the work being undertaken under the *Building Stronger Foundations* program to enhance ASX's technology governance and operational risk management process. The Committee was also provided with an overview of the major technology projects underway to accelerate the replacement or upgrading of existing infrastructure.

The Committee was briefed on the progress with the CHESSE replacement project leading up to the first release of technical documentation due in mid-December as well as the extensive stakeholder engagement program for 2019 to assist ASX with designing the new features of the replacement system and to commence migration and implementation planning. There were questions from members on the precise timing of both documentation release and pricing features of the new system.

The Committee was also updated on the current work and stakeholder engagement being undertaken in relation to the Corporate Action STP Phase 2 project.

Agreed Actions

None

Minutes

Business Committee Meeting

Date	29 November 2018	Time	4:00pm – 6:00pm
Location	ASX Offices – Level 1, 20 Bridge Street, Sydney		

1. Service Performance

- a) Cash Market Clearing and Settlement - Operating Performance
- b) ASX Technology Governance and Operational Risk Management

2. CHES Replacement Project

- a) CHES Replacement
 - Software development update
 - Customer engagement activities
- b) Update on Corporate Action STP Phase 2
- c) Report on the Sydney meeting of the Securities Market Practice Group
- d) ISO 20022 Technical Committee Report and Minutes
Members will receive reports from the September, October & November meetings.

3. Administration

- a) Minutes from the 28 September 2018 Business Committee Meeting
- b) Forward work program
- c) Other matters

4. Next Meeting - 4 April 2019

5. End of Year Drinks

Business Committee Members are invited to stay for end-of-year drinks to thank members for participating throughout 2018.

Business Committee Members

Company	Name	Job Title	Apologies
ABN AMRO Clearing	Matt McMahon (Delegate)	Head of Operations	Barry Parker
ACSA	Rob Brown	Chief Executive Officer	
AFMA	David Lynch	Chief Executive Officer	
ASX	Tim Hogben (Delegate)	Business Committee Chair, Chief Operating Officer	Peter Hiom
Bank of America Merrill Lynch	Rhys Cahill	Global Markets COO	
Bell Potter Securities	Rodd Kingham	Head of Operations – Transformation	
BNP Paribas	Mark Wootton	Head of Custody Product Australia & New Zealand	
Chi-X Australia	Mike Aikins	Chief Operating Officer	
Citi	Miles O'Connor	Director, Direct Custody & Clearing Securities & Funds Services	
CMC Markets	Andrew Rogers	Director of Broking Business	
Commonwealth Bank of Australia	Sheridan Thompson	Head of Strategic Development, CommSec	
Credit Suisse	Winston Loke	Australia Equities COO	Winston Loke
Deutsche Bank AG	Geoffrey Plaisted	Chief Operating Officer, Equities	
Goldman Sachs	Yen Le	Executive Director	
HSBC	Peter Snodgrass	Head of Direct Custody and Clearing	
J.P. Morgan	Jonathan Evans	Head of Custody and Markets Operations	
Macquarie Group	James Indge	Cash Equities Business Manager	
Morgan Stanley	Craig McGuire	Head of Operations	
Morgans	Peter Chisholm	Manager, Transactional Services & Settlement Systems	
National Australia Bank	Greg Bowrey	General Manager, Self-Directed Wealth Products & Markets	
NSX	Ann Bowering	Managing Director	
Pershing Securities	Leigh Conder	Chief Operating Officer	
Stockbrokers and Financial Advisers Assoc	Andrew Green	Chief Executive Officer	
Sydney Stock Exchange	Antony Tolfts	Listings Director	
UBS	Conor Foley	Chief Operating Officer	

ASX Management

Name	Job Title
Daniel Moran	General Counsel
Hamish Treleaven	Chief Risk Officer
Eloise Wett	Executive General Manager, Operations
Cliff Richards	Executive General Manager, Equity Post Trade Services
Dan Chesterman	Chief Information Officer
Sally Palmer	Deputy General Counsel
Katie McDermott	General Manager, Equity Post Trade Services
Gary Hobourn	Senior Economic Analyst, Regulatory and Public Policy
Karen Webb	Senior Manager, Equity Post Trade Services
Keith Purdie	Senior Manager, Equity Post Trade Services

INTRODUCTION

The Acting Chair welcomed members and delegates to the fourth and final meeting of the year, noting that Peter Hiom was an apology for this meeting.

He welcomed a new member, CMC Markets, to the Business Committee replacing ANZ following the transfer of the equity market business, indicating that Andrew Rogers would be attending as their nominated representative. The Chair noted Winston Loke (Credit Suisse) was an apology and ABN AMRO Clearing had nominated a delegate, Matt McMahon, to attend on behalf of Barry Parker.

The Chair advised the Committee that Dan Chesterman, ASX's Chief Information Officer, will be attending Business Committee meetings going forward to bring a technology focus as CHES replacement moves into the implementation phase.

Four members dialled in to the meeting: Rhys Cahill (BAML), Peter Snodgrass (HSBC), Peter Chisholm (Morgans) and Matt McMahon (ABN AMRO Clearing).

AGENDA ITEM 1: SERVICE PERFORMANCE

a) Operating Performance Report

The ASX Executive General Manager, Operations noted that there was one extension to CHES batch settlement during October in response to a customer's technical issue. She noted that clearing and settlement metrics in October were generally in line with the previous quarter.

The Chair noted that the National Stock Exchange (NSX) and ASX have been doing a lot of work together on NSX's application to join the Trade Acceptance Service for the clearing and settlement of their listed securities. The process is well advanced and he thanked NSX for their engagement. The Chair also noted that ASX Clear has commenced clearing and settlement of Chi-X's Un-sponsored Depositary Receipt product [TraCRs].

b) ASX Technology Governance and Operational Risk Management

The Chair thanked a committee member for suggesting that ASX's technology governance and operational risk management practices be added to the agenda for this meeting given its importance.

ASX's Chief Risk Officer noted that ASX has important regulatory obligations relating to its licences to operate critical market infrastructure and the reliability of these services is also an important value proposition for our business. ASX has been undertaking a significant body of work over the past two years around reviewing and, where necessary, enhancing, risk management practices and outcomes but he noted that the work is not yet complete.

He outlined that ASX's Vision Strategy and Execution (VSE) framework includes a strategic pillar around enduring trust, integrity and resilience including in areas such as technology and operations.

ASX has undertaken a range of initiatives that are focused on reducing inherent risk levels. These include replacing and contemporising ASX's infrastructure and applications through replacing aging, albeit well-performing infrastructure and contemporising other infrastructure. The largest example of this being CHES replacement.

ASX is also introducing a range of new management tools and updating some of our business practices to reduce risk back to target levels. In the second half of 2016, the ASX board and senior management instituted some changes to organisational structure and personnel to bring all the technology and operations functions under the Chief Operating Officer.

The following year ASX refreshed its strategies and developed improvement plans around enterprise risk and technology. These were subsequently reviewed and validated by an external professional services firm. The external appraisal was also something that ASX's regulatory agencies, ASIC and the RBA, had requested following the ASX Trade outage in September 2016.

With regards to operational risk ASX has: reviewed its Risk Appetite Statement; refreshed the key risk indicators; and is currently implementing a new governance, risk and compliance (GRC) tool to assist in monitoring and managing

risks. In addition, the three lines of defence risk management organisational structure around roles, responsibilities, accountabilities and consequences is currently being rolled out across ASX.

From a technology governance perspective, the focus is on how ASX arranges its technology resources and ensures clarity around staff roles and responsibilities.

The body of work around implementing enhanced policies, processes, and tools is just over half completed and the rollout will be finalised by the end of 2019.

ASX's Chief Information Officer outlined some of the key technology initiatives, outside of CHES replacement, where infrastructure is being replaced to reduce inherent risk. This includes the replacement of ASX's internal data storage and transport system (Core); consolidating six customer networks onto a single platform; and the relocation of ASX's secondary data centre. These initiatives, when combined with earlier technology upgrades, will represent a significant renewal of ASX's infrastructure.

In addition there are initiatives to strengthen ASX's technology risk management function, including hiring additional staff and enhancing service management practices and processes around responding to incidents and supporting new technology releases.

Members had no questions on ASX's technology governance and operational risk management practices.

AGENDA ITEM 2: CHES REPLACEMENT PROJECT

a) CHES Replacement

ASX's General Manager of Equity Post-Trade indicated that the project remains on track, with weekly drops of code from ASX's software partner Digital Asset being tested and any defects being quickly remediated.

The technical documentation to support the first drop of code will be released in mid-December, four months prior to the code being made available in the customer development environment (CDE). ASX is also actively working to finalise and publish the pricing framework for access and connectivity and hopes to be in a position to do so as soon as possible.

She noted that the Hong Kong Stock Exchange recently announced that they would be using DLT and partnering with Digital Asset for the settlement of their Stock Connect service with mainland China.

The Senior Manager Equity Post-Trade Services updated members on recent stakeholder activities and the forward plan for 2019.

The Connectivity and Integration Working Group was convened, commencing with webinars in the first half of October. The first webinar provided information to a wide audience regarding the different connectivity options and allowed ASX to respond to some of the more common questions received through the recent consultation paper. A second webinar, held two weeks later, involving clearing, and settlement participants and their software vendors drilled down into more detail on the direct integration connectivity option, including the key features of taking a node, the ledger API, and data streaming.

Then two classroom style meetings of the Connectivity and Integration Working Group were held to foster a more collaborative and interactive environment. The first drilled down on more details for the Advanced Message Queuing Protocol (AMQP) option, including how to connect and get started. The second focussed on digital messaging using SWIFTNet including an overview of messaging, the components of user connectivity, how to connect to the CDE and some complimentary tools and resources.

There have also been three focus group meetings to date. The focus groups consider solution design for the new features for CHES replacement prior to ASX releasing the technical documentation.

The first focus group discussed the different structure for holder registration, including how ISO 20022 standards differ between accounts and holders. There was a robust discussion of the impact of the new business requirements: additional investor information, data capture and storage (e.g. ABN, TFN, LEIs, bank account details) and the

electronic provision of holding statements. ASX asked attendees to respond to some questions to allow further consideration of some matters raised during the meeting. Subsequent feedback received to date has been generally very supportive, but the closing date for responses is 30 November.

The second focus group examined demand transfers and settlement instructions including bilateral and unilateral demand settlement instructions. The discussion focused on supplementary references to support matching, that ASX was contemplating changing how tolerances work (cash value of bilaterals), and broker sponsored locking of demand transfers and settlement instructions. Attendees were asked to consider a series of follow-up questions and ASX is currently digesting the feedback received.

The third focus group was held with payment providers to seek input on the real-time payment options (RTGS and NPP), the decommissioning of some EIS CHES messages, and connectivity options. ASX has been meeting with the payment providers every six months as part of the Equity Settlement Payment Providers Sub-Committee (ESPPSC) but the frequency of this engagement will be increased to at least quarterly.

He then outlined the forward work plan for stakeholder engagement:

- A third Connectivity and Integration Working Group meeting for CS participants and vendors scheduled for early December on direct integration and nodes to step through the fundamentals of a node, the ledger API, key considerations for different connectivity options and some example use cases.
- A webinar on the technical documentation release in mid-December covering: functional specifications and message requirements (i.e. a user guide, technical manual and a mapping guide between the ISO 20022 and the CHES EIS messages); technical details on connectivity options; testing environments; and release notes that will accompany every tranche of technical documentation. There will also be a one-stop shop released around the same time to host all CHES replacement technical documentation through an online confluence website.
- A series of other working group meetings will occur throughout 2019, around every 4-6 weeks with webinars to cover issues where there is broad interest. The use of webinars could be expanded if stakeholders find the classroom style meetings too limiting, although the more interactive format allows for more two-way discussion. ASX is interested in any feedback members have on the structure of the working groups going forward.
- Technical documentation for each software drop will be provided at least 3 months prior to the code becoming available in the CDE and ASX will provide a six month forward rolling view of upcoming code releases.
- Implementation and Transition Working Groups will kick off in the first quarter of 2019 covering the migration plan, the strategy for a successful cutover, key milestones, tools to facilitate migration, and accreditation testing. The group is likely to meet at least monthly, but the precise frequency will be set to support the project timeline.
- Focus groups will recommence in January. The first will be with AMOs (on trade registration) followed by one on transfers and conversions in February and then with payment providers in March. The plan is that these groups will continue throughout 2019 meeting once a month.
- ASX has offered to hold bilateral meetings with software vendors, in addition to their attending working groups.
- The Corporate Actions, STP working group has commenced work and will continue into 2019.
- The frequency of ISO 20022 Technical Committee meetings will increase from every six weeks to monthly and there will four Business Committee meetings next year.
- There will continue to be bilateral meetings with stakeholders (where necessary) as well as separate engagement plans for groups such as issuers.

The Chair noted that this represents a substantial program of stakeholder engagement and acknowledged that ASX recognises the importance of providing sufficient information to enable forward planning as this intensive consultation places significant resource demands on firms in addition to the other projects they are working on.

A member asked about the expected timing of the release of the first tranche of technical documentation and information on pricing. It was noted that the document release was expected to occur as soon as practicable after the webinar on 12 December and ASX is working to release something on pricing well in advance of the original April 2019 timeline.

Another member noted that most participants are currently in a holding pattern waiting for information on pricing and technical documentation and questioned whether ASX thought this may impact on the planned project timelines.

In response, the Executive General Manager, Equity Post-Trade Services noted that ASX is working on the pricing framework for the connectivity options for the new system. The first option is via ISO 20022 XML messages over SWIFTNet or AMQP and the second is direct integration through taking a node as a managed service. There will be a no charge for any of the access options in the development and testing environments, so participants can choose one or all, if they wanted, and there'll be no charge for taking those up to go live. In addition, he indicated that the choice of connectivity will not affect the price for clearing or settlement services.

b) Update on Corporate Action STP Phase 2

The Senior Manager Equity Post-Trade Services updated members on the work ASX has been doing to progress the Corporate Action STP Phase 2 project and the associated engagement activities.

ASX has established a project team comprising ASX staff, consultants and vendor representatives which is working closely alongside the CHES replacement team. Technical environments have been established based on the current technical solution for corporate actions which remains fit for purpose, although a number of system upgrades have been identified that will be executed during the project to deliver contemporary infrastructure.

The project team has started work on the detailed specifications to deliver on the high-level business requirements identified earlier in the year. Some enhancements to events that are already in production (e.g. dividends) have been prioritised, including upgrading them to the latest version of ISO 20022 and identifying any changes (including any data changes) that need to be made.

The team has also commenced investigation of the corporate action events that will be included in phase two to understand those events in more detail, their processes and associated data, to enable business requirements to be defined and solutions developed. The first aspect to be examined will be capital raising or capital change events, which are currently described in an Appendix 3B to the listing rules. These are one of the most common announcements to market, numbering about 10,000 a year.

With regards to stakeholder engagement, the first meeting of the Corporate Actions STP Phase 2 Industry Working Group was held on 15 October. There are currently around 20 members, including clearing and settlement participants, some vendors, share registries, AMOs and issuer representative associations (over time more individual issuers will be added). The first meeting covered the project scope and objectives, an overview of the current technical solution and the expected timeline.

ASX recently released a consultation paper on listing rule changes which touches on quite a few of the deliverables of the corporate actions project, including those specifically related to corporate action announcements and some of the activities identified through the earlier CHES replacement working groups. At the next meeting (6 December) the working group will discuss that consultation paper in more detail, specifically how those changes relate to the phase one change event work that ASX is currently undertaking. Submissions to this consultation closes on 1 March 2019.

It is anticipated that the working group will meet every 1-2 months going forward. In addition to the current listing rule consultation it is anticipated there will be a subsequent public consultation on the second phase events. This means the project will likely be delivered through two distinct phases.

A member asked if ASX was comfortable with the extent of industry representation in the working group. In response it was noted that ASX will be working to achieve greater direct issuer engagement given the success of the project is reliant on issuers being comfortable adopting the new process. This includes working with industry associations such as the Governance Institute of Australia and the Australasian Investor Relations Association to get their assistance to reach out to issuers.

c) Report on the Sydney meeting of the Securities Market Practice Group

The Senior Manager Equity Post-Trade Services provided members with a report on the recent meetings of the Asia Pacific and Global Securities Market Practice Group that ASX hosted around the SIBOS conference. The group

comprises experts from many different countries and exchange views on how international standards are being adopted in different markets. The group usually convenes monthly by phone but also arranges face to face meetings in the margins of significant global events.

There were over 30 organisations (45 representatives) from 19 countries represented at the Sydney meetings. It provided an opportunity for international visitors to get to know more about our market and our region as well as discussing current global initiatives. Discussion typically focuses on detailed matters around securities settlement and reconciliation as well as corporate actions.

The meetings also provided a good opportunity to promote the Australian equity market's adoption of ISO 20022 and to help other representatives understand the nuances of our market and to indicate where we will be seeking new messages to be added to the global standard to support some unique Australian features.

The discussions highlighted the significant global regulatory change and innovation programs that are being progressed, particularly by market infrastructures. It also identified: the growing adoption of global standards (particularly ISO 20022); the changing technology around API and data; and the increased work (proof of concepts and projects) in DLT. There was a lot of interest in Australia's leading position in DLT and ASX (and Digital Asset) conducted a number of demonstrations of the technology that will underpin CHES replacement.

d) ISO 20022 Technical Committee Report and Minutes

The Chair spoke to the recent activities of the ISO 20022 Technical Committee. He highlighted that the ISO 20022 work being undertaken in Europe for the T2S settlement platform is being leveraged by Australia where possible to support our own initiatives.

A readiness portal for customer testing of ISO 20022 messages will complement the technical documentation being released in mid-December to assist developers. The alignment of the messaging protocol to the CHES technology build and the code drops is important and ASX will coordinate processes so that the business and the technical side of participants and their vendors are all looking at a similar message schema at any given point in time.

A member asked if ASX has received any feedback that the amount of work required to map existing CHES messages to the new ISO 20022 standard has been greater than originally anticipated.

The Chair responded that there has been a lot of positive feedback on the simplicity of the ISO standard and the ability to consolidate the number of messages used in our market place to a much smaller set. However, the challenge has been to translate some of the Australian market's existing bespoke messages and data to the global ISO standard. This involves balancing the views of those who favour a pure global standard with those who want to retain the benefits that have been delivered from more customised message schemas. The approach taken to date is to have messages that are as close as possible to the global standard because otherwise it introduces complexity for those who are looking to do business in our market.

ASX hasn't received feedback to date that this is going to involve a lot more work. A survey of Technical Committee members a couple of months ago found that members thought they have been receiving sufficient information. However, it is possible that that this view could change as developers and users increasingly start to build to the new ISO messages.

AGENDA ITEM 3: Administration

a) Minutes from the 28 September 2018 Business Committee Meeting

The minutes of the 28 September 2018 meeting were approved without further change.

b) Forward work program and BC Meeting dates for 2018

The Chair noted that the forward work program focuses heavily on CHES replacement and the corporate actions project but members were encouraged to suggest any other agenda items.

The next Business Committee meeting is scheduled for 4 April, with three other meetings pencilled in for July, September and November.

c) Other matters

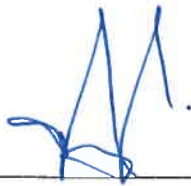
There were no other matters raised by members.

Next meeting

The next meeting is scheduled on 4 April 2019.

The meeting closed at 5.20pm.

Signed as a correct record of the meeting.

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

Chair

15 APRIL 2019.

Date