

Agenda

Business Committee

Dat	7 December 2022	Time	4:00pm- 6:00pm	
Loc	ASX offices – Level 1, 20 Bridge Street, Sydney/MS Teams			
1.	Minutes and Actions		4:00pm- 4:20pm	
	a) Minutes from the 5 October 2022 Business Comr	nittee Meeting		
	b) Open actions			
2.	Service Performance		4:20pm- 4:30pm	
	a) Cash Market Clearing and Settlement - Operating	Performance		
3.	CHESS Replacement		4:30pm- 5:30pm	
	a) Accenture's independent review			
	b) ASX's perspective on Accenture's findings and nex	t steps		
	c) Assurance program update			
4.	Maintaining the stability of existing CHESS		5.30pm- 5.45pm	
5.	Other Matters		5:45pm- 6.00pm	
	a) Forward work program			
	b) AOB			
	c) Next meeting – 22 March 2023			

End of Year Drinks

Business Committee members are invited to stay for drinks to thank members for their participation throughout 2022.

Action Items*

*For historical action items please refer to archived minutes here.

Item number#	Action	Due date	Status	Owner
2021 Oct (1)	GIA to share their insights and experiences from their recent data migration and cutover activities as potential learnings for the CHESS replacement project	Dec 2021	Completed	GIA
2021 Dec (1)	ASX to follow up bilaterally with Chi-X on the planning and timeframe to manage any potential industry impacts with Chi-X's planned move to the Cboe platform prior to CHESS replacement go-live	April 2022	Completed	ASX
2021 Dec (2)	ASX to table contingency planning for CHESS replacement for discussion at a future business committee meeting	July 2022	Completed	ASX
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2021 Dec (4)	ASX to include T+1 in the forward work program for further discussion; in the interim any member feedback on the materials presented would be welcomed	April 2022	Completed	ASX & BC Members
2022 Apr (1)	ASX to consider forums in which non-cash equity conversations can be undertaken, including Austraclear and recent issues and challenges for market repo transactions	July 2022	Completed	ASX
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2022 Oct (2)	ASX to consider publishing a policy regarding treatment of ETO expiry on a closure day (e.g. late announced public holiday, core technology outage etc)	Dec 2022	Open	ASX
2022 Oct (3)	ASX to discuss with ASIC demands on the industry, in the context of the potential concurrency of consultation on ASIC Report 708 and CHESS replacement	Dec 2022	Open	ASX
2022 Oct (4)	ASX to review the wording in its Clearing and Settlement Fee Schedule describing the discount available	Dec 2022	Open	ASX



Business Committee Members

Company	Name	Job Title	Apologies
ABN AMRO CLEARING	Barry Parker	Chief Executive Officer	
AFMA	Damian Jeffree	Senior Director of Policy	
ASX	Val Mathews	Business Committee Chair and Chief Customer and Operating Officer	
ASX	Jamie Crank	Acting Co-Group Executive, Markets and General Manager, Trading	
AIRA	Ian Matheson	Chief Executive Officer	
ACSA	David Travers	Chief Executive Officer	
ASA	Fiona Balzer	Policy & Advocacy Manager	
AUSIEX	Patrick Salis	Chief Executive Officer	
BANK OF AMERICA	Stephen Hacker	Director, Head of Operations	
BELL POTTER SECURITIES	Robert Tesoriero	Settlements Manager	
BNP PARIBAS	Mark Wootton	Head of Custody Product Aust & NZ	
BOARDROOM	Martin Jones	General Manager Corporate Governance & Director	
CBOE	Mike Aikins	Chief Operating Officer, APAC	
CITI	Christopher Moore	Manager – Direct Custody & Clearing	
CMC	Andrew Rogers	Director of Broking Business	
COMMSEC	Sheridan Thompson	Head of Industry Engagement & Process Improvement	
COMPUTERSHARE	Scott Hudson	General Manager – Market Liaison	
CREDIT SUISSE	Winston Loke	Australian Equities COO	
FINCLEAR SERVICES	David Ferrall	Founder, Managing Director & CEO	
GOLDMAN SACHS	Yen Le	Executive Director	
GIA	Megan Motto	Chief Executive Officer	
HSBC	Toni Icevski	Head of Client Services, Securities Services	
J.P. MORGAN	Jonathan Evans	Head of Custody & Markets Operations	
LINK MARKET SERVICES	Peter Jackson	Chief Operating Officer	
MACQUARIE GROUP	James Indge	Cash Equities Business Manager	
MORGAN STANLEY	*Carrie Barrack	Country Business Manager (Australia)	Rebecca Hill, Chief Operating Officer
MORGANS	Daniel Spokes	Director, Client Support Services	
NAB	Anita Mead	Head of Business Management, Self- Directed Wealth	
NSX	Chan Arambewela	Chief Operating Officer	
SIAA	Judith Fox	Chief Executive Officer	
SYDNEY STOCK	Steven Larkins	General Manager, SSX Market	
EXCHANGE		Operations	

^{*} Delegate



ASX Management

Name	Job Title	Apologies
Tim Hogben	Group Executive, Securities and Payments	
Hamish Treleaven	Chief Risk Officer	
Dan Chesterman	Group Executive, Technology and Data, and CIO	
Tim Whiteley	Project Director, CHESS Solution Design	
Sally Palmer	Deputy General Counsel	
Katie McDermott	General Manager, Equity Post Trade, Securities and Payments	
Diane Lewis	General Manager, Head of Regulatory Affairs	
Andrew Jones	General Manager, Issuer Services, Securities and Payments	
Suzy Munro	General Manager, Securities and Payments Operations	
Sabra Mott	General Manager, Securities and Payments Technology	
Karen Webb	Senior Manager, Issuer Services, Securities and Payments	
Keith Purdie	Senior Manager, Equity Post Trade, Securities and Payments	

Observers

Name	Job Title Apologies	
Nathan Bourne	Nathan Bourne Senior Executive Leader, Market Infrastructure (ASIC)	
Dodie Green Senior Manager, Market Infrastructure (ASIC)		
Andia Petropoulos Senior Analyst, Market Infrastructure (ASIC)		
Kylie Stewart	Senior Manager, Financial Market Infrastructure, Domestic and Payments (RBA)	
Stephanie Bolt	Manager, Financial Market Infrastructure, Domestic and Payments (RBA)	

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

Business Committee Meeting

At its 5 October 2022 meeting, the Business Committee was updated on:

- the operating performance of CHESS for the September quarter 2022
- the CHESS replacement project, including updates on project progress, the independent review by Accenture and the assurance program
- the external audit of ASX's compliance with the regulatory expectations, and ASX's annual report on Cash Equity Clearing and Settlement service developments
- an update on issuer services enhancements.

KEY ISSUES DISCUSSED

Members were briefed on the public holiday on 22 September to commemorate Her Majesty Queen Elizabeth II's death, and the work performed by ASX and industry to prepare with eight business days' notice.

An update was provided on the status of the CHESS replacement project, including:

- An overview of core issues being examined by Accenture as part of its review of the project
- Accenture's review being on schedule, with the publication date for the Accenture review to be late November or potentially early December
- ASX would begin engaging with stakeholders on the findings of the review, following publication and before a more formal
 consultation
- · Confirmation that Accenture would present their findings at the next Business Committee meeting
- Updates on ITE1 and ITE2 activity.

There were questions and discussion about competing industry priorities and the need for clarity around timing from an investment and resourcing perspective. Questions and discussion also included the longevity of existing CHESS, the course of action should Accenture's review conclude that the replacement system is not fit for purpose, the duration and form of ASX's consultation on the project replan and whether ASX would consider further functionality changes. The nature of member engagement as part of the assurance program was also discussed.

ASX also acknowledged member feedback that ASX's announcement on 3 August was unexpected following the CHESS replacement project update provided at the 13 July Business Committee meeting.

At member request, ASX provided an overview of the RBA's recent assessment of ASX against its Financial Stability Standards, including discussion around settlement facility standard 9.1 and CHESS holding statements.

Members were also briefed on the roadmap of issuer services work over the next 12-18 months.

AGREED ACTIONS

Four new actions where raised at the meeting:

- 1. ASX to amend the draft minutes from 13 July 2022 meeting to reflect the update provided on the status of the 17 streams of CHESS replacement work
- 2. ASX to consider publishing a policy regarding treatment of ETO expiry on a closure day (e.g. late announced public holiday, core technology outage etc)
- **3.** ASX to discuss with ASIC competing industry demands with the potential concurrency of consultation on ASIC Report 708 and CHESS replacement
- **4.** ASX to consider revising the explanation in the Clearing and Settlement Schedule of Fees regarding the circumstances in which a discount is available for Holder/Holding bulk changes.

Draft minutes from the meeting are attached.



Business Committee

Dat	e	5 October 2022	Time	12:00pm- 2:00pm
Loc	ation	ASX offices – Level 1, 20 Bridge Street, Sydney/MS Teams		
1.	Minute	s and Actions		12:00pm- 12:15pm
	a) Mir	nutes from the 13 July 2022 Business Commit	tee Meeting	
	b) Ope	en actions		
2.	Service	Performance		12:15pm- 12:25pm
	a) Cas	h Market Clearing and Settlement - Operatin	g Performance	
3.	CHESS I	Replacement		12:25pm- 1:25pm
	a) Pro	ject progress update		
	b) Ass	urance program update		
1.	Regulatory Expectations		1:25pm-1:40pm	
	a) Ext	ernal audit of ASX's compliance with the regu	ulatory expectations	
	-	nual report on Cash Equity Clearing and Settle velopments	ment Service	
5.	Service	Enhancements		1:40pm- 1:50pm
	a) Upo	date on developments		
5.	Other N	Natters		1:50pm- 2.00pm
	a) For	ward work program		
	b) AOI	3		
	c) Nex	rt meeting – 7 December 2022		

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AIRA	Ian Matheson	Chief Executive Officer	Apology
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FINCLEAR SERVICES	David Ferrall	Founder, Managing Director & CEO	
GOLDMAN SACHS	*Marton Laszlo	rlo Head of A/NZ Operations Yen Le, Executi	
GIA	*Catherine Maxwell	General Manager, Policy & Advocacy	Megan Motto, Chief Executive Officer
HSBC	*Tanya Dioguardi	Client Services Manager at HSBC Custody Nominees (Australia)	Toni Icevski, Head of Client Services, Securities Services
J.P. MORGAN	Jonathan Evans	Head of Custody & Markets Operations	
LINK MARKET SERVICES	Peter Jackson	Chief Operating Officer	
MACQUARIE GROUP	James Indge	Cash Equities Business Manager	
MORGAN STANLEY	Rebecca Hill	Chief Operating Officer	Apology
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SIAA	Judith Fox	Chief Executive Officer	
SYDNEY STOCK EXCHANGE	Stuart Guinness	Director – Regulatory Affairs / Company Secretary	
UBS	Scott Hanlon	Head of Operations, Executive Director	
Delegate		·	

^{*} Delegate





Name	Job Title	Apologies
Tim Hogben	Group Executive, Securities and Payments	
Daniel Moran	General Counsel	Apology
Hamish Treleaven	Chief Risk Officer	
Dan Chesterman	Group Executive, Technology and Data, and CIO	Apology
Sally Palmer	Deputy General Counsel	
Katie McDermott General Manager, Equity Post Trade, Securities and Payments		
Diane Lewis General Manager, Head of Regulatory Affairs		
Andrew Jones General Manager, Issuer Services, Securities and Payments		
Suzy Munro General Manager, Securities and Payments Operations		
Karen Webb Senior Manager, Issuer Services, Securities and Payments		
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Observers

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Stephanie Bolt	Manager, Financial Market Infrastructure, Domestic and Payments (RBA)	Apology



AGENDA ITEM 1: MINUTES AND ACTIONS

The Chair welcomed members and delegates to the meeting and noted two recent membership changes; Patrick Salis was welcomed as the member for AUSIEX (replacing Eric Blewitt), and Steven Larkins was welcomed as the member for Sydney Stock Exchange (replacing Michael Go).

Ian Matheson (AIRA), Andrew Rogers (CMC), Rebecca Hill (Morgan Stanley) and Daniel Spokes (Morgans) were apologies. Mark Wootton (BNP Paribas), was represented by a delegate, Sam Meares. Yen Le (Goldman Sachs), was represented by a delegate, Marton Laszlo. Megan Motto (GIA), was represented by a delegate, Catherine Maxwell. Toni Icevski (HSBC), was represented by a delegate, Tanya Dioguardi.

Roberto Fitzgerald and Juan Carlos Martin from Ernst & Young (EY) attended the meeting as guests for the CHESS replacement assurance program update (agenda item 3b).

Attending as observers were ASIC representatives Dodie Green and Andia Petropoulos (Nathan Bourne was an apology), and RBA representative Kylie Stewart (Stephanie Bolt was an apology). Brett Harper (AFMA) also attended as an observer.

The agenda and papers were distributed to all members in advance of the meeting.

a) Minutes from 13 July 2022 Business Committee meeting

The Chair noted that ASX received no comments on the draft minutes circulated on 4 August in advance of the meeting.

Member discussion:

A registry member requested ASX amend the minutes to reflect the verbal statement made as part of the CHESS replacement project update; that of the 17 streams of the project, 16 were tracking green or amber. The Chair confirmed that ASX would amend and re-circulate the minutes.

b) Open actions

The Chair noted there were no open actions.

AGENDA ITEM 2: SERVICE PERFORMANCE

a) Cash Market Clearing and Settlement - Operating Performance

The ASX General Manager, Securities and Payments Operations provided an update on the operating performance of the cash market clearing and settlement services for the September quarter (using data for July and August):

- Service availability for CHESS and the Trade Acceptance Service were at 100% for the quarter
- The daily average fail rate was relatively low during the reporting period, notably in July where the fail rate averaged 0.16%. The daily average fail rate increased for a few days in August, attributed to the netting treatment for one security that was going through a non-renounceable rights issue for three days in the month
- Trades were lower in July and August, and adding in September data trade volumes are consistent with the past two quarters, while trade value has decreased

The ASX General Manager, Securities and Payments Operations acknowledged the public holiday on 22 September to commemorate Her Majesty Queen Elizabeth II's death. With eight business days' notice, changes to inflight business events and dates across many systems were required at both ASX and across the industry. A number of corporate action events had a record date and ex-date set for 22 September, which needed to be moved to a valid business date. A number of issuers also had payment dates set for 22 September that needed to be assessed on a case by case basis. Furthermore, 23 ASX issuers had scheduled critical corporate action events for 22 September, and each needed



to be rescheduled to a valid business date. All changes were effected within the preceding week and in place by Friday 16 September, so that all files and security events were updated ahead of the public holiday.

Member discussion:

A participant member thanked ASX for its related work on weekly ETOs, noting the right outcome was achieved. However, the member requested ASX publish a procedure or policy to fall back on when there is not the opportunity to plan for an outage (or similar) in relation to an options expiry. The member noted this matter had been raised multiple times and pointed to the example of Hong Kong exchange having a clear published policy in this area. The ASX Markets member had not joined the meeting at this point to respond to the request and the Chair advised that ASX would take this away as an action.

AGENDA ITEM 3: CHESS REPLACEMENT

a) Project progress update

The ASX Group Executive, Securities and Payments provided an update on project progress since the Committee last met.

As part of PwC's audit of ASX's compliance with the regulatory expectations, member feedback was acknowledged around how ASX's market announcement on 3 August was unexpected following the CHESS replacement project update provided at the 13 July Business Committee meeting. The ASX Group Executive, Securities and Payments noted ASX's intention to release information as soon as possible, and this had to be considered with ASX's continuous disclosure obligations. Going forward, ASX would give consideration to the timing of Business Committee meetings versus the timing of material announcements.

ASX continues to work through the current replanning exercise before it is able to confidently communicate a new timeline for stakeholder feedback. As a result, recent customer feedback has noted difficulties with investment and resource planning, including for the upcoming end of year holiday period. ASX acknowledged and understood why some software vendors and other stakeholders had paused work on the project, noting that work for ASX continued across a number of work streams.

The ITE1 environment had been upgraded with a release at the start of August 2022 that included functionality for changes to controlling participants and class mergers. A couple of pilot customers were currently undertaking initial accreditation activities for messaging in ITE1 with ASX using a purpose built tool, that has automated many of the processes and reduces the manual effort required. Early feedback from the pilot customers on initial accreditation has been positive.

All software vendors are now in ITE1, and all of CHESS functionality made available in ITE1 following the August release has been tested by one or more software providers (noting the testing has uncovered some new defects). ASX had observed a recent decline in testing, with some customers pausing any further activity until the outcomes of the Accenture review and a new timeline have been communicated. Some software providers had indicated they would be accrediting their software as soon as possible, although initial accreditation was not mandatory at that point in time.

Seven CHESS users were now connected to ITE2 with a number of other applications still in progress. 13 customers had advised they would opt out of connecting to ITE2 at this point in time, until further information becomes available. Connectivity to ITE2 is not mandatory at this time and consistent with ASX's communication on 3 August, CHESS user readiness testing will commence no later than 12 months prior to a new go-live date.

ASX published a project update earlier today (5 October) on the planning processes around the Accenture review and the timing for the start of industry engagement after the findings have been made public.

Recent updates to technical documentation had included connectivity protocols, accreditation checklists, supporting documentation about code drops and new information around Ledger API contracts.

Member discussion:



An industry association member noted resourcing expectations on market operators and participants in the context of ASIC Report 708, and asked whether ASX was considering this in light of potential implications of ramping down and subsequently ramping up CHESS replacement testing activity. The ASX Group Executive, Securities and Payments acknowledged the demands on customers at that point in time, and advised that ASX had thoroughly reviewed ASIC Report 708 for outcomes applicable to the CHESS replacement project. Whilst the resourcing ramp down/up had not been explicitly considered by ASX in the context of ASIC Report 708 to date, the Chair confirmed that ASX would liaise with ASIC to ensure industry capacity is appropriately considered.

A participant member noted Cboe's technology upgrade was occupying different internal resources within their organisation. The participant member noted they had stood down their CHESS replacement team and were working on other priorities at present.

Another participant member added they had also re-directed their CHESS replacement team onto other initiatives, and in some cases contracting staff had been let go.

The ASX Group Executive, Securities and Payments reiterated ASX's prior communication that go-live would not be before late 2024 at the earliest, with increased particiant demand in the 12 months in the lead up to go-live, as well as some engagement with stakeholders around a replanning exercise in the near term. The participant member noted they would look to redeploy staff as needed, and the ASX Group Executive acknowledged this risk and noted the importance of clear communication from ASX regarding timing to ensure forward planning.

Another participant member noted that generally for custodians, and at least for their organisation, they would need to plan their technology resources by mid calendar year for redeployment in the following year or 12 months time.

Accenture Review

The ASX Group Executive, Securities and Payments noted the communication released 5 October to CHESS replacement stakeholders advising that the independent review by Accenture was on schedule. It was noted that after ASX receives the final report, it will go through internal assessment and governance processes, before the report findings are publicly released. ASX expects the publication date to be late November or potentially early December. Afterwards, ASX would then begin engaging with stakeholders on the findings before a more formal consultation. The planning around stakeholder engagement activities would take into account the end of year holiday period, acknowledging that many organisations would have staff on leave around that time.

The ASX Group Executive, Securities and Payments also acknowledged recent discussions with AFMA and its members on what the industry can do to help. ASX appreciated this engagement in the context of discussing the challenges it was facing with the CHESS replacement application and the impacts functional components can have on nonfunctional outcomes.

The ASX Group Executive, Securities and Payments then provided an update on four core issues Accenture are assessing in relation to performance, scalability, recoverability and supportability.

- 1. <u>Bilateral matching</u> bilateral transactions are currently matched sequentially, i.e. it is a serial process that presents scalability and performance challenges, particularly in areas with a high volume of 'potential matches'. A possible solution would be to introduce a unique identifier as part of the matching criteria.
- 2. <u>Cum entitlement balances</u> an Australian market practice that perpetuates existing CHESS system complexity. However, since the move to T+2 settlement, the need to maintain a cum entitlement balance has diminished in line with other markets.
- 3. <u>Holdings</u> transactions targeting a single holding at volume have performance scalability constraints, as the system needs to update the holding sequentially, especially in the context of accumulation accounts. This results in processing bottlenecks and creates future scalability challenges.
- 4. Resiliency during complex and long running batch processes e.g. batch settlement, the system must retain information 'in state' to ensure commitment of final outcome to the ledger. Using distributed ledger technology in its pure form, transactions would be committed as they occur, and similarly customers would be notified of fails as they occur. Where there is a business logic failure mid-way through batch settlement, the application



needs to consider how to recover any 'in state' processes safely to ensure both the ledger and customers remain aligned.

Further guidance on any stakeholder engagement activities will follow the publication of Accenture's findings.

It was also noted that ASX continues to invest in the existing CHESS system to ensure it remains secure and stable, and continues to perform well.

Member discussion:

In response to a question from an industry association member, the ASX Group Executive, Securities and Payments noted two further issues that were not customer impacting and are about improving the performance of the system from a design perspective.

A participant member asked what analysis ASX had performed on the remaining lifetime of current CHESS should the Accenture review conclude the replacement system is not fit for purpose. The ASX Group Executive, Securities and Payments advised the front end and back end servers/hardware are supportable for years to come, and ASX was strengthening its COBOL programming capabilities in addition to existing third party arrangements already in place. From an internal support perspective, ASX had assessed current CHESS as very low risk for the foreseeable future.

Another participant member asked whether the four core issues discussed were issues in current CHESS, or whether they are issues specific to the use of distributed ledger technology, and whether ASX would consider bringing forward any of the Day 2 functionality while it was considering these functional changes. The ASX Group Executive, Securities and Payments noted the issues are largely related to building future scalability coupled with the complexities of the Australian market and serial (sequential) based processing, and advised it was not ASX's current intention to increase the scope for Day 1 by bringing forward any Day 2 functionality given the desire for a predictable and efficient path to go-live.

An industry association member noted their appreciation for ASX collaboratively working with its members and reiterated the support of the industry in the successful project delivery.

A participant member asked what form ASX's consultation on the replan will take, the expected duration and when ASX would be in a position to confirm the new go-live date. The ASX Group Executive, Securities and Payments advised that this was dependent on the outcomes of the Accenture review, however any formal consultation process would provide for a minimum four weeks for stakeholder review, and would likely be supplemented by some bilateral or industry-wide webinar style engagement.

A registry member asked what would happen if Accenture's review concludes that the replacement system is not fit for purpose. The ASX Group Executive, Securities and Payments noted that ASX's board and management was tracking this risk and had clear pathways for alternatives, if needed, and work done to date on CHESS replacement would not necessarily be considered throwaway. It was also noted that plans and investments had been made to current CHESS to enhance its longevity.

A participant member noted ASX's earlier comments about some of the challenges being considered being due to the unique nature of the Australian market, and asked whether ASX was considering structural changes to address these issues and potentially more closely align to international standards, including potential changes in scope. The ASX Group Executive, Securities and Payments referred to the previous comment on engaging with AFMA and its members on the willingness to consider looking at different ways of doing processes that haven't changed in decades to help with non-functional requirements around scalability and performance, for example cum entitlements balances. Any changes to scope also need to be weighed up against time and cost, both to ASX and stakeholders at this stage in the project.

A market operator member sought further information on the investments in current CHESS to ensure its longevity continues. The ASX Group Executive, Securities and Payments noted that in addition to the earlier comments on COBOL programming and hardware, it was noted changes have been made to how transactions are written to the CHESS databases as well as simplifying some overnight jobs to optimise time spent on processes such as reporting.



A registry member sought to understand if the Accenture review includes engaging with external stakeholders or is it solely with ASX and its partners, DA and VMware. The ASX Group Executive, Securities and Payments noted the Accenture review does not extend to engagement with external stakeholders and clarified the review is only focused on the CHESS replacement application.

b) Assurance program update

ASX's Chief Risk Officer advised that EY's third semi-annual independent report was expected in December 2022.

The assurance program would be re-baselined and re-scheduled following the outcomes of the replanning exercise, to ensure the reviews are appropriately aligned to milestones. This work will likely occur in the first quarter of 2023. These details will then be shared with EY for them to form their opinion on whether or not the assurance program continues to be fit for purpose; it is anticipated this opinion would be included in EY's June 2023 semi-annual report.

Focus areas for the assurance program and EY through until December 2022 include:

- EY completing a short review of the scope of work and purpose of the Accenture review, as required by the regulatory agencies, to ensure the scope of work, approach and methodology will answer all of the questions being posed
- EY reviewing the outcomes of the existing assurance program reviews, with a current focus on security
- EY commencing the review of the replanning work towards the end of the year and into first quarter 2023 (as noted above)

ASX's Chief Risk Officer also provided an update around how EY is engaging with ASX. EY had recently attended a monthly executive steering group meeting for the CHESS replacement project, and a fortnightly assurance program governance meeting. EY will attend more of these meetings going forward.

Member discussion:

A registry member repeated a question from previous meetings; what does the external engagement program look like, and when will it occur. The EY Partner (Roberto Fitzgerald) noted that as part of its replan review, EY will closely review ASX's stakeholder consultation, including who is consulted, the amount of time allowed for feedback, the information provided and what ASX does with the feedback it receives. These observations would form part of EY's process, with another source of information potentially coming from bilateral engagement. In terms of exactly how and when EY would engage externally, EY was considering this as part of an overall integrated plan. The EY Partner also noted that EY had been engaged with Accenture to date. The registry member sought clarification that they should not expect any engagement from EY before the end of the year. The EY Partner noted EY was dependent on the replan consultation in terms of timing, and advised the member that they shouldn't expect EY engagement between now and the end of 2022 other than in connection with the ASX replan consultation (when applicable).

AGENDA ITEM 4: REGULATORY EXPECTATIONS

a) External audit of ASX's compliance with the regulatory expectations

ASX's Chief Risk Officer noted that PwC had completed their annual audit with the same interview based methodology used in recent years. The findings of the audit had been shared with Committee members via the meeting papers, including PwC's opinion that ASX had complied in all material respects with the regulatory expectations as evaluated against the compliance framework for the year ended 30 June 2022.

PwC had one finding, based on feedback from members about not being fully aware of what pricing discounts they are eligible for, and ASX had one action from the audit to communicate to members the discounts available and eligibility criteria.

The ASX General Manager, Equity Post Trade, Securities and Payments provided further context on the discount – which is applicable for holder recordkeeping as distinct from ASX's revenue share scheme (i.e. rebates). The discount is detailed in ASX's Clearing and Settlement Schedule of Fees, however the ASX General Manager, Equity Post Trade, Securities and



Payments acknowledged the wording was potentially unclear, and noted that ASX would review the wording in light of the audit finding. The discount is specific to ASX-managed HIN migrations, where the fees are in excess of \$40,000 (for example, a change of back office system might require a bulk transfer, or a merger of participants). For activity of this scale, it would require the involvement of ASX, and ASX advises participants if they are eligible for the discount as part of the process of working with the customer on the migration. The discount had been applied four times in the past six years.

ASX's Chief Risk Officer also noted two points from PwC's audit which did not result in a finding:

- Some members noted the contrast in information discussed at the July committee meeting regarding the status
 of the CHESS replacement project compared with the announcement three weeks later that the go-live date had
 been delayed. As the ASX Group Executive, Securities and Payments had noted earlier, ASX's Chief Risk Officer
 acknowledged this feedback and would seek to be more mindful of this going forward, whilst being cognisant of
 ASX's continuous disclosure obligations.
- Regarding how ASX Clear manages conflict sensitive matters for access from unaffiliated market operators or clearing and settlement facilities, a member noted some perceptions around discriminatory treatment. PwC reviewed ASX's policies and procedures in relation to how it manages conflict sensitive matters, as well as all communications related to that matter, and found that ASX had adhered with its internal protocols for handling that particular matter.

Member discussion:

An industry association member asked ASX's Chief Risk Officer to speak to the Reserve Bank of Australia's (RBA) recently published assessment of ASX against its Financial Stability Standards. ASX's Chief Risk Officer provided an overview of the RBA's annual assessment, including the process and findings. Key focus areas for ASX include:

- Work under the comprehensive management of risk standard including a response plan to KPMG's review into ASX's enterprise risk management capabilities
- Work related to operational risk around improving project delivery, ensuring the resilience and reliability of current CHESS, and enhancements to regulatory reporting
- Work related to governance, including development of a clearer accountability framework off the back of the operating model change in FY21.

A registry member asked if the strengthening of governance arrangements sat with the executive team or the board. ASX's Chief Risk Officer noted it was a combination of board and executive.

ASX would also provide an ASX management response update at the next quarterly industry Risk Consultative Committee in November.

The Chair extended an invitation, following PwC's interviews, for further discussion with members on any topics they wish to discuss.

b) Annual report on Cash Equity Clearing and Settlement Service Developments

The ASX General Manager, Equity Post Trade, Securities and Payments noted that ASX's sixth Cash Equity Clearing and Settlement Services Developments Report had been shared with Committee members via the meeting papers. The report summarised service developments and investments ASX had undertaken over the 12 month period ending 30 June 2022, including ongoing work on CHESS replacement, a review of the TAS and Product Services legal terms, enhancements to TAS reporting for AMOs and the introduction of electronic CHESS holding statements.

Member discussion:

Members did not raise any questions in respect of the update.

AGENDA ITEM 5: SERVICE ENHANCEMENTS

a) Update on developments



The ASX General Manager, Issuer Services, Securities and Payments provided an overview of ASX's issuer services roadmap over the next 12-18 months, noting that whilst this meeting was not an issuer services forum some of the activities had relevance to participants.

Themes for future work include improving the issuer experience through digitisation and workflow changes (as an example the move to electronic statements), and improving the experience for investors who hold stock on HIN (for example the investor communication portal for delivery of electronic statements).

Specifically, ASX was talking to participants about:

- ASX's Primary Market Facility (a service provided to issuers, and facilitated by brokers and participants) –
 opportunities to digitise manual workflows and enhance functionality
- Offer administration (including takeovers and other offer administration) opportunities to digitise processes and enhance efficiency (for example, in multi-party workflows)
- Further enhancements to the electronic statements communication portal for investors including consideration of a request for an API feed of statements direct to brokers and registries, simpler ways for an investor to logon and potentially a live feed of holdings as opposed to a monthly statement

ASX had engaged with a number of participants on these matters to date, and members were invited to engage on any other suggested enhancements to any of the matters raised.

Member discussion:

A market operator member noted the RBA's comment in its 2022 Financial Stability Standards assessment of ASX regarding settlement facility standard 9.1, that they did not consider the holding statement played a role in meeting that requirement, and asked whether ASX was considering removing the mandatory requirement to issue holding statements. The ASX General Manager, Issuer Services, Securities and Payments noted that CHESS holding statements may indeed not have particular use for reconciling holding balances of investors as a daily process, but considered their value to the end investor as a confirmation, on a monthly basis, that ASX has a record of the number of shares in their account. In this context, the market operator member questioned why ASX would not consider making provision of holding statements optional, rather than mandatory. The ASX General Manager, Issuer Services, Securities and Payments noted that under the new pricing model, there is no charge for unlimited electronic statements, and that ASX considers that investors place value in the statements. The market operator member noted they would continue discussion of this matter offline with ASX.

An industry association member noted consistent feedback from annual general meetings that investors like paper statements, and suggested they will need to continue for another 5-10 years.

AGENDA ITEM 6: OTHER MATTERS

a) Forward work program

Referring to the forward work program, the Chair outlined the items planned for discussion at the December 2022 meeting, and acknowledged that ASX was working towards providing an update on forthcoming change initiatives, in response to feedback that it would be helpful for customers to have further insight beyond the technology initiatives already in train or planned, from a budget and resourcing perspective.

The Chair welcomed feedback and suggestions for agenda items for future meetings.

Member discussion:

An industry association member clarified whether Accenture would present their findings on CHESS replacement at the December meeting, and the Chair confirmed they would.

The industry association member also clarified the timing of ASX's next (second) ASIC Report 708 consultation, to establish whether that would be a relevant topic for the December meeting, and ASX's Acting Co-head of Markets confirmed it was expected to be released in November 2022, with the deadline for responses under consideration by ASX.



b) Any other business

The Chair noted four actions:

- ASX to amend the draft minutes from 13 July 2022 meeting to reflect the update provided on the status of the 17 streams of CHESS replacement work
- ASX to consider publishing a policy regarding treatment of ETO expiry on a closure day (e.g. late announced public holiday, core technology outage etc)
- ASX to discuss with ASIC competing industry demands with the potential concurrency of consultation on ASIC Report 708 and CHESS replacement
- ASX to consider revising the explanation in the Clearing and Settlement Schedule of Fees regarding the circumstances in which a discount is available for Holder/Holding bulk changes.

The Chair thanked the Committee for their contributions and conversation.

c) Next meeting – 7 December 2022

The next meeting is scheduled for 7 December 2022, at the later time of 4-6pm to accommodate end of year drinks.

The meeting closed at 1.45 pm.

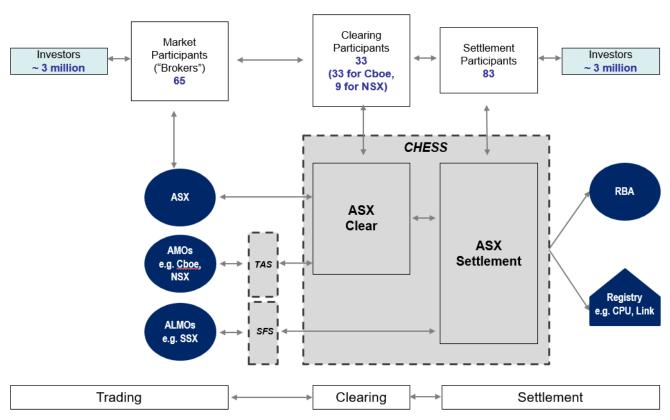
Signed as a corr	ect record of the meeting.	
Chair		Date



Committee	Business Committee
Agenda title	Cash market clearing and settlement - Operating Performance
Item	2a
Purpose	To report on key performance metrics for ASX's clearing and settlement services
Meeting date	07 December 2022
Prepared by	General Manager, Securities & Payments Operations (Suzy Munro)
	Senior Manager, Settlement Operations (Brendan Laird)

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 are supported in ASX's core system CHESS. It is critical for market operations, that CHESS 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 CHESS is 99.80%.

For the December 2022¹ quarter, the average monthly system availability was 100% for CHESS. The average monthly availability of CHESS has been 99.99% between November 2011 and November 2022.

Trade Acceptance Service and Settlement Facilitation Service

ASX Clear and ASX Settlement's Trade Acceptance Service (TAS) provides a mechanism for Cboe and NSX to submit trades into CHESS and the Settlement Facilitation Service (SFS) provides settlement arrangements for unaffiliated Approved Listing Market Operators (ALMOs) in respect of the CHESS-eligible financial products listed on their markets (SSX). The CHESS system performs the clearing and settlement functions.

The Trade Acceptance Service and Settlement Facilitation Service availability target is 99.80% (the same as CHESS).

For the December 2022¹ quarter, the average monthly system availability was 100% for the TAS and Settlement Facilitation Service. The average monthly availability of the TAS and SFS has been 99.99% between November 2011 and November 2022 (the same as CHESS).

Reporting on clearing and settlement service performance

The key metrics noted above on novation, netting efficiency and settlement efficiency for the December 2022¹ quarter are reported in Attachment A. They are also supported by charts demonstrating a longer reporting period in Attachment B.

Settlement Performance

A performance metric for monitoring the CHESS settlement batch is the fail performance.

For the December 2022¹ quarter, the daily average fail performance has increased to 0.293% and averaged 0.261% for the previous twelve months, between December 2021 and November 2022.

The daily average fail performance was 0.289% over the 3 year period from December 2019 and November 2022.

ASX Settlement Operations review daily settlement data for recurring trends in the settlement failure rate, to monitor and ensure there are no systemic issues.

¹ As of 30 November 2022

Month	November	October	September	August	July	June
Average Fail Rate	0.315%	0.270%	0.324%	0.277%	0.160%	0.216%
Maximum Fail Rate	0.634%	0.414%	2.329%	0.885%	0.356%	0.313%
Minimum Fail Rate	0.124%	0.145%	0.109%	0.112%	0.098%	0.098%
# of days Fail rate > 0.50%	2	0	2	2	0	0
Batch Settlement Extensions	3	0	1	1	2	2
Fall back of Payment Provider	0	1	0	0	0	0

The average CHESS settlement batch fail rate exceeded 0.300% during September 2022 and November 2022.

During September 2022, the daily fail rate exceeded 0.300% on only 5 of the 21 business days, each being attributed to unilateral fails wholly within a Participant.

During November 2022, the daily fail rate exceeded 0.300% on 12 of the 22 business days. The persistent instance of elevated fails was attributed to the following reasons:

- I. System issues experienced by separate Participants, on different days
- II. Participant PID change requiring an update to counterparty instructions

ASX delayed the commencement of the batch on 3 days to provide additional time for requesting Participants to resolve system issues in order to prepare for settlement. The daily fail rate returned to within normal range in the last week of November 2022.

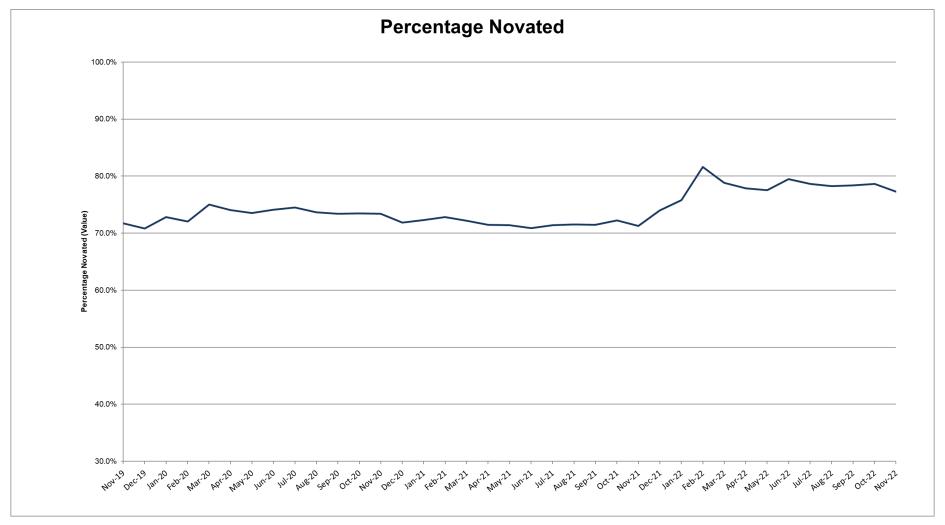
ATTACHMENT A – SUMMARY METRICS RELATING TO THE PERFORMANCE OF ASX'S CLEARING AND SETTLEMENT SERVICE

	December 2022 Quarter ²	September 2022 Quarter	June 2022 Quarter
System Availability (CHESS)	100%	100%	100%
System Availability (TAS)	100%	100%	100%
Total Trades Accepted (ASX)	65,488,006	117,615,336	112,436,196
Total Trades Rejected (ASX)	0	2	0
Total Trades Accepted (Cboe)	21,267,190	37,030,792	39,228,382
Total Trades Rejected (Cboe)	0	0	0
Total Trades Accepted (NSX)	139	167	151
Total Trades Rejected (NSX)	1	0	0
Total Settlements (SSX)	0	0	0
Total Value of Settlements (SSX)	\$0	\$0	\$600
Daily Average Traded Value (On and Off Market) *	\$10.56 billion	\$10.59 billion	\$12.23 billion
Daily Average Cleared Value *	\$8.23 billion	\$8.30 billion	\$9.57 billion
Percentage Novated *	78.0%	78.4%	78.2%
Daily Average Cleared Value Post-Netting	\$2.33 billion	\$2.29 billion	\$2.65 billion
Netting Efficiency (Value) *	71.7%	72.4%	72.2%
Netting Efficiency (Volume) *	98.9%	98.9%	98.9%
Daily Average Settled Value (Including Non-Novated)	\$11.59 billion	\$11.73 billion	\$13.50 billion
Settlement Efficiency (Value)	99.81%	99.91%	99.90%
Average Daily CHESS Fail Rate (% Rescheduled to the next settlement date)	0.315%	0.254%	0.238%

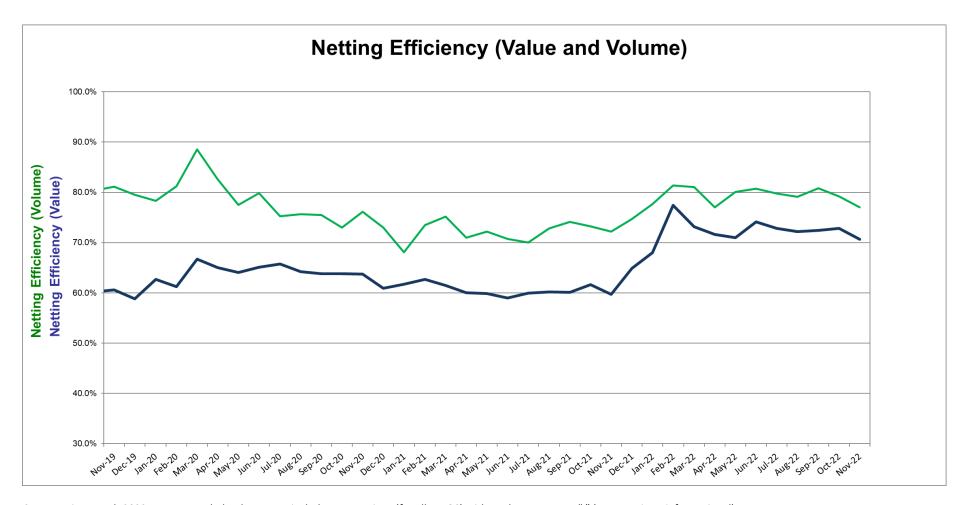
^{*} Commencing March 2022 quarter, Traded Volume now includes transactions (for all AMOS) with settlement status "I" (e.g. crossings, informational)

² As of 30 November 2022

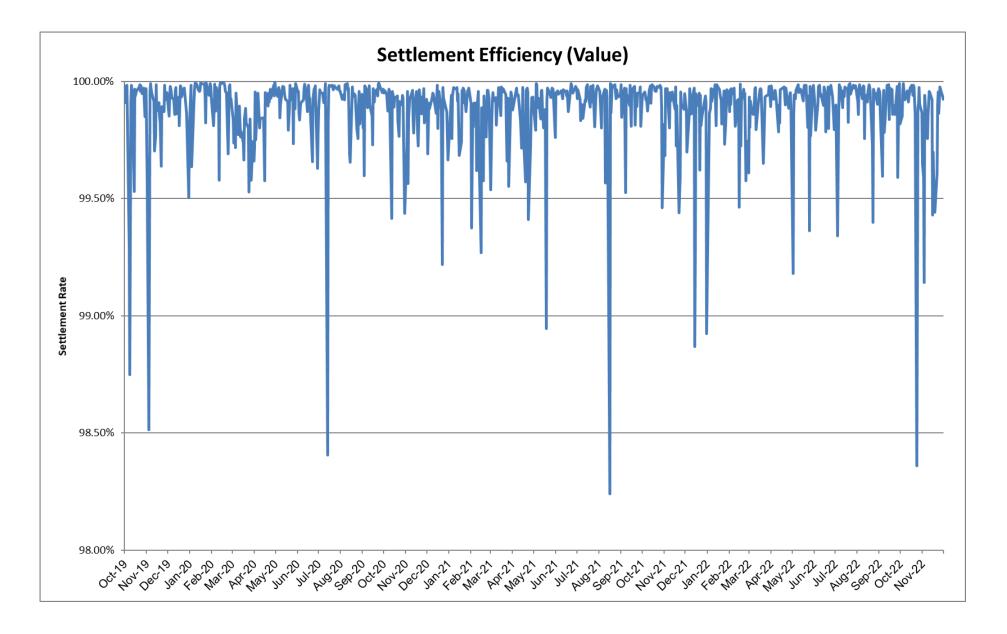
ATTACHMENT B – PERFORMANCE OF ASX'S CLEARING AND SETTLEMENT SERVICES FROM NOVEMBER 2021 TO NOVEMBER 2022



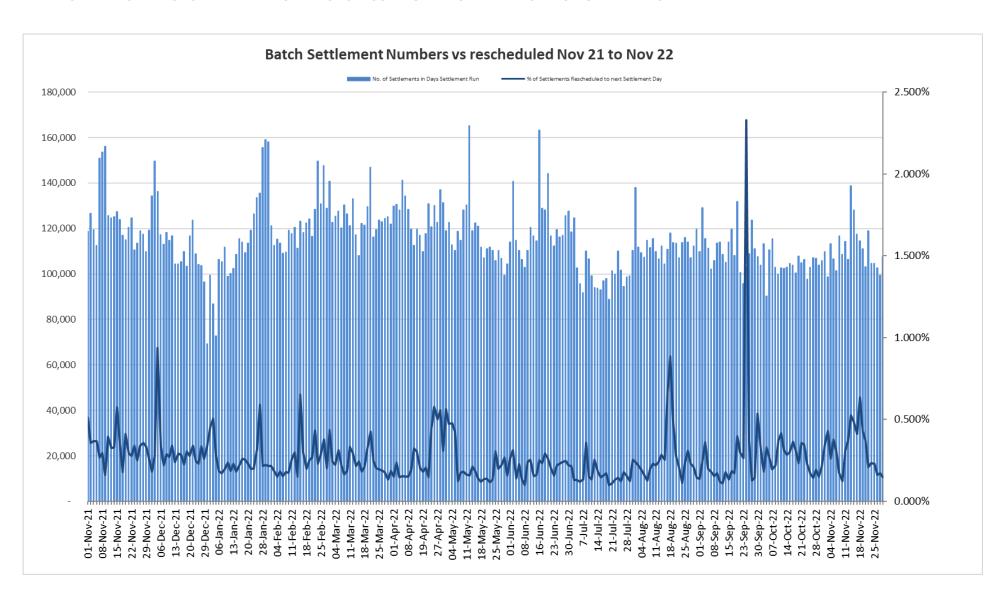
• Commencing March 2022 quarter, Traded Volume now includes transactions (for all AMOS) with settlement status "I" (e.g. crossings, informational



• Commencing March 2022 quarter, Traded Volume now includes transactions (for all AMOS) with settlement status "I" (e.g. crossings, informational)



ATTACHMENT C – BATCH SETTLEMENT NUMBERS VS RESCHEDULED NOVEMBER 2021 TO NOVEMBER 2022





Committee	Business Committee	
Agenda title	CHESS Replacement	
Item	3a, 3b, 3c	
Purpose	To provide Business Committee members with an update on the independent review and ASX's perspectives on the finding and next steps, and an assurance program update	
Meeting date	7 December 2022	
Prepared by	Group Executive, Securities and Payments (Tim Hogben)	
	General Manager, Equity Post Trade, Securities and Payments (Katie McDermott)	
	Senior Manager, Equity Post Trade, Securities and Payments (Keith Purdie)	
	Chief Risk Officer (Hamish Treleaven)	

KEY SUMMARY POINTS

- ASX will reassess all aspects of the CHESS replacement project following completion of the independent review conducted by Accenture and its own internal assessment
- The independent report published on 17 November identifies significant challenges with the solution design and its ability to meet ASX's requirements
- ASX will revisit the solution design immediately to assess changes required to bring the project to market safely, efficiently and for the long-term
- Current activities on the project have been paused while ASX revisits the solution design
- Current CHESS remains secure and stable, and is performing well. ASX will continue to invest in its capacity and resilience
- A Project Director with extensive technology transformation experience has been appointed for the next phase of the CHESS replacement project
- ASX remains committed to providing the best long-term clearing and settlement solution for the Australian financial market
- The dedicated CHESS replacement documentation portal has been deactivated and access to the industry test environments terminated
- Stakeholders will be updated on progress at ASX's half-year results presentation in February 2023

AGENDA ITEM 3A: INDEPENDENT REPORT ON ASX CHESS REPLACEMENT APPLICATION DELIVERY REVIEW

Overview

Accenture was commissioned by ASX in August 2022 to conduct an independent review for the purpose of bringing external expertise to assess the remaining work required to complete delivery of the CHESS Replacement application component of the solution. This included both functional and non-functional aspects, as well as improvement to the "ways of working" specific to ASX and its delivery partner Digital Asset to identify necessary actions for ASX to communicate a revised timeline to finish the project. The report is available here.

The review was conducted over 12 weeks through a collaborative approach with ASX and DA, and included the following activities:

Detailed review and analysis of artefacts related to the CHESS Replacement application and focus areas

- ASX and DA stakeholder workshops and interviews to capture additional detail and seek further clarification on focus areas
- Governance meetings held across three governance levels: working group, management and sponsor level inclusive of project RAID tracking
- Findings Hypothesis and Validation, grouped into common themes and documented
- Detailed recommendations aligned to overarching themes

The findings and recommendations of the independent report are limited to the CHESS Replacement application delivery capabilities managed by ASX and DA, and should not be considered a CHESS Replacement program-wide or ASX organisation-wide assessment.

Scope

Accenture reviewed the current solution for the CHESS Replacement application along with client node and ledger components, supporting architecture, design, current implementation, and a high-level sample code review to examine practices and levels of technical debt post-deployment. Accenture also reviewed the solution in relation to scalability, resiliency, and supportability. This involved:

- 1. Review of the six CHESS Replacement application core issues identified by ASX and DA around (i) holdings, (ii) batch settlement, (iii) bulk process support and resiliency, (iv) bilateral matching, (v) issuer (HIN) notifications, and (vi) support for ex-transactions that collectively were contributing to the challenges in the current solution design
- 2. The Delivery Assessment consisted of:
 - a. The Solution Review focused on the solution design and architecture for the CHESS Replacement application, use of Daml and VMware Blockchain, and a code review to develop a set of recommendations
 - b. The Capability Assessment focused on the maturity of the software delivery lifecycle processes managed by ASX and DA
 - c. The draft delivery plan provided by DA was reviewed to understand the remediation activities required to address the core issues for the purpose of planning and timeline discussions. Note, this was a draft plan which was reviewed point-in-time to provide feedback and shouldn't be considered final or complete
- 3. A set of 45 recommendations that were grouped to a set of 12 areas of focus across ways of working, software delivery, quality engineering efficiency, and solution design.

Summary of recommendations

	S	TRATEGIC: empower the bus	iness to meet growth obje	ctives	
	CS License continue to be the market operator, provide secure, resilient, and scalable infra	CS Efficiency/Growth Ease of implementation of future product development and CHESS day-2 functions	ASX Efficiency & Growth 'future proof' for product expansion, DLT value proposition, etc.		
	SIMPLIFICA	TION: reduce complexity to i	ncrease transparency & o	perate more effectively	
	Solution Design simplify the architecture, technology stack, options for functionality on-chain/off- chain	Operating Model clear roles & mandates to optimise, scale & better align to business objectives	Delivery Execution data clarity, access & reporting to inform decisions, on cost, scope, time, etc.	Standardised Artefacts inputs and outputs of processes driving outcomes must be consistent throughout delivery	
WORKING SMARTER: optimise tech, tools, & capabilities					
	Release Management ephemeral, build once, branching and tagging, monitoring & logging	Collaboration Tools standardised tools and processes for tracking, reporting, drive transparency	Delivery Agility right size, cross- functional, dedicated owners, clear metrics to progress	Quality Engineering Shift-left long tail of sequential control processes; "Definition of Ready", before feature dev	
	FOUNDATIONAL: enable and 'stick to' the vision over time				
	Ways of Working tech direction & change governance with a clear link to business objectives	Design Maturity clarity to continuously improve & align to business objectives	Product Ownership clear lines of ownership for CHESS Replacement rollout func/tech across ASX/vendors	Reporting progress on waterfall targets, not leveraging agile metrics to demo value or identify impediments	

AGENDA ITEM 3B: ASX PERSPECTIVE ON THE FINDINGS FROM THE INDEPENDENT REPORT

The independent report highlights the magnitude and complexity of the CHESS replacement project and raises significant issues.

Application readiness

The report estimates the application software is 63% complete i.e. delivered and mostly tested when considering both functional and non-functional requirements.

The timeline to completion is uncertain, particularly given the complexity of the project and the challenges with the solution that have been identified.

Complexity in the integrated solution

The report identifies complexity in the integrated solution design, including in the way ASX requirements interact with the application and underlying ledger.

These complexities contribute to challenges in achieving the necessary supportability, scalability and stability for clearing and settlement.

Project governance

The report identifies vendor management issues in the way teams from ASX and its delivery partner Digital Asset operate and interact which present challenges in project delivery.

The report observes a number of inefficiencies in the delivery lifecycle through to testing, with siloed execution and reporting resulting in misaligned views of status on delivery progress, risks and issues.

Implementing enhanced governance

ASX have appointed a highly experienced technology transformation executive, Tim Whiteley, as Project Director. Tim will report directly to Helen Lofthouse, the CEO. Tim is extremely well credentialed and respected as a CIO and transformation executive. He brings extensive expertise managing large and complex projects. Tim will focus on revisiting solution design, establishing new project governance arrangements, strengthening vendor management, and positioning the project for the next delivery phase.

ASX will also establish an industry forum to provide input and receive regular status reporting on the project. This forum will complement the existing Business Committee.

Immediate impacts to stakeholder readiness activities

Access to the industry test environment, ITE1, was terminated on 30 November. The initial accreditation process is no longer required at this time. Prior to the announcement, three pilot customers had successfully completed messaging accreditation.

Similarly, any organisation undertaking onboarding activities to ITE2 was notified that connectivity to ITE2 will be disabled and access terminated effective 30 November.

ASX's dedicated CHESS replacement documentation portal has been deactivated and any further updates have been paused. The information has been retained and will be made available at the right time provided the information is relevant to the pathway forward.

The CHESS replacement message collections are 'on hold' until a time when ASX has understood and evaluated the solution design options. The CHESS Replacement ISO 20022 collection will still be available in MyStandards, but ASX will not add any new members to the CHESS Replacement community until further notice.

CHESS user organisations making use of the registration details tool to assess their current CHESS registration and accounts details for compliance to the new standards have been recommended to suspend usage until ASX has determined the pathway forward and if any changes are required to registration details. Notice of this suspension has been sent to those organisations who registered to use the tool.

ASX now needs to take the time to time to evaluate the solution design options before updating and engaging with stakeholders before determining a revised solution. As such, ASX does not expect stakeholders to support or respond to any CHESS replacement activities prior to ASX's FY23 half-year results presentation on 16 February 2023 when further details on the solution design phase will be provided.

Potential paths forward

Further planning now needs to be undertaken by ASX to understand and evaluate the solution design options and their potential impacts. The solution design process will consider a number of broad options.

ASX will be mindful of the specifications stakeholders have worked to, including connectivity channels and business processes as well as existing CHESS replacement requirements.

AGENDA ITEM 3C: ASSURANCE PROGRAM UPDATE

EY's third independent six monthly review has been completed as required under the additional licence conditions. The report will be finalised in December. The report will make comment on progress made in addressing findings from the last independent six monthly review (June 22); the scope of the Accenture Application Delivery Review as well as reviews planned in relation to the Program's Replan and Program testing processes. The report will also cover the closure of findings over the six month period, including progress in addressing remedial actions from the trade outage Independent Expert review recommendations.

The Assurance program will be reviewed and revised, as appropriate, to support evaluating the solution design options for CHESS replacement.



Committee	Business Committee
Agenda title	Maintaining the stability of existing CHESS
Item	4
Purpose	To provide Business Committee members with an update on the programme of work to ensure existing CHESS continues to provide the level of service, reliability and resilience required by the market until CHESS replacement is implemented
Meeting date	7 December 2022
Prepared by	Group Executive, Securities & Payments (Tim Hogben)
	Group Executive, Technology and Data, and CIO (Dan Chesterman)
	General Manager, Technology, Securities & Payments (Sabra Mott)

Overview

The CS Facilities have established operational risk management frameworks with appropriate systems, policies, procedures and controls to identify, monitor and manage operational risk.

The objectives of the frameworks extend to, but not limited to, targets for system availability, scalable capacity adequate to handle increasing volumes, physical and information policies that address potential vulnerabilities and threats, business continuity arrangements for timely recovery of operations and availability of well-trained and competent personnel.

Internal audits and independent external expert reviews are undertaken of operations, management processes and internal control mechanisms.

Outlook

Following the announcement current activities on the CHESS replacement project have been paused while we revisit the solution design, ASX will continue to invest in the ongoing supportability and maintenance requirements of current CHESS including:

- Internal and external support requirements
- Obsolescence of the end-to-end infrastructure stack hardware and software ("aged assets")
- System capacity and performance scalability if trade volumes continue to increase
- Overall system risk assessment

ASX's immediate focus will be to:

	Customer Impact (Y/N)	Target Date
Upgrade frontend servers and operating system	Y (UAT)	March – May 2023
Upgrade hardware security module (HSM) devices	Y (UAT)	TBD
(i.e. encryption devices)		
Migrate all customers VPN access from v3 to v4	Υ	TBD
	(internet customers only)	

CHESS Replacement – Technical Driver for Replacement 2013

In 2013, as part of ongoing management of technology infrastructure assets, the provider of the operating system CHESS runs on (Hewlett Packard, OpenVMS) announced support "through at least the end of 2020". Hewlett-Packard subsequently changed its direction on OpenVMS. Instead of pushing its users off the system, it licensed OpenVMS to a

new company, VMS Software Inc. (VSI). It continues to be supported today and used by a number of organisations (>2,000). Consequently, this risk to supportability has been reduced.

OpenVMS has long been recognised for its disaster-tolerant capabilities, security and overall reliability. It runs mission-critical systems and because of its consistent performance it tends to get little attention, except from a dedicated user community.

Current and Future Business Needs

Consideration will be given to adding new features to current CHESS, including requirements captured for CHESS Replacement. The framework for scope, functionality analysis and prioritisation has yet to be determined but will be communicated when available.

Next steps

Current CHESS is performing well and our investment in it will continue while ASX assess the various pathways for its ultimate replacement.

Members will be provided with further information on 7 December as part of a verbal update on the ongoing programme of work to ensure the scalability and useful life of current CHESS continues until CHESS replacement can be safely implemented.



1/1

Committee	Business Committee
Agenda title	Forward work program
Item	5a
Purpose	To update members on the forward work program of the Business Committee for 2023
Meeting date	7 December 2022
Prepared by	Business Committee Chair, Chief Customer and Operating Officer (Val Mathews)

The Business Committee will meet four times in 2023. The meeting dates are:

- 22 March 2023 12.00-2.00pm
- 19 July 2023 12.00-2.00pm
- 11 October 2023 12.00-2.00pm
- 6 December 2023 4.00-6.00pm

Subject to input from members on additional items, the forward work program of the Business Committee in 2023 will continue to focus on the operating performance of CHESS, maintaining the stability of existing CHESS, updates on CHESS replacement and updates related to the Regulatory Expectations.

Members of the Business Committee are invited to suggest topics for inclusion in the forward work program at any time by contacting the Business Committee Secretariat by email at BCSecretariat@asx.com.au.

ATTACHMENTS

Attachment A Business Committee Forward work program 2023

HIGHLY PROTECTED

Attachment A: Business Committee Forward work program 2023

22 March 2023

- · Service performance of CHESS
- Maintaining the stability of existing CHESS
- · CHESS Replacement update
- · (T+1 update TBC)

11 October 2023

- · Service performance of CHESS
- Maintaining the stability of existing CHESS
- · CHESS Replacement update
- Annual report on Cash Equity C&S Service developments
- · Regulatory Expectations Audit

19 July 2023

- · Service performance of CHESS
- Maintaining the stability of existing CHESS
- · CHESS Replacement update
- Regulatory Expectations Audit Terms of Reference

6 December 2023

- · Service performance of CHESS
- Maintaining the stability of existing CHESS
- · CHESS Replacement update