

# CHES Replacement Technical Committee Minutes

8 November 2023

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At its November meeting, the CHES Replacement Technical Committee was updated on:

## AGENDA

- Open actions;
- Member feedback from last meeting;
- Project status and governance;
- ISO 20022 Binary Transmission;
- Scope Refinement Next Steps & Engagement;
- Forward work plan; and
- Observer feedback.

## KEY ISSUES DISCUSSED

Key points from the discussion about the CHES Replacement project included:

- i. An update on project progress including key work stream activities;
- ii. A discussion on ISO 20022 Binary Transmissions; and
- iii. A discussion on scope refinement next steps and engagement.

## AGREED ACTIONS

There were two new actions raised at the meeting:

1. Verify with other markets if there are any future plans to cater for ASN.1 change in format.
2. Provide and validate priority scope items to support the effective sequencing of future working groups.

Minutes from the meeting are attached.

# Agenda

## CHES Replacement Technical Committee

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<b>Date</b>	8 November 2023	<b>Time</b>	2:00pm-4:00pm
<b>Location</b>	ASX offices – Level 1, 20 Bridge Street, Sydney/MS Teams		

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- 1. Welcome and open actions**
- 2. Member feedback**
- 3. Project Status & Governance**
- 4. ISO 20022 binary transmission**
- 5. Scope refinement next steps & engagement**
- 6. Other matters**
  - a) Forward work plan
  - b) Observer playback

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## Action Items

Item number#	Action	Due date	Status	Owner
2023 September (2)	Investigate and make recommendations on how the Technical Committee can collaborate with the Equities Settlement Payments Providers Sub Committee (ESPPSC).	8 November 2023	Closed	ASX
2023 September (3)	Clarify more detail on scope recommendations including next steps.	8 November 2023	Closed	ASX
2023 September (5)	Investigate options for binary transmission of ISO 20022 for high volume participants.	8 November 2023	Closed	ASX
2023 September (6)	Contact <a href="#">ASX CHES Replacement</a> if SWIFT access pricing affected a committee members' response to the interface options survey.	8 November 2023	Closed	Committee Members
2023 September (7)	Ensure Business Committee representatives are informed of Committee recommendations before the 11 October BC.	11 October 2023	Closed	Committee Members
2023 September (8)	Clarify the 'proceed to design' classification as part of the TC recommendation to BC (BC Paper).	11 October 2023	Closed	ASX
2023 November (1)	Verify with other markets if there are any future plans to cater for ASN.1 format.	7 Feb 2024	Open	ASX
2023 November (2)	Provide and validate scope priority items to support the effective sequencing of future working groups.	7 Feb 2024	Open	Committee Members & ASX

## CHES Replacement Technical Committee Members

Company	Name	Job Title	Apologies
ASX	Tim Whiteley	Technical Committee Chair and Project Director, CHES Replacement Project	
	Paul Rayson	Business Committee Chair	Apology
<b>Clearing and Settlement Participants</b>			
ABN AMRO CLEARING	Matthew McMahon	Head of Operations	
AUSIEX	Ashish Jha	Director, Solution Delivery Management	
Merrill Lynch Equities (Australia)	Matthew Gwynn	Project Manager Director, Head of Operations	
BELL POTTER SECURITIES	Lee Muco	Chief Operating Officer	
BNP PARIBAS	Wayne Murphy	Project Manager	
CITI	Lyall Herron	Program Manager	
CMC	Michael Connaghan	Head of Engineering & Project Delivery, Stockbroking	
COMMSEC	Ryan Jones	Crew Technical Lead	
FINCLEAR SERVICES	Nikki Gleisner	Senior Business Analyst/Client Relationship Manager	Apology
GOLDMAN SACHS	Simon Wyss	COO, Australia/ New Zealand Engineering	
HSBC	*Asri Asat	Senior Product Manager	Simon Siluk
J.P. MORGAN	Scott Oakland	Executive Director Product Management	
MACQUARIE GROUP	Paul Bragg	Operations Analyst	
MORGAN STANLEY WEALTH	Andrew Sime	Executive Director	
MORGAN STANLEY SECURITIES	Rebecca Collins	Executive Director	
MORGANS	Daniel Spokes	Director, Client Support Services	
NAB	Rodd Kingham	Head of Investment Service (WealthHub Securities)	
UBS	*Andrew Lockhart	Executive Director, Investment Bank Operations	Scott Hanlon, Head of Operations, Executive Director
<b>Third party software vendors</b>			
BROADRIDGE	Danielle Gerace	Head of Client Service Australia	
COMPUTERSHARE	Leanne Bailey	Senior Business Analyst	Apology
FINCLEAR	Craig Gray	Head of Product for Settlement & Clearing systems	
FNZ	Nick Clarke	Head of Product Management – Capital Markets	Apology
SECURITEASE	David Hinkley	General Manager	
<b>AMOs</b>			
ASX	Jimmy Halstead	Head of Trading Technology Markets,	

		Technology	
CBOE	Mike Aikins	Vice President APAC – Operations and Technology	
NSX	Yemi Oluwi	Head of Market Operations and Technology	
SYDNEY STOCK EXCHANGE	Rajnish Tiwari	Head Exchange Technology	
<b>Share Registries</b>			
ADVANCED SHARE REGISTRY	Patrick Gan	IT Manager	Apology
AUTOMIC GROUP	Sue Julian	Head of Business Operations	
BOARDROOM	Michael Mullins	Chief Information Officer	
COMPUTERSHARE	Scott Hudson	General Manager – Market Liaison	
LINK MARKET SERVICES	Chris Wong	Senior Project Manager – CHES Replacement	Apology

\* Delegate

### Observers

Company	Name	Job Title	Apologies
AusPayNet	Luke Wilson	Chief Operating Officer	
AFMA	Brett Harper	Chief Executive Officer	Apology
	Damian Jeffree	Senior Director of Policy	
AIRA	Ian Matheson	Chief Executive Officer	
GIA	Simon Pordage	Brand Ambassador for Governance Institute of Australia & Company Secretary for ANZ)	Apology
SIAA	Judith Fox	CEO	
ASIC	Dodie Green	Senior Manager, Market Infrastructure	Apology
	Andia Petropoulos	Senior Analyst, Market Infrastructure	Apology
	Bharat Patel	Senior Specialist, Financial Markets Infrastructure Financial Risk Manager	
RBA	Kylie Stewart	Senior Manager, Domestic and Payments, Financial Market Infrastructure	Apology
	Tatiana Moiseeva	Lead Analyst, Financial Market Infrastructure, Domestic and Payments	Apology
	Elizabeth Kandelas	Manager	Apology
	Rhea Choudhary	Graduate	Apology
	Jonathan Jones	Lead Analyst, Clearing and Settlement Facilities Supervision, Payments Policy Department	

## EY

<b>Name</b>	<b>Job Title</b>	<b>Apologies</b>
Corinne De Rosa	Director, Financial Services	
Felicity Potter	Partner	
Monica Du	Manager	

## ASX Management

<b>Name</b>	<b>Job Title</b>	<b>Apologies</b>
Katie McDermott	General Manager, Business Design, CHES Replacement Project	
Steven Hannan	Stakeholder Engagement Senior Manager, Equity Post Trade	
Triona Quinlan	Delivery Lead, CHES Replacement Project	Apology
Chris Boyes	Senior Product Manager, Securities and Payments	
Russell Eyre	Enterprise Architect	

## AGENDA ITEM 1: Welcome and open actions

The Chair welcomed members and delegates to the tenth CHES Replacement Technical Committee (Committee) meeting.

Paul Rayson (BC Chair), Nikki Gleisner (Finclear), Leanne Bailey (ComputerShare), Nick Clarke (FNZ), Patrick Gan (Advanced Share Registry), Chris Wong (Link Market Services) and Simon Pordage (GIA) were apologies. Scott Hanlon (UBS) was represented by a delegate, Andrew Lockhardt. The Senior Manager, Stakeholder Engagement, Equity Post Trade noted a change in membership and welcomed Ashish Jha as the new Technical Committee representative member for AUSIEX.

The minutes of the previous 13 and 28 September Committee were approved and published with materials now available on the CHES Replacement [website](#).

The Chair introduced and thanked Paul Bragg (Macquarie Bank) as the meeting observer for the 8 November 2023 meeting.

The Chair reminded members of their obligations under competition law and encouraged active participation noting the purpose of the Committee was for stakeholders to provide input and feedback. An overview of the agenda was provided before the Chair introduced the six open actions from the 13 and 28 September meetings:

Item Number	Action	Discussion
2023 September (2)	Investigate and make recommendations on how the Technical Committee can collaborate with the Equities Settlement Payments Providers Sub Committee (ESPPSC).	Action addressed and closed as part of Agenda item 5. (Scope refinement next steps & engagement) for further detail.
2023 September (3)	Clarify more detail on scope recommendations including next steps.	Action addressed and closed as part of Agenda item 5. (Scope refinement next steps & engagement) for further detail.
2023 September (5)	Investigate options for binary transmission of ISO 20022 for high volume participants.	Action addressed and closed as part of Agenda item 4. (ISO 20022 binary transmission) for further detail.
2023 September (6)	Contact <a href="#">ASX CHES Replacement</a> if SWIFT access pricing affected a committee members' response to the interface options survey.	Action closed in meeting via verbal update. Members can contact <a href="#">ASX CHES Replacement</a> if there are any further queries
2023 September (7)	Ensure Business Committee representatives are informed of Committee recommendations before the 11 October BC.	Action addressed and closed as part of Agenda item 5. (Scope refinement next steps & engagement) for further detail.
2023 September (8)	Clarify the 'proceed to design' classification as part of the TC recommendation to BC (BC Paper).	Action addressed and closed as part of Agenda item 5. (Scope refinement next steps & engagement) for further detail.

## AGENDA ITEM 2: Member Feedback

### Hong Kong Exchange 'Synapse' Project

Since the September 28 Committee, the Chair received a request from a member representing a Participant for ASX to review and consider findings from the Hong Kong Exchange 'Synapse' project. The Chair noted, initial analysis indicates the project closely aligned to scope objectives 2.1 and 2.2. Consequently, ASX intends to leverage learnings and findings from the project's design to inform the approach to these objectives.

A member representing a Participant requested clarification whether the intent of the Technical Committee was to review industry changes within other markets to provide insights on how they may be adopted locally. The Chair agreed, noting that once a topic has been determined as relevant, it can flow through the recommendation process to the Business Committee and the ASX Clear and Settlement Boards or Advisory Group if required.

### AFMA Registries Forum

The Chair introduced and handed over to the member from AFMA to provide a summary of the AFMA Registry Forum.

The member from AFMA summarised proceedings from the recent AFMA Registry Forum, noting it was well attended. The member from AFMA thanked Citi for chairing and reiterated that this responsibility would continue to be rotated among members. The forum facilitated a productive exchange of ideas, with an emphasis on data as well as identifying and defining problems. Notably, discussions highlighted the importance of enabling key benefits at a minimal cost. One area of focus was APIs and the potential for more commonality in the future as well as additional options for organisations to resolve issues upfront. To support further discussion, next steps involve an increased monthly cadence. The next AFMA Registries Forum is scheduled for 5 December, noting the member for AFMA is gauging interest for a January forum due to anticipated member absences.

## AGENDA ITEM 3: Project Status & Governance

The ASX General Manager Business Design provided the project update noting the progress of the analysis of solution options. The ASX General Manager Business Design stated the primary focus of the project team is finalising deliverables and ensuring the Advisory Group is informed about the project's progress ahead of the Q4 solution decision announcement. The Q4 solution decision announcement remains subject to various factors, including regulatory engagement and the Advisory Group, who will meet on 9 November to provide feedback on the materials ASX has presented. The Chair reiterated the in-flight activities supporting the project including EY's assurance, further regulatory engagement at ASX executive and Board level, noting once the decision has been finalised the announcement, supported by an industry webinar and ad-hoc Technical Committee, will go ahead this quarter.

### Member discussion:

A member representing a Participant questioned whether all four previously discussed solution archetypes were still potential solution options. The Chair noted that as the solution decision process involves commercial and confidential matters which are still subject to change ASX cannot disclose more at this stage. In the Technical Committee meetings after a decision has been announced ASX will be able to have a productive and open discussion.

A member representing a Participant raised a question, whether any solution option vendor or delivery partner would be represented at the Technical Committee. The Chair reiterated ASX's overall accountability for the delivery of the CHESS Replacement project. The ASX General Manager Business Design added that this was a lesson learnt from the previous project and that, if a vendor solution was elected, the vendor or delivery partner would be appropriately represented.

A member representing a Participant inquired about activities beyond the Q4 solution decision announcement. The ASX General Manager Business Design explained that preparatory activities would be undertaken internally to transition to the next phase of the project after Q4 solution decision announcement.



A member representing a Participant requested clarification on the remaining in-progress activities and whether they were now considered overdue. The Chair clarified these activities were not considered overdue as they all targeted the same due date and remained in-progress due to a dependency on input from the Advisory Group.

#### **AGENDA ITEM 4: ISO 20022 binary transmission**

The ASX Enterprise Architect detailed ISO 20022's support for two formats, XML and ASN.1. ASN.1 is a popular format in many industries and is significantly faster to decode and more compact than XML.

However, in the context of ISO 20022 usage market infrastructures, it is not the dominant format (e.g. T2S uses ISO 20022 XML). Additionally, SWIFT does not support ASN.1 over its network.

There are three possibilities for ISO 20022 transmission:

1. Continue with an XML format (with the optional removal of outbound message signatures);
2. Switch to ASN.1; or
3. Support ASN.1 in conjunction with XML.

ASX investigated potential bottlenecks and whether there is evidence these bottlenecks would eventuate and require ASX to move away from XML.

#### **Context**

The proposed message format for CHES Replacement is ISO 20022 XML

- Typical messages are 3Kb in size and swells to 6 KB with a digital signature;
- Clearing participants receive a notified trade message for each trade that is registered for clearing;
- A large clearer on 15M trade day may receive ~4.5M messages (counterparty to 30% of the trades);
- Modelling on the March 2020 peak indicates that a system wide throughput of <1500/s is needed to process all trades. A large clearer with 30% of the trade volume would need to handle 500/s; and
- Assuming a 6KB average size then the total data would be 4.5M x 6KB = 27GB of data.

#### **Decoding Performance**

##### **Key insights from OSS Nokalva ASN.1 Whitepaper**

- The ASN.1 format achieved high rates of decoding in well in excess of what is required by CHES Replacement at 100,000/s.
- The whitepaper did not provide tabular results but noted that ASN.1 results were circa 24 - 45 times higher than the basic XML format. This implied a rate in the thousands per second for XML. This aligns with ASX Clear experience with CHES Replacement project where we were able to decode, digitally sign, and recode the ISO 20022 XML with the signature, at the rate of 500/s per process.
- The basic XML format outperformed compressed XML formats, hence there was nothing to be gained from compressing the XML payload.

##### **ISO 20022 XML bandwidth**

- 27GB of data requires up to 40 Gbps network bandwidth to transmit within acceptable timeframe
- The bandwidth on our standard ASX Net CPE devices are set at 50 Mbps in each direction but can be upgraded to up to 1.2Gbps, representing up to 30 times the forecast peak bandwidth.
- The size of ISO 20022 XML messages can easily be accommodated within the bandwidth constraints of ASX Net. In addition, Participants can elect out of outbound messages signing which would halve the required bandwidth

#### **Conclusion**

ASX will maintain the continued use of an ISO 20022 XML for the following reasons:

- Adopting a widely used industry format such as ISO 20022 XML aligns to the CHES Replacement project's objectives (refer to the [22 February Committee](#)), including:
  - Enabling opportunities for industry efficiencies and growth;
  - Reducing rework and supporting the reuse of previously completed ISO 20022 XML work; and
  - Avoiding the addition of any unnecessary project complexity.
- Switching to ASN.1 or offering ASN.1 as an alternate format would require strong evidence of potential XML usage performance issues. An analysis of both decoding performance and bandwidth requirements did not find any strong evidence for this.
- As part of a future Technical Committee, ASX will provide further detail on non-functional areas such as performance.

#### **Member discussion:**

A member representing a Participant inquired about the approach post go-live in the event a potential issue with XML eventuates. The ASX Enterprise Architect confirmed that the approach would involve further developing the platform post go-live if XML-related issues arose, based on evidence from non-functional testing with customers.

A member representing a Participant sought clarification on whether ASX had completed any further research or had compiled any information supporting additional use cases. The ASX Enterprise Architect noted analysis was based on the referenced white paper and incorporated additional analysis completed by ASX on calculated message size and network throughput. Supporting this analysis and ASX's conclusion, a member representing a Participant cited evidence from their organisation's use of ISO 20022 XML format in T2S without challenges, even with high volumes.

A member representing a Participant questioned the potential for format changes in T2S or other market infrastructures. The ASX Enterprise Architect confirmed ASX will continue to monitor any international market changes.

A member representing a share registry requested a follow-up with their organisation to revisit ISO 20022 binary transmission and ASX's planned usage of an ISO 20022 XML format, as well as whether there was a roadmap to T2S incorporating the ASN.1 format. The ASX Enterprise Architect agreed to a follow-up.

### **AGENDA ITEM 5: Scope refinement next steps & engagement**

#### **Business Committee Scope Refinement Update**

The ASX General Manager Business Design provided an overview of the changes to the scope objectives categorisation as a result of feedback received from members in the 28 September Committee. The ASX General Manager Business Design noted that the Committee's recommendation was endorsed at the 11 October Business Committee and will be formalised for resolution at the Clearing and Settlement Boards. These changes involved:

1. Proceed to CHES Replacement design **evaluation and** consultation
  - Evaluation will be based on the chosen solution option in parallel with support from relevant and appropriate industry forums or requisite working groups.
2. Proceed to CHES Replacement design **evaluation and** consultation (and evaluate the opportunity to make improvements in current CHES)
  - Feasibility of objectives will also be explored in current CHES.
    - Not expected to include any CHES code changes, but rather minor configuration or process changes.
3. Further consideration

- Objectives will be brought back to the Technical Committee for further discussion and analysis. Where relevant and appropriate, industry forums may be consulted. These objectives, and any future objectives, will have the opportunity to be recommended to the Business Committee and C&S Boards for inclusion in the CHES Replacement design phase in the future.
4. Not supported
- Objectives have not received sufficient support and will not be brought forward at this time.

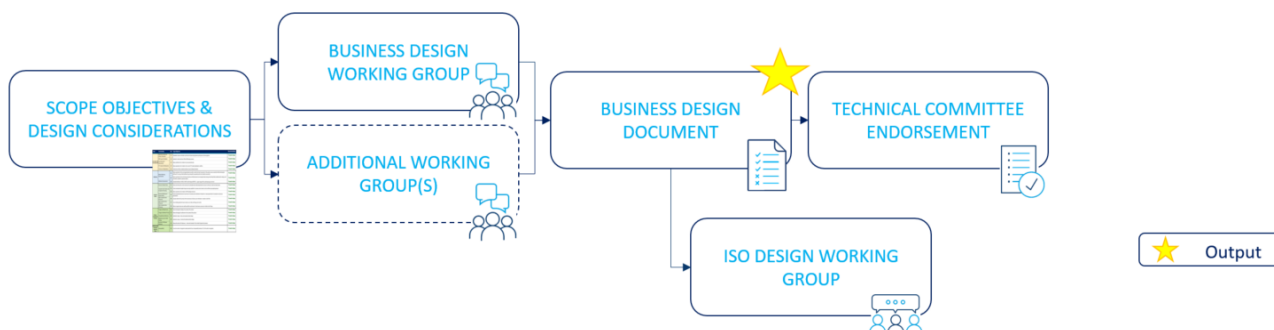
### Proposed Technical Committee Operating Model for CY24

Post solution announcement and subject to various forms of consultation, the ASX Senior Product Manager proposed the following operating model to support industry engagement:

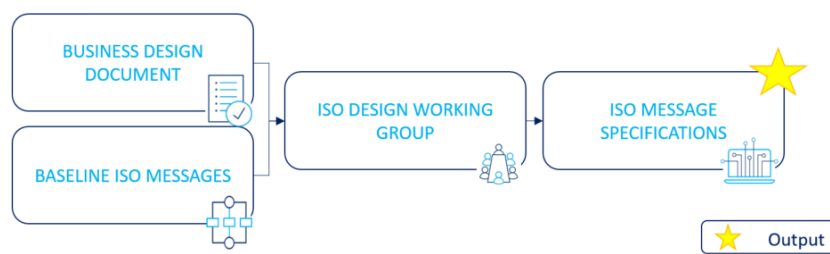
1. Business Design Working Group (BDWG)
  - Responsible for the functional design of any new/changing scope; and
  - Includes Business and Operational SMEs from relevant organisations.
2. ISO Design Working Group (IDWG)
  - Responsible for the ISO20022 message designs and flows;
  - Will be consulted on all messages; and
  - Includes Technical SMEs from relevant organisations.
3. Additional Working Groups
  - Members and responsibilities as required.

### Proposed next steps for Scope Objectives

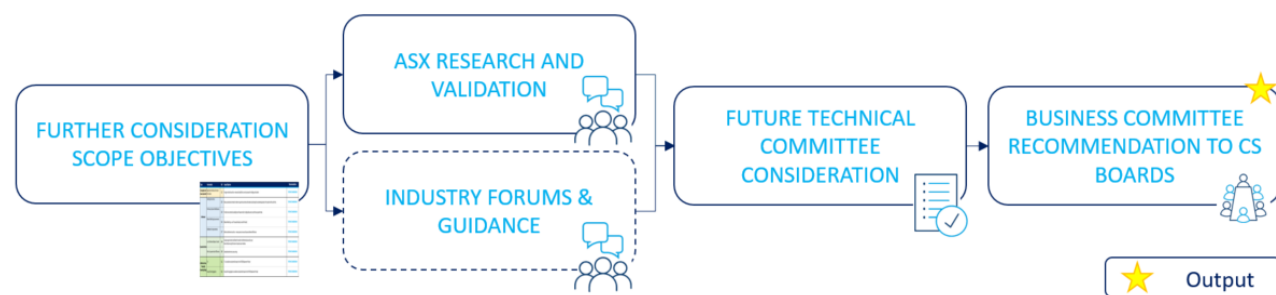
The ASX Senior Product Manager proposed the following model for the scope objectives recommended to ‘Proceed to CHES Replacement design evaluation and consultation.’ The model below details how scope objectives are refined into the CHES Replacement business design documentation.



The model below details the proposed ISO design Working Group process and how scope objectives are addressed in the technical design and review of existing ISO 20022 messages.



The ASX Senior Product Manager concluded by proposing the following model for scope objectives recommended for ‘Further consideration’. The model below details how scope objectives are revisited after further discussion and analysis.



### Member discussion:

A member representing a Participant sought clarity on the ISO Design Working Group, noting ASX have previously spoken to leveraging what was possible of the existing design work from the former project. The ASX Senior Product Manager responded that future ISO Design Working Groups would primarily focus on taking the baseline messages and evaluating any changes that might be needed. This involves evaluating whether existing messages align with the most recent ISO 20022 standards as well as considering any changes stemming from scope objectives, customer feedback, and potential tweaks to the solution. The goal of the ISO Design Working Group is to ensure ISO 20022 standard compliance, check and, where required, make changes to messages. The Chair reiterated that while ISO 20022 standards act as the framework for the working group, the business logic and technical details may vary and are crucial to consider when implementing ISO 20022 standards.

A member representing a Participant requested clarification on the membership of the ISO Design Working Group and whether SWIFT would be invited in the capacity of an ISO Registration Authority. The Chair stated that membership had not yet been confirmed, noting that ISO 20022 SMEs are planned to be a key part of the ISO Design Working Group.

A member representing a Participant questioned whether any new or emerging requirements would impact existing XML schemas. The Chair suggested this is the intent of the ISO 20022 Design Working Group and where required, the appropriate SMEs would be engaged to ensure ISO 20022 standards compliance.

A member representing a Participant asked whether the working group recommendation process involved the Technical Committee. The ASX Senior Product Manager agreed and explained that the proposed Business Design and ISO Design Working Group will focus on scope objectives and with material gathered from previous discussions and surveys to create a business design document. This document would articulate a more detailed breakdown of requirements and be reviewed by the Technical Committee. The ASX Senior Product Manager reiterated that these models are proposed for Member review and input, stating that ASX is seeking guidance from the industry on how they want to be engaged.

A member representing a third-party software vendor stressed the importance of business case drivers and understanding the nature of any proposed changes. The third-party vendor continued noting any additional supplemental information, such as end-to-end operating flows and different participant views, would be beneficial to support the proposed working groups and formal consultation. The Chair and ASX General Manager Business Design acknowledged the working groups, and any supplementary information would ultimately support and facilitate ongoing market feedback prior to formal consultation. The ASX General Manager Business Design continued, acknowledging the information requested would be valuable to appropriately consider the diverse perspective of different CHES user types and determine how best to support them. The Chair further added the challenge new scope items present, noting the need to balance cost and benefit. The Chair reinforced the need to appropriately address this challenge as part of the next phase of industry engagement.

The ASX Senior Product Manager, Equity Post Trade concluded by noting ASX is open to feedback on the proposed approach and would continue to refine the process, acknowledging that certain topics may require multiple sessions.

### AGENDA ITEM 6: Other Matters

#### a) Forward work plan

The ASX Senior Manager Stakeholder Engagement, Equity Post Trade discussed the forward work plan, noting the final Technical Committee for the calendar year following the Q4 solution decision announcement will be ad-hoc and in a virtual format. Committee members were reminded to submit any desired topics for future discussion at the Technical Committee to [ASX CHESS Replacement](#).

The ASX Senior Manager Stakeholder Engagement, Equity Post Trade presented the proposed cadence of Business and Technical Committees for the next calendar year. The schedule was designed to provide members with an appropriate amount of time to review papers and pre-reading ahead of each Committee. Feedback was welcomed on the proposed dates or to highlight scheduling challenges to [ASX CHESS Replacement](#).

The ASX Senior Manager Stakeholder Engagement concluded by providing an overview of the Q4 solution decision announcement communications plan. This involved three primary steps:

1. **Announcement:** The high-level solution will be announced, supported by a high-level project timeline.
2. **Industry Webinar:** The announcement will be supported by an industry webinar and Q&A.
3. **Technical Committee:** Shortly after the industry webinar, a Technical Committee will be scheduled to provide further details about the solution and project plan.

The Chair reiterated the proposed high-level timeline supporting the Q4 solution decision announcement is subject to change based on the planned Q1 market consultation on the project plan.

#### b) Meeting observations

The appointed independent meeting observer complimented the overall discussion and participation within the Committee, noting the larger meeting room was more accommodating and had no audio challenges. The observer noted content was meaningful to the agenda and addressed all outstanding topics, actions and questions. From a meeting hygiene perspective, one improvement area the observer reminded Committee members of was for members to introduce themselves when speaking, especially for those physically present, as it is not always clear who is speaking to those attending virtually.

The meeting closed at 3:10 PM

Signed as a correct record of the meeting.



7 February 2024

Chair

Date