



ASAE 3402

Assurance Report on Controls at a Service Organisation relating to the Clearing House Electronic Subregister System (CHESS)

1 JULY 2023 – 30 JUNE 2024



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1 / Statement by ASX as the Service Organisation

The accompanying description provided by ASX management in this report has been prepared for facility users who have used CHES System (Facility Users) and their auditors who have a sufficient understanding to consider the description, along with other information (including information about controls operated by Facility Users themselves), when assessing the risks of material misstatement of Facility Users' financial reports / statements. ASX confirms that:

- a) The accompanying description in Sections 5, 7 and 9 fairly presents CHES ('CHES' or 'system') for processing Facility Users' transactions throughout the period 1 July 2023 to 30 June 2024.

The criteria used in making this statement were that the accompanying description:

- (i) presents how the system was designed and implemented, including:
 - the types of services provided including, as appropriate, classes of transactions processed
 - the procedures, within both information technology and manual systems, by which those transactions were initiated, recorded, processed, corrected as necessary, and transferred to the reports prepared for Facility Users
 - the related accounting records, supporting information and specific accounts that were used to initiate, record, process and report transactions; this includes the correction of incorrect information and how information was transferred to the reports prepared for Facility Users
 - how the system dealt with significant events and conditions, other than transactions
 - the process used to prepare reports for Facility Users
 - relevant control objectives and controls designed to achieve those objectives
 - controls that ASX assumed, in the design of the system, would be implemented by Facility Users, and which, if necessary to achieve control objectives stated in the accompanying description, are identified in the description along with the specific control objectives that cannot be achieved by ASX alone, and
 - other aspects of the ASX control environment, risk assessment process, information system (including the related business processes) and communication, control activities and monitoring controls that were relevant to processing and reporting Facility Users' transactions.
 - (ii) includes relevant details of changes to CHES during the period 1 July 2023 to 30 June 2024, and
 - (iii) does not omit or distort information relevant to the scope of the system being described, while acknowledging that the description is prepared to meet the common needs of a broad range of Facility Users and their auditors and may not, therefore, include every aspect of the system that each individual Facility User may consider important in its own particular environment.
- b) The controls related to the control objectives stated in the accompanying description were suitably designed and operated effectively throughout the period 1 July 2023 to 30 June 2024. The criteria used in making this statement were that:
- (i) the risks that threatened achievement of the control objectives stated in the description were identified
 - (ii) the identified controls would, if operated as described, provide reasonable assurance that those risks did not prevent the stated control objectives from being achieved, and



- (iii) the controls were consistently applied as designed, including that manual controls were applied by individuals who have the appropriate competence and authority, throughout the period 1 July 2023 to 30 June 2024.

Signed on behalf of management

Signed by:

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Group Executive, Securities and Payments

25 July 2024



2 / Independent Service Auditor's assurance report on the description of controls, their design and operating effectiveness

To: Directors of ASX Limited

Scope

In accordance with the terms of the engagement letter dated 01 February 2024, we were engaged to report on ASX Limited's (ASX) description in Sections 5, 7 and 9 of its CHESS system (System) for processing Facility Users' transactions throughout the period 1 July 2023 to 30 June 2024 (the description), and on the design and operation of controls related to the control objectives stated in the description.

The description indicates that certain control objectives specified in the description can be achieved only if complementary user entity controls contemplated in the design of ASX's controls are suitably designed and operating effectively, along with related controls at the service organisation. We have not evaluated the suitability of the design or operating effectiveness of such complementary user entity controls.

ASX's Responsibilities

ASX is responsible for: preparing the description and accompanying statement in Section 1, including the completeness, accuracy and method of presentation of the description and statement; providing the services covered by the description; stating the control objectives; and designing, implementing and effectively operating controls to achieve the stated control objectives.

Our Independence and Quality Management

We have complied with the ethical requirements of the Accounting Professional and Ethical Standard Board's APES 110 *Code of Ethics for Professional Accountants (including Independence Standards)* relevant to assurance engagements, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our firm applies Australian Standard on Quality Management ASQM 1, *Quality Management for Firms that Perform Audits or Reviews of Financial Reports and Other Financial Information*, or Other Assurance or Related Services Engagements, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Service Auditor's Responsibilities

Our responsibility is to express an opinion on ASX's description and on the design and operation of controls related to the control objectives stated in that description, based on our procedures. We conducted our engagement in accordance with Standard on Assurance Engagements ASAE 3402 *Assurance Reports on*

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Controls at a Service Organisation (ASAE 3402), issued by the Auditing and Assurance Standards Board. That standard requires that we plan and perform our procedures to obtain reasonable assurance about whether, in all material respects, the description is fairly presented and the controls are suitably designed and operating effectively.

An assurance engagement to report on the description, design and operating effectiveness of controls at a service organisation involves performing procedures to obtain evidence about the disclosures in the service organisation's description of its System, and the design and operating effectiveness of controls. The procedures selected depend on our judgement, including the assessment of the risks that the description is not fairly presented, and that controls are not suitably designed or operating effectively. Our procedures included testing the operating effectiveness of those controls that we consider necessary to provide reasonable assurance that the control objectives stated in the description were achieved. An assurance engagement of this type also includes evaluating the overall presentation of the description, the suitability of the objectives stated therein, and the suitability of the criteria specified by the service organisation and described in Section 1.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Limitations of Controls at a Service Organisation

ASX's description is prepared to meet the common needs of a broad range of Facility Users and their auditors and may not, therefore, include every aspect of the System that each individual Facility User may consider important in its own particular environment. In addition to this, because of their nature, controls at a service organisation may not prevent or detect all errors or omissions in processing or reporting transactions. Further, the projection of any evaluation of effectiveness to future periods is subject to the risk that controls at a service organisation may become inadequate or fail.

Opinion

Our opinion has been formed on the basis of the matters outlined in this report. The criteria we used in forming our opinion are those described in ASX's statement in Section 1. In our opinion, provided Facility Users have applied the complementary user entity controls contemplated in the design of ASX's System and those controls were operating effectively, in all material respects:

- (a) The description fairly presents the System as designed and implemented throughout the period from 1 July 2023 to 30 June 2024.
- (b) The controls related to the control objectives stated in the description were suitably designed throughout the period from 1 July 2023 to 30 June 2024.
- (c) The controls tested, which were those necessary to provide reasonable assurance that the control objectives stated in the description were achieved, operated effectively throughout the period from 1 July 2023 to 30 June 2024.

Description of Tests of Controls

The specific controls tested and the nature, timing and results of those tests are listed in Section 9.



Other Information

The information included in sections 3, 4, 6 and 8 is presented by the service organisation to provide additional information and is not part of the service organisation's description of controls that may be relevant to Facility Users' internal control as it relates to financial reporting. Such information has not been subjected to the procedures applied in the examination of the description of the service organisation and accordingly, we express no opinion on it.

Intended Users and Purpose of the report

Anyone accessing this report is taken to have acknowledged and agreed to the following:

This report and the description of tests of controls in Section 9 are intended only for ASX and Facility Users who have used ASX's CHES system, and their auditors, who have sufficient understanding to consider it, along with other information including information about controls operated by Facility Users themselves, when assessing the risks of material misstatements of Facility Users' financial reports / statements.

This report was prepared on the instructions of our client, ASX, in connection with certain of ASX's internal controls. We have no knowledge or understanding of the circumstances or position of each Facility User or any other party. Our work was not planned or conducted having regard to the information any party may require regarding ASX's CHES system (including the control objectives or controls within the System), or the ways in which they may seek to make use of our report or the accompanying description of tests of controls and we therefore make no representation concerning the appropriateness of this report or the accompanying description of tests of controls for them. Except to the extent set out above, we performed our work and this report is prepared in accordance with the purpose and terms of our engagement by ASX and we accept no responsibility or liability to anyone else (other than the Facility Users) in connection with it. Anyone else who chooses to use or rely on our reports for their own individual purposes do so at their own risk.

This disclaimer applies:

- to the maximum extent permitted by law and, without limitation, to liability arising in negligence or under statute; and
- even if we consent to anyone other than ASX and the Facility Users and their auditors receiving or using this report or the accompanying description of tests of controls.

DocuSigned by:

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PricewaterhouseCoopers

DocuSigned by:

A stylized signature of Scott Hendry in blue ink.

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Scott Hendry

Partner

Sydney

25 July 2024



3 / Introduction

ASX management is responsible for the design, implementation and maintenance of the internal control procedures and for the declarations and assertions in this report. In carrying out this responsibility, management has regard to the interests of Facility Users, the ASX Clear Operating Rules, the ASX Settlement Operating Rules, the general effectiveness of the operation of CHESS and the overall stability of the Australian financial system.

This report has been prepared to provide:

- an overview of the ASX Group
- an overview of CHESS and its role in the clearing and settlement process
- a summary of ASX's corporate governance arrangements relating to the CHESS operating environment
- the control objectives and control procedures that underpin the CHESS control environment, and
- the independent auditor's report on the control objectives and control activities supporting those control objectives.

The report has been prepared in compliance with *ASAE 3402 Assurance Reports on Controls at a Service Organisation*.



4/ Overview of the ASX Group

ASX is an integrated exchange offering listings, markets, securities and payments, and technology and data services. It operates markets for a wide range of asset classes including equities, fixed income, commodities and energy and is a top 10 global securities exchange by value and the largest interest rate derivatives market in Asia.

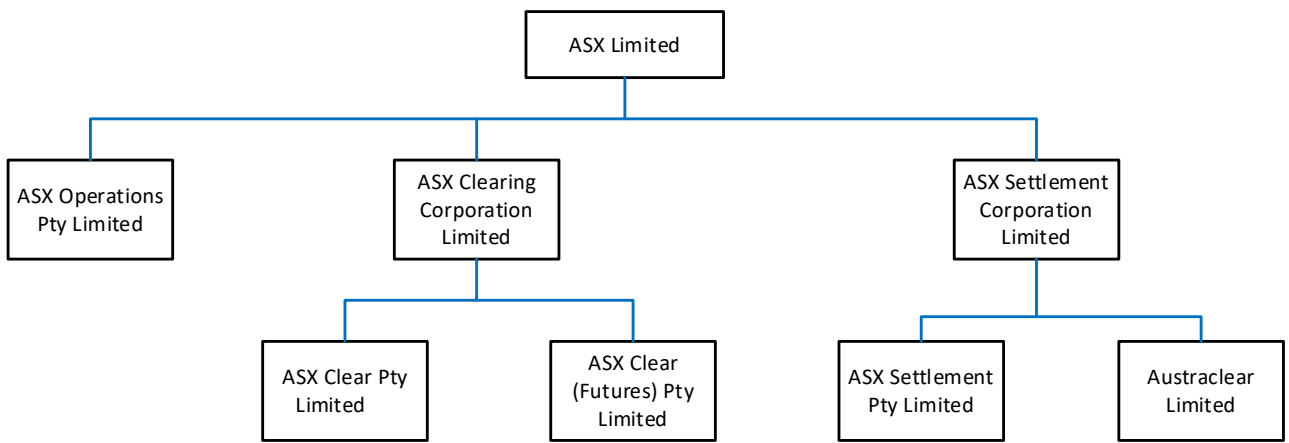
Companies and other issuers of capital from Australia and around the world engage with ASX to manage risk and raise capital to sustain and grow their businesses. ASX operates liquid, transparent and reliable markets of integrity. The certainty and security of its clearing and settlement activities help to underpin the systemic stability of the Australian economy.

ASX also provides data and technology services to intermediaries, banks, information vendors and software developers to help them make informed decisions, offer services to their clients and connect with one another.

More information about ASX can be found at: www.asx.com.au.

Structure

Relevant parts of the ASX Group structure are depicted below:





5 / Overall control environment

Corporate Governance

The control environment within which ASX operates CHES is not restricted to the control objectives and procedures outlined in this report.

The ASX Group maintains a high standard of corporate governance and has implemented governance arrangements which are consistent with the ASX Corporate Governance Council’s Corporate Governance Principles and Recommendations (4th Edition). An overview of those components of ASX’s corporate governance framework which are relevant to the operation of CHES is set out below. More information on ASX’s corporate governance framework is available on ASX’s website and in its Annual Report.

CHES is operated by ASX Operations Pty Limited, a wholly-owned ASX Group subsidiary, to fulfil the clearing and settlement functions of ASX Clear Pty Limited and ASX Settlement Pty Limited respectively. ASX Clear and ASX Settlement are clearing and settlement facility licensees and are wholly-owned subsidiaries of ASX. They are two of four clearing and settlement facility licensees in the ASX Group.

The ASX Board relies on the Clearing and Settlement (CS) Boards to provide oversight of the clearing and settlement operations of the clearing and settlement subsidiaries including, the management of clearing and settlement risk, and compliance with the Financial Stability Standards determined by the Reserve Bank of Australia (RBA).

The following table sets out key responsibilities of the CS Boards in relation to risk management:

Operational risk tolerance	Set the operational risk tolerance for the CS facility licensees, and in doing so, have regard to the legitimate business interests of ASX as a provider of capital to the central counterparties.
Risk management framework & internal controls	Review and approve the risk management framework and oversee the adequacy of internal controls, systems and processes for the management of clearing and settlement risks of the CS facility licensees.
Oversee management systems and processes	Oversee management systems and processes for the purpose of: <ul style="list-style-type: none">• ongoing compliance with the Financial Stability Standards• ongoing compliance with statutory obligations of the CS facility licensees• management of the CS facility licensees within risk appetite and operational risk tolerances.

Each of the CS Boards is comprised of a majority of directors who are independent non-executives. The Chair is also an independent non-executive director. For each of the CS facility licensees (including ASX Clear and ASX Settlement), there is an additional requirement that their Boards comprise at least 50 percent of the non-executive directors who are not also directors of ASX Limited (**‘non-ASX directors’**) and that the Chair is a non-ASX director.

These arrangements allow the non-ASX directors of ASX Clear and ASX Settlement to form a quorum and meet separately to consider matters that relate to providing clearing and settlement services to non-ASX affiliated market operators or listing venues, including the consideration of confidential and competitively sensitive information. The non-ASX directors may also meet separately to consider potential intra-group conflicts and any recommendations on the management of those intra-group conflicts.

The Clearing and Settlement Boards’ Charter sets out further details regarding their functions and governance.

ASX Limited has established an Audit and Risk Committee (ARC) (comprising independent, non-executive directors of ASX Limited). The ARC also serves as the audit and risk committee of ASX’s Clearing and Settlement Boards (including ASX Clear and ASX Settlement) and there is a standing invitation for a representative of the non-ASX directors of ASX’s Clearing and Settlement Boards to attend.



ASX Limited and ASX's Clearing and Settlement Boards have established a Technology Committee (comprising independent, non-executive directors of those boards. One member is a non-ASX director of ASX's Clearing and Settlement Boards and the rest of the members are independent non-executive directors of ASX Limited). The Technology Committee assists the CS Boards to review and oversee arrangements for the CS facility licensees to achieve compliance with their statutory obligations as licence holders in relation to technological resources and human resources (with respect to technology) for operating the CS facilities.

The following Committees (comprised of Senior Management) also form an integral part of the overall control environment in which CHESS operates:

- Risk Committee
- Regulatory Committee
- Technology Management Committee
- Executive Team
- Monthly and Quarterly Business Reviews (Enterprise wide) and
- Portfolio Business Review

Each clearing and settlement facility licensee has a lead business executive (each, a CS Lead Executive) responsible for the operation of the facility, and for the achievement of strategies and objectives for the facility as determined by the relevant ASX Clearing and Settlement Board. The Group Executive, Markets is a CS Lead Executive for ASX Clear (Futures) and the Group Executive, Securities and Payments is a CS Lead Executive for Austraclear, ASX Settlement and ASX Clear.

ASX's Enterprise Compliance function conducts oversight of the ASX Group and provides quarterly reports to the Risk Committee, Regulatory Committee, Audit and Risk Committee, Clearing and Settlement Boards and a meeting of non-ASX directors of Clearing and Settlement Boards in relation to regulatory compliance matters.

Charters of the ASX Board, Clearing and Settlement Boards, ARC and the Technology Committee are available on ASX's website: www.asx.com.au.

Risk Management

ASX has an established enterprise risk management framework that supports ASX's approach to risk management, and encompasses risk appetite, risk culture and behaviours, and supporting frameworks and processes governing risk identification and assessment, treatment, monitoring and reporting.

ASX's enterprise risk management function has day-to-day responsibility for implementation of the enterprise risk management framework. The ARC reviews the enterprise risk management framework annually.

ASX's enterprise risk management framework is founded on the Three Lines of Defence model, which sets out clear roles and responsibilities for managing risks and controls across the organisation.

The Three Lines of Defence are as follows:

- **Line 1** is risk management within the business divisions and functions, including the identification, assessment, monitoring, reporting and escalation of risks.
- **Line 2** is the independent risk management and compliance functions that develop risk and compliance frameworks and policies and oversee and challenge risk management in Line 1. This includes the Enterprise Risk and Enterprise Compliance functions that report to the CRO.
- **Line 3** is the independent assurance function (including Internal Audit).



Figure 2 Graphical representation of the Three Lines of Defence within the ASX organisational structure



The identification and assessment of risks relating to the resilience, reliability, integrity, and security of CHES are addressed as part of this overarching risk management framework.

Internal Audit

Internal Audit is an independent assurance function. Its role is to provide the ASX Limited Board, CS Boards and management with assurance that ASX has effective, adequate and efficient internal controls in place to support the achievement of its objectives, including the management of risk. It also provides advice on ASX’s internal controls and business processes.

The Internal Audit function provides regular reports to management, the ARC and the CS Boards on key findings from internal audits and the implementation status of agreed internal audit recommendations. Management remains responsible for risk management and the operation and enhancement of internal controls, as well as for implementing agreed internal audit recommendations.

The General Manager, Internal Audit reports to the CFO for administrative purposes and has a direct reporting line to the Chair of the ARC in relation to the performance of the Internal Audit function. The General Manager, Internal Audit also has direct access to the CS Boards.

The Internal Audit function has its own charter that sets out its objectives, role, responsibilities, authority and accountability. The charter is published on the [ASX website](#).

Regulatory Governance

Licensed entities in the ASX Group are subject to review by ASIC and the RBA.



6 / Overview of CHESS environment

The clearing and settlement of equities is a critical component of the operation of Australia's financial markets. ASX Clear Pty Limited (ASX Clear) and ASX Settlement Pty Limited (ASX Settlement) are licenced clearing and settlement (CS) facilities under the Corporations Act. ASX Clear and ASX Settlement (the CS facilities) are currently the sole providers of clearing and settlement services for Australia's equity markets for cash market products traded on the ASX market, cash equities traded on the NSX and SSX markets, ASX-listed cash equities quoted and traded on the Cboe market, and warrants and ETFs quoted on Cboe.

Regulation

ASX Clear and ASX Settlement as licensed CS facilities under the Corporations Act must comply with the Financial Stability Standards (FSS) published by the RBA. In addition, they must:

- to the extent that it is reasonably practicable to do so, do all other things necessary to reduce systemic risk
- to the extent that it is reasonably practicable to do so, do all things necessary to ensure that the facility's services are provided in a fair and effective way, and
- have an adequate arrangement for supervising the facility.

CHESS

The CS facilities are licensed to operate the cash equities clearing and settlement facility and currently they do this using CHESS.

Settlement conducted through CHESS, operates a Model 3 Delivery versus Payment (DvP) multilateral net batch settlement mechanism, exchanging cash for securities irrevocably. Cash payments are made across the RBA RITS infrastructure while securities title is transferred in CHESS. This is performed via batch processing each morning (known as the 'CHESS Batch') and is usually complete by 12.30pm.

The CHESS settlement facility provides ASX-approved CHESS participants with the ability to meet settlement obligations, register and transfer holdings of securities via electronic CHESS messaging. In May 2014 the facility was expanded to facilitate the buying (applying for), selling (redeeming) and registration of units in unlisted managed funds (mFund).

CHESS was developed internally by ASX and has been operating since 1994. It is fully supported by a dedicated ASX technology team who performs all development requirements.

Transactions typically performed in CHESS include:

- client administration and maintenance
- security and holding administration and maintenance
- clearing and settlement processing (including daily batch)
- transfers between subregisters, and
- corporate actions.

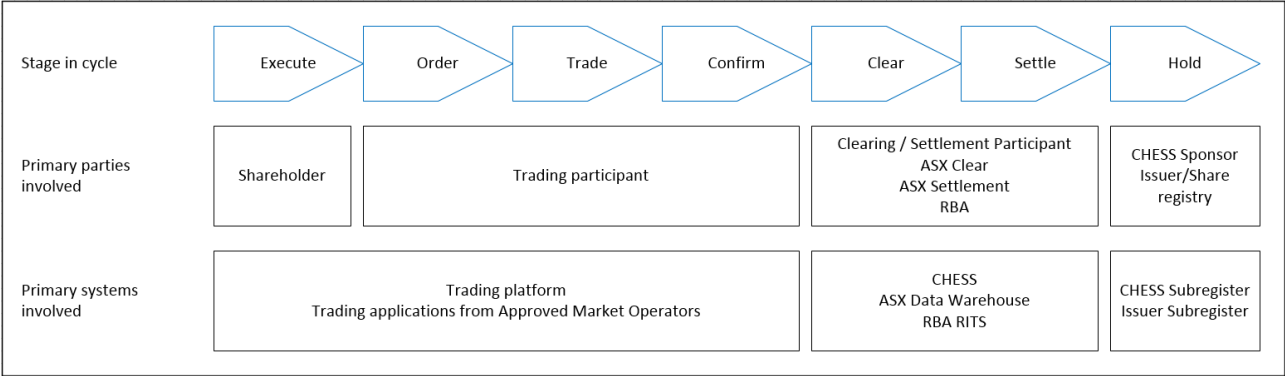
ASX Settlement authorises Facility Users such as brokers, custodians, third party clearing participants, settlement agents and others to access CHESS, and settle trades made by themselves or on behalf of their clients. In addition, Facility Users use CHESS for the purposes of receiving clearing services from ASX Clear Pty Limited.

In administering the CHESS Subregister, the CS facilities provide additional services to issuers, participants and holders of securities, including transfers and conversions, monthly statements, corporate action processing, takeover acceptances, primary and secondary market capital raising, depositary receipts in foreign securities, and reporting services.



The process of ordering, trading, clearing and settlement is a fully automated process. CHESS interacts with a number of ASX internal systems (such as the trading, risk management and data warehouse systems) as well as the systems and interfaces of Approved Market Operators, Facility Users and regulators.

An overview of the primary parties and systems involved in the trading cycle is depicted below.



ASX Settlement Services

Trade Acceptance Service (TAS)

A trade execution venue for ASX and non-ASX-quoted securities can use ASX’s Trade Acceptance Service (TAS) to put in place the clearing and settlement arrangements it needs to obtain an Australian market licence. ASIC is responsible for the granting of Australian market licences.

The TAS provides non-discriminatory access to clearing and settlement arrangements for other market operators which trade ASX and non-ASX-quoted securities.

The TAS enables trades in CHESS-eligible securities executed on any Australian licensed trading platform to be cleared and settled by the CS facilities in an identical fashion to trades executed on ASX’s own cash equity market.

Settlement Facilitation Service (SFS)

ASX Settlement provides settlement arrangements for approved listing venues (Approved Market Operators or AMOs) in respect of CHESS-eligible financial products listed on the markets of those AMOs.

There are two options for the settlement arrangements:

- a Transfer Facilitation Service where CHESS-eligible AMO-listed financial products can be transferred in real-time by ASX Settlement participants through CHESS. Payment is handled bilaterally by participants outside of CHESS, or
- a DvP Facilitation Service where CHESS-eligible AMO-listed financial products can be settled on a delivery versus payment (DvP) basis by ASX Settlement participants through the CHESS settlement batch. This service is currently suspended.

ASX Settlement has also put in place arrangements for AMO-listed issuers to access the following services:

- ASX Primary Market Facility, which enables them to use DvP settlement for certain capital raisings, and
- a Corporate Actions Service where ASX Settlement may process a corporate action, through the settlement facility for CHESS-eligible AMO listed financial products.



7 / Overview of CHES operations

The primary division that has direct control over the operational governance of CHES is the Securities and Payments Line of Business (S&P LoB). The Operations team within the S&P LoB is responsible for the day to day processing of trading, clearing and settlement transactions. The S&P Technology team and the technology shared services teams within the ASX Technology, and the IT Service Management team within the Enterprise Customer and Operations division are responsible for the IT support and development of CHES.

The CHES operational environment includes processes and controls in the following areas:

- transaction processing
- error resolution and escalation, and
- security and operational resilience
- system operations
- change management
- security, and
- system resilience.

The Securities and Payments Line of Business is headed by the Group Executive, Securities and Payments, ASX Technology is headed by the Chief Information Officer, and the Enterprise Customer and Operations division is headed by the Chief Operating Officer.

The following sections provide an overview of business and IT controls.

CHES transaction processing

Information between Facility Users and the clearing and settlement facility is communicated via a range of messages specified via a prescribed protocol. Each type of message allows for a business function to be performed. Within a functional area, there may be one or more sets of messages forming a sequence for that function. Information on CHES messages can be found in the CHES External Interface Specification manual.

CHES processing times

CHES is available for Registry processing from 5.10am and Facility Users processing from 6:00 am and closes at 7:00pm so that end of day processing can commence. The key components of end of day processing are CHES reporting, corporate action processing and netting. Netting occurs on settlement date minus one (S-1), whereby the trades reported via ASX Trade or the TAS are netted together at participant, security and settlement account level. Facility Users are advised via CHES messaging of the outcome of netting.

Processing errors are either flagged by CHES or identified by ASX via operational monitoring of the system and transaction reports. Once identified, errors follow a defined escalation path.

Holding securities in CHES

The CS facilities establish and administer a subregister of securities within CHES, known as the "CHES Subregister". CHES registers the title (ownership) of shares on its subregister and maintains a legal record of the balances of holdings in CHES for securities holders. The Principal Register for any particular company is made up of the combined holdings registered on both the CHES Subregister and the Issuer Sponsored Subregister (maintained by the issuer's share registry). Conversions of issuer-sponsored to CHES-sponsored holdings are processed automatically by CHES based on instructions received from participants. Holdings on CHES are recorded on Holder Identification Number's (HINs) and



holdings on the Issuer Sponsored Subregister are held on a Security holder Reference Number (SRN). An SRN must be issued for each holding in a security but a HIN may hold multiple securities on the one identification number.

A security holder can only record their holding in the CHESS Subregister through an approved ASX Settlement Participant and accordingly is required to enter into a "Sponsorship Agreement" with that ASX Settlement Participant (referred to as a "CHESS Sponsor"). The Sponsorship Agreement sets out the terms and conditions under which the CHESS Sponsor maintains a client's holdings and HIN.

ASX has established processes in place, including system-enforced segregation of duties between data entry and review for the additional and removal of issuers and participants.

Any manual addition or modification to security holdings data or settlement instructions in CHESS are performed by senior staff or upon instruction of senior staff or manager of the CHESS Settlement Operations team. Automated CHESS messages are sent to the relevant participants once these actions are completed.

On a regular basis, reconciliation of the ASX provided settlement obligation and security holdings from CHESS to Facility Users' internal records should be performed by the Facility Users. Where variances are noted, ASX should be notified. ASX follows an established incident management process to track these variances to resolution.

Daily settlement in CHESS

On a daily basis, CHESS processes the batch settlement based on netted settlement obligation communicated to the Facility Users on the previous day.

The ASX Settlement Operations team monitors the settlement process, identifies any security and payment failures and follows up in accordance with the established documented policies and procedures. Extensions to the daily batch settlement process, additions and modifications to settlement instructions, including cancellations and reschedules are recorded and actioned.

In the event assisted transactions are required to be completed by ASX on behalf of the payment providers, the Settlement Operations team completes the request after authorisation is provided by pre-approved personnel from payment providers.

Logical access

ASX has an established enterprise-wide identity and access management policy that is available to all staff. A centralised Identity and Access Management team is responsible for the implementation and operation of controls relating to user maintenance (i.e. provisioning, changing and de-activating accounts including remote access), password management and the performance of user access reviews for the ASX network, application software, operating systems and underlying databases relevant to CHESS. In addition, ASX maintains documented procedures and network security mechanisms for the prevention, detection and remediation of a malicious attack.

Change management

Changes relating to CHESS follow the enterprise-wide change management process that requires all changes to be logged in a centralised IT Service Management (ITSM) tool and approved, tested and monitored through the change life cycle. The process requires all changes to be assessed and signed off by the relevant Technology, Business and Change Approval Board (CAB) representatives prior to implementation, with the exception of those changes designated as standard changes. Standard changes are pre-authorised by the CAB and are very low risk changes that are well understood, repeatable and fully documented in an approved standard template. System and user documentation is updated, as appropriate, for each completed change.

Emergency changes also follow a defined and approved process, however, due to the nature of an emergency change, verbal or email approvals are obtained prior to implementation. Emergency changes may only be initiated if there is a corresponding incident ticket in the ITSM tool. Testing and formal approvals are performed as soon as practical following the change.



ASX maintains separate development, test and production environments for CHESS as well as segregation of duties between development and production migration and support activities.

Physical security

In addition to the head office in the CBD, there are two data centres – a primary data centre managed by ASX, and a secondary vendor-managed data centre (SDC). The SDC has dedicated and secured areas for ASX infrastructure, office space and control room, over which ASX maintains direct control of physical security. As such, the data centre provider is not considered a sub-service organisation for the purpose of this report.

ASX implements and operates physical security controls at both data centres to ensure access to these data centres is limited to authorised personnel. The controls include access provisioning and removal, regular review of physical access, as well as established policies and procedures, electronic and biometric security devices and CCTV.

Environmental controls

There are environmental control mechanisms in place at both data centres. These are maintained on a regular basis to facilitate continued operation of the systems. Maintenance activities for the primary data centre are managed by ASX, while the vendor manages the maintenance for the SDC. ASX monitors the completion of the maintenance per an agreed schedule.

Disaster recovery

ASX operates using a dual site model for all key operational and technology functions, with one operational site (also the primary data centre) outside of the Sydney CBD and the SDC approximately 30km from the CBD. ASX maintains a Business Continuity Framework and dedicated plan for each key business unit, including those operating CHESS and scenario(s) are tested at least yearly. A Disaster Recovery (DR) plan is in place for the system with testing conducted annually to ensure the system redundancy, secondary services and fail-over processes remain current and operational, and the system is able to meet the targeted 2 hour recovery timeframe.

In addition, all ASX staff have the ability to work remotely, however some job functions may require an element of physical access to technology assets. Remote access is secured using multi-factor authentication.

IT processing

The following provides a summary of the other key technology processes relating to CHESS:

- **System backup:** CHESS application data is replicated to the secondary data centre in accordance with established policies and procedures. In addition, a regular backup cycle exists with tapes stored in an offsite facility by a specialist third party.
- **System monitoring:** There is automated monitoring in place for key functions and processing to support the operational integrity of the system with exception reporting and alerting to the relevant support teams for issues and failures. System capacity, performance incidents, operational incidents and system availability is monitored and reported to management on a monthly basis.
- **Job scheduling:** A number of job schedules exist that are key to the successful processing of transactions in CHESS. The status of the batch processes is monitored to ensure they are successfully completed. Changes to the schedules require approval prior to being implemented.
- **Incident management:** CHESS related incidents are logged and tracked to resolution following the ASX enterprise-wide incident management process.

System change

During the period, there were changes made to the CHESS environment as part of usual management and support, however there were no changes in processes and controls described above.



Control objectives and control procedures

Set out in this report are the control objectives relevant to CHES. The controls listed in Section 9 of the report have been designed to achieve each of the control objectives, and any references to the network, application, operating system and database are specific to CHES.

Complementary User Entity Controls

Achievement of control objectives 7 and 8 as set out in Section 9 are also dependent on controls performed by Facility Users as well as controls performed by other related party entities. These are known as Complementary User Entity Controls, or CUECs.

Internal controls, no matter how well designed and operated, can provide only reasonable, not absolute, assurance to management of achieving an entity’s objectives. All internal control systems are subject to inherent limitations.

Each Facility User must evaluate its internal controls to determine if appropriate procedures are in place. In order to rely on the controls in this report, the Facility User’s auditors should consider whether the following CUEC is operating.

Ref	Control description	Relevant control objectives in section 9
CUEC 1	Facility users should perform a regular reconciliation of the ASX provided settlement obligation and security holdings from CHES to their internal records. Where variances are noted, ASX should be notified accordingly for investigation and resolution.	7 and 8



8 / Requirement for the report

The requirement for and scope of the independent audit is mandated in the ASX Clear Operating Rules and ASX Settlement Operating Rules.

The following table provides the requirements under section 1.22 of the ASX Clear Operating Rules.

Rule Ref	Title	Content
1.22.1	ASX Clear to conduct annual review	ASX Clear must require an independent auditor to conduct an annual review of the Clearing System and that review must comprise the matters specified in the Procedures.
1.22.2	Copy of audit certificate to be provided to Participant	<p>If a Participant requests that ASX Clear provide a copy of any audit certificate arising from an annual review under Rule 1.22.1, ASX Clear must, without charge, provide a copy of the audit certificate to the Participant within 1 calendar month of:</p> <ul style="list-style-type: none"> (a) ASX Clear receiving the audit certificate or (b) the request <p>whichever is the later.</p>
1.22.3	Participant may request other review of the Clearing System	<p>If a Participant gives notice to ASX Clear requesting an audit certificate in relation to any review of the Clearing System other than an annual review under Rule 1.22.1:</p> <ul style="list-style-type: none"> (i) the Participant must in the notice undertake to pay any fee for that service which ASX Clear may notify to Participants from time to time and (ii) ASX Clear must request an independent auditor to conduct the requested review and supply an audit certificate in relation to the review to the Participant as soon as reasonable practicable.
1.22.4	No other right to inspect ASX Clear records	Except as expressly provided in these Rules, no Participant has any right of access to, or right to inspect, ASX Clear's Records.
1.22.5	Participant to accept review by auditor	Each Participant must accept and treat a review conducted by ASX Clear's auditor under this section as if that review were conducted by the Participant's own auditor.



The following provides the requirements under section 1.22.1 of the ASX Clear Operating Rules – Procedures:

The review will comprise:

- (a) reviewing ASX Clear's information processing facilities and the integrity of the Clearing System including:
 - (i) maintenance of security and confidentiality over the data of Participants
 - (ii) security over the physical operation of the Clearing System
 - (iii) backup and disaster recovery procedures and
 - (iv) Clearing System access controls.
- (b) assessing the integrity and accuracy of information generated by the Clearing System including:
 - (i) internal controls over data input by ASX Clear and
 - (ii) processing and reporting of transaction data.

The following table provides the requirements under section 12.3 of the ASX Settlement Operating Rules.

Rule Ref	Title	Content
12.3.1	ASX Settlement to conduct annual review	ASX Settlement must require an independent auditor to conduct an annual review of CHES and that review must comprise the matters specified in the Procedures (refer below).
12.3.2	Copy of audit certificate to be provided to Facility User	<p>If a Facility User requests that ASX Settlement provides a copy of any audit certificate arising from an annual review under Rule 12.3.1, ASX Settlement must, without charge, provide a copy of the audit certificate to that Facility User within 1 calendar month of:</p> <ul style="list-style-type: none"> (c) ASX Settlement receiving the audit certificate; or (d) the request <p>whichever is the later.</p>
12.3.3	Facility User may request other review of CHES	<p>If a Facility User gives notice to ASX Settlement requesting an audit certificate in relation to any review of CHES other than an annual review under Rule 12.3.1:</p> <ul style="list-style-type: none"> (iii) the Facility User must in the Notice undertake to pay the fee for that service set out in the Fees and Charges Schedule; and (iv) ASX Settlement must request an independent auditor to conduct the requested review and supply an audit certificate in relation to the review to that Facility User as soon as reasonably practicable.
12.3.4	No other right to inspect ASX Settlement records	Except as expressly provided in these Rules, no Facility User has any right of access to, or right to inspect, ASX Settlement records.



Rule Ref	Title	Content
12.3.5	Facility User to accept review by auditor	Each Facility User must accept and treat a review conducted by ASX Settlement’s auditor under this Section as if that review were conducted by that Facility User’s own auditor.

Note: The ASX Settlement Operating Rules define a facility user (under section 2.13) as a participant; an issuer of approved financial products; or a market licensee which is provided with a transfer service under Rule 4.1A.

The following provides the requirements under section 12.3.1 of the ASX Settlement Operating Rules – Procedures:

The review of CHESS is to comprise:

- (a) reviewing ASX Settlement’s information processing facilities and the integrity of CHESS including:
 - (i) maintenance of security and confidentiality over the data of Facility Users;
 - (ii) security over the physical operation of CHESS;
 - (iii) CHESS backup and disaster recovery procedures; and
 - (iv) CHESS access controls.
- (b) assessing the integrity and accuracy of information generated by CHESS including:
 - (i) internal controls over data input by ASX Settlement; and
 - (ii) processing and reporting of transaction data.



9 / Control objectives and related control procedures

This section sets out the control objectives identified and developed by ASX for CHESS and the associated control activities, which are in scope for PricewaterhouseCoopers’s (PwC) independent assurance report. Any references made to the ASX network, application, operating system and database are specific to CHESS.

Following the description of control activities is a summary of tests performed by PwC to determine that the control activities in place were designed and operating with sufficient effectiveness to provide reasonable, but not absolute, assurance that the control objectives specified were achieved during the period 1 July 2023 to 30 June 2024. Where exceptions have been identified, these have been noted under ‘Results’ in the table below.

Logical Access

Control Objective 1: *Controls provide reasonable assurance that logical access is restricted to prevent inappropriate or unauthorised access to the ASX network, application software, operating systems and underlying databases.*

Description of controls		Test performed by PwC	Results
1.1	The ASX Identity and Access Management Policy (the Policy) is documented and outlines the principles for restricting access to the network, application software, operating systems and underlying databases. The Policy is available to all staff.	Inspection Verified through inspection that the ASX Identity and Access Management Policy was documented and outlined the principles for restricting access to the network, application software, operating systems and underlying databases and was available to all staff.	No exception noted.
1.2	New and modifications to user access to the ASX network, application software, operating systems and underlying databases are approved prior to access being provisioned.	Inspection For a sample of new and modifications to user access, verified through inspection that access to the ASX network, application software, operating system and underlying database was approved prior to access being granted.	No exception noted.



Description of controls	Test performed by PwC	Results
<p>1.3 Termination of user access to the ASX network, application software, operating systems and underlying databases is performed in a timely manner. Terminated employees' Active Directory access is automatically removed or deactivated on last day of service as recorded in the HR system.</p>	<p>Inspection</p> <p>For a sample of terminated users, verified through inspection that access to the ASX network, application software, operating system and underlying database was revoked in a timely manner in accordance with the ASX Identity and Access Management Policy.</p> <p>Observation</p> <p>Verified through onscreen observation that an automated deactivation process was in place to disable terminated staff network access on the last day of service as recorded in the HR system.</p> <p>Inspection</p> <p>For a sample of terminated users throughout the period, verified through inspection that their ASXProd account (ASX network access) was automatically deactivated on the last day of service as recorded in the HR system.</p>	<p>No exception noted.</p>



Description of controls	Test performed by PwC	Results
1.4 Access to the ASX network, application software, operating systems and underlying databases is authenticated and restricted through the use of password controls in line with policy requirements or a valid exemption for the deviation exists.	<p>Inspection</p> <p>Verified through inspection at the time of testing that password parameters at the ASX network, application software, operating system and underlying database layers were in line with the ASX Identity and Access Management Policy requirements.</p> <p>Inspection</p> <p>Where the password parameters were not in compliance with the ASX Identity and Access Management Policy requirements, validated through inspection that a current exemption for the deviation exists.</p>	No exception noted.
1.5 Regular reviews of user access to the application software, operating systems, underlying databases and source code repositories are performed to confirm currency and appropriateness of access. Follow up actions are completed in a timely manner.	<p>Inspection</p> <p>For a sample of application software, operating system, underlying database and source code repository user access reviews, verified through inspection that the reviews were performed to confirm currency and appropriateness of access.</p> <p>Inspection</p> <p>Verified through inspection that all follow up actions resulting from the sampled user access reviews were completed in a timely manner in accordance with ASX Identity and Access Management Policy.</p>	No exception noted.



Description of controls	Test performed by PwC	Results
1.6 Documented procedures and network security measures, i.e. firewalls, intrusion detection software, patching, anti-virus software and incident response process, are in place for safeguarding against the threat of malicious attacks.	<p>Inspection</p> <p>Verified through inspection of the Security Patching Guidelines, Malicious Code Standard, Cyber Incident Response Plan and Incident Response Playbooks that principles for safeguarding against the threat of malicious attack were outlined.</p> <p>Inspection and Observation</p> <p>Verified through inspection of network documentation and onscreen observation that firewalls, intrusion detection software and anti-virus software were in place.</p> <p>Inspection</p> <p>For a sample of monthly patching meetings, verified through inspection that the available patches were evaluated and, where required, tracked for implementation in line with the Security Patching Policy.</p> <p>*For incident response process testing, please refer to control 5.7.</p>	No exception noted.



Description of controls	Test performed by PwC	Results
1.7 Remote access to the ASX network, application software, operating system and underlying databases is restricted and further security measures include digital certificates and/or RSA tokens.	<p>Observation</p> <p>For a sample user, verified through onscreen observation that User IDs and passwords, as well as digital certificates or RSA tokens, were required to access the ASX network remotely.</p> <p>Inspection</p> <p>Verified through inspection of the ASX Mobility and Remote Access Standard that requests for remote access using RSA token were required to be authorised.</p> <p>Inquiry and Inspection</p> <p>Based on our inquiry and inspection, there were no instances of new remote access granted with the use of RSA tokens during the period.</p> <p>Inspection</p> <p>For a sample of users no longer requiring remote access accounts, verified through inspection that remote access was removed in a timely manner.</p>	<p>No exception noted.</p> <p>There were no instances of new remote access being granted with the use of RSA tokens during the period 1 July 2023 to 30 June 2024. Therefore, the operating effectiveness of this control could not be tested, and our procedures were limited to inquiry only.</p>



Change Management

Control Objective 2: Controls provide reasonable assurance that all changes relating to the application software, operating system software and underlying databases within the CHES production environment are authorised, tested and managed appropriately.

Description of controls	Test performed by PwC	Results
2.1 Documented change management procedures are in place. The policy is available to all relevant staff.	Inspection Verified through inspection that the ASX ITSM Change Management Policy was documented and outlines the procedures to handle standard, normal and emergency changes and was available to all relevant staff.	No exception noted.
2.2 Changes (excluding emergency changes) to the application software, operating systems and underlying databases have testing performed with testing results recorded, tracked and signed off prior to implementation.	Inspection For a sample of changes to the application software, operating system and underlying databases, verified through inspection that testing results were recorded, tracked and signed off prior to implementation.	No exception noted.
2.3 Changes (excluding emergency changes) to the application software, operating systems and underlying databases are authorised by Technology and/or the Business prior to implementation.	Inspection For a sample of changes to the application software, operating system and underlying databases, verified through inspection that each change was authorised by Technology and/or the Business prior to implementation.	No exception noted.



Description of controls	Test performed by PwC	Results
2.4 Segregation of development, test and production environments is in place.	Observation Verified through onscreen observation that segregated development, test and production environments existed at the time of testing.	No exception noted.
2.5 Emergency changes are authorised prior to or as soon as practical after implementation with documentation and testing performed as soon as practical upon implementation.	Inspection For a sample of emergency changes, verified through inspection that each change was formally authorised, tested and documented according to the ASX ITSM Change Management Policy.	No exception noted.
2.6 Segregation of duties between developers and migrators of changes is enforced through periodic review of access at the source code repositories and operating systems. Follow up actions are completed in a timely manner.	Refer to control 1.5 above.	Refer to control 1.5 above.



Physical Security

Control Objective 3: *Controls provide reasonable assurance that physical security prevents unauthorised access to the ASX primary data centre and ASX-controlled areas in the secondary data centre.*

Description of controls	Test performed by PwC	Results
3.1 Documented physical security policies and procedures relating to the ASX primary data centre and ASX-controlled areas in the secondary data centre are in place. This includes site visitation procedures (i.e. sign-in process, and the requirement to be accompanied by an authorised individual) for each category of access. The policy is available to all relevant staff.	<p>Inspection</p> <p>Verified through inspection that documented physical security policies and procedures relating to the ASX primary data centre and ASX controlled areas in the secondary data centre were in place and available to all relevant staff.</p>	No exception noted.



Description of controls	Test performed by PwC	Results
<p>3.2 Access to the ASX primary data centre and ASX-controlled areas in the secondary data centre is restricted and monitored through the use of electronic security devices and other arrangements (i.e. locked doors, security cameras, 24x7 operation). Identification badges are required for staff, visitors, contractors and customers.</p>	<p>Observation</p> <p>Verified through observation at the time of testing that the ASX primary data centre and ASX-controlled areas in the secondary data centres that access was restricted and monitored through the use of electronic security devices and other arrangements, including:</p> <ul style="list-style-type: none">- locked doors- security cameras, and- 24x7 operation <p>Observation</p> <p>Verified through observation at the time of testing that staff, visitors, contractors and customers were required to wear identification badges.</p>	No exception noted.
<p>3.3 Access requests to the ASX primary data centre and ASX-controlled areas in the secondary data centre are approved prior to access being granted.</p>	<p>Inspection</p> <p>For a sample of access requests to the ASX primary data centre and ASX-controlled areas in the secondary data centre, verified through inspection that access was approved prior to access being granted.</p>	No exception noted.



Description of controls	Test performed by PwC	Results
3.4 Access is removed in a timely manner for employees who no longer require access to the ASX primary data centre and/or ASX-controlled areas in the secondary data centre.	Inspection For a sample of terminated employees, verified through inspection that access to the ASX primary data centre and/or ASX-controlled areas in the secondary data centres was removed in a timely manner.	No exception noted.
3.5 Regular access reviews are performed to confirm currency and appropriateness of access to the ASX primary data centre and ASX-controlled areas in the secondary data centre. Follow up actions are completed in a timely manner.	Inspection For a sample of data centre user access reviews, verified through inspection that regular access reviews were performed to confirm currency and appropriateness of access to the ASX primary data centre and ASX-controlled areas in the secondary data centre. Inspection Verified through inspection that no follow up actions (access removals) were identified during the user access reviews.	No exception noted. There were no follow up actions identified during the user access reviews, therefore, testing over follow up actions was not performed.



Disaster Recovery Procedures

Control Objective 4: Controls provide reasonable assurance that in the event of a disaster, measures are in place to enable CHESS to resume effective operations within two hours.

Description of controls		Test performed by PwC	Results
4.1	A documented Disaster Recovery Plan for the system is in place and tested on a regular basis with an appropriate level of oversight.	Inspection Verified through inspection that a documented Disaster Recovery Plan for the system was in place, tested on a regular basis and test results are communicated and approved by relevant management.	No exception noted.
4.2	A documented Business Continuity Plan is in place and reviewed on a periodic basis. Scenario(s) are tested at least yearly, results are reviewed, approved and updates are made to the Business Continuity Plan as required.	Inspection Verified through inspection that the Business Continuity Plan (BCP) was in place and was reviewed periodically. Inspected that BCP scenario testing was performed at least annually, results reviewed, approved and updated as required.	No exception noted.



IT Processing

Control Objective 5: Controls provide reasonable assurance that CHESS is backed up, and system processing and performance is monitored.

Description of controls		Test performed by PwC	Results
5.1	Documented backup policies and procedures are in place. The policy and procedure documents are available to all relevant staff.	<p>Inspection</p> <p>Verified through inspection that back up policies and procedures were documented and were available to all relevant staff.</p>	No exception noted.
5.2	Application data is backed up on a regular basis. Failures are identified and tracked to resolution.	<p>Observation</p> <p>Verified through onscreen observation that the backup schedule for application data was setup in line with policy requirements.</p> <p>Observation and Inspection</p> <p>Verified through onscreen observation and inspection that an automated notification was generated upon failure of a backup job.</p> <p>Inspection</p> <p>For a sample of days, verified through inspection that backups were completed successfully.</p> <p>Inspection</p> <p>For a sample of incident tickets raised due to backup failures, verified through inspection that they were resolved in a timely manner in line with policy.</p>	No exception noted.



Description of controls	Test performed by PwC	Results
<p>5.3 Backed up data is stored in an offsite location and restricted to authorised personnel.</p>	<p>Inspection</p> <p>Verified through inspection of the agreement with the third-party service provider that backed up data was taken and stored in an offsite location.</p> <p>Inspection</p> <p>For a sample of days, verified through inspection that sign-off was provided by an authorised representative when backup tapes were taken off-site for storage.</p> <p>Inquiry and Inspection</p> <p>Verified through inquiry with management and inspection of the listing of individuals with access to ASX data stored at offsite locations that they were authorised personnel.</p>	<p>No exception noted.</p>
<p>5.4 Automated system monitoring tools are in place. Exception reporting is used to alert staff of operational failures.</p>	<p>Observation</p> <p>Verified through onscreen observation that automated system monitoring tools were in place.</p> <p>Inspection</p> <p>Verified through inspection that exception reporting functionality alerted staff of operational failures.</p>	<p>No exception noted.</p>



Description of controls	Test performed by PwC	Results
5.5 Job schedules are in place for batch processing. Failures are identified and tracked to resolution.	Inspection Verified through inspection that job schedules were in place for batch processing. Inspection For a sample of days, verified through inspection that the job schedules results were documented and reviewed. In the event of any failures, these were identified and tracked to resolution.	No exception noted.
5.6 Changes to job schedules are tested and approved prior to implementation.	Inquiry Verified through inquiry with management that no changes were made to the scheduled jobs for CHESS during the period 1 July 2023 to 30 June 2024. Inspection Verified through inspection of relevant job scheduler screenshots and confirmed that no changes were made to the scheduled jobs for CHESS during the period 1 July 2023 to 30 June 2024.	There were no changes made to the scheduled jobs for CHESS during the period 1 July 2023 to 30 June 2024. Therefore, the operating effectiveness of this control could not be tested and our procedures were limited to inquiry only.



Description of controls	Test performed by PwC	Results
5.7 Documented incident management procedures are in place and available to relevant staff. Incidents are logged and tracked to resolution in accordance with procedures.	<p>Inspection</p> <p>Verified through inspection that the ASX IT Incident Management Process was documented and outlined the incident management process and was available to all relevant staff.</p> <p>Inspection</p> <p>For a sample of incident tickets, verified through inspection that the incidents were logged and tracked to resolution in accordance with ASX IT Incident Management Process document.</p>	No exception noted.



Environmental Controls

Control Objective 6: Controls provide reasonable assurance that environmentally-controlled data centres exist to facilitate continuity of data processing operations.

Description of controls	Test performed by PwC	Results
<p>6.1 The data centres contain the following environmental mechanisms</p> <ul style="list-style-type: none">- fire detection and suppression systems- air conditioning systems- uninterruptible power supplies, and- water detection systems.	<p>Observation</p> <p>Verified through observation at the time of testing that the ASX primary data centre and ASX-controlled areas in the secondary data centre contained the following environmental mechanisms:</p> <ul style="list-style-type: none">- fire detection and suppression systems- air conditioning systems- uninterruptible power supplies, and- water detection systems. <p>Inspection</p> <p>For the ASX-controlled areas in the secondary data centre, for a sample of months, verified through inspection that management received and reviewed a report which included information on these relevant environmental mechanisms.</p>	<p>No exception noted.</p>



Description of controls	Test performed by PwC	Results
6.2 A schedule of maintenance is performed on a regular basis to assist in preventing operational failure of the above environmental mechanisms.	<p>Inspection</p> <p>Verified through inspection of the data centre maintenance schedules that maintenance of the above environmental mechanisms was performed on a regular basis.</p> <p>Inspection</p> <p>For ASX primary data centre, verified through inspection of a sample of maintenance reports that the preventative maintenance occurred in accordance with the schedule.</p> <p>Inspection</p> <p>For the ASX-controlled areas in the secondary data centre, verified through inspection that management had performed a monitoring check to ensure maintenance for environmental mechanisms relevant to ASX had been completed in accordance with the pre-defined schedule.</p>	<p>No exceptions were noted in PwC's testing.</p> <p>For 2 of the 4 months tested for regular maintenance for the ASX primary data centre by the ASX Internal Audit team, it was noted that maintenance was not performed for sprinkler and electrical/generator pumps which are part of the fire detection and suppression systems.</p>



CHES

Control Objective 7: Controls provide reasonable assurance that the process of daily settlement is complete and accurate.

Description of controls	Test performed by PwC	Results
7.1 Job schedules are in place for batch processing. Failures are identified and tracked to resolution.	Inspection	No exception noted.
	Verified through inspection that job schedules were in place for batch settlement processing.	
	Inspection For a sample of days, verified through inspection of checklists completed that the job schedule results were documented and reviewed.	
7.2 CHES payment failures are identified and actioned in accordance with the documented policies and procedures.	Inquiry and Inspection	There was no instance of job failures during the period 1 July 2023 to 30 June 2024. Therefore, the operating effectiveness of this control could not be tested and our procedures were limited to inquiry only
	Based on our inquiry and inspection, there were no job failures during the period.	
	Inspection	
7.2 CHES payment failures are identified and actioned in accordance with the documented policies and procedures.	Verified through inspection that documented CHES payment failure policies and procedures were in place.	No exceptions noted.
	Inquiry and Inspection	
	Based on our inquiry and inspection, no payment failures were noted during the period.	
		There was no instance of payment failures during the period 1 July 2023 to 30 June 2024. Therefore, the operating effectiveness of this control could not be tested and our procedures were limited to inquiry only



Description of controls	Test performed by PwC	Results
7.3 CHES securities failures are identified and actioned in accordance with the documented policies and procedures.	<p>Inspection</p> <p>Verified through inspection that documented CHES securities failure policies and procedures were in place.</p> <p>Inspection</p> <p>For a sample of days, verified through inspection that securities failures were monitored and followed up with the participants where required.</p> <p>Inspection</p> <p>For a sample of securities that did not settle within the required timeframe, verified through inspection that these failures were escalated to ASX Participants Compliance in a timely manner.</p>	No exception noted.
7.4 Extensions to the daily batch settlement process are recorded and actioned.	<p>Inspection</p> <p>For a sample of extensions to the daily batch settlement process, verified through inspection that each extension was recorded and actioned.</p>	No exception noted.
7.5 Deviations from scheduled settlement instructions (cancellations and re-schedules) are recorded and actioned.	<p>Inspection</p> <p>For a sample cancellation or reschedule of settlement instructions, verified through inspection that they were recorded and actioned.</p>	No exception noted.



Description of controls	Test performed by PwC	Results
<p>7.6 Additions and modifications to security holdings or settlement instructions are completed by appropriate personnel in accordance with documented procedures.</p>	<p>Inspection</p> <p>Verified through inspection that documented procedures for additions and modifications to the security holdings or settlement instructions were in place.</p> <p>Inspection</p> <p>For a sample of changes to securities holdings or settlement instructions, verified through inspection that documentation of the change existed and the change was processed by appropriate personnel.</p>	<p>No exception noted.</p>
<p>7.7 Authorisation from the payment provider is required prior to ASX performing assisted transactions.</p>	<p>Inspection</p> <p>For a sample of quarters, verified through inspection that signatory listings of payment providers were confirmed.</p> <p>Inspection</p> <p>For a sample of ASX assisted transactions, verified through inspection of relevant documentation that authorisation had been received from the payment provider prior to the transactions being performed.</p>	<p>Exception noted.</p> <p>For 1 request for authorisation which related to 9 assisted transactions, approval came from an individual not on the current authorised signatory list. An authorised signatory was also included in all related correspondence. On identification of this exception, retrospective approval was obtained from the appropriate authorised signatory.</p> <p>During the engagement period there were a total of 7 authorisation requests, related to 36 assisted transactions. All remaining 27 assisted transactions were approved by an authorised signatory.</p>



Description of controls	Test performed by PwC	Results
7.8 Incidents logged with regards to a discrepancy in the settlement obligations or security holdings are tracked to resolution.	Inspection Verified through inspection that a documented ASX IT Incident Management Process was in place for incident management.	No exception noted.
	Inquiry and Inspection Based on our inquiry and inspection, there were no incidents logged with regards to a discrepancy either in settlement obligations or security holdings during the period.	There were no incidents logged with regards to a discrepancy either in settlement obligations or security holdings during the period 1 July 2023 to 30 June 2024. Therefore, the operating effectiveness of this control could not be tested and our procedures were limited to inquiry only.

**Control Objective 8:** *Controls provide reasonable assurance that the securities holdings recorded and maintained by CHES are complete and accurate.*

Description of controls	Test performed by PwC	Results
8.1 Approval and processing of new settlement participants are completed through system-enforced segregation of duties (data entry and review) in accordance with documented procedures.	<p>Inspection</p> <p>Verified through inspection that documented procedures for the processing and approval of new settlement participants were in place.</p> <p>Observation</p> <p>Verified through on-screen observation that CHES enforces segregation of duties for the setup of a new settlement participant.</p>	No exception noted.
8.2 Approval and processing of new issuers are completed through system-enforced segregation of duties (data entry and review) in accordance with documented procedures.	<p>Inspection</p> <p>Verified through inspection that documented procedures for the processing and approval of new issuers were in place.</p> <p>Observation</p> <p>Verified through on-screen observation that CHES enforces segregation of duties for the setup of a new issuer.</p>	No exception noted.



Description of controls	Test performed by PwC	Results
8.3 Removal of settlement participants is completed through system-enforced segregation of duties (data entry and review) in accordance with documented procedures.	Inspection Verified through inspection that documented procedures for the removal of participants were in place. Observation Verified through on-screen observation that CHESSE enforces segregation of duties for the removal of participants.	No exception noted.
8.4 Removal of issuers is completed through system-enforced segregation of duties (data entry and review) in accordance with documented procedures.	Inspection Verified through inspection that documented procedures for the removal of issuers were in place. Observation Verified through on-screen observation that CHESSE enforces segregation of duties for the removal of issuers.	No exception noted.
8.5 Additions and modifications to security holdings or settlement instructions are completed by appropriate personnel in accordance with documented procedures.	Refer to control 7.6 above.	Refer to control 7.6 above.
8.6 Conversion of issuer-sponsored to CHESSE-sponsored holdings are processed automatically by CHESSE completely and accurately.	Inspection For a sample of conversions from issuer sponsored to CHESSE sponsored holdings, verified through inspection that the transfers were processed completely and accurately.	No exception noted.



Description of controls	Test performed by PwC	Results
8.7 Set up, modification and cancellation of payment facilities are completed by appropriate personnel in accordance with the documented procedures. This includes system-enforced segregation of duties (data entry and review) for the set up and cancellation of payment facilities.	Observation Confirmed through onscreen observation that segregation of duties was required for the set up and cancellation of payment facilities. Inspection For a sample of set up of payment facilities, modification of payment facilities, and cancellation of payment facilities verified through inspection that approval had been received from the participant.	No exception noted.
8.8 Incidents logged with regards to a discrepancy in the settlement obligations or security holdings are tracked to resolution.	Refer to control 7.8 above.	Refer to control 7.8 above.



Control Objective 9: Controls provide reasonable assurance that transactions submitted to CHESSE by ASX, participants or registries are processed completely and accurately.

Description of controls	Test performed by PwC	Results
9.1 CHESSE messages follow predefined CHESSE parameters to prevent inappropriate message structure.	<p>Inquiry</p> <p>Verified through inquiry with management that there was a predefined message format required for CHESSE messages.</p> <p>Inspection</p> <p>For a sample CHESSE message, verified through inspection that the messages were validated against the predefined parameters before being accepted.</p>	No exception noted.
9.2 CHESSE messages received and sent are logged. Exception reports are produced and any unprocessed CHESSE messages are actioned.	<p>Inspection</p> <p>Verified through inspection of CHESSE message logs that CHESSE messages received and sent were logged.</p> <p>Inspection</p> <p>Verified through inspection that the following exception reports were produced, and procedures were in place for the review and actioning of any unprocessed CHESSE messages:</p> <ul style="list-style-type: none">- Admin General Error Report- Corporate Actions Error Report.	No exception noted.



Description of controls	Test performed by PwC	Results
9.3 Set up, modification and cancellation of payment facilities are completed by appropriate personnel in accordance with the documented procedures. This includes system-enforced segregation of duties (data entry and review) for the set up and cancellation of payment facilities.	Refer to control 8.7 above.	Refer to control 8.7 above.
9.4 In the event of operational issues resulting from the incomplete or inaccurate processing of transactions in CHESS, an incident is logged and tracked to resolution by the Operations or Technology team.	Inspection Verified through inspection that a documented ASX IT Incident Management Process was in place for incident management. Inspection For a sample of operational issues resulting from the incomplete or inaccurate processing of transactions in CHESS, verified through inspection that the incident was logged and tracked to resolution by the ASX Operations or Technology Team.	No exception noted.