A1. Details Supporting Assessment of Central Counterparties

The following provides detailed evidence relevant to the Australian Securities and Investments Commission's (ASIC's) and the Reserve Bank's (the Bank's) assessment of how the central counterparties (CCPs) ASX Clear Pty Limited (ASX Clear) and ASX Clear (Futures) Pty Limited (ASX Clear (Futures)) observe each of the relevant Principles and underlying Key Considerations of the *Principles for Financial Market Infrastructures* (the PFMIs) developed by the Committee on Payment and Settlement Systems (CPSS, now the Committee on Payments and Market Infrastructure (CPMI)) and the Technical Committee of the International Organization of Securities Commissions (IOSCO). It includes ASIC's and the Bank's ratings of how well ASX Clear and ASX Clear (Futures) comply with each of the Principles at 30 June 2014.[1]

A1.1 ASX Clear

ASX Clear is a wholly owned subsidiary of ASX Clearing Corporation Limited (ASXCC), itself a wholly owned subsidiary of ASX Limited (see 'ASX Group Structure' in Section 2.3.1). ASX Clear acts as the CCP for cash equities, pooled investment products, warrants, certain fixed-income products and equity-related derivatives listed on the ASX market. Under the Trade Acceptance Service, it can also act as CCP for trades executed on approved market operator platforms, which it currently does for Chi-X Australia Pty Ltd (Chi-X).

Principle 1: Legal basis

A central counterparty should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 1. The legal basis of ASX Clear is described in further detail under the following Key Considerations.

1.1 The legal basis should provide a high degree of certainty for each material aspect of a central counterparty's activities in all relevant jurisdictions.

Legal basis

ASX Clear novates and nets transactions submitted for clearing by its participants. These activities require a high degree of legal certainty. Key components of the legal framework under which the CCP operates are:

- ASX Clear holds a clearing and settlement (CS) facility licence, under Part 7.3 of the *Corporations Act 2001*. This licence is administered by ASIC in consultation with the Bank, with the Minister acting as ultimate decision-maker on licensing matters.
- ASX Clear has defined Operating Rules and Procedures. Under section 822B of the Corporations Act, these Rules and Procedures have effect as a contract under seal

[1] For an explanation of ASIC's and the Bank's Assessment approach and the ratings scale used, see Section 3.1.

between: ASX Clear and each of its participants; each participant and each other participant; and each participant and each issuer.

- ASX Clear is protected as a 'netting market' under Part 5 of the PSNA (see also Key Consideration 1.4).

The legal basis of ASX Clear's activities is reviewed by ASX Legal whenever there are material amendments to the Operating Rules or Procedures. Three such reviews occurred for ASX Clear during 2013/14.

Legal entity

ASX Clear is a wholly owned subsidiary of ASX Clearing Corporation Limited, which is itself a wholly owned subsidiary of ASX Limited. As a separate legal entity, ASX Clear's central clearing activities are separate from the activities conducted by ASX's other CS facilities and the rest of the ASX Group, notwithstanding the sharing of operational resources across multiple entities within the group.

ASX Clear's services are limited to CCP clearing of cash securities and derivatives transactions executed on the ASX and Chi-X markets, in accordance with the ASX Clear Operating Rules and Procedures. Accordingly, ASX Clear does not provide any services that have a distinct profile from, or pose additional risks to, its activity of operating a CCP.

Rights and interests

The rights and interests of ASX Clear, its participants and, where relevant, its participants' customers in cleared positions and collateral are defined in ASX Clear's Operating Rules and Procedures.

1.2 A central counterparty should have rules, procedures and contracts that are clear, understandable, and consistent with relevant laws and regulations.

Section 822A of the Corporations Act establishes a framework to prescribe the matters that must be dealt with in the Operating Rules and those that may instead be considered under the Procedures. Rule changes are subject to a Ministerial disallowance process.

The ASX Clear Operating Rules and Procedures are supplemented with explanatory material, published on the ASX public website and the ASX restricted participant website, to support participants' (and prospective participants') understanding of the risks they face through participation in the system. Publicly available material includes high-level descriptions of ASX Clear's risk management framework, the Standard Portfolio Analysis of Risk (SPAN) and Cash Market Margining (CMM) margining methodologies, business continuity arrangements and the Default Management Framework (DMF). Participants have access to additional manuals, reports and explanatory notes covering such topics as the application process for new participants, compliance, technical and operational details, counterparty risk assessment and fees.

There is a clear process for changing ASX Clear's Operating Rules and Procedures. Proposed rule changes may be submitted informally to ASIC. In consultation with the Bank, ASIC will consider the changes and advise ASX of any regulatory concerns. Once such concerns are satisfactorily addressed, ASIC will invite formal submission of the proposed changes to ASIC, which triggers a 28-day 'disallowance' period, during which the Minister may choose to disallow the changes. The Minister considers a number of factors, including whether the

proposed changes are consistent with the public interest. To assist the Minister in this process, ASIC provides detailed advice to the Minister, incorporating the views of the Bank as appropriate. If changes to the Operating Rules are not disallowed by the Minister, they are notified to participants via the ASX website.

1.3 A central counterparty should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.

The legal basis for the activities of ASX (Clear) and the facility's protection as an approved netting market under the PSNA – see also Key Consideration 1.4 – are described on the ASX public website in its Disclosure Framework document, which sets out in detail how each CS facility meets the requirements of each Principle within the *Principles for Financial Market Infrastructures* (PFMIs) developed by the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) (see Key Consideration 23.2).[2]

ASX, on behalf of ASX Clear, submits an Annual Group Licence Report to ASIC and the Bank. This report sets out the legal basis for the CS facilities' activities under their licence obligations, and is used by ASIC in the preparation of ASIC's Market Assessment Report for the ASX Group.

ASX Clear may seek independent legal opinions on relevant legal matters relating to significant new services, including any implications their introduction may have for the legal basis of existing functionality. These opinions may, in some circumstances, be shared with participants or other stakeholders for their information, particularly to demonstrate that new Operating Rules will have the intended legal effect.

1.4 A central counterparty should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the central counterparty under such rules and procedures will not be voided, reversed, or subject to stays.

ASX Clear's Operating Rules establish the point at which trades are novated and the risk controls that apply to manage clearing exposures. Such risk controls are calibrated to participants' net obligations to the CCP. Unlinked payment obligations, including those related to margin obligations, arising from clearing are settled in Austraclear. The point at which settlement of these obligations is final and irrevocable is established in Austraclear's Regulations. Securities transfers and related payment obligations arising from clearing are settled in ASX Settlement, and the point at which settlement is final and irrevocable is established in ASX Settlement's Operating Rules.

Novation and netting

Part 5 of the PSNA protects the effectiveness of market netting contracts, including contracts entered into in accordance with the rules of a netting market. ASX Clear is an approved netting market. This protection from the application of any other law, including insolvency provisions, is relevant to the function of a CCP. In particular, it provides protection for:

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[2] Available at <http://www.asx.com.au/documents/regulation/pfmi_disclosure_framework.pdf>.

- novation, the process whereby matched trades between participants are replaced by separate contracts between the buyer and the CCP and the seller and the CCP
- the process of reducing each participant's contracts to a net exposure (reflecting the exposure to the participant's portfolio of contracts)
- the CCP's rules covering default, such that future exposures may be terminated and a net payout obligation calculated
- payments made on a net basis, by protecting against the voiding of net payments in the event of insolvency of a participant.

Settlement finality

Payment-only obligations arising between ASX Clear and its participants are settled in Austraclear and securities-related obligations are settled in ASX Settlement. The legal certainty of settlement finality is supported by Austraclear's approval as a real-time gross settlement (RTGS) system under Part 2 of the PSNA and by ASX Settlement's approval as a netting arrangement under Part 3 of the PSNA. Approval under Part 2 provides protection against application of the so-called 'zero-hour rule' in insolvency law, whereby transactions occurring after the point at which an insolvency is legally determined to have started could potentially otherwise be reversed. Approval under Part 3 provides protection of the finality of settlements in ASX Settlement's multilateral net batch. Any interbank transactions arising from these settlements are settled in real time in the Reserve Bank Information and Transfer System (RITS), across Exchange Settlement Accounts (ESAs) held with the Bank. Finality of funds transfers in RITS is again supported by the approval of RITS under Part 2 of the PSNA.

Assumption of risk

Through novation, the obligations of ASX Clear are to each participant as principal – irrespective of whether that participant is acting for itself or on behalf of a client. Equally, participants' obligations are to ASX Clear for all transactions that have been novated (i.e. both proprietary and client transactions).

Importantly for the legal protections provided under the PSNA, as noted above, the point of novation is established by ASX Clear's Operating Rules. For cash market transactions, ASX Clear's Operating Rules specify that a transaction on the ASX or Chi-X markets is novated with effect from the matching of a bid and offer, while for exchange-traded and over-the-counter (OTC) equity options, novation occurs upon acceptance and registration of that transaction within the clearing system.

Enforceability of ASX rules while under external administration

ASX Legal has analysed the legal enforceability of ASX Clear's Operating Rules upon the CCP's entry into external administration, and has identified no material legal risk to enforceability. During the 2013/14 Assessment period ASX Clear introduced rules giving participants the right to terminate novated contracts in the event that ASX Clear defaulted on its obligations, with calculation of a net obligation to or from each participant on termination ('close-out netting'). Close-out netting rights are a prerequisite for participants that are authorised deposit-taking institutions (ADIs) to apply capital requirements to their net (rather than gross) trade exposures to CCPs, and similarly to report these exposures as net in their financial accounts. The rules do not interfere with ASX Clear's existing liquidity management arrangements, and ASX will review the continued appropriateness of close-out netting rights in light of future developments in FMI recovery and resolution.

1.5 A central counterparty conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.

Although participants of ASX Clear include Australian-domiciled subsidiaries of entities that are based in foreign countries, the Operating Rules are governed by Australian law and require that all participants submit to the non-exclusive jurisdiction of New South Wales courts. ASX Legal's analysis of potential conflicts of law across jurisdictions has identified no material legal risks.

Principle 2: Governance

A central counterparty should have governance arrangements that are clear and transparent, promote the safety and efficiency of the central counterparty, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 2. ASX Clear's governance arrangements are described in further detail under the following Key Considerations.

2.1 A central counterparty should have objectives that place a high priority on the safety and efficiency of the central counterparty and explicitly support financial stability and other relevant public interest considerations.

The high-level objectives of ASX Clear are set out in the CS Boards' Charter, which is available on the ASX public website. The objectives prioritise the Boards' responsibilities in the area of risk management and in particular, ASX Clear's responsibility for complying with the Bank's Financial Stability Standards (FSS), which are aligned with stability-related requirements of the Principles.

ASX Clear's objectives recognise the public interest. These objectives are reflected in the ASX Limited Board Charter, which provides that the Board has a responsibility to oversee the conduct of the affairs of the ASX Group consistent with licence obligations, as well as public policy objectives directed at financial market and payments system integrity. The CS Boards' Charter also specifically acknowledges the Board's public interest responsibilities, as well as its obligations under Part 7.3 of the Corporations Act. These include that ASX Clear, to the extent that it is reasonably practicable to do so, comply with relevant FSS and do all (other) things necessary to reduce systemic risk arising from its services, and that its services are provided in a fair and effective way.

To support the interests of its customers, ASX has developed a Customer Charter, which is referenced in the CS Boards' Charter. The Customer Charter commits that ASX: work with its customers to deliver products and services that meet their needs and provide them with choice; make its products and services available on a non-discriminatory basis and on reasonable commercial terms; and manage its businesses and operations on a commercial basis to benefit its customers and provide appropriate returns to ASX shareholders. The Customer Charter recognises ASX's role as a provider of critical infrastructure to the Australian financial markets and commits to make the necessary investments to ensure it can fulfil this role and provide confidence to market participants, investors and regulators.

ASX Clear's governance arrangements allow for appropriate consideration of stakeholder views. When considering major operational or risk management changes, or new services, ASX uses stakeholder forums, and formal and informal consultation processes to communicate proposed changes to relevant stakeholders (see Key Consideration 2.7). Consultations and responses to consultations are made available on the ASX website. In addition, the ASX Group has disclosure obligations under the Corporations Act and Listing Rules which it manages in accordance with those laws and rules.

Under the Code of Practice, a new advisory forum (the Forum) met for the first time in October 2013. The Forum provides user feedback in relation to the ongoing development of cash market clearing and settlement infrastructure and services.[3] One objective of the Forum is to consider any matters of common interest arising under the Code of Practice or in the principles set out in the *Competition in Clearing Australian Cash Equities* report prepared by the Council of Financial Regulators (see Key Consideration 2.7).[4]

2.2 A central counterparty should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants and, at a more general level, the public.

The governance arrangements of ASX Clear are documented on the ASX public website. This documentation includes the Charters of the ASX Limited Board, the CS Boards (including that of ASX Clear), and other subsidiary boards and committees. The charter documents provide information about the role and composition of the CS Boards and board committees, as well as the key senior managers of the clearing facilities; namely the Managing Director and CEO, the Chief Risk Officer, and the Executive responsible for settlement risk. Profiles of CS facility directors are also publicly available online. Key governance policies and charters are reviewed regularly by the relevant boards and committees.

The ASX Limited Annual Report provides information about ASX Group's risk management arrangements, including the role of boards, key committees, key subsidiary boards (e.g. ASX Compliance), and the roles of senior group executives who report directly to the Managing Director and CEO. Explanatory documentation on the website also describes: the FSS and CPSS-IOSCO Principles; group and business structure, including an organisational chart showing senior group executives; and risk management policies (in summary form).

Under the Corporations Act, ASX must notify ASIC as soon as practicable after a person becomes or ceases to become a director, secretary or senior manager of ASX Clear, including when a person changes from one of those positions to another. Changes to senior risk management personnel are also notified to the Bank.

2.3 The roles and responsibilities of a central counterparty's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.

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3 Available at <http://www.asx.com.au/cs/index.htm>.

4 Available at <http://www.treasury.gov.au/~/media/Treasury/Publications%20and%20Media/Publications/2013/Council%20of%20Financial%20Regulators%20advice%20on%20competition/Downloads/Competition%20in%20clearing%20and%20settlement%20of%20the%20Australian%20cash%20equity%20market.ashx>.

Ultimate responsibility for the oversight of the risks faced by ASX Clear lies with the ASX Limited Board and the ASX Clear Board. The ASX Limited Board Charter delegates certain responsibilities to the ASX Clear Board, including the review and oversight of the management of ASX Clear's clearing- and settlement-related risks, and its compliance with the FSS. The CS Boards' Charter elaborates on other roles and responsibilities of the ASX Clear Board. The CS Boards' Charter places requirements on the structure of the CS Boards, including that the majority of directors and the Chair be independent. The ASX Clear Board meets regularly (seven times in 2013/14) and receives detailed reports on ASX Clear's business and operations, risk management and financial performance.

Board performance is dealt with periodically in private session by the relevant boards. The process may be facilitated by external independent consultants. A number of tools are used, which may include private session review, skills matrices and surveys, and externally facilitated group discussions. Details of Board performance reviews are set out in the ASX Limited Annual Report (the same process applies for the key subsidiary boards).

The CS Boards' Charter sets out how the Boards address directors' interests and potential conflicts. Directors of the CS Boards must disclose all material personal interests (such as shareholdings, directorships and consultancy arrangements) which may potentially conflict with their duties. If there is a change in a director's material personal interests, the director must notify that change at the next meeting. If there is a real possibility of a material conflict of interest and duty on a matter being voted on at a meeting of the CS Boards, the director must not be present for the discussion or vote related to that matter.

2.4 The board should contain suitable members with the appropriate skills and incentives to fulfil its multiple roles. This typically requires the inclusion of non-executive board member(s).

At the end of June 2014, the ASX Limited Board had eight members, comprising the ASX CEO and seven independent, non-executive directors. As set out in the CS Boards' Charter, the CS Boards, in consultation with the Nomination Committee and the ASX Limited Board, determine the composition of the CS Boards, with directors selected based on relevant skills and expertise. Currently, the ASX Clear Board comprises one executive director (the ASX CEO) and five non-executive directors. During 2013/14, one non-executive director resigned and two new directors were appointed. Two of the non-executive directors are also members of the ASX Limited Board, while the remaining three, including the Chair, are external directors appointed for their expertise in clearing and settlement operational and risk management matters. This ensures that directors have the capacity to conduct informed independent review of relevant issues. During 2013/14, ASX made changes to the composition of the CS Boards. Previously, all four CS Boards shared common directors; now, the ASX Clear and ASX Settlement Boards share common directors, but one of these directors does not serve on the ASX Clear (Futures) or Austraclear Boards. This change was made primarily for business reasons, but also supports ASX's conflict handling arrangements (see below under 'Group structure').

ASX has adopted a policy that the majority of directors on each of its CS Boards must be independent. The Board Policy and Guideline to Relationships Affecting Independent Status is available on the ASX website.[5] The independence of directors is assessed according to this

[5] Available at <http://www.asx.com.au/documents/regulation/ASXL_guidelines_affecting_independent_status.PDF>.

policy, which is aligned to the ASX *Corporate Governance Council's Corporate Governance Principles and Recommendations* for listed companies. The policy requires, for example, that independent directors be free of business or other relationships that could interfere with the independent exercise of the director's judgement. Specifically considered is whether the director is a substantial shareholder of ASX, as well as whether in the last three years the director was previously employed by ASX or was an adviser to ASX. The biographies of the directors, which show their relationship with other ASX Group companies, are set out on the ASX website.[6]

Selection, succession planning and training for board members are dealt with in private session by the Nomination Committee and Boards at appropriate intervals. New directors receive a comprehensive induction from Board and Nomination Committee members, as well as senior managers and other key staff. Directors' fees at both ASX Limited and ASX Clear are considered by the ASX Limited Remuneration Committee, recognising the level of skill and expertise that a director must have to effectively meet its responsibilities. Remuneration of directors is determined in private session by the ASX Limited Board on the recommendation of the Remuneration Committee at regular intervals. The ASX Limited Board reviews its fees regularly to ensure that ASX non-executive directors are remunerated fairly for their services, recognising the level of skill and experience required. It also reviews its fees to ensure that it has in place a fee scale that enables ASX to attract and retain appropriately skilled and qualified non-executive directors. Non-executive directors' fees are broadly aligned to the top quartile of the marketplace. In conducting a review, the Board may take advice from an external remuneration consultant. The process involves benchmarking against a group of peer companies. The last fee review took place at the end of 2013 following changes to relevant governance and regulatory arrangements. The revised fees took effect on 1 January 2014.

Group structure

The potential for intragroup conflicts arising from ASX's group structure is addressed by 'intragroup' service agreements, which set out the basis on which other group entities will provide services to the CS facilities and specify that the entities providing the services must have sufficient financial and other resources to meet their obligations. These agreements provide that ASX Group staff are under a duty to act in the best interests of the facility that is receiving the services.

ASX's governance arrangements are designed to ensure that shared directorships within the ASX Group cannot compromise each CS facility's compliance with its licence obligations and the Principles. ASX considers that there is limited potential for shared directorships to create conflicts between ASX's group-wide commercial interests and the risk management function of the CS facilities. More broadly, it considers that conflicts between directors' roles on the CS Boards and the ASX Limited Board are unlikely given the distinct roles the separate entities perform, and in view of group-wide arrangements to manage matters such as operations and compliance. If a conflict were to arise, a director sitting on multiple CS Boards would be expected to make decisions in the best interests of each facility.

The restructuring of the CS Boards to reduce the number of common directors between each of the CS facilities and ASX Limited further limits the potential for conflict. Two directors will

[6] Available at < http://www.asx.com.au/about/board-and-management.htm>.

now be able to form a quorum of the ASX Clear Board, allowing matters that raise potential conflicts of interest to be considered and voted on without the involvement of directors that are also on the ASX Limited Board.

2.5 The roles and responsibilities of management should be clearly specified. A central counterparty's management should have the appropriate experience, mix of skills and integrity necessary to discharge their responsibilities for the operation and risk management of the central counterparty.

ASX has clear and direct reporting lines between management and the CS Boards. This is set out in the CS Boards' Charter, along with the roles and responsibilities of the Managing Director and CEO, the Chief Risk Officer (CRO), and the Group Executive, Operations (GE, Operations). The Managing Director and CEO has responsibility for the overall operational and business management and profit performance of ASX, while the CRO has responsibility for the overall clearing risk management of the CS facilities and for ensuring that CS facility licence obligations are met. The CRO has a direct reporting line to the CS Boards and is entitled to attend and be heard at CS Board meetings.

ASX has a comprehensive remuneration policy and performance management framework in place, which aims to ensure that management personnel have an appropriate mix of skills and experience to discharge their responsibilities. The ASX Limited Remuneration Committee has delegated responsibility from the ASX Limited Board to conduct detailed examination of matters including oversight of the remuneration and incentive framework, succession plans, recruitment, retention and termination strategies, and the remuneration of the Managing Director and CEO and ASX Group non-executive directors. The Committee members are appointed by the ASX Limited Board, and must consist of only non-executive directors, with at least three members, a majority of independent directors, and an independent chair who is not Chairman of ASX Limited. The Committee has direct access to ASX senior management and the authority to seek independent advice. The CS Boards have delegated responsibility to the Committee for compensation arrangements and performance management processes relating to the CRO and the GE, Operations. The CS Boards provide input on the setting of Key Performance Indicators and may review the performance outcomes for the CRO and the GE, Operations.

ASX carries out succession planning and management processes in order to ensure leadership continuity in key positions, and develop intellectual depth and business knowledge. This includes the biannual review of a 'talent assessment tool' by Group Executives and Human Resources to identify and manage the development of high potential staff according to individual and business needs. Succession and contingency planning is conducted for Group Executives, General Managers and other key staff.

2.6 The board should establish a clear, documented risk management framework that includes the central counterparty's risk tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision-making in crises and emergencies. Governance arrangements should ensure that the risk management and internal control functions have sufficient authority, independence, resources and access to the board.

ASX has a documented risk management framework, which is described under Key Consideration 3.1. The CS Boards are responsible for approving and reviewing high-level risk management policy relevant to clearing and settlement operations. The Boards approve all new clearing and settlement risk policies and standards, as well as material changes to existing clearing and

settlement risk policies and standards. The Boards consider these policies and standards at a concurrent meeting; where the policy or standard is relevant to more than one facility, the Boards of those facilities would simultaneously determine whether to approve the policy or standard. If the policy requirements under consideration differ across facilities, the Boards of each relevant facility would separately determine whether to approve the policy or standard (during the concurrent meeting). Board feedback is incorporated before risk policies and standards are approved.

Responsibilities under the high-level risk management policy are distributed as follows:

- Key policies and standards, such as margin policy, stress-testing standards and investment mandates, are reviewed by the CS Boards on an annual basis. Detailed reporting to the CS Boards occurs quarterly on the operation of the CCPs and their compliance with risk management policies and standards, and on broader management and operational matters. Internal Audit conducts a rotational risk-based audit program, which includes ensuring that relevant operational departments comply with Board-approved policies and standards, where necessary using external specialists to assist with reviews. The CS Boards may also request external reviews. Clearing and settlement risk management policies and standards were reviewed during 2013/14. The review, along with the development of new policies and standards, will be continued during 2014/15.

- The Audit and Risk Committee has responsibility for the oversight of the Enterprise Risk Framework.

- The Enterprise Risk Management Committee, comprising executives from across the departments, is responsible for enterprise risk management policy and reviewing controls, processes and procedures to identify and manage risks. This committee is also responsible for formally approving significant operational risk policies prepared by individual departments.

- Individual departments are responsible for: identifying business-specific risks; applying controls; maintaining risk management systems; reporting on the effectiveness of risk controls; and implementing enhancements and taking remedial action as appropriate. Each department is required to maintain a record of its risk profile, reviewing this on a six-monthly basis and updating as appropriate. This record includes 'Key Risk Indicators' and action plans to address any identified risk that is not adequately mitigated. Policies are formally reviewed every 18 months to three years. More frequent reviews are undertaken where there are potential changes to technology, legal or regulatory requirements, or business drivers.

The CRO has a direct reporting line to the CS Boards. Within ASX's management structure, those departments primarily responsible for CCP financial risk management report to the CRO, who in turn reports directly to the CEO. The CRO is not responsible for any other functions, and none of the departments within the CRO's portfolio have a primary revenue or profit objective. There are four functional departments with at least some responsibility for CCP financial risk management: the Clearing Risk Strategy and Policy department; the Clearing Risk Quantification (CRQ) department; the Clearing Risk Management department; and the Portfolio Risk Manager. The CRQ department was created specifically to maintain and validate risk and pricing models, allowing Clearing Risk Strategy and Policy to focus on higher

level risk policies and longer term initiatives. In addition, ASX maintains a number of executive committees that have some responsibility for financial risk management.

Directors are entitled to obtain independent advice. The Annual Report addresses directors' access to information, management and advice. To the extent that directors wish to seek independent advice, they can raise this in board meetings, with the Managing Director and CEO, or with the Chairman. ASX has determined that establishing a separate participant risk committee at ASX Clear is not currently necessary, given the availability of alternative means of seeking participant feedback on risk matters. ASX Clear obtains participant feedback on risk management matters through multiple channels, including the Forum, the Business Committee, and an ETO Advisory Committee.

Model validation

The Boards of ASX Clear and ASX Clear (Futures) (the 'Clearing Boards') regularly review and discuss with management matters of risk policy, including changes to margin and stress-testing methodologies.

ASX has developed a framework for model validation. This framework identifies models to be validated, defines what constitutes 'model validation', describes the model validation approach to be applied to the identified models, and specifies model validation governance arrangements. Key models at ASX Clear include SPAN margining, CMM, the pricing system for derivatives and the capital stress-testing model. Governance arrangements specify criteria for ranking model risk, validation roles and responsibilities, validation frequency, the assessment approach and whether the validation should be carried out by an internal or external expert. ASX assigns each of its risk models a weighted risk score between one and five to determine how critical it is, based on factors such as the internal and external impact of the model, frequency of use and complexity. ASX uses the risk score to determine the frequency of comprehensive independent model validations and whether models are to be validated internally or externally. Model validation is performed on a regular basis according to the risk ranking.

The approach to model validation is based on objective statistical tests, including sensitivity analysis, with each model validation strategy to be reviewed and approved by an internal management committee known as the Risk Quantification Group (RQG). Backtesting is used to provide systematic comparison of model forecasts with observed outcomes. Model validation reviews are coordinated by Internal Audit, including the use of external experts as required under the framework or where this is deemed necessary by the RQG or Internal Audit. ASX Clear's approach to model validation is discussed in more detail under Key Considerations 4.5, 6.7 and 7.9.

Internal audit

ASX maintains an internal audit plan that provides for a three-to-five year review cycle of key operational and risk management processes, and internal control mechanisms that are governed by ASX's Enterprise Risk Framework, business continuity framework, enterprise compliance framework and internal audit methodology. The internal audit plan is approved by the ASX Limited Audit and Risk Committee and the audit work that is relevant to the CS Boards and ASX Compliance Board is endorsed by those Boards. The key governance frameworks are reviewed by external independent experts, as required. ASX's internal audit arrangements are set out in an Internal Audit Charter, which is reviewed and approved by the

ASX Limited Audit and Risk Committee on an annual basis and made available on the ASX public website.

The Internal Audit department is a separate department within ASX that reports to the CRO for administrative purposes, and the Audit and Risk Committee and Managing Director and CEO for audit purposes. The Internal Audit department's reporting structure also includes reports to the CS Boards and ASX Compliance Board. Internal Audit's principal objective is to 'provide independent, objective assurance and consulting services designed to add value and improve the operations of ASX'. Its scope covers the policies, processes and procedures of all risk management and internal control systems. The General Manager of Internal Audit has direct access to the ASX Limited Audit and Risk Committee, CS Boards and ASX Compliance Board. Members of the Internal Audit department are required to hold appropriate undergraduate and postgraduate qualifications relevant to their roles.

The role and performance of the Internal Audit function is regularly reviewed by the ASX Limited Audit and Risk Committee. Internal Audit is also reviewed by external independent auditors on a three-year cycle. The last such audit was carried out in 2011, with the next assessment scheduled for October/November 2014.

ASX has a clearly defined methodology for internal audit, based on the International Professional Practices Framework set out by the Institute of Internal Auditors.[7] The audit process includes phases for planning, fieldwork, reporting, final sign-off, and issues logging and follow-up. The planning phase includes the preparation of terms of reference that define the purpose, timing, approach and scope of the audit.

The internal audit methodology allows for ad hoc reviews if, for example, material new risks are identified or other changes to ASX's business occur. This is a matter which the General Manager, Internal Audit and the Audit and Risk Committee consider. The ASX Compliance Board and the CS Boards may also request ad hoc reviews.

2.7 The board should ensure that the central counterparty's design, rules, overall strategy and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.

The interests of direct and indirect participants and other relevant stakeholders are recognised in the ASX Limited Board Charter, the CS Boards' Charter and the ASX Customer Charter.

The views of participants and other stakeholders are sought through formal and informal means. ASX Clear routinely conducts public consultations when considering major changes to existing services or new service offerings. These consultations allow for written submissions and discussion in both bilateral and open forums. Participants' views may also be gathered through the induction program for new participants, as well as ongoing participant liaison and compliance checks.

Under the Code of Practice, ASX has established the Forum, an advisory body that allows users of ASX's cash market clearing and settlement services, and other industry stakeholders,

[7] The Institute of Internal Auditors is the leading international organisation representing internal auditors. It has developed a set of standards that provide a framework for carrying out and evaluating the performance of internal audits.

to provide input to the Boards of ASX Clear and ASX Settlement on those services. The Forum provides a mechanism for ASX to engage with users in relation to the ongoing development of cash market clearing and settlement infrastructure and services, to help ensure that these meet the needs of users and are aligned with global standards. The Forum has three objectives:

- to provide user input to the Boards of ASX Clear and ASX Settlement from a wide range of users in relation to ongoing investment in the design, operation and development of the core clearing and settlement infrastructure for the Australian cash equity market, including the Clearing House Electronic Sub-register System (CHESS)
- to consider any matters of common interest arising under the Code of Practice or in the principles set out in the report prepared by the Council of Financial Regulators
- to provide a formal mechanism for the Boards of ASX Clear and ASX Settlement to report to users on their strategic plans and investment decisions in relation to the design, operation and development of the core clearing and settlement infrastructure for the Australian cash equity market, including CHESS.

The Forum comprises 22 senior representatives from clearing and settlement participants, an alternative market operator, and other stakeholders including system vendors, custodial service providers, share registries, investors, listed companies and the superannuation industry. Members are appointed for a term of two years. It is chaired by a non-executive member of the CS Boards and also includes a non-executive director representing ASX Limited. The Forum meets at least three times each year, with the first meeting held in October 2013. Upcoming meeting dates, agendas and minutes are all published on a dedicated website, together with a summary of key issues discussed and the Forum's recommendations for the CS Boards. Under the Code of Practice, ASX has also established a Business Committee to support the Forum. This Committee comprises representatives of clearing participants, settlement participants and alternative market operators, and provides business and operational input on the Forum's forward work program. Business Committee meetings are held four to six weeks prior to Forum meetings.

The Forum and Business Committee have progressed three main work streams during 2013/14:

- a proposed move to a shortened two-day settlement cycle for equities
- replacement of the CHESS clearing and settlement system, including review of messaging standards (see Principle 22)
- international benchmarking of cash market clearing and settlement prices.

ASX Clear seeks participant feedback on matters relating to ETOs through an ETO Advisory Committee, as well as regular engagement with the ETO subcommittee of the Stockbrokers Association of Australia. The ETO Advisory Committee, representing participants and clients, was established to advise ASX in its response to declining volumes in the ETO market, but it also provides a forum for broader user feedback, including on risk management matters.

Given the availability of alternative means of seeking participant feedback on risk matters, ASX determined that establishing a separate participant risk committee at ASX Clear, similar to the Risk Committee established in ASX Clear (Futures) was not necessary (see Appendix A1.2, Key Consideration 2.7). However, ASX would review the case for establishing a separate

risk committee for ASX Clear if there were significant changes to the regulatory or market environment.

Principle 3: Framework for the comprehensive management of risks

A central counterparty should have a sound risk management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Rating: Broadly observed

The Bank's assessment is that ASX Clear broadly observes the requirements of Principle 3. In order to fully observe Principle 3, ASX Clear should:

- implement plans to enhance its recovery plan consistent with forthcoming CPSS-IOSCO guidance on recovery planning.

ASX Clear's risk management framework is described in further detail under the following Key Considerations.

3.1 A central counterparty should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the central counterparty. Risk-management frameworks should be subject to periodic review.

Identification of risk

ASX's high-level framework for risk management is described in its Enterprise Risk Management Policy. This policy divides risks identified by ASX into two broad categories: strategic risks and operational risks. Operational risks are further categorised into financial risks, legal and regulatory risks, and technological and operational risks. Specific risks identified by ASX are described within these broad categories. For each identified risk, ASX judges how likely it is the risk event will occur within the next 12 months and the potential impact. Reputational and participant impacts are considered along with the financial, operational and regulatory impacts of risks.

Comprehensive risk policies, procedures and controls

ASX's Enterprise Risk Management Policy has been developed with reference to the international standard ISO 31000 *Risk Management – Principles and Guidelines* (see Key Consideration 2.6).[8] At a high level, the ASX Enterprise Risk Management Policy outlines: the overall risk environment in the ASX Group; the objectives of risk management policies; the process by which risks are identified and assessed; the controls in place to detect and mitigate risks; and how risks are monitored and communicated. ASX's stated tolerance for financial, operational, legal and regulatory risks is 'very low'.

ASX uses key risk indicators to measure levels of risk in the organisation and categorise risk levels according to a scale: satisfactory; within risk tolerance but requiring action to further control the level of risk; exceeding ASX's risk tolerance.

[8] ISO is an international standard-setting body and ISO 31000 is considered to be relevant guidance for enterprise risk management. The ISO 31000 standard has been reproduced by Standards Australia and Standards New Zealand as AS/NZS 31000.

The Enterprise Risk Management Policy also assigns specific risk responsibilities across the ASX Group, including to the ASX Limited Board of Directors, the Audit and Risk Committee, the Enterprise Risk Management Committee, the General Manager, Enterprise Risk, and managers of individual departments. Managers of each department are responsible for identifying and monitoring risks relevant to their department's activities, as well as for designing and implementing risk management policies and controls to manage identified risks. Department managers assess the appropriateness and operational effectiveness of these controls twice a year; these assessments are reviewed by Internal Audit and the Enterprise Risk Management Committee.

In 2012/13, ASX adopted an updated and formalised Clearing Risk Policy Framework to better align both it and related governance structures with the requirements of the Principles embedded in the FSS. The Clearing Risk Policy Framework sets out a comprehensive set of clearing and treasury risk policies to support the risk management approach of ASX's CCPs, including ASX Clear. These policies govern more granular internal standards, which in turn govern detailed procedures for the management of clearing and treasury risk. The structure of policies, standards and procedures reflects the requirements of the FSS. During 2013/14, ASX has developed or updated standards covering most relevant aspects of the FSS. The Bank will continue to monitor the maintenance of existing policies and standards, and the finalisation of remaining policies and standards by ASX over 2014/15.

A number of boards and internal committees oversee clearing risk management policy, including:

- *The CS Boards*. Each CS facility has a board (see Key Consideration 2.3 and 'ASX Group Structure' in Section 2.3.1), which shares members with the other ASX CS facilities, has oversight of the Clearing Risk Policy Framework, and is responsible for any significant amendments. Policies and designated key standards under the framework are governed by the CS Boards.

- *The Clearing Risk Policy Committee (CRPC)*. The CRPC was formed in June 2013, to review and approve clearing risk policies and standards prior to submission to the CS Boards. The CRPC is chaired by the CRO and includes the ASX Group Legal Counsel, CFO and GE, Operations. It will generally meet quarterly in line with meetings of the CS Boards.

- *The Capital and Liquidity Committee (CALCO)*. CALCO is constituted to ensure the structural integrity and efficient use of the liquidity, on- and off-balance sheet assets, liabilities and capital resources of the ASX Group. CALCO advises on changes to the clearing risk policies related to capital, liquidity and balance sheet management. CALCO is chaired by the CRO and comprises senior managers and executives from Finance, Risk and Internal Audit. CALCO generally meets on a quarterly basis.

- *The CCP Risk, Operations and Compliance Committee (CROCC)*. CROCC is chaired by the GE, Operations and is made up of senior managers and executives from the clearing and settlement risk management, operations and compliance areas of ASX. The Committee acts as an information-sharing and discussion body for the purpose of enhancing ASX's ability to identify, assess and reduce systemic, operational or compliance risk, and manage clearing risk. The CROCC currently meets on a monthly basis.

- *Risk Quantification Group*. ASX established the RQG in early 2013 to strengthen the technical oversight of risk management policy. The RQG is chaired by either the CRO, the

General Manager, CRQ, or the General Manager, Clearing Risk Strategy and Policy, and is made up of key staff from ASX's CRQ, Clearing Risk Strategy and Policy and Clearing Risk Management departments most familiar with ASX's margin and other risk management models. The focus of the group is the review and application of quantitative risk policies and the Model Validation Framework, including oversight of model governance and regular reviews of margining and stress test models. The group meets at least on a monthly basis or more frequently as required.

- *Default Management Steering Group (DMSG).* ASX formed the DMSG in 2010/11 to provide oversight of the CCPs' DMF. The DMSG is chaired by the CRO and comprises key representatives from ASX Legal, Compliance, Operations and Risk. The DMSG currently meets at least on a monthly basis or more frequently as required.

Information and control systems

ASX Clear employs information systems that provide timely and accurate information relevant to its risk policies, procedures and controls. This includes information on risk exposures to individual participants, as well as aggregated information on risk exposures across the central counterparty. Key information systems include:

- *Margining*. ASX Clear uses the CME SPAN system for margining of derivatives and uses CMM for the daily margining of cash equity transactions using a mixture of Historical Simulation of Value at Risk (HSVaR) and flat rates for less liquid securities.

- *Capital and liquidity stress testing*. Stress testing is carried out daily to gauge the adequacy of ASX Clear's financial resources and to monitor the risks associated with individual participants' positions. Capital stress testing estimates the loss that would result from the realisation of extreme but plausible price changes. Liquidity stress testing estimates the liquidity exposures that would result from extreme but plausible price changes.

ASX Clear monitors daily risk management reports produced by its information management systems to identify changes in positions that may require mitigating action. ASX Clear's information systems also provide information to participants about positions and margin requirements, which assists in their management of credit and liquidity positions. ASX publishes detailed margining information on its website, including descriptions of the margining methodology, schedules of margin rates, and daily SPAN margin parameter files. This information is sufficient for participants to perform their own margin calculations on hypothetical or actual portfolios. To facilitate this, a number of third-party vendors use this information to provide margin estimation software to participants.

Internal controls

ASX's risk management policies are generally reviewed formally every 18 months to 3 years, although more frequent reviews may occur depending on changes to technology, business drivers or legal requirements. Reviews are conducted by specific working groups and committees. Final approval of reviews for more significant policies is the responsibility of the Enterprise Risk Management Committee. Under the Enterprise Risk Management Policy, ASX's departments are required to update a risk profile every six months, which identifies relevant risks and sets out planned actions to respond to those risks.

Risk management arrangements are also subject to periodic review by Internal Audit. Such audits provide assurance that the risk management framework continues to be effective. Risk

management arrangements may also be subject to review by external experts from time to time. The last such review of the Enterprise Risk Management Policy was undertaken by PricewaterhouseCoopers in 2011 and the next review is scheduled for the second half of 2015.

Previously, the Enterprise Risk Management Policy was reviewed by the Audit and Risk Committee approximately every three years, with the Committee informed of material changes in the interim. Following the most recent review in August 2013, future reviews will be conducted on a two year cycle.

3.2 A central counterparty should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the central counterparty.

The use of margin and additional margin at ASX Clear creates an incentive for participants to manage the exposures that they bring to the CCP. Participants are also required to post additional collateral or increase their capital levels if they create exposures that are large relative to the size of their capital. ASX is proactive in monitoring participant exposures and utilises conservatively set triggers for additional monitoring or action, such as requiring participants to actively manage down exposures (see Key Consideration 4.2).

ASX Clear may also apply sanctions to, or place additional requirements on, participants that fail to comply with its Operating Rules. Participants may ultimately be required to seek alternative clearing arrangements.

3.3 A central counterparty should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies, and develop appropriate risk-management tools to address these risks.

ASX Clear reviews the material risks that it bears from and poses to other entities in the context of its ongoing review of enterprise risks (such as the six-monthly update of department risk profiles, see Key Consideration 3.1), and its processes for identifying risks associated with new activities. In the case of new products and services, ASX undertakes risk assessments when undertaking an expansion of its activities or in the event of material changes to its business. Risk assessments are built into ASX's project management framework (see Key Considerations 15.1, 17.4).

For instance, ASX Clear has identified risks to its operational activities arising from participants' increased usage of third-party vendors for back-office systems, and participants outsourcing their back-office processing offshore. ASX Clear has also identified interdependencies with service providers. ASX Clear's response to these interdependencies is outlined in Key Consideration 17.4.

Interdependencies with ASX Settlement for the settlement of securities transactions and Austraclear for the settlement of margin obligations are managed within the context of ASX Group's broader risk management framework (see Principle 20).

3.4 A central counterparty should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. A central counterparty should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, a central counterparty should also provide relevant authorities with the information needed for purposes of resolution planning.

ASX Clear has developed a basic recovery plan that identifies scenarios that could threaten its ongoing provision of critical clearing services and sets out how it would respond to such scenarios on the basis of its existing powers under its Operating Rules and Procedures. The recovery plan sets out the likely sequence of actions that ASX would take under each identified recovery scenario, and analyses the advantages and disadvantages of tools available to ASX Clear to respond to such scenarios. In particular, ASX's analysis has identified that ASX Clear's existing Operating Rules do not provide it with sufficient tools to be able to fully address uncovered credit losses and liquidity shortfalls, and replenish financial resources following a participant default or a non default-related financial loss (see also Key Considerations 4.7 and 7.9).

ASX has commenced work to develop a more comprehensive recovery plan supported by tools to fully address uncovered credit losses and liquidity shortfalls, and replenish financial resources. It intends to base these tools on forthcoming CPSS-IOSCO guidance on recovery planning, expected to be published in late 2014. ASX intends to consult on its proposed recovery approach in the second half of 2014.

Principle 4: Credit risk

A central counterparty should effectively measure, monitor and manage its credit exposures to participants and those arising from its payment, clearing and settlement processes. A central counterparty should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a central counterparty that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the central counterparty in extreme but plausible market conditions. All other central counterparties should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the central counterparty in extreme but plausible market conditions.

Rating: Broadly observed

The Bank's assessment is that ASX Clear broadly observes the requirements of Principle 4. In order to fully observe Principle 4, ASX Clear should:

- implement mechanisms consistent with forthcoming CPSS-IOSCO guidance on recovery planning that fully address any uncovered credit losses and replenish financial resources following a participant default
- complete the full validation of its capital stress-test model by external experts and consider further enhancements to its reverse stress testing approach that take into account the impact of systematic shocks across multiple products.

ASX Clear's approach to managing its credit risk is described in further detail under the following Key Considerations.

4.1 A central counterparty should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement

processes. Credit exposures may arise from current exposures, potential future exposures, or both.

ASX Clear maintains a comprehensive framework for managing credit exposures to its participants. This framework comprises: a stress-testing regime (see Key Consideration 4.5); the use of variation margin to mark positions to market (see Principle 6); and the maintenance of prefunded financial resources. These financial resources comprise initial margin (see Principle 6), other collateral calls based on participants' positions, and fully prefunded pooled financial resources of $250 million (see Key Consideration 4.4). Financial resources received in cash are invested in high-quality assets in accordance with ASXCC's treasury investment policy (see Principle 16). ASX Clear also has access to $300 million of promissory resources from participants if required (Key Consideration 4.7).

4.2 A central counterparty should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk management tools to control these risks.

ASX Clear's Clearing Risk Management (CRM) department is responsible for monitoring participants' credit standing and credit exposures to participants.

Within CRM, the Exposure Risk Management team monitors day-to-day developments in, among other things, open positions, market price moves and settlement obligations to the CCPs. Participants' positions are marked to market and ASX Clear calculates initial and variation (or mark-to-market) margin requirements on both cash-equity transactions and derivative contracts at the end of each business day. When market movements exceed certain thresholds, ASX Clear calculates and, where appropriate, calls intraday margin on derivatives positions reflecting both price movements and changes in participant portfolios (see Key Consideration 6.4). ASX Clear conducts daily stress testing to monitor the effects of extreme but plausible scenarios on participants' portfolios. Where stress-test results are above a defined limit, Additional Initial Margin (AIM) is called (see Key Consideration 4.4).

Within CRM, the Counterparty Risk Assessment (CRA) team is responsible for ongoing monitoring, assessment and investigation of matters relating to financial requirements (including participants' monthly financial statements). CRA is also responsible for determining and reviewing participants' credit standing, drawing in part on information provided by participants in regular financial returns to ASX. ASX determines an Internal Credit Rating (ICR) for each participant. The ICR takes into account the participant's external credit rating as appropriate. Other metrics monitored by CRA, including factors used in determining the CROCC watch list (see below), can be used as an alternative or supplementary means for ICR determination where these indicate an assessment of credit risk that differs from external credit ratings. In other cases, the ICR is based on the participant's capital position (or that of its parent where that parent is unrated but provides a formal guarantee to the CCP).

CRA also coordinates a 'watch list' of participants deemed to warrant more intensive monitoring. Inclusion on the watch list is based on a range of factors, such as: concentration risk; concerns emerging from a specific event or media report; significant changes in a participant's own share price, bond yield or credit default swap price; ICR downgrades; calls for AIM; operational issues; compliance issues; or issues arising from ASX's routine review of financial returns, for example regular losses or breaches of minimum capital requirements. The assessment of watch list factors monitored by CRA, ASX Compliance and the Operations Division is coordinated by the CROCC. Based on such an assessment, ASX Clear may decide to

place restrictions on a participant's trading, clearing and settlement activities. During 2013/14, there were no ASX Clear participants on the watch list.

Participants on ASX's watch list may be subject to trading restrictions, or additional credit risk controls. For instance, they may be subject to calls for additional margin, higher capital requirements, additional capital reporting requirements, or a reduced STEL (such that additional margin would be called at a lower level of capital stress-test exposure (see Key Consideration 4.5)). CRM typically also carries out a detailed credit review of participants on the watch list.

ASX Clear will also call capital-based position limit (CBPL) AIM from a participant with a large portfolio (measured by initial margin requirements) relative to its net tangible assets, or may make an additional cover call where it has other counterparty credit risk concerns.

During 2013/14, ASX undertook a broad review of concentration risk. As a result of this review, ASX developed a formal Concentration Risk Standard, setting out a risk-based approach to monitoring concentration risks in three areas:

- Concentrations in participants' exposures to their clients (discussed under Principle 19).
- Concentrations of individual participants' positions in particular products. Evidence of such concentration indicates individual participant exposure to large price movements in a particular product that could challenge its capacity to meet obligations to the CCP. CRM monitors the concentration of participants' ETO positions in single products, by number of contracts or value of underlyings. Further review would be triggered should exposure to a particular product exceed a specified share of a participant's total portfolio, subject to a materiality threshold.
- Concentration of positions in a market in a single participant. Evidence of a single participant accounting for a large share of positions in a particular market segment could indicate the potential for complications in closing out or transferring these positions if the participant were to default. CRM monitors the market shares of participants in each ETO product. Further review would be triggered if a single participant held more than 25 per cent of the contracts in the market for that product and the size of the position (relative to average market turnover for that period) suggested that it could take more than two days to close out that participant's position.

If a trigger were met under its Concentration Risk Standard, ASX would not automatically take action. In determining whether further investigation or action was warranted, ASX would take into account a number of factors, including the materiality of the breach, and the credit standing and activity profile of the relevant participant.

Under its risk-based approach to monitoring concentration risk, ASX Clear has prioritised formal concentration monitoring for derivatives products over cash market products. This reflects the currently relatively low exposures generated by cash market transactions. ASX Clear nevertheless monitors concentration risks in the cash market via its ongoing monitoring of participant credit exposures, investigating whether identified issues are related to concentrated holdings in particular securities.

For details of ASX Clear's other participation requirements and participant monitoring arrangements, see Principle 18.

4.3 A payment system or securities settlement facility should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a deferred net settlement payment system or deferred net settlement securities settlement facility in which there is no settlement guarantee, but where its participants face credit exposures arising from its payment, clearing and settlement processes such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.

Not relevant to central counterparties.

4.4 A central counterparty should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). In addition, a central counterparty that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure for the central counterparty in extreme but plausible market conditions. All other central counterparties should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure for the central counterparty in extreme but plausible market conditions. In all cases, a central counterparty should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.

In June and July 2013, ASX raised $553 million of capital by means of a stock entitlement offer. This capital raising permitted a change in the composition of ASX Clear's prefunded pooled financial resources. In particular, $100 million was used to replace with equity a subordinated loan to ASX Clear from ASXCC, which had in turn been funded by a principal-reducing subordinated from a commercial bank. ASX Clear's $250 million of prefunded financial resources currently consist of (in order of application): funds held in a restricted capital reserve ($71.5 million); own equity ($3.5 million); fully drawn subordinated loans from ASXCC (totalling $75 million), which are ultimately funded by a subordinated loan from ASX Limited ($75 million); and a second tranche of own equity ($100 million);. ASX Clear also has the right under its Operating Rules and Procedures to levy its participants up to $300 million collectively in Emergency Assessments should a loss caused by a participant's default exceed its other resources.

ASX Clear conducts daily stress tests to ensure that the level of its prefunded financial resources is sufficient to cover the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP under a wide range of scenarios (see Key Considerations 4.5, 4.6). Since they are not prefunded, Emergency Assessments are not taken into account (either by ASX or the Bank) when assessing ASX Clear's ability to cover such a default but may be used to address uncovered losses in the event that prefunded financial resources were exhausted (Key Consideration 4.7). ASX Clear's capital stress test model was updated in June 2013 to take into account the joint default of a participant and its affiliates; previously only single participant defaults were considered. Since

ASX Clear clears only transactions in cash securities and equity derivatives, the Bank does not consider that ASX Clear is involved in activities with a complex risk profile. Further, since ASX Clear clears only domestic products, has a largely domestic participant base and during 2013/14 did not require recognition in other jurisdictions, the Bank's assessment is that ASX Clear was not systemically important in multiple jurisdictions at the date of this Assessment.

Under ASX Clear's AIM methodology, a participant is required to post additional collateral should stress-test outcomes reveal that the potential loss arising from its positions (as at the close of the previous day) exceeds a predetermined STEL (see Key Consideration 4.5). The objective of this regime is to provide additional participant-specific cover against non-systematic spikes in individual participants' exposures. This mitigates the risk that the default of a participant with a large exposure, in more extreme market conditions than are contemplated by regular initial margin, may deplete or even exhaust prefunded pooled financial resources. By upholding the 'defaulter pays' principle, the AIM regime also provides an incentive for participants to manage the risk they bring to the CCP. However, it is not a substitute for holding sufficient prefunded pooled financial resources. There are potential shortcomings to relying too heavily on variable calls related to stress-test exposures, particularly given lags in the calculation and settlement of such calls (see Key Consideration 4.5).

4.5 A central counterparty should, determine the amount and regularly test the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A central counterparty should have clear procedures to report the results of its stress tests to appropriate decision makers at the central counterparty and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a central counterparty should perform a comprehensive and thorough analysis of stress-testing scenarios, models and underlying parameters and assumptions used to ensure they are appropriate for determining the central counterparties required level of default protection in light of current and evolving market conditions. A central counterparty should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a central counterparty's participants increases significantly. A full validation of a central counterparty's risk management model should be performed at least annually.

ASX Clear uses daily capital stress tests to monitor risk exposures to individual participants and the adequacy of its financial resources. Capital stress tests are based on a range of scenarios covering extreme price moves and volatility shifts at the market-wide, sector and individual-stock levels (see Key Consideration 4.6). ASX Clear applies a set of underlying parameters and assumptions in performing capital stress tests, including that: profits in client accounts cannot be used to offset house losses; prices may rebound following a large fall; price and volatility move independently; and the close-out period is one day. On a daily basis, ASX reviews the scenarios which underpin the capital stress testing regime for ASX Clear, and on a monthly basis carries out a review of market conditions to determine whether there is any evidence of stress that would support a change to scenarios. Any observed changes in price, volatility or interest rate curves in excess of the stress-test scenarios would constitute an event beyond what was previously considered to be extreme but plausible. Accordingly, it is likely that a revision to the relevant stress test scenario would be presented for

consideration by the Clearing Boards. In addition, ASX conducts monthly reverse stress tests to confirm the sufficiency of pooled financial resources and to cross-validate the capital stress-test scenarios (see Key Consideration 4.6).

ASX's Model Validation Standard requires that all models that are critical to ASX (as measured against a series of risk factors) undergo a full annual validation (see Key Consideration 2.6). Under this framework the capital stress test model must be externally validated annually. ASX has engaged external experts to conduct a validation of the capital stress test model during the third quarter of 2014. The Bank will monitor the outcome of this validation.

Reporting and use of stress test results

Capital stress test exposures are routinely reported to ASX management, the Clearing Boards and the Bank. Participant stress test losses are used to gauge the adequacy of ASX Clear's available financial resources, with widespread and/or large STEL breaches an indicator that resources may need to be increased. STEL breaches are reported to management and persistent breaches are escalated in the first instance to the CRO and CALCO. The CS Boards and ASX Limited Board are responsible for approving any increase to prefunded pooled financial resources where this is considered necessary (see below).

Each participant in ASX Clear is allocated a STEL based on its ICR. Where a group of participants are affiliated (i.e. part of the same corporate group), and the sum of affiliated participants' STELs that would apply if based solely on ICRs exceeds ASX Clear's prefunded financial resources, and adjustment is applied to the STELs of the affiliated participants. The adjustment ensures that ASX Clear's combined exposure to affiliated participants cannot therefore increase above the assigned group-wide STEL (which in turn cannot exceed ASX Clear's prefunded financial resources) without triggering an AIM call (see below). Since there are only a limited number of affiliated participant groups with combined ICR-based STELs that would exceed ASX Clear's prefunded financial resources, ASX Clear allows input from these groups as to how the required reduction in STELs is distributed across the group.

Where a participant's projected stress-test losses exceed its STEL, ASX will call for STEL AIM. Typically AIM calls are made on participants by 9.30 am and must be settled within two hours via the transfer of cash in Austraclear. ASX Clear's internal standards and procedures provide for highly rated (i.e. A-rated and B-rated) participants to receive discounts on their STEL AIM calls. However, these discounts have not applied since April 2010. Initially this was due to ASX considering market conditions to be abnormal. However, ASX has since determined that it would no longer apply these discounts even in apparently normal market conditions, and will remove provisions for such discounts from internal standards and procedures over 2014/15.

In deciding whether ASX Clear has sufficient prefunded pooled financial resources, ASX considers the size, frequency, duration and distribution of AIM calls across participants. ASX Clear would consider increasing these resources if stress-test results in excess of prefunded pooled resources were persistent, significant and widespread. In other cases, ASX Clear would generally rely on additional collateral collected under the AIM regime.

4.6 In conducting stress testing, a central counterparty should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset

markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.

ASX Clear uses its capital stress test to establish the overall adequacy of prefunded financial resources and to determine whether a participant is required to post AIM (see Key Considerations 4.4, 4.5).

The stress-testing regime is based on 102 scenarios, each calibrated to a once in 30 year event. To meet these targeted probabilities, stress-test scenarios are calibrated to cover 99.987 per cent of daily price and volatility movements, based on a sample distribution constructed from 20 years of price and volatility data. The sample distribution used by ASX Clear reflects the period in which ASX has judged historical data as consistent and relevant to current market structures. These scenarios have to date been reviewed annually, with the most recent changes to scenarios taking effect in February 2014. Review of these scenarios against observed market movements also occurs on a daily basis and against overall market conditions on a monthly basis (see Key Consideration 4.5).

ASX Clear uses six market-wide scenarios that cover price movements ranging from a 15 per cent decrease to a 7 per cent increase, increases in volatility of up to 150 per cent, and scenarios that combine changes in price and increases in volatility. Other scenarios cover seven broad market sectors (such as consumer staples, energy and financials), applying hypothetical extreme increases and decreases in price across these sectors, and a 150 per cent increase in volatility. Finally, stress-test scenarios are included for 25 individual stocks, chosen based on total open derivatives positions; these scenarios cover a 30 per cent increase in price, a 30 per cent decrease in price and a 250 per cent increase in volatility.

In practice, the largest stress-test exposures are commonly generated by market-wide price movements, i.e. the market down 15 per cent or market up scenarios. However, small or medium-sized participants often record their largest stress-test results against single-stock stress-test scenarios where they have more concentrated positions in a single stock.

ASX Clear introduced reverse stress testing of its capital stress test model in June 2014. Currently, the ASX Clear reverse stress test assumes a uniform movement in equity prices and does not consider scenarios in which the prices of different securities or contracts change in different directions or at different rates. This is, in part, because ASX judges that in stressed circumstances the price of individual securities would be mostly driven by market-wide rather than idiosyncratic factors.

In order to test the sensitivity of the stress test models to other model assumptions, the reverse stress test is repeated for a wide range of scenarios. These include assuming the default of multiple participants, and varying assumptions on the size, concentration or directionality of participants' portfolios. To test these assumptions, reverse stress tests are applied to participant portfolios that exhibit certain characteristics, such as concentrated exposure to a particular contract or a highly directional equities exposure. ASX also conducts tests of extreme hypothetical portfolios that would generate losses sufficient to exhaust pooled financial resources under plausible market scenarios.

In interpreting the results of reverse stress testing, ASX considers the plausibility of any scenarios that could exhaust pooled financial resources. Any recommended changes to stress test scenarios or pooled financial resources would first be considered by the RQG and then escalated to the Clearing Boards for approval. A summary of reverse stress testing outcomes

is reported alongside the monthly margin backtesting and capital stress test review reports and included in quarterly risk management reports to the Clearing Boards.

4.7 A central counterparty should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the central counterparty. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds a central counterparty may borrow from liquidity providers. These rules and procedures should also indicate the central counterparty's process to replenish any financial resources that the central counterparty may employ during a stress event, so that the central counterparty can continue to operate in a safe and sound manner.

In March 2014, ASX finalised a basic recovery plan that relies on existing tools and powers within the CS facilities' Operating Rules. Currently, if ASX Clear's prefunded pooled financial resources were insufficient to fully cover its credit losses following a participant default, ASX Clear may call up to $300 million in Emergency Assessments from surviving participants to cover residual losses. ASX acknowledges, however, that this may not be sufficient to fully address any uncovered credit losses that ASX Clear might face. While ASX's recovery plan identifies measures that could be used to mitigate this in part (such as adjustments to STELs and the collection of additional margin), additional measures will be required to comprehensively allocate uncovered losses.

ASX also acknowledges additional tools and powers may be necessary to adequately and reliably replenish financial resources following a participant default (see Key Consideration 3.5). Responsibility for determining if the resources will be replenished and, if so, how this should be achieved, ultimately lies with the ASX Limited Board, which would make this decision in consultation with the ASX Clear Board. ASX has documented replenishment intentions, which include several options; the particular approach taken to replenishment would depend on the specific circumstances, including the severity of the loss and the market environment (see Key Consideration 13.1). ASX Limited has also committed to maintaining a certain level of equity capital in ASX Clear (including via ASXCC), provided certain conditions are met, including that the CCP is solvent.

ASX has therefore commenced work to develop a more comprehensive recovery plan supported by tools to fully address uncovered credit losses and replenish financial resources. It intends to base these tools on forthcoming CPSS-IOSCO guidance on recovery planning, expected to be published in late 2014. ASX intends to consult on its proposed recovery approach in the second half of 2014.

Principle 5: Collateral

A central counterparty that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity and market risks. A central counterparty should also set and enforce appropriately conservative haircuts and concentration limits.

Rating: Observed

The Bank's assessment is that ASX Clear observes the requirements of Principle 5. ASX Clear's collateral acceptance policies are described in further detail under the following Key Considerations.

5.1 A central counterparty should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity and market risks.

Initial and premium margin obligations may be met by posting either cash or non-cash collateral.[9] Non-cash collateral is subject to a haircut. Variation and intraday margin obligations must be met by cash collateral (see Principle 6).

ASX Clear specifies criteria for eligible securities collateral. Acceptable collateral includes S&P/ASX 200 index constituent stocks; exchange-traded funds that ASX Clear determines to be mature and liquid, and for which issuer risk is considered low (currently only the SPDR S&P/ASX 200 Fund); and other stocks lodged as specific cover for call options written on the same stock. The list of acceptable collateral is reviewed at least quarterly, including to reflect changes to the S&P/ASX 200 constituent list. ASX Clear prohibits the use by participants of stock issued by related entities except when it is used as specific cover for a transaction in that stock. ASX Clear also and restricts the use of related entity issued stocks to client transactions (subject to strict concentration limits) as collateral to manage the potential risk of correlated default of a participant and the collateral issuer ('wrong-way risk'). Collateral must be unencumbered.

During 2013/14, ASX formally documented its approach to collateral in a Collateral Policy and a Collateral Standard. These documents set out ASX's collateral eligibility criteria, procedures for review of eligibility, the basis for calibrating haircuts and arrangements for the review of collateral settings.

In normal circumstances, ASX Clear does not accept bank guarantees as collateral. However, in limited circumstances and at the discretion of ASX, it may accept guarantees from banks with a short-term S&P credit rating of at least A-1+, as long as the bank is not a related entity of the participant. As a transitional measure for three years, following the introduction of margining for cash securities in June 2013, ASX Clear permits participants to meet cash market margin) obligations with bank guarantees, but only in exceptional circumstances and at the discretion of ASX. ASX Clear made changes to its collateral procedures in April 2014 to ensure that the use of bank guarantees to meet ETO margin obligations is also at the discretion of ASX. ASX intends to use this discretion sparingly to avoid growth in the use of bank guarantees, which is currently low. ASX Clear has established a standard format for eligible bank guarantees, and any requests by banks or participants for material deviations from this format require clearance from ASX Legal.

ASX Clear takes into account market liquidity in determining the eligibility of collateral. ASX Clear considers the equity securities that it will accept as collateral – stocks in the S&P/ASX 200 index and the SPDR S&P/ASX 200 Fund – to be sufficiently liquid that the eligibility of these assets as collateral will not have any material impact on market liquidity or price. In light of the depth of liquidity in these assets, ASX Clear would also expect to be able to liquidate such collateral in a timely fashion as required. These assets are also well known and understood to participants in the Australian market.

5.2 A central counterparty should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.

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[9] Premium margin is used to cover the amount that would be required to close out short positions in exchange-traded options (see CCP Standard 6.1).

Since S&P/ASX 200 stocks and the SPDR S&P/ASX 200 fund are highly liquid, price information is readily available. ASX revalues collateral on a daily basis using end-of-day prices. If there is no price information available for a particular day (for example due to a corporate action), ASX Clear uses the previous day's price to value the relevant asset.

ASX Clear sets haircuts to cover a fall in the collateral value of stocks over a one-day period under extreme but plausible scenarios. Haircuts are based on the largest price falls used in corresponding capital stress-test scenarios (see Key Consideration 4.6). For stocks that are not used in individual stock stress-test scenarios, the largest price fall applied in any individual stock stress-test scenario is used to determine the haircut. Collateral haircuts are reviewed at least annually to take into account any changes to historically observed volatility trends. Collateral haircuts were most recently reviewed in January 2014. In addition, since collateral haircuts are calibrated to the same stress scenarios as those used in the stress testing regime, the ongoing review of capital stress test scenarios also verifies the appropriateness of haircut rates (see Key Consideration 4.4).

5.3 In order to reduce the need for procyclical adjustments, a central counterparty should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.

ASX Clear's collateral haircutting policy is designed to cover extreme but plausible scenarios based on market price and volatility movements observed in the past 20 years, which includes the extreme volatility observed during the 2008-09 financial crisis. This is intended to ensure that haircuts remain stable over the business cycle, even in stressed market conditions.

5.4 A central counterparty should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.

Currently, ASX Clear does not have formal limits on concentrations of collateral in particular assets. During 2013/14, the maximum holding of non-cash collateral was $4.6 billion; this was used to meet less than $750 million of collateral requirements, after haircuts, with the remaining amount representing excess collateral lodged by participants or their clients. Around 43 per cent of margin requirements were met using cash collateral.

During 2013/14, ASX developed a risk-based policy for managing concentration risks in its CCPs (see Key Considerations 4.2 and 19.4). While, this policy does not address concentrations in collateral holdings, ASX limits and mitigates the risk of such concentrations by restricting non-cash collateral (other than specific cover) to ASX 200 securities and applying a conservative haircut of 30 per cent. The Bank will continue to discuss with ASX its approach to monitoring collateral concentration risks.

5.5 A central counterparty that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.

ASX Clear does not accept any cross-border or foreign currency collateral.

5.6 A central counterparty should use a collateral management system that is well designed and operationally flexible.

Collateral management system

ASX Clear manages the calculation and execution of margin calls through its Derivatives Clearing System (DCS) and CMM System. These systems accurately monitor initial and variation margin levels and flows on an intraday basis (although intraday margin is not calculated or called for cash securities). The timely deposit, withdrawal and substitution of non-cash collateral are facilitated by CHESS. ASX intends to extend its collateral management service, currently available for debt securities held in Austraclear, to securities in CHESS. This would increase the ease of collateral substitution for ASX Clear participants.

Re-use of collateral

ASX Clear does not re-use non-cash collateral posted by participants and the re-use of such collateral is not supported under its Operating Rules.

Principle 6: Margin

A central counterparty should cover its credit exposures to its participants for all products through an effective margin system that is risk based and regularly reviewed.

Rating: Broadly observed

The Bank's assessment is that ASX Clear broadly observes the requirements of Principle 6. In order to fully observe Principle 6, ASX Clear should:

- complete the full validation of its SPAN and Derivatives Pricing System (DPS) models by external experts, and carry out plans for these external experts to perform a full validation of the CMM model within the next two years.

ASX Clear's margin system is described in further detail under the following Key Considerations.

6.1 A central counterparty should have a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves.

ASX Clear applies initial and variation margin to both derivatives products, and cash securities transactions. Initial (risk) margin provides protection to a CCP in the event that a participant defaults and an adverse price change occurs before the CCP can close out the defaulted participant's positions (potential future exposure). Variation margin is levied on cash market positions, long and short low exercise price options, and all futures positions to reflect observed price movements (current exposure); it is collected from the participant with a mark-to-market loss and, depending on the product, either passed through in cash to the participant with a mark-to-market gain, or recognised as a credit (see Key Consideration 6.4). ASX Clear also levies so-called 'premium' margin on short exchange-traded option positions, updating this daily to reflect mark-to-market changes in the close-out price.

2013/14 was the first full year of CMM, which involves the collection of initial margin and mark-to-market margin in respect of unsettled cash securities transactions. The selected methodology for initial margin calculation is primarily based on the historical simulation of value at risk. The HSVaR methodology calculates hypothetical changes in the value of a portfolio of securities, using historical price moves, and determines a margin requirement from these taking into account the desired degree of confidence (see Key Consideration 6.3). For less liquid stocks, or securities with an insufficient price history to apply HSVaR, ASX Clear

applies flat rate margins. Currently 43 of the 500 stocks that make up the All Ordinaries Index are margined on a flat-rate basis. Margins calculated using HSVaR currently make up around 39 per cent of initial margins collected through the CMM system. Around 70 per cent of flat-rate margin collections relate to trades in warrants and stocks outside the All Ordinaries Index, which attract higher margin rates. Transactions in CGS depository interests are margined according to the flat rate applied to fixed interest products.

ASX Clear uses a variant of the internationally accepted SPAN methodology for the margining of derivatives positions (see Key Consideration 6.3). All margin rates are reviewed on a three-monthly cycle, supplemented with ad hoc reviews during especially volatile market conditions.

ASX Clear predominantly clears standardised, exchange-traded products with risks that are well known to both ASX Clear and its participants. The only OTC products cleared by ASX Clear are equity options that share similar characteristics to exchange-traded products.

6.2 A central counterparty should have a reliable source of timely price data for its margin system. A central counterparty should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.

ASX Clear has access to timely price data for the majority of its exchange-traded products. For less liquid stocks (e.g. stocks outside the All Ordinaries Index and warrants) and new stocks for which there is insufficient historical price data, ASX Clear applies flat rate margins. These are based on available price information for individual stocks in the All Ordinaries Index, or for grouped categories of other products. The settlement value of exchange-traded options is calculated throughout the day using the DPS. Where available, the DPS uses recent traded prices, but the system is able to extrapolate prices from previous pricing periods or untraded bids and offers where traded price data are not available. For OTC equity options, ASX Clear interpolates the value using the prices of similar exchange-traded options.

Over the course of 2013, ASX introduced several enhancements to the DPS to improve the calculation of prices for less liquid stocks. These include new limits on implied volatilities, cross-checks of calculated prices against trades in similar options, and the application of smoothing to and imposition of restrictions on the slope and convexity of deemed volatility curves. The pricing period was also extended from a portion of a trading day to the whole day to increase the contribution of traded prices. The DPS is considered a key risk model and accordingly will be subject to annual external validation under ASX's Model Validation Standard; the first such validation is scheduled to take place by the end of 2014.

6.3 A central counterparty should adopt initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Initial margin should meet an established single-tailed confidence level of at least 99 per cent with respect to the estimated distribution of future exposure. For a central counterparty that calculates margin at the portfolio level, this requirement applies to each portfolio's distribution of future exposure. For a central counterparty that calculates margin at more granular levels, such as at the sub portfolio level or by product, this requirement must be met for the corresponding distributions of future exposure. The model should (a) use a conservative estimate of the time horizons for the effective hedging or close out of the particular types of products cleared by the central counterparty (including in stressed market conditions), (b) have an appropriate method for

measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products, and (c) to the extent practicable and prudent, limit the need for destabilising, procyclical changes.

ASX's approach to margining takes into account price history at a granular level. Where price history is inadequate, the ASX methodology makes appropriately conservative adjustments. ASX Clear applies different margin models to securities and derivatives transactions.

Securities

For securities transactions, ASX applies an HSVaR-based model, which is calibrated and adjusted to meet a single-tailed confidence interval of 99.7 per cent of the estimated distribution of future exposure. Estimates of the distribution of future exposure under this model are based on 2 years of 1-day price moves applied to current participant portfolios (see Key Consideration 6.5). While ASX targets 99.7 per cent coverage of the distribution of future exposures from CMM, as a first step ASX identifies the 99th percentile of the sample distribution. Since HSVaR requires reliable and uninterrupted price data, it is only applied to transactions in sufficiently liquid securities, namely those in the ASX 500 All Ordinaries. Even so, the small number of observations of price movements beyond the 99th percentile makes it difficult to construct reliable estimates of the desired 99.7 per cent margin coverage. ASX therefore applies a Portfolio Add-on Factor (currently 30 per cent) to the HSVaR estimate of potential future exposure at a 99 per cent confidence level to achieve the desired 99.7 per cent level of cover.

For securities that do not have the required price history to apply HSVaR, ASX applies, consistent with its overall CMM approach, flat rate margins intended to cover 1-day price moves with a 99.7 per cent confidence at a portfolio level. In order to achieve the desired confidence level at the portfolio level, confidence intervals and close-out periods applied to individual stocks differ according to liquidity and available price information. Stocks in the ASX 200 target a 99.7 per cent confidence interval applied to a 1-day close-out period; other stocks in the All Ordinaries target a 97 per cent confidence interval over a 2-day close-out period; and all other products target a 95 per cent confidence interval over a 3-day close-out period. The lower confidence intervals for the latter two groups reflect the difficulty of constructing reliable estimates of the extremities of the distributions of price movements for securities with limited price history and/or liquidity. However, longer close-out periods of 2 days for next 300 All Ordinaries shares or 3 days for other securities are assumed. Backtesting seeks to verify that the flat rates for less liquid securities provide cover both to the target confidence interval and close-out period at an individual security level, and to at least a 99.7 per cent confidence interval at the portfolio level (see Key Consideration 6.6).[10]

Derivatives

For derivatives transactions, ASX Clear calculates initial margin requirements using the SPAN methodology. The SPAN methodology calculates initial margin requirements that reflect the total risk of each portfolio – for ASX Clear, each house or client account is considered a separate portfolio. The key parameters in the SPAN methodology are the 'price scanning range' (PSR) and 'volatility scanning range' (VSR). These scanning ranges are individually

[10] Flat rates effectively assume independence of price movements between securities subject to flat rates. Unless a portfolio is highly concentrated in a small number of flat rate securities, it is likely that this assumption would lead to coverage at the portfolio level that exceeds the targeted confidence interval for individual securities.

calibrated to the distribution of price and volatility movements for a set of related contracts under normal market conditions. The scanning ranges inform a set of 16 hypothetical risk scenarios used to measure the loss from a portfolio under alternative combinations of changes in price and volatility. For example, in one risk scenario, price increases by one-third of the PSR and volatility falls by the full VSR, while in another scenario price falls by the full PSR and volatility rises by the full VSR. The margin rate is then based on the highest estimated loss across the 16 scenarios.

ASX Clear bases the scanning ranges on key volatility statistics; namely, the higher of three standard deviations (a confidence interval of 99.7 per cent) of a 60-day or 252-day sample distribution, using the higher of one- or two-day price movements. The sample period reflects a preference for incorporating recent market conditions. The inclusion of two-day price movements reflects a conservative assumption that a defaulter's positions may take up to two days to close out. ASX also evaluates margin rates against multiple look-back periods incorporating both short- and long-term periods (1 day, 1 week, 120 business days and 12 months).

ASX Clear also applies a series of adjustments within SPAN to account for correlations and specific risks.

- *Intra-commodity spread charge*. This is an adjustment to the margin requirement for a given set of related contracts, to account for less-than-perfect correlation between contracts with different expiries. This adjustment is based on a participant's actual net position at each expiry month multiplied by an 'intra-commodity charge rate', which is itself based on observed price correlations between the different expiries. The default setting is to apply a single charge rate. However, for some contracts ASX utilises SPAN's charge-rate tiering functionality. This allows charge rates to vary depending on the temporal difference in the pair's expiries.

- *Inter-commodity spread concession*. ASX Clear also applies offsets designed to account for reliable and economically robust correlations across different contract types (see Key Consideration 6.5). These offsets reflect that, while the scanning risk for each related contract – a 'combined commodity' in SPAN terminology – is set based on the worst-case risk scenario for that combined commodity, it may be highly unlikely that the set of worst-case scenarios occurs simultaneously. This is particularly the case if a participant holds net long and net short positions in different related contracts that have a robust positive correlation. The inter-commodity spread concession is calculated by applying (in a defined order) a spread ratio and concession rate to a participant's actual net positions in pairs of related contracts. The spread ratio determines the number of net positions in one related contract required to offset a position in another related contract. The concession rate is specified as a percentage of the scanning risk for both contracts in the pair. ASX calculates these parameters in the same manner as the price movement for the intra-commodity spread charge.

- *Other adjustments.* ASX Clear applies an adjustment to cover its exposure on the day of contract expiry, since expiring positions are otherwise not included in that day's initial margin calculations. ASX also maintains a minimum margin requirement on short positions to ensure the collection of margin on deep out-of-the-money options that would otherwise return no scanning range.

Under ASX's internal Margin Standard, the Manager of Exposure Risk Management (part of CRM) can approve adjustments to margin rate settings jointly with the CRO, or with the General Manager of either CRM, Clearing Risk Strategy and Policy or CRQ. Such adjustments may be made if application of the standard statistical analysis would result in inappropriate outcomes; for example, if the backward-looking statistical analysis does not take appropriate account of expected future price movements. Other reasons for using management discretion include insufficient historical data (e.g. where a product is new), seasonality in some products, and isolated spikes in price movements that result in a distortion of statistical recommendations. The ASX Margin Standard also allows exceptions to the normal margin rate setting process based on a broader risk assessment – such exceptions require the approval of the General Manager of Clearing Risk Strategy and Policy and the General Manager of CRQ.

6.4 A central counterparty should mark participant positions to market and collect variation margin at least daily to limit the build-up of current exposures. A central counterparty should have the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants.

Margin requirements are calculated overnight, with variation margins based on closing prices each day. These are notified to participants the next morning. For cash market transactions, mark-to-market margin is calculated in respect of securities in the All Ordinaries and added to initial margin if prices have moved against the participant. If prices have moved in favour of the participant then an offset may be applied to the participant's initial margin requirement, but this is capped by the level of initial margin. Mark-to-market margin is not called on flat rate-margined securities that are not within the All Ordinaries as up-to-date price data may not be available for all of these securities. However, adjustments are made to the overall margin called for these securities to ensure that ASX Clear is adequately covered in the case of adverse market movements.

All margin obligations are settled via Austraclear and regular calls must be met by 10.30 am. When market movements exceed certain thresholds, ASX Clear will calculate intraday margin requirements on derivatives positions. This involves calculating the net mark-to-market losses on all positions, and the initial margin on any new positions opened during the day. Where a participant's margin shortfall is greater than $100 000 and represents an erosion of initial margin of 40 per cent or more, ASX Clear calls intraday margin. This must be met by participants within two hours of notification.

Under ASX Clear's AIM methodology (discussed above in relation to Principle 4), a participant is also required to post additional collateral should stress-test outcomes reveal potential losses that exceed a predetermined STEL, or if participants have large portfolios relative to their capital (see Key Consideration 4.5).

If a margin payment is not made by the required time, ASX contacts the participant to determine the reasons for the delayed payment. Delayed payments are not common. When they do occur, they are typically the result of communication or technical issues involving the participant and/or its payment provider. Early communication by ASX aims to ensure that, in such cases, payment can still be made within a short period of the required time. In the event that the matter was more serious, ASX would investigate to decide whether a default event should be declared and, if so, how the default should be managed (see Principle 13).

6.5 In calculating margin requirements, a central counterparty may allow offsets or reductions in required margin across products that it clears or between products that it and another central counterparty clear, if the risk of one product is significantly and reliably correlated with the risk of the other product. Where two or more central counterparties are authorised to offer cross-margining, they must have appropriate safeguards and harmonised overall risk management systems.

ASX Clear applies margin at a portfolio (clearing participant) level for its cash market securities using its HSVaR methodology. This implicitly reduces the margin requirements for any products within the portfolio that have displayed negatively correlated risks over the previous 2 years. The use of historical simulation over a 2-year period establishes the significance and reliability of these correlations. ASX has identified that the direction of participant portfolios is a more significant contributor to the events captured in HSVaR margin settings than implicit price correlations, while flat rate margins do not assume any price correlations between securities. The reliability and significance of the correlations underlying the implicit offsets in HSVaR, which do not represent a significant proportion of ASX Clear's overall risk exposure, are subject to regular verification through backtesting (see Key Consideration 6.6).

In applying the SPAN methodology to derivatives transactions, ASX allows offsets in the form of 'inter-commodity spread concessions' (see Key Consideration 6.3). These offsets reduce margin requirements to account for reliable and economically robust correlations observed across related contracts. Inter-commodity spread concessions are applied the correlation is significant and based on economic fundamentals. ASX uses sensitivity analysis to verify the reliability of assumed correlations between products used in calculating inter-commodity spread concessions (e.g., analysis of the effect of retaining stressed data from 2008 in the historical simulation period (see Key Consideration 6.6)). Changes to inter-commodity spread concessions must be approved by the RQG, which considers whether changes identified by SPAN appropriately reflect underlying economic relationships, including in periods of market stress.

ASX Clear does not currently have any cross-margining arrangements with any other CCPs.

6.6 A central counterparty should analyse and monitor its model performance and overall margin coverage by conducting rigorous daily backtesting and at least monthly, and more frequent where appropriate, sensitivity analysis. A central counterparty should regularly conduct an assessment of the theoretical and empirical properties of its margin model for all products it clears. In conducting sensitivity analysis of the model's coverage, a central counterparty should take into account a wide range of parameters and assumptions that reflect possible market conditions, including the most volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices.

During 2013/14, ASX made significant enhancements to its backtesting and sensitivity analysis of margin models, introducing improvements to daily backtesting procedures supplemented by more comprehensive periodic backtesting and sensitivity analysis of its margin models.

Under ASX's Model Validation Standard, daily backtesting of both the SPAN and CMM margin models is used to test, on an ongoing basis, whether the margin models reliably cover price movements to a 99.7 per cent confidence interval. Daily backtesting is performed against both dynamic and static actual portfolios. Backtesting against actual dynamic portfolios

involves the comparison of actual initial margin collected from each participant against actual variation margin calculated over the following one or two days, depending on which is the larger amount. One limitation of using variation margin on dynamic portfolios to model changes in the value of a portfolio over the close-out period is that it is influenced not only by market movements but also by changes in the composition of the portfolio. To address the limitations of dynamic portfolio analysis, static portfolio backtests are also used to hold the portfolio composition constant over time. For actual static portfolios, ASX calculates hypothetical variation margin obligations for each day of the validation period based on historical price movements, and compares these to initial margin calculated on the actual portfolio on the day of the backtest. Under both types of backtest, when variation margin is greater than initial margin an 'exception' is recorded. CRM compares the number of exceptions to the expected number of exceptions, based on a 99.7 per cent confidence interval.

A report summarising the results of backtesting is automatically generated and circulated to relevant staff in the Risk division. Further analysis is undertaken when an exception is recorded, both to investigate model performance and to investigate the potential financial implications of the exception given the particular participant and portfolio affected. Where an exception is recorded against an individual client account, this investigation will proceed only if the dollar value of the exception breaches a materiality threshold. Further investigation also takes place if the actual number of exceptions exceeds the expected number. By investigating further, ASX determines whether any follow-up actions are required, such as the calling of additional initial margin or the managing down of positions.

Daily backtesting reports are aggregated into a monthly backtesting report which compares the number of observed exceptions to expected exceptions for the previous month, quarter and year. This report, which also includes the results of sensitivity analysis (see below) is reviewed by the RQG and used to identify the need for further investigation of margin model performance. RQG will take into account the frequency and magnitude of any breaches in determining whether to commission additional analysis from CRQ.

On a periodic basis, approximately every four months, ASX performs a more comprehensive backtesting analysis of each of its margin models. The periodic reviews allow ASX to examine the model in more detail and provide a basis for recommending changes to the model or further analysis. Hypothetical portfolios extend the analysis, allowing ASX to test the performance of margin models when applied to portfolios with certain characteristics (e.g. mix of contracts, concentrations, directionality) that may be particularly adversely affected by market conditions during the validation period.

ASX applies sensitivity analysis to its margin models as part of its quarterly margin rate reviews for SPAN and CMM. Although margin rate reviews for CMM are conducted only for flat rates, sensitivity analysis for the HSVaR component of CMM is carried out at the same time as the flat rate margin review and sensitivity analysis. Sensitivity analysis allows ASX to test the performance of a model beyond the boundaries of its existing assumptions, potentially also examining the implications of assumptions that would not reasonably be expected to hold. ASX has developed internal guidance setting out its approach to sensitivity analysis for margin models, which highlights three main assumptions that it varies when conducting sensitivity analysis: the confidence interval, close-out period and look-back period. In addition, ASX investigates the impact of varying the historical simulation period for CMM and the application of floors to model parameters in SPAN. If varying particular inputs

reveals weaknesses in the model, ASX considers how plausible these varied assumptions are when considering whether to make adjustments to the model. Where sensitivity analysis identifies potential weaknesses in margin models, the RQG will consider recommended changes to address these.

6.7 A central counterparty should regularly review and validate its margin system.

ASX Clear's margin methodologies are also subject to a comprehensive annual validation and ongoing review under ASX's Model Validation Standard (see Key Consideration 4.5). The RQG is responsible for performing the regular reviews of models, while Internal Audit coordinates the independent validation process with CRQ input. ASX's Model Validation Standard requires that all models that are critical to ASX (as measured against a series of risk factors) undergo a full annual validation (see Key Consideration 2.6). Under this framework the SPAN and DPS models must be externally validated annually, while CMM must be externally validated once every two years. ASX has engaged external experts for a three-year period to conduct annual validations of ASX's key risk models, including both the SPAN and DPS models. The first validations of these models will occur during the second half of 2014. A full external validation of CMM is scheduled for the following year. The Bank will monitor the outcome of these validations.

At ASX, the margining process is governed by an internal Margin Standard, which is reviewed annually, with material changes approved by the Clearing Boards. The authorisation and documentation process for margin parameter changes and guidelines for the application of management discretion are also reviewed annually.

ASX publishes detailed margining information on its website, including descriptions of the margining methodology, schedules of margin rates, and daily SPAN margin parameter files. These files allow participants to perform margin calculations on hypothetical or actual portfolios. A number of third-party vendors use this information to provide margin estimation software to participants.

Principle 7: Liquidity risk

A central counterparty should effectively measure, monitor and manage its liquidity risk. A central counterparty should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the central counterparty in extreme but plausible market conditions.

Rating: Broadly observed

The Bank's assessment is that ASX Clear broadly observes the requirements of Principle 7. In order to fully observe Principle 7, ASX Clear should:

- implement mechanisms consistent with forthcoming CPSS-IOSCO guidance on recovery planning that would fully address any uncovered liquidity shortfall related to derivatives transactions following a participant default
- complete the full validation of its liquidity stress test model by external experts, and enhance its sensitivity analysis approach to allow it to systematically examine the effect of underlying

assumptions. This should include assumptions on the porting of client derivatives positions and the degree to which timely settlement can be achieved without the use of offsetting transaction arrangements.

The Bank will monitor planned enhancements to ASX Clear's liquidity stress test to provide additional information to management and the Bank on the degree of contingent reliance on offsetting transaction arrangements with participants to meet settlement-related payment obligations in a participant default. The Bank will discuss further with ASX how such information might best be disseminated to participants to support their liquidity management and planning.

ASX Clear's arrangements to measure, monitor and manage its liquidity risk are described in further detail under the following Key Considerations.

7.1 A central counterparty should have a robust framework to manage its liquidity risks from its participants, commercial bank money settlement agents, nostro agents, custodians, liquidity providers and other entities.

Sources of liquidity risk

The primary source of liquidity risk in ASX Clear is the potential default of a participant with payment obligations to the CCP. To the extent that the CCP relies on such incoming payment flows to meet its obligations to other participants, it could face a liquidity shortfall. Payment obligations to and from participants may be in the form of payments for settlement of a securities transaction, or initial and variation margin. ASX Clear does not rely on commercial bank money settlement agents, nostro agents, custodians or liquidity providers (other than participants providing liquidity via offsetting transaction arrangements – see Key Consideration 7.4) in meeting its Australian dollar payment obligations.

Managing liquidity risk

ASX Clear minimises the size of its liquidity obligations to participants through daily (and in the case of significant market movements, intraday) settlement of variation margin. This prevents the build-up of large (credit and) liquidity exposures. ASX Clear's framework for managing its remaining liquidity risks involves the monitoring of liquidity exposures through daily stress testing (see Key Consideration 7.9) and the maintenance of sufficient liquid resources to be able to meet payment obligations in the event of a participant default (see Key Consideration 7.4).

ASX Clear also provides participants with information to help them manage their liquidity needs and risks, which in turn protects the CCP. Participants are provided with sufficient information to understand their intraday margin call obligations, and replicate stress-test outcomes. ASX publishes a daily SPAN and CMM margin parameter file that allows participants to estimate payment obligations associated with margin requirements for actual or hypothetical portfolios. Advance warnings and communications in respect of calls for additional margin, and margin rate changes also assist participants in their liquidity planning. For example, participants are notified if their stress-testing results approach their STELs. Additionally, ASX works closely with participants where new obligations are likely to affect their liquidity needs. The Bank will discuss ASX Clear's approach to analysing and disclosing the liquidity impact of offsetting transaction arrangements on participants in the context of planned enhancements to liquidity stress testing arrangements (see Key Consideration 7.9).

7.2 A central counterparty should have effective operational and analytical tools to identify, measure and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.

Daily cash flows and investment of funds across the ASX CCPs are monitored and managed by an experienced Portfolio Risk Manager. In addition, the CRM department reviews a daily report of key risk indicators, related to liquidity demands. Any issues are escalated to the CRO. Funding arrangements, such as settlement flows, are also monitored in real time by the CRM and Treasury functions.

Portfolio Risk Management uses reports provided by CRM to monitor SPAN-calculated margin flows originating from DCS, which feed into ASX's Treasury Management System. Portfolio Risk Management enters trades required to manage daily cash-flows into ASX's Treasury Management System. Clearing and Settlement Operations uses daily settlement reports produced by the Treasury Management System to generate settlement instructions in Austraclear. Resulting cash flow movements are monitored in RITS. Margin payments from participants must be made by 10.30 am, while outward payments to participants are manually managed in the RITS queue, and are only released once all incoming margin obligations have been settled (generally by 12.00 pm).

ASX Clear mitigates potential liquidity risks in several ways. ASX Clear maintains $250 million in prefunded financial resources invested in liquid assets (see Principles 4 and 16). In addition, ASX Clear has $50 million available to it under a committed standby liquidity facility from ASX Limited. ASX Clear does not include promissory commitments in its liquidity calculations, including in its stress tests, in recognition of the potential delay in receipt of these resources.

ASX Clear's liquid assets are invested and managed on its behalf by ASXCC (see 'ASX Group Structure' in Section 2.3.1). ASXCC's Investment Mandate establishes a clear definition of liquid assets: liquid assets must be available for use within two hours and held in the form of either a restricted set of highly liquid securities or securities eligible for repurchase with the Reserve Bank (see Key Consideration 7.5).

7.3 A payment system or securities settlement facility, including one employing a deferred net settlement mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.

Key Consideration 7.3 is not relevant to central counterparties.

7.4 A central counterparty should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the central counterparty in extreme but plausible market conditions. In addition, a central counterparty that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should

include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the central counterparty in extreme but plausible market conditions.

ASX Clear's liquid resources include margin and other collateral posted by participants, as well as its own holdings of liquid assets and a committed liquidity facility from ASX Limited. ASX Clear's holdings of liquid assets and cash collateral posted by participants are invested on its behalf by ASXCC in accordance with its Investment Mandate. The ASXCC Investment Mandate requires that ASX hold liquid assets sufficient to cover the sum of:

- *The total available financial resources (AFR) across the ASX CCPs.* The AFR for ASX Clear is currently set at $300 million (including $50 million in respect of its committed liquidity facility from ASX Limited) and is calibrated to cover the largest stressed liquidity exposure to a single participant and its affiliates, with the exception of peak liquidity exposures to A-rated and B-rated participants (see Key Consideration 7.9). The AFR for ASX Clear (Futures) is currently $650 million (see Appendix A1.2, Key Consideration 7.4).
- *An 'ordinary liquidity requirement'.* This is intended to cover day-to-day liquidity requirements, such as the return of margin to participants, and is specified as a percentage of the ASXCC portfolio. This is calibrated to the maximum margin outflow in normal market conditions over the last 12 months and is reviewed quarterly.
- *Cash margin requirement*. This is an amount sufficient to cover the cash margin requirement of the largest participant of ASX Clear and its affiliates and the two largest participants of ASX Clear (Futures), based on the largest margin amounts held by participants over the previous quarter.

The requirement to cover the AFR across both CCPs takes a conservative approach in that it provides for the simultaneous default, under extreme but plausible market conditions, of the largest participant and its affiliates in ASX Clear and the two largest participants in ASX Clear (Futures).

In the event of the default of a participant with net securities-related payment obligations, ASX Clear's liquidity needs may be significantly greater than its credit exposure. From a credit risk perspective, ASX Clear is exposed only to replacement cost risk from an adverse price movement in the resale of any securities due to be purchased. Funds received from the sale may be used to offset its payment obligation. However, there is a timing mismatch between the point at which ASX Clear must meet the defaulted participant's payment obligation in relation to the purchased securities and that at which it receives funds from the resale of these (typically 3 days later). This creates a gross liquidity exposure for ASX Clear that may significantly exceed any replacement cost exposure on the same default. As a result, ASX Clear's AFR may be insufficient to meet its full liquidity exposure on a default.

With this in mind, ASX Clear introduced offsetting transaction arrangements in April 2014 to ensure access to sufficient liquidity to settle cash market transactions when due, while avoiding the costs of maintaining a significantly increased quantum of outright liquid resources. If a participant were to default due to a shortfall of funds, the ASX Default Management Committee would first determine whether ASX Clear could inject sufficient liquidity, from the existing $300 million of available financial resources, to ensure that settlement of payment obligations occurred as expected.

It is expected that available resources would first be injected. However, if it was not possible or prudent to rely solely on prefunded liquidity, ASX Clear would settle transactions by entering into 'offsetting transaction arrangements' with participants that were due to deliver securities to the defaulted participant. In these circumstances, ASX Settlement's back-out algorithm would identify transactions in the batch that, if removed, would reduce ASX Clear's payment obligations on behalf of the defaulted participant to zero, while avoiding an increase in net payment obligations for other participants (see Appendix A2.1, Key Consideration 12.1). ASX Clear would then settle the novated trades that have been identified by the back-out algorithm by entering into 'offsetting transaction arrangements' with participants due to deliver securities under these trades. Offsetting transaction arrangements enable the CCP to settle its payment obligations with these participants on the intended settlement date through an arrangement to offset the underlying settlement obligations to and from those participants.

Under the first leg of the offsetting transaction arrangement, ASX Clear would, in effect, re-deliver the stock to the relevant non-defaulting participant in return for payment equal to the amount of the payment obligation of ASX Clear to that participant. Under these arrangements, ASX Clear would agree to repurchase the stock the next business day under the second and final leg of the transaction. If this transaction was unable to be settled on the next business day, subsequent offsetting transactions would be entered into on a daily basis until the settlement of on-market close-out trades had taken place.

7.5 **For the purpose of meeting its minimum liquid resource requirement, a central counterparty's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If a central counterparty has access to routine credit at the central bank of issue, the central counterparty may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.**

ASXCC holds an ESA at the Bank to facilitate money settlements on behalf of ASX Clear (and ASX Clear (Futures)) (see Key Consideration 7.8). As an ESA holder, ASXCC is eligible for access to Australian dollar liquidity under the Bank's overnight and intraday liquidity facilities (against eligible collateral specified by the Bank that is held within its investment portfolio), including in times of market stress.

The ASXCC Investment Mandate requires the Portfolio Risk Manager to maintain high-quality liquid assets to meet ASX Clear's minimum liquidity requirements, consistent with the definition of qualifying liquid assets under this standard. Liquid assets must be available for use within two hours and held in either a restricted set of highly liquid securities or securities eligible for repurchase transactions with the Bank. Investments held in the form of bank bills, negotiable certificates of deposit and floating rate notes issued by approved counterparties or obligors are required to be tradable on a robust secondary market. At 30 June 2014, term deposits accounted for 36.4 per cent of the ASXCC investment portfolio, at-call deposits 16.4 per cent, with holdings of other approved securities making up the balance. Offsetting transaction arrangements with participants (see Key Consideration 7.4) also meet the

definition of qualifying liquid resources for the purpose of this standard, since they are prearranged, committed and reliable (given that they effectively utilise funds otherwise due to participants). Eligible investment counterparties are discussed under Principle 16.

ASX Clear's committed liquidity facility with ASX Limited is contractually based, and can be considered highly reliable due to the corporate relationship between the two entities. These funds would be sourced from ASX Limited's cash resources, and are not routinely utilised in any other part of ASX's operations.

7.6 A central counterparty may supplement its qualifying liquid resources with other forms of liquid resources. If the central counterparty does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if a central counterparty does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. A central counterparty should not assume the availability of emergency central bank credit as a part of its liquidity plan.

ASX Clear does not supplement its qualifying liquid resources with other forms of liquid resources.

7.7 A central counterparty should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the central counterparty or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. A central counterparty should regularly test its procedures for accessing its liquid resources at a liquidity provider.

The Portfolio Risk Manager, in consultation with the CRO, is responsible for the provision of timely liquidity to fund margin and settlement obligations to non-defaulting participants. The DMF (see Key Consideration 13.1) covers liquidation of participant non-cash collateral, as well as the liquidation of treasury investments representing participant cash collateral and other prefunded financial resources. While the order of use of particular collateral types will depend on the particular circumstances, a typical order of use may be cash first, followed by non-cash collateral. The order of liquidation of non-cash collateral to meet funding requirements will depend on factors such as prevailing market conditions, liquidity needs and the amount of funds required relative to the size of each collateral lodgement. Procedures for dealing with liquid assets in the treasury investment portfolio are documented, and are available for Portfolio Risk Management staff at both primary and backup sites.

7.8 A central counterparty with access to central bank accounts, payment services or securities services should use these services, where practical, to enhance its management of liquidity risk.

ASXCC holds an ESA. Accordingly, ASX Clear may, via ASXCC, access Australian dollar liquidity under the Bank's overnight and intraday liquidity facilities (against eligible collateral specified by the Bank). ASXCC's Investment Mandate clarifies its ability to make use of these services, by specifying the list of securities (from the Bank's approved list) available for repurchase,

including the securities of the Commonwealth, certain states and major banks (see Principle 16).

ASX Clear uses ASXCC's ESA to settle its AUD margin and cash settlement obligations in RITS (see also Principle 9).

7.9 A central counterparty should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. A central counterparty should have clear procedures to report the results of its stress tests to appropriate decision-makers at the central counterparty and to use these results to evaluate the adequacy of, and adjust, its liquidity risk management framework. In conducting stress testing, a central counterparty should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the central counterparty, include all entities that might pose material liquidity risks to the central counterparty (such as settlement banks, nostro agents, custodian banks, liquidity providers and linked FMIs), and where appropriate, cover a multiday period. In all cases, a central counterparty should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.

ASX Clear uses daily liquidity stress testing to assess the adequacy of its liquidity arrangements. The stress-testing model, which is adapted from ASX Clear's capital stress tests (described under Principle 4), calculates the maximum liquid funds that ASX Clear would need to access in order to meet obligations arising in the event of the joint default of a clearing participant and its affiliates. The liquidity stress tests assume that a default occurs just prior to receipt of the previous day's option premium payments, if owed by the defaulter.

ASX Clear's liquidity stress tests currently apply different assumptions depending on the size and credit standing of the defaulted participant. For A-rated and B-rated participants, liquidity stress-test results are derived directly from the capital stress test. This is based on the assumption that, for these large participants, excess liquidity exposures generated by the securities settlement cycle would be addressed through offsetting transaction arrangements entered into with non-defaulting participants (see Key Consideration 7.4). For other participants, the liquidity stress testing combines the results from two independent models: one for derivatives transactions and one for the cash market. Since securities settle on a three-day cycle, liquidity stress tests for the cash market uses projected cash inflows and outflows from settlements and margin payments to calculate the cumulative liquidity requirement for each of the four days following a participant default. The stress-test result used in the liquidity stress-test model is taken from the day with the largest cumulative requirement.

The cash market and derivatives stress tests each apply three default scenarios, combined with a number of market change scenarios.

For the cash market stress test, three market change scenarios are applied: an increase of 7 per cent, an increase of 10 per cent and a decrease of 15 per cent. In the cash market stress test, the default scenarios apply different assumptions to:

- the priming of settlement accounts before default (either 90 per cent or 100 per cent of deliverable securities are assumed to be in the defaulted participant's settlement account)
- the use of non-novated transactions to offset obligations in respect of novated transactions
- whether the defaulter's sell transactions are deferred for three days or settled as soon as securities are available.

In the derivatives stress test the market change scenarios are based on the price and volatility changes set out in the capital stress-test scenarios (see Key Consideration 4.6). The three default scenarios for the derivatives stress test assume that ASX Clear is able to transfer all, some or only profit-making client accounts.

The results of the liquidity stress tests give a 'default liquidity requirement' (DLR), which is compared with ASX Clear's AFR (currently set to $300 million). A stress-test result above the AFR for three consecutive trading days is considered a breach of the AFR and triggers a detailed investigation into the breach. When assessing the materiality of a liquidity stress-test breach, the CCPs will consider contributing and mitigating factors, such as changes in the ICR of the participant, atypical trading activity, and any AIM that is being held. Given that liquidity resources are maintained on an aggregate basis (in ASXCC), in order to test the sufficiency of ASX's overall liquid resources the results of liquidity stress testing for each CCP are aggregated to calculate the total DLR.

The results of liquidity stress testing are regularly reported to ASX senior management, the Clearing Boards and the Bank. All liquidity stress-test breaches are reported to the CRO, the General Manager of Clearing Risk Strategy and Policy, and the Portfolio Risk Manager. A sustained or widely distributed breach may lead to a review of the adequacy of the AFR. Over 2013/14, there were a number of occasions on which liquidity stress-test results exceeded the AFR due to ASX Clear's exposures to C-rated participants. Since none of these occasions constituted a breach, ASX concluded that an increase in the AFR was not required. This decision was supported by the narrow base of participants affected, the ability to call additional margin under the AIM regime (see Key Consideration 4.5), and the availability of offsetting transaction arrangements to provide additional liquidity to settle cash market transactions (see Key Consideration 7.4).

Review and validation

ASX Clear plans to review its liquidity stress testing approach in light of the introduction of offsetting transaction arrangements. In particular, ASX Clear will implement planned enhancements to ensure that its liquidity stress testing can routinely provide more information on the degree to which prefunded liquid resources can be relied on to meet payment obligations on a participant default, without the need to utilise offsetting transaction arrangements.

ASX is also considering its approach to reverse stress testing of liquid resources in ASX Clear. While the scenarios used in liquidity stress testing are currently subject to regular analysis in reverse stress testing of the capital stress test model (see Key Consideration 4.6), an extension to this approach is required to take into account assumptions unique to liquidity stress testing. These assumptions relate to the timing of settlement for cash market positions and the porting of derivatives positions. The finalisation of a liquidity reverse stress test for

ASX Clear will depend on ongoing enhancements to the capital stress test (including any that may result from the external validation described under Key Consideration 4.5), as well as planned enhancements to liquidity stress tests to take into account the availability liquidity from offsetting transaction arrangements with participants.

ASX's Model Validation Standard requires that all models that are critical to ASX (as measured against a series of risk factors) undergo a full annual validation (see Key Consideration 2.6). Under this framework the liquidity stress test model must be externally validated annually. ASX has engaged external experts to conduct a validation of the liquidity stress test model by the end of 2014. The Bank will monitor the outcome of this validation.

7.10 A central counterparty should establish explicit rules and procedures that enable the central counterparty to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the central counterparty's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.

The introduction of offsetting transaction arrangements in April 2014 ensures that ASX Clear would, in all circumstances, be able to fully address any liquidity obligations related to the settlement of securities transactions (see Key Consideration 7.4). Although offsetting transaction arrangements cannot be directly used to address liquidity shortfalls related to derivatives transactions or the return of cash market margin, offsetting transaction arrangements used to meet payment obligations for settlements may allow for greater use of prefunded liquid resources for these other obligations.

In March 2014, ASX finalised a basic recovery plan that relies on existing tools and powers within the CS facilities' Operating Rules. In preparing the plan for ASX Clear, ASX identified that the existing Operating Rules do not provide the CCP with sufficient tools to be able to fully address any uncovered liquidity shortfalls relating to derivatives transactions following a participant default (see Key Consideration 3.4). While ASX's recovery plan identifies measures that could be used to mitigate this in part (such as the collection of additional margin or seeking to realise non-liquid assets such as term deposits), additional measures will be required to comprehensively address a liquidity shortfall for derivatives transactions.

ASX has commenced work to develop a more comprehensive recovery plan supported by tools to fully address uncovered liquidity shortfalls generated by derivatives transactions. It intends to base these tools on forthcoming CPSS-IOSCO guidance on recovery planning, expected to be published in late 2014. ASX intends to consult on its proposed recovery approach in the second half of 2014.

Principle 8: Settlement finality

A central counterparty should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, a central counterparty should provide final settlement intraday or in real time.

Rating: Observed

The Bank's assessment is that ASX Clear observes the requirements of Principle 8. ASX Clear's arrangements for ensuring finality of its settlements are described in further detail under the following Key Considerations.

8.1 A central counterparty's rules and procedures should clearly define the point at which settlement is final.

The settlement of obligations in ASX Clear is final according to the terms of ASX Clear's and ASX's Operating Rules and Procedures, which set out the means of settlement. For payments settled in Austraclear, settlement is final according to Austraclear's Regulations and Procedures and its approval under Part 2 of the PSNA. This approval protects the finality of payments made in the event of a participant entering external administration (see Appendix A2.2, Key Consideration 8.1). For payments and securities obligations settled through ASX Settlement, finality is supported both by ASX Settlement's Operating Rules and Procedures and its approval under Part 3 of the PSNA. This approval protects ASX Settlement's netting arrangements for securities and payment obligations. Any interbank transactions arising from settlements in either Austraclear or ASX Settlement are settled in real time across ESAs held with the Bank. Payments within this system are also final and irrevocable; this is supported by the approval of RITS under Part 2 of the PSNA. With this approval, a payment executed in RITS at any time on the day on which a RITS participant enters external administration has the same standing as if the participant had gone into external administration on the next day. Accordingly, in the event of insolvency all transactions settled on the day of the insolvency are irrevocable and cannot be unwound.

8.2 A central counterparty should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. A large-value payment system or securities settlement facility should consider adopting real-time gross settlement or multiple-batch processing during the settlement day.

The settlement of obligations in ASX Clear is governed by ASX Clear's and ASX's Operating Rules and Procedures. These specify that securities-related obligations use the settlement facility provided by ASX Settlement, while other (e.g. margin) payments to and from the CCP must use the facility provided by Austraclear. In each case, ASX Clear calculates bilateral net positions between itself and its clearing participants that reflect both cash payment and securities obligations. The relevant netting arrangements are outlined in the ASX Clear Operating Rules and Procedures, and ASX Clear is protected as a netting market under Part 5 of the PSNA.

Margin payments

Participants settle routine margin payments via cash transfers in Austraclear, which settle in real time via RITS. Daily margin payments are due by 10.30 am each day, and are settled using ASXCC's ESA. Intraday margin requirements are calculated and notified to participants following significant market movements (see Key Consideration 6.4) and must be settled within the notified time frame, which is generally 2 hours. Participants may also meet margin obligations via securities that have been lodged in CHESS for this purpose.

Delivery of securities

ASX Settlement's settlement process involves the use of a delivery-versus-payment (DvP) model 3 mechanism, whereby cash payments and securities transfers are settled simultaneously in a single daily multilateral net batch (see Key Consideration 12.1). Within

this batch ASX Settlement nets both novated transactions cleared by ASX Clear and non-novated transactions from outside the CCP. As the outcome of this process, ASX Settlement participants face a net cash settlement obligation to or from ASX Settlement and a net securities settlement obligation for each line of stock.

Participants are required to have sufficient securities in their settlement account by 10.30 am on the day of settlement. Once participants' net delivery obligations have been determined, ASX Settlement confirms that sufficient securities are available in each participant's settlement account in CHESS. The transfer of securities within the system is then restricted until the settlement process has been completed. Net cash payment obligations are forwarded for settlement in RITS across Payment Providers' ESAs (see Principle 9). Once cash settlement has been confirmed, ASX Settlement effects the net transfer of securities within CHESS and settlement is usually completed by around 11.30 am.

Failed settlements are removed from the multilateral net batch via the CHESS back-out algorithm (for a securities shortfall), and rescheduled for settlement on the next day as long as the participant is not in default (see Appendix A2.1, Principle 13). In the case of a failed settlement caused by a funds shortfall, ASX Clear will inject funds into the settlement batch or enter into an offsetting transaction arrangement with sellers of affected securities to ensure timely settlement (see Key Consideration 7.4).

Options delivery

Payments to settle up-front premium amounts for equity options occur via Austraclear, and are due by 10.30 am on the day following a trade. Following the exercise of an equity option contract, obligations are settled in the same manner as cash securities transactions. Any contract which is in the money on the day of its expiry is automatically exercised where the account is set to auto-exercise. When an options contract is exercised, performance obligations are allocated via a random process to a seller of a contract within the same series.

8.3 A central counterparty should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.

Participants are not able to revoke a payment or transfer instruction once it has been submitted to ASX Clear.

Principle 9: Money settlements

A central counterparty should conduct its money settlements in central bank money where practical and available. If central bank money is not used, a central counterparty should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Rating: Observed

The Bank's assessment is that ASX Clear observes the requirements of Principle 9. While existing arrangements meet the minimum standard, the Bank encourages ASX Clear to work with ASX Settlement to introduce a framework to formally engage Payment Providers on changes to settlement processes in response to regulatory or market-driven change.

ASX Clear's money settlement arrangements are described in further detail under the following Key Considerations.

The description of money settlement arrangements in this Principle draws a distinction between 'money settlement agents' – the entities whose assets are used to settle the ultimate payment obligation – and 'settlement banks', which maintain accounts with the money settlement agent to settle their own obligations or those of other participants.

9.1 A central counterparty should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.

ASX Clear's money settlements are all settled in central bank money. Margin payments are settled via Austraclear on an RTGS basis across ESAs at the Bank, via RITS. ASX Clear uses ASXCC's ESA to settle these obligations in RITS.

Settlement of net securities-related payment obligations arising in the CHESS settlement batch operated by ASX Settlement (see Key Consideration 8.2) also occurs across ESAs at the Bank, via RITS. These obligations are settled on behalf of participants between commercial settlement banks known as Payment Providers.

9.2 If central bank money is not used, a central counterparty should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.

ASX Clear's money settlements are all settled in central bank money.

9.3 If a central counterparty settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, a central counterparty should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalisation, access to liquidity, and operational reliability. A central counterparty should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.

ASX Clear does not settle in commercial bank money or effect settlement using a commercial settlement bank.

The role of commercial settlement banks acting on behalf of participants is covered by the terms of the CHESS Payment Interface Standard Payments Provider Deed entered into by ASX Settlement, ASX Clear, APCA and the relevant commercial bank. This deed sets out payment authorisation deadlines and other operational requirements for Payment Providers that act as commercial settlement banks for participants. Changes to the deed may be required to support the introduction of planned enhancements to settlement processes for client securities holdings (see Principle 14). The process of updating the deed involves negotiation with APCA and Payment Providers, which can create delays in implementing changes to authorisation deadlines or other operational requirements required to support changes to the settlement process.

9.4 If a central counterparty conducts money settlements on its own books, it should minimise and strictly control its credit and liquidity risks.

ASX Clear does not conduct money settlements on its own books.

9.5 A central counterparty's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as

soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the central counterparty and its participants to manage credit and liquidity risks.

ASX Clear does not conduct settlements via commercial bank money settlement agents.

Principle 10: Physical deliveries

A central counterparty should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

Rating: Not applicable

ASX Clear does not clear any contracts with physical delivery obligations.

The Bank has concluded that Principle 10 does not apply to ASX Clear.

10.1 A central counterparty's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.

Not applicable to ASX Clear.

10.2 A central counterparty should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.

Not applicable to ASX Clear.

Principle 11: Central securities depositories

A central securities depository should have appropriate rules and procedures to help ensure the integrity of securities issues and minimise and manage the risks associated with the safekeeping and transfer of securities. A central securities depository should maintain securities in an immobilised or dematerialised form for their transfer by book entry.

Rating: Not applicable

Principle 11 is not relevant to central counterparties.

Principle 12: Exchange-of-value settlement systems

If a central counterparty settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Rating: Observed

The Bank's assessment is that ASX Clear observes the requirements of Principle 12. ASX Clear's arrangements for DvP settlement of linked obligations are described in further detail under the following Key Considerations.

12.1 A central counterparty that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the central counterparty settles on a gross or net basis and when finality occurs.

ASX Clear eliminates principal risk by ensuring that settlement of all securities transactions takes place in ASX Settlement using a DvP Model 3 settlement mechanism. Under this arrangement, settlement of novated and non-novated transactions takes place in a daily batch process run in CHESS. All scheduled securities transfers are reduced to a single multilateral net transfer per line of stock for each participant. Payments associated with these transactions are similarly settled on a multilateral net basis, in RITS, contemporaneously with the securities transfers (see Appendix A2.1, Key Consideration 12.1 for a detailed description of ASX Settlement's settlement model).

The use of a DvP Model 3 settlement mechanism is acceptable for ASX Clear given the relatively low average value of securities transactions involved. In 2013/14, the average value of individual gross settlement instructions in ASX Settlement for novated transactions cleared by ASX Clear was around $4 500. This compares with an average of $29.5 million for an individual DvP settlement instruction for debt securities in Austraclear. In particular, the value of CGS transactions cleared by ASX Clear and settled within the CHESS batch remains relatively low compared with values settled within Austraclear (see Appendix A2.1, Key Consideration 12.1).

DvP Model 1 settlement (real time exchange of individual obligations) has certain risk management advantages over DvP Model 3 settlement, since the latter framework may only settle on an all or nothing basis. However, DvP Model 3 may be advantageous for a settlement system servicing a CCP that manages its risk on a net portfolio basis. Partial settlement (due to a clearing participant default) under DvP Model 1 would alter net exposures upon which the CCP's risk controls are based. This issue may be addressed within a DvP Model 1 framework by managing the order in which obligations are settled. However, achieving this may be complex and introduce inefficient from a liquidity viewpoint. Accordingly, while in its 2008 *Review of Settlement Practices for Australian Equities*, the Bank encouraged ASX to consider introducing a DvP Model 1 settlement mechanism for cash equities over the medium term, the Bank accepts that, taking into account these complexities, neither ASX nor market participants are persuaded of the need to move to a new settlement model. Furthermore, ASX has taken actions since the 2008 review to further strengthen the resilience of the batch settlement process.

Principle 13: Participant default rules and procedures

A central counterparty should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the central counterparty can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 13. ASX Clear's default management arrangements are described in further detail under the following Key Considerations.

13.1 A central counterparty should have default rules and procedures that enable the central counterparty to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.

Rules and procedures

The Operating Rules and Procedures provide ASX Clear with the authority and flexibility to deal with a participant default using a variety of methods to manage its exposure. For cash market transactions, ASX Clear may enter into market transactions to sell or purchase securities to facilitate the settlement of novated transactions, and is also able to enter into an offsetting transaction in respect of any settlements involving the failed participant, or those affected by its failure (see Key Consideration 7.4). For derivatives, ASX Clear has the ability to close out any open contracts, to exercise or terminate open contracts, or to seek to transfer (port) client positions. The specific close-out method will depend on market conditions and the products in question.

The formal Rules and Procedures are supplemented by an internal DMF, applicable to both ASX Clear and ASX Clear (Futures), to assist in the management of a clearing participant default. The DMF is based on high-level principles regarding the management of a default that have been approved by the CS Boards. In particular, these principles specify that the key aim in handling a default is to minimise the impact of the event on the CCP, clearing participants and the market. The DMSG provides oversight and review of the DMF, including discussion of proposed changes prior to submission to the CS Boards.

The DMF covers each stage of a default, from the identification of a default event, to the management of the defaulter's position, real-time monitoring of financial solvency, and financial offset and reconciliation. It is intended to be flexible, rather than prescriptive, and may be developed and adapted as appropriate.

The DMF outlines the key roles and responsibilities in managing a clearing participant default. The ASX Group has established a Default Management Committee (DMC), comprising senior management from relevant policy and operational areas, to be the primary decision-making forum for the management of a default. The DMC's responsibilities range from recommending declarations of default and suspensions, to devising a risk neutralisation plan and overseeing its implementation.

Use and sequencing of financial resources

Following a declaration of default, ASX Clear would suspend the defaulted participant's authority to clear. Suspension, rather than termination, ensures that the participant remains bound by the central counterparty's rules. There would be no further payments or collateral movements to the clearing participant following declaration of a default. This enables the central counterparty to 'crystallise' the defaulted participant's position and generate detailed account and position data (including collateral held). This establishes the basis for the close out of exposure to the defaulted participant.

In the first instance, ASX Clear would meet obligations arising from a participant default using collateral lodged by that participant. Collateral may be in the form of cash or eligible securities (see Key Consideration 5.1). In the event that the defaulted participant's contributions were insufficient, ASX Clear could draw upon pooled financial resources (see Principle 4). In addition to its $250 million of prefunded resources, ASX Clear has the capacity to call a further $300 million in Emergency Assessments from participants.

ASX has documented, in an internal paper provided to the ASX Limited Board, a process for making decisions regarding replenishment of ASX Clear's financial resources following any draw down arising from a participant default. Responsibility for determining whether to

replenish financial resources and how this might best be achieved ultimately lies with the ASX Limited Board. The decision would be taken in consultation with the ASX Clear Board. ASX's documented replenishment intentions canvass several options, including the injection of additional funds from within the ASX Group, from participants or from third-party institutions. The particular approach taken would depend on the specific circumstances, including the severity of the loss and the market environment (see also Key Consideration 4.7). ASX Limited has also committed to maintaining a certain level of equity capital in ASX Clear (including via ASXCC) provided certain conditions are met, including that ASX Clear is solvent. ASX plans to consult on enhancements to its replenishment arrangements as part of its broader consultation on enhancements to its recovery plans (see Key Considerations 3.4 and 4.7).

Default management

The DMF and the Operating Rules and Procedures allow ASX Clear to employ a variety of methods to close out or otherwise manage the positions of a defaulted participant. These include transfer, on- or off-market liquidation, expiry, exercise, compulsory settlement (generally considered to be a last-resort method of closing out) and hedging (see Key Consideration 13.2 for more information on close-out arrangements).

13.2 A central counterparty should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.

To facilitate early identification of a default event, the ASX Clear Operating Rules and Procedures require that participants inform ASX Clear immediately in the event of a default, or if there is a reasonable expectation of such an event. This requirement is legally binding and would continue to apply even in the event that an external administrator was appointed to the clearing participant. The Operating Rules and Procedures envisage a number of possible events of default. These include: becoming subject to external administration; being unable to meet obligations relating to open contracts; default of the clearing participant at another CCP or exchange; and being in breach of the CCP's risk-control requirements, such as failing to fulfil margin or other payment obligations to the CCP.

Although the ASX Clear Operating Rules set out specific events of default, declaration of a default would never be automatic. Instead, ASX Clear maintains the right to investigate a potential default fully, taking into account any extenuating circumstances. This was the approach taken by ASX in relation to events of default relating to a participant that had taken on a particularly large position and was unable to meet margin requirements. The process of investigating, and the subsequent handling of, a potential default would depend on its nature. Specifically, the rules distinguish between 'operational', 'compliance' and 'financial' defaults. This differentiation appropriately reflects the gravity and potential ramifications of a declaration of default. Ultimately, the declaration of any default is the responsibility of the Managing Director and Chief Executive Officer of ASX, under delegated responsibility from the CS Boards.

The DMF and the Operating Rules and Procedures allow ASX Clear to employ a variety of methods to close out or otherwise manage the positions of a defaulted participant. These include hedging, transfer, on- or off-market liquidation, expiry, exercise and compulsory settlement (generally considered to be a last-resort method of closing out). There are advantages and disadvantages to each close-out method and therefore the specific method used in practice would depend on market conditions and the products in question. For example, subject to other legal and practical impediments, the account structure used by the

CCP would be a relevant factor in determining whether client positions could be transferred following a default event. The individually segregated client account structure for derivative positions at ASX Clear makes it more likely that transfer of these positions could be achieved than in the case of cash securities for which client positions and house positions are commingled. In practice, it is likely that the scope for transfer of cash market positions would be limited under any account structure due to the short (three-day) equity settlement cycle (see Principle 14).

13.3 A central counterparty should publicly disclose key aspects of its default rules and procedures.

ASX Clear's Operating Rules are available on the ASX public website. These rules outline when ASX Clear may take action against a participant and the powers of ASX Clear in the event of a default, including the ability of ASX to transfer client derivative positions to other participants. ASX Clear's Operating Rules set out the treatment of proprietary and customer positions. In addition, ASX has published a high-level overview of its approach to managing a participant default on its website.

13.4 A central counterparty should involve its participants and other stakeholders in the testing and review of the central counterparty's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.

The DMF is reviewed on an annual basis, or more frequently as needed, and is regularly tested by in-house default management 'fire drills'. These tests ensure that relevant ASX personnel are familiar with the default management process and identify areas where the DMF should be updated. Findings, including any recommended enhancements to the DMF, are reported to the DMSG after each fire drill. The Bank observed the ASX fire drill exercise conducted in early 2014 and will continue to observe future fire drills. In recent years, the DMF has been updated on several occasions: during 2011/12 to incorporate lessons learned from the default of MF Global; in 2012/13 in anticipation of the launch of the OTC derivatives clearing service; and then in May 2014 to account for the use of offsetting transaction arrangements.

Currently, participants are not directly involved in default management fire drills for ASX Clear. This allows ASX to more freely incorporate scenarios based on actual participants and portfolios into its fire drills, involving the use of confidential information that cannot be shared with other participants. Nevertheless, after each fire drill a sample order file is sent to each of the default brokers that would be used by ASX to execute close-out trades, in order to test the compatibility of the file with their systems.

In addition to the default management information provided on its website, ASX provides detailed responses to any targeted requests for information by clearing participants. Clearing participants have the ability to provide feedback and seek further information on default processes through this mechanism.

The default arrangements in ASX Clear take into account, as far as possible, the implementation of any resolution regime that governs the CCP's participants. ASX has undertaken analysis on the impact of ADI resolution proceedings on a CCP's default management processes. While acknowledging that ADI resolution authorities may have broad

powers to intervene in the arrangements of an insolvent ADI participant, the analysis suggests that, in general, resolution proceedings should not impede a CCP's default management processes. ASX will be conducting further analysis on the interaction between ADI and FMI resolution once international work on FMI resolution and the proposed domestic framework for FMI resolution have been finalised.

Principle 14: Segregation and portability

A central counterparty should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the central counterparty with respect to those positions.

Rating: Broadly observed

ASIC's and the Bank's assessment is that ASX Clear broadly observes the requirements of Principle 14. In order to fully observe Principle 14, ASX Clear should:

- complete implementation of enhanced client protection arrangements for cash equities that provide materially equivalent protection to omnibus account segregation.

ASX Clear's segregation and portability arrangements are described in further detail under the following Key Considerations.

14.1 A central counterparty should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the central counterparty additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the central counterparty should take steps to ensure that such protection is effective.

ASX Clear maintains a segregated account structure for its options and futures products which separates client positions from the participant's proprietary (house) positions. For these products, clients are able to access individually segregated accounts that offer protection against the concurrent default of the participant and a fellow client (see Key Consideration 14.2).

ASX Clear utilises a single account for each participant's house and client cash market transactions. It has introduced arrangements to offer clients enhanced protections that, with the implementation of a second stage expected in May 2015, will be materially equivalent to the protections afforded by segregated house/client omnibus accounts (see Key Consideration 14.2). These alternative arrangements were introduced in response to concerns raised in a July 2013 stakeholder consultation that omnibus segregation for the cash market would be costly and deliver minimal benefits in terms of protection for clients of participants.

In addition to these arrangements, ASX Clear already has the capacity to transfer (port) participants' clients' positions and collateral under its Operating Rules (see Key Consideration 14.3). Part 5 of the PSNA allows a CCP to transfer client collateral of a defaulted participant as provided for by its Operating Rules without the need to seek approval from the participant's external administrator.

14.2 A central counterparty should employ an account structure that enables it readily to identify positions of a participant's customers and to segregate related collateral. A central counterparty should maintain customer positions and collateral in individual customer accounts or in omnibus customer accounts.

ASX Clear offers individual client segregation for options and a choice of individual client segregation or omnibus segregation for futures transactions. For these products, client collateral cannot be used to offset losses arising from a participant's proprietary (house) account. Non-cash collateral (including excess collateral) lodged with ASX Clear in respect of options transactions remains under the beneficial ownership of clients.

While ASX Clear employs a commingled house/client account structure for cash market transactions, it has commenced implementation of arrangements that provide materially equivalent protection to house/client omnibus segregation. ASX Clear introduced Stage 1 of its enhancements to client protections for the cash market in April 2014. These enhancements ensure that participants employ best practice in processing client trades during the pre-settlement period, namely: that client securities due for delivery that are held in the participant's accumulation account remain the beneficial property of the client until they are placed into the participant's settlement account (see Appendix A2.1, Key Consideration 12.1); and that client monies to fund a purchase must remain in trust accounts until the purchased stock is registered in the client's name.[11] The ASX Clear Operating Rules also require daily reconciliation by participants of unsettled stock held beneficially for the client.

A second stage of enhanced protections is scheduled to come into effect during the first half of 2015. It will require participants to pre-schedule movements of beneficially held client stock to their settlement account, allowing this to take place at the commencement of the CHESS settlement batch process. Participants will also be required to fund any movements of beneficially-held client stock to the settlement account on the day that the movement occurs, generally by placing the required amount into trust for the client. The changes to messaging in support of this process will also allow automated post-settlement allocation. As part of the CHESS settlement batch process, Payment Providers will be provided with a net amount to be transferred between participants' general account and client trust accounts. Once both stages are in place, client assets and funds will remain in the beneficial ownership of clients throughout the pre-settlement period.

These arrangements will protect clients from principal losses in the event of a participant default but will not protect clients against the cost of replacing trades in such an event. Even if omnibus segregation was adopted, however, clients could not be effectively protected against replacement cost losses in the event of a participant default. This reflects that Australian law currently prevents a clearing participant from passing through to a CCP margin posted by a client in respect of cash equities.

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[11] Participants maintain 'accumulation' and 'settlement' accounts to manage the processing of securities for settlement. Client securities due for delivery are typically initially placed in accumulation accounts prior to transfer to the participant's settlement account, at which point the participant takes effective control over the use of securities. Securities are delivered to and from settlement accounts as part of ASX Settlement's batch settlement process.

14.3 A central counterparty should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.

ASX Clear has the power under its Operating Rules to transfer client positions and collateral following a participant default. The availability of individually segregated client accounts for both options and futures supports the transfer of client positions and collateral to another participant in the event of a clearing participant default. Under individual client segregation, margin requirements are calculated on a gross basis for the positions held by each client. Accordingly, there should be sufficient collateral available to support the transfer of each client's positions to another clearing participant. Portability is further supported by Part 5 of the PSNA (see Key Consideration 14.1). However, portability cannot be guaranteed since it relies on the willingness, and capacity, of another participant to take on the affected clients within a short period of time. The time window available for porting will also depend on market conditions, since ASX Clear would remain exposed to market risk until such time as a defaulted participant's client positions were ported or closed out (see Principle 13).

The commingled account structure used for cash market transactions creates practical difficulties for portability. The commingled account structure makes it difficult to identify client positions, and even if positions could be identified, since house and client positions are margined on a net basis across the commingled account, there is unlikely to be sufficient collateral at the CCP to achieve the fully collateralised transfer of individual client positions to alternative clearing participants. However, even under a segregated account structure the scope for transfer of cash market positions would be limited due to the short (three-day) equity settlement cycle.

14.4 A central counterparty should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the central counterparty should disclose whether customer collateral is protected on an individual or omnibus basis. In addition, a central counterparty should disclose any constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.

Current arrangements for segregation and portability are defined in the ASX Clear Operating Rules and Procedures. ASX has also published a public overview of clearing participant default arrangements, which outlines the current operational constraints to portability and the implications of different account structures.

In addition, during 2013 and 2014 ASX has publicly consulted stakeholders on segregation and portability arrangements for both derivatives and cash market transactions cleared in ASX Clear. These consultations have identified operational constraints to portability and the implications of different account structures used by ASX Clear.

Principle 15: General business risk

A central counterparty should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Rating: Broadly observed

ASIC's and the Bank's assessment is that ASX Clear broadly observes the requirements of Principle 15. In order to fully observe Principle 15, ASX Clear should:

- carry out plans to enhance its recovery plan in line with forthcoming CPSS-IOSCO guidance, and ensure that the capital it holds under Key Consideration 15.2 continues to be sufficient to fund the enhanced plan. As ASX Clear further develops its recovery plan, it should also review and integrate its recapitalisation processes with its broader recovery planning arrangements.

ASX Clear's management of general business risk is described in further detail under the following Key Considerations.

15.1 A central counterparty should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.

ASX's approach to business risk is consistent with its overall Enterprise Risk Management Policy and Framework (see Principle 3). Under the framework, formal policies are in place for individual risk categories such as accounting, authorisations, business continuity, technology, fraud control and procurement.

ASX monitors a variety of financial business risks, including market risk, credit risk, liquidity risk and capital risk.

- Group funds (as distinct from collateral lodged by participants) may be exposed to market risk due to changes in market variables such as interest rates, foreign exchange rates and equity prices. Mitigants for market risk include hedging of foreign exchange risk and monitoring of equity price risk, with appropriate capital allocation.
- Credit risk for the Group's general business activities arises in the collection of receivables, which principally comprise fees from market participants, issuers, users of market data and other customers. Mitigants include active collection procedures on trade receivables and 'ageing' of receivable amounts.
- Liquidity risk is mitigated by prudent liquidity management, with forward planning and forecasting of liquidity requirements.
- ASX may be exposed to capital risk if equity in group entities falls below prudent or regulatory minimum levels. ASX manages its capital at a group level, in accordance with an objective of maintaining a prudent level of surplus net tangible equity. Ongoing monitoring of cash flows and capital adequacy is conducted via quarterly meetings of CALCO.

ASX undertakes periodic strategic risk assessments in the context of its overall business plans. Through this process, ASX identifies new strategic business initiatives, such as the projects that delivered the ASX Collateral and OTC derivatives clearing services. These are subject to financial analysis, which includes high, low and base case revenue assumptions and forecasts. Impacts on capital are also determined and analysed.

ASX undertakes risk assessments when undertaking any expansion of its activities or in the event of material changes to its business. Risk assessments are built into ASX's project management framework (see Key Consideration 17.4). Under this framework, an initial high-

level risk indication is defined at the project concept stage. This is followed by a formal project risk assessment undertaken across both project delivery risks and impacts to business activities at the project definition stage. ASX typically conducts a series of workshops involving project staff to discuss risks associated with any planned new service. Prior to the approval of a project for launch/production, ASX prepares an operational readiness summary and conducts a final workshop to discuss possible risks associated with initial launch. This includes consideration of potential failure scenarios and workarounds, procedures for escalation of issues, and help desk and key staff availability.

Following launch, the risks of a new activity are captured in risk profiles that are prepared by department management every six months. CALCO also monitors actual and forecast capital and liquidity requirements on a quarterly basis, including requirements related to new projects.

15.2 A central counterparty should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity a central counterparty should hold should be determined by its general business risk profile and the length of time required to achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

ASX has set aside $232 million for operational and business risk across the four ASX Group CS facilities, $15 million of which has been attributed specifically to ASX Clear's operational and business risks. Since ASX has identified constraints to making business risk capital bankruptcy remote within the CCP, this capital is held at the ASX Group level to ensure that it cannot be applied to meet losses caused by a participant default. Each CS facility has a separate allocation for business risk capital that is explicitly recognised within group-wide capital holdings. These holdings include an additional buffer against potential losses sustained elsewhere in the group. During 2013/14, ASX made amendments to the ASX Group Support Agreement, placing an obligation on ASX to maintain sufficient capital to support ASX Clear's continued operations in the event of general business losses. These amendments support the legal certainty of ASX Clear's access to business risk capital as required.

In determining the sufficiency of the $15 million in operational and business risk capital set aside for ASX Clear, ASX has estimated the capital required to cover six months of current operating expenses, with an additional buffer to allow for future growth (see Key Consideration 15.3). These funds are also sufficient to cover the estimated largest general business loss that ASX Clear may incur. Loss scenarios considered include facility closure due to external events such as pandemics, the fraudulent redirection of a participant margin payment, or the unauthorised transfer of invested funds.

15.3 A central counterparty should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, a central counterparty should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

ASX Clear has developed a plan setting out options for its recovery or wind-down based on its existing Operating Rules, and has commenced work towards enhancing this plan in line with forthcoming CPSS-IOSCO guidance on recovery planning (see Key Consideration 3.4). In calculating the quantum of business risk capital described under Key Consideration 15.2, ASX has sought to ensure access to sufficient liquid net assets to fund operations during the execution of ASX Clear's recovery plan, or to cover a minimum of six months of current operating expenses.

15.4 Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the central counterparty to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.

The risk capital for ASX's CS facilities is invested in accordance with the ASX Limited and ASX Operations Pty Limited Investment Mandate. The Investment Mandate specifies investment objectives, responsibilities, approved products and counterparties, and audit and maintenance of the mandate. Approved products are generally highly rated and liquid products such as: cash deposits; bank bills, negotiable certificates of deposit and floating rate notes issued by APRA-approved ADIs; foreign exchange in specified currencies; CGS; and selected semi-government securities. Limits are applied against counterparty, liquidity and market risks. Liquidity limits are specified for maximum instrument maturity and weighted average maturity.

15.5 A central counterparty should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.

As noted, ASX Limited manages its operational and business risk capital at the group level. The ASX Limited Board monitors the ongoing capital adequacy of the ASX Group as part of its regular capital planning activities. The Board determines the most appropriate means of raising additional capital when needed, giving due consideration to prevailing market conditions and available alternative financing mechanisms. For example, in June 2013, ASX Limited conducted a capital raising by way of a $553 million share entitlement offer, with the bulk of the funds being used to increase the business risk capital of the CS facilities and their pooled financial resources to deal with participant default. Recapitalisation processes will be reviewed and integrated with broader recovery planning arrangements as ASX Clear further develops its recovery plan in line with forthcoming CPSS-IOSCO guidance.

Principle 16: Custody and investment risks

A central counterparty should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. A central counterparty's investments should be in instruments with minimal credit, market, and liquidity risks.

Rating: Broadly observed

ASIC's and the Bank's assessment is that ASX Clear broadly observes the requirements of Principle 16. In order to fully observe Principle 16, ASX Clear should:

- implement plans to further reduce the concentration of unsecured exposures to the large domestic banks under its treasury investment policy. The Bank has opened a dialogue with ASX on the detail of its expectations for the credit and liquidity risk profile of ASXCC's investment portfolio, as well as the time frame over which these expectations should be met.

Based on this information, the ASX Clear's management of custody and investment risks is described in further detail under the following Key Considerations.

16.1 A central counterparty should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.

The assets of ASX Clear and its participants are administered and held within the ASX Group. Intragroup arrangements allow ASX Clear to fully understand the nature of its risk exposure to ASXCC and other group entities such as Austraclear (for safekeeping of AUD-denominated debt securities). This exposure is managed within the context of ASX's overall Clearing Risk Policy Framework. ASX has robust accounting practices, safekeeping procedures and internal controls to protect its own and its participants' assets (as described under Key Consideration 2.6).

Non-cash collateral is held in CHESS. ASX Clear's Operating Rules and Procedures define how collateral is used. ASX Clear does not re-use non-cash collateral posted by participants.

Cash investments, including cash collateral, clearing participant contributions and shareholder funds, are controlled by ASXCC, of which ASX Clear is a subsidiary (see 'ASX Group Structure' in Section 2.3.1). ASXCC makes its investments in accordance with its Investment Mandate and ASX's Investment Policy, which together define investment objectives, investment specifications, and audit and maintenance of the policy (see Key Consideration 16.4).

16.2 A central counterparty should have prompt access to its assets and the assets provided by participants, when required.

ASXCC's Investment Mandate requires that a portion of its portfolio be held in liquid asset form to cover liquidity risks from both general business risks and risks related to ASX Clear's clearing activities. Only investments in instruments that can be liquidated or repurchased for cash within two hours are treated as 'liquid' products (see also Key Consideration 7.5).

16.3 A central counterparty should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.

ASXCC does not use custodians to hold assets invested on behalf of ASX Clear.

16.4 A central counterparty's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.

ASXCC is the controlling entity for the investments of both CCPs. In respect of both cash margin collected and pooled risk resources, ASXCC invests funds in accordance with a defined treasury investment policy, endorsed by the Clearing Boards and itself governed by the ASX Enterprise Risk Management Policy. The treasury investment policy, set out in a high-level policy document and the more detailed ASXCC Investment Mandate, articulates the basis for ASX Clear's mitigation of investment-related credit, market and liquidity risks (Principle 7). The performance of the investment portfolio within the parameters of this policy is closely monitored by ASXCC, with trigger points to automatically escalate potential issues to the CRO before actual limits are reached. Trigger points are defined for weighted average maturity and percentage of total liquid assets held in non-AUD denominated securities.

The ASXCC Investment Mandate defines investment counterparty eligibility criteria and sets investment limits in order to control counterparty investment risk.

- *Counterparty eligibility criteria*. Counterparties must be Commonwealth or State Government entities (including the Bank), APRA-approved ADIs that are licensed banks in Australia under the *Banking Act 1959*, or (from July 2014) supranational agencies that issue in the Australian bond market. ADIs must also have a Standard & Poor's short-term credit rating of A1 or above, while supranational agencies must have a rating of AAA. The Investment Mandate does not permit investments in securities of ASX Group entities. Nor is ASXCC permitted to create unsecured exposures to any investment counterparty that is a participant or affiliated with a participant, other than the four major banks.
- *Counterparty investment limits*. Counterparty investment limits are determined according to factors such as the credit quality of the counterparty or obligor, the size of available financial resources, and whether eligible investment counterparties and their affiliates are also clearing participants. Limits are set on both the proportion of the portfolio and the absolute amount that can be invested with a single counterparty.

The Investment Mandate aims for quick liquidation of investments with little, if any, price effect. Only investments in instruments that can be liquidated or repurchased for cash within two hours are treated as 'liquid' products. These are defined based on the depth of market liquidity and the terms of investment, including whether the instruments are eligible for repurchase transactions with the Bank (see Key Consideration 7.5). Such liquid assets include CGS, bank bills and certificates of deposits. The policy also sets a 'value-at-risk' limit.

ASXCC's Investment Mandate recognises the primacy of maintaining liquidity and credit quality against achieving investment return, given that funds under management are a critical source of liquidity in the event of a market disruption or clearing participant default. The investment policy and limits are reviewed and approved annually by the ASXCC Board with input from the Risk Committee. The broad approach to investment and investment holdings is disclosed publicly in the ASX Annual Report.

Consistent with the revisions to its Investment Mandate, during 2013/14 ASX reduced the limits applicable to the large domestic banks in recognition of their participation in the new OTC derivatives clearing service, and applied a further reduction in limits as part of the annual review of the ASXCC Investment Mandate. In addition, ASX has taken steps to diversify its unsecured exposures to a broader range of highly rated investment counterparties and has introduced arrangements allowing it to invest cash with selected counterparties on a secured basis. ASX plans to review concentration limits to investment counterparties again in 2015 and is working to further strengthen its capacity to invest on a secured basis. The Bank has opened a dialogue with ASX on the detail of its expectations for the credit and liquidity risk profile of ASXCC's investment portfolio, as well as the time frame over which these expectations should be met.

Principle 17: Operational risk

A central counterparty should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational

reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the central counterparty's obligations, including in the event of a wide-scale or major disruption.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 17. ASX Clear's arrangements for managing operational risks are described in further detail under the following Key Considerations.

17.1 A central counterparty should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.

ASX's operational risk policies and controls have been developed in accordance with ASX's group-wide Enterprise Risk Management Framework (see Key Consideration 3.1). Under this framework, the ASX Limited Board is responsible for reviewing and overseeing the group's risk management systems (see Key Consideration 2.6). The Board delegates review of the Enterprise Risk Management Framework to its Audit and Risk Committee. An Enterprise Risk Management Committee, comprising executives from across ASX's departments, is responsible for approving enterprise risk policies and reviewing controls, processes and procedures to identify and manage risks, as well as the formal approval of significant operational risk policies prepared by individual departments. Under the Enterprise Risk Management Framework, individual departments are also responsible for: identifying business-specific risks; applying controls; maintaining risk management systems; reporting on the effectiveness of risk controls; and implementing enhancements and taking remedial action. A dedicated security team has responsibility for assessing both physical and cyber security risks, and is overseen by a Security Steering Committee comprising the Chief Information Officer, head of Internal Audit and other senior executives.

Access to resources

ASX Clear has arrangements in place to ensure that it has well-trained and competent personnel operating DCS and CHESS. Staff are provided with relevant policies and guidelines from commencement of employment, with weekly communications thereafter. Staff are evaluated with reference to each defined operational process and broader skills matrices, with training provided for identified areas of weakness. ASX Clear has a formal succession planning and management process in place for key staff. ASX has sought to automate routine operational processes and reporting over recent years, freeing up additional staff resources that would otherwise be devoted to these tasks.

To facilitate rapid recovery in the event of an operational disruption, ASX intends to increase the proportion of operational staff based at its secondary operations site, to around 30 per cent from the current 20 per cent. In case of a disruption to staffing arrangements at the primary site for staff, the secondary operations site has capacity to house 65 per cent of all operational staff.[12]

[12] ASX currently maintains three main sites for its operations and data processing: a primary operations site (where the majority of staff are located); a secondary operations site that also operates as the primary data centre; and a backup data centre.

Resources shared with a related body

Within the ASX group structure, most operational resources are provided by ASX Operations Limited, a subsidiary of ASX Limited (see 'ASX Group Structure' in Section 2.3.1), under a contractual Support Agreement. In the event that ASX Operations Limited became subject to external administration, to the extent permissible by law, provisions within the Support Agreement provide for ASX Clear and the other clearing and settlement corporate entities to retain the use of operational resources.

Major projects

Major projects are overseen by the Enterprise Portfolio Steering Committee (EPSC), which is comprised of representatives of the Group Executive. The EPSC is responsible for determining project priorities across the ASX Group and overseeing the quality of project execution. The EPSC is also tasked with ensuring that ASX has sufficient well-qualified personnel to cope with periods in which it is simultaneously undertaking a number of projects, including those resulting in significant changes to business. Project management of major projects is undertaken by the Project Management Office (PMO). For projects affecting core systems (including DCS and CHESS), the PMO rates projects to ensure that they receive appropriate access to resources. Projects incorporate testing processes, which verify that systems or services meet benchmarks set prior to implementation. Testing addresses both technical and operational aspects of projects. The project management process includes engagement with customers and third-party vendors of supporting systems where appropriate, particularly in customer testing. Project plans also include formal checkpoints to ensure all appropriate risk management controls are in place prior to live use of a new or updated system or service.

Over recent years, ASX has undertaken work on close to 60 projects, including major projects such as the OTC derivatives clearing service and enhanced client clearing arrangements in ASX Clear (Futures), and the ASX Collateral service. Work on these projects, often to challenging time frames, in addition to work required by ASX to ensure compliance with the new FSS, has tested the capacity of ASX's existing resources. Targeted deadlines for key projects have nevertheless largely been met. In order to meet increased demand for resources associated with these projects and ongoing business requirements, ASX has taken on new staff, employed consultants and utilised partnerships with service providers.

17.2 A central counterparty's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the central counterparty's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.

The roles and responsibilities for addressing operational risk are defined in the CS Boards' Charter, the Audit and Risk Committee Charter, and the Enterprise Risk Management Framework. As described above, risk responsibilities are shared between the ASX Limited Board, the CS Boards, the Audit and Risk Committee, the Enterprise Risk Management Committee and individual departments.

Policies and procedures are the subject of internal and external review. ASX's Internal Audit department routinely monitors compliance with operational policy, reporting to the Audit and Risk Committee on a quarterly basis. Audit findings may prompt a review of policy, which would be conducted in consultation with key stakeholders. Technology-related security policy is considered by external auditors annually.

ASX benchmarks its operational risk policy against relevant international standards. For example:

- ISO 31000 – Risk Management Principles and Guidelines is used to benchmark ASX's overarching framework for operational risk management.
- The business continuity framework is benchmarked against the Business Continuity Institute's Good Practice Guidelines 2013, the international standard ISO 22301:2012 Business Continuity Management Systems, and the British standard BS 25999 1:2006.
- The technology risk management framework is benchmarked against the ISO 27001:2005 Information Security Management Systems standard. Cyber security strategies are further benchmarked against the Australian Signals Directorate's Strategies to Mitigate Targeted Cyber Intrusions.
- The compliance framework is benchmarked to the AS 3806-2006: Compliance Programs.
- The ASX Fraud Control Policy is benchmarked against AS 8001-2008: Fraud and Corruption Control.

The risk framework defines a variety of control procedures to support the core operational systems. These include audit logs, dual input checks, management sign-off and processing checklists as the primary preventative controls, supported by reconciliations and management reviews of activity. ASX Clear operates a separate test environment for its core systems (DCS and CHESS) and has a formal, documented change management process. There are also defined procedures for communicating with participants and vendors details of technology upgrade releases, which include regular notices to participants of upcoming changes.

17.3 A central counterparty should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.

Availability targets are documented and defined formally for critical services. DCS and CHESS are required to meet a minimum availability target of 99.8 per cent; during 2013/14, both were available 100 per cent of the time.

System capacity is monitored on an ongoing basis, with monthly reviews of current and projected capacity requirements. The results are reviewed against established guidance for capacity headroom over peak recorded values for all critical systems; that is, to maintain capacity 50 per cent over peak recorded daily volumes, with the ability to increase to 100 per cent over peak within six months. Capacity data are reported monthly to the CEO. Average capacity utilisation of DCS and CHESS during 2013/14 was 13 per cent and 14 per cent respectively, while peak utilisation was 30 per cent for DCS and 20 per cent for CHESS. ASX Clear considers that it has sufficient technical and human resources to operate DCS and CHESS during peak periods, including in the event of operational incidents or system failure.

17.4 A central counterparty should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.

ASX Clear's approach to ensuring scalable capacity adequate to handle increasing stress volumes and to achieve its service level objectives is described under Key Consideration 17.3. As noted above, average capacity utilisation of DCS and CHESS during 2013/14 was 13 per

cent and 14 per cent respectively, peak utilisation was 30 per cent for DCS and 20 per cent for CHESS, while both core systems were available 100 per cent of the time over this period.

17.5 A central counterparty should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.

Information security policy is implemented using a risk-based decision process, based on ISO 31000, relevant federal and state legislation, and other best-practice standards. The goal of ASX's information strategy is to create a strong and reliable security environment that meets business and functional requirements for customers and employees while balancing risk to the organisation, the cost of controls, and the richness and flexibility of services. ASX's information security policy applies to all employees, consultants, vendors and contractors of ASX. It also applies to all facilities, equipment and services managed by or on behalf of ASX, including off-site data storage, computing and telecommunications equipment. The policy is reviewed annually or when material or organisational changes are made. The last review was in March 2014.

Information security policy is tested at a number of levels. This includes penetration testing against the ASX perimeter and vulnerability testing within the perimeter. ASX Clear performs DCS and CHESS security testing on a quarterly basis. ASX operates a suite of controls designed to prevent and detect cyber attacks on its systems, such as denial of service or malware threats. These include steps to monitor suspicious internet traffic, and the maintenance of spare capacity to manage legitimate or malicious surges in internet traffic, as well as steps to regulate access to ASX systems (described below).

Physical access is controlled at both an enterprise and departmental level. The key systems supporting ASX's clearing and settlement processes are operated within a secure building. Clearing operations are separated from general office areas with permitted access determined at a senior manager level and records of access maintained. Physical security arrangements for the primary and backup data centres are broadly equivalent.

User access for the key systems is restricted to prevent inappropriate or unauthorised access to application software, operating systems and underlying data. User activities are uniquely identifiable and can be tracked via audit trail reports. The level of access is authorised by the system owner with users granted the minimum level of access to systems necessary to perform their roles effectively. External access to ASX systems must pass through multiple layers of firewalls and intrusion prevention, and individual networks are segregated.

Application testing is carried out in test environments. Testing reports are documented, with identified problems escalated to management and tracked through to remediation. Similarly, any technology-based operational incidents are reported to senior management and issues are tracked through to resolution via regular updates to management.

17.6 A central counterparty should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the central counterparty to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The central counterparty should regularly test these arrangements.

Business continuity arrangements

ASX Clear maintains extensive contingency plans detailing the appropriate operational response to a CS facility disruption, including coverage of the various lines of authority, means of communication, and failover procedures. These plans are updated periodically. ASX Clear policy requires that failover to the backup data centre should occur within two hours for all systems. Plans for recovery of key systems apply to both physical and cyber threats to business continuity.

ASX Clear employs a variety of technologies to ensure a high degree of redundancy in its systems – both across sites and within a single site. ASX maintains both primary and backup data centres, with broadly equivalent operational requirements. Key plant and equipment at the primary site are designed to the Uptime Institute Tier 3 standard of concurrent maintainability.[13] The main computer network is connected via point-to-point optical fibre, which ASX operates with its own technology, thereby reducing the potential for outages due to operational problems with the telecommunications provider. All core systems employ multiple servers with spare capacity. Front-end servers handling communications with participants are configured to provide automatic failover across sites. Failover of the more critical data servers is targeted to take place within two hours, but would generally be expected to occur within an hour, under the control of management.

Disruption to participants in such circumstances would be mitigated by the high degree of redundancy in front-end system components. In most circumstances, these would be expected to maintain communications with participants' systems and queue transactions until the data servers were reactivated. The integrity of transactions would be supported by: queuing messages until they could be processed; storing all transactions in the database with unique identifiers, thereby preventing the loss or duplication of transactions; and synchronising replication of database records between the primary and backup data centres. Furthermore, in the event that a significant part of a system or an operational site failed, ASX Clear has contingency arrangements to activate an additional tier of 'cold' redundancy arrangements (either by converting test systems into production systems or rebuilding systems from readily available hardware) within 24 hours to meet the contingency of any further service interruption.

ASX Clear has clearly defined procedures for crisis and event management. These procedures cover incident notification, emergency response (including building evacuation), incident response (including overall incident assessment and monitoring), and incident management testing. Since May 2014 these include the use of Twitter to advise stakeholders of market-wide operational or technical incidents. ASX maintains a major incident management team that includes senior representatives of the core business activities, as well as facilities management, business continuity, and media and communications. The procedures identify responsibilities, including for internal communication and external communication to emergency services, the market, industry and media. As part of these procedures, ASX maintains a 'multi-market communication protocol' for communicating information to participants and stakeholders should any disruption to market, clearing or settlement services

[13] The Uptime Institute is an IT consulting organisation that has developed a widely adopted classification system for the level of redundancy arrangements in data centres. 'Tier 3' is the second highest standard of redundancy, indicating that a data centre has redundant components, multiple independent power and cooling systems, and a high degree of availability.

eventuate, including where this affects market operators accessing ASX Clear via the Trade Acceptance Service.

ASX Clear regularly tests its business continuity arrangements. Dual site operational teams across the primary and secondary operations sites effectively test backup operational processes on a continuous basis. For those teams not located across both sites, connectivity and procedural testing of the secondary site are performed monthly by representatives from ASX Clear. Live technology tests, where clearing services are provided in real time from the backup data centre, are conducted on a two-year cycle. Test results are formally documented and reported to ASX senior management and are also made available to internal and external auditors. The use of live tests ensures that participant connectivity to the backup data centre is also tested. ASX's business continuity framework is audited externally every three to five years; the most recent audit, conducted in late 2012, found that ASX's business continuity standards were broadly consistent with widely recognised global standards and did not identify any major areas of concern.

Participant continuity arrangements

Recognising that effective continuity of operations may depend on the capacity of participants to recover from an operational disruption, business continuity requirements for participants are set out in the ASX Clear Operating Rules and Procedures, supplemented by additional guidance issued by ASX on 1 July 2014. These require participants to maintain adequate business continuity arrangements that are appropriate to the nature and size of their business as a participant. The Operating Rules specify that participants must have arrangements that allow for the recovery of usual operations. It is ASX Clear's expectation (set out in guidance) that this would be within two hours, and no more than four hours, following a contingency event for large participants. The targeted recovery time for smaller participants is four hours (and no more than six). These arrangements are reviewed as part of the participant admissions process. If a participant fails to maintain business continuity arrangements consistent with these recovery targets, it may become subject to sanctions or restrictions on its activities. Participants are also subject to spot checks of their ongoing compliance with operational requirements. Spot checks may be based on topical themes, in some cases arising from observations of general business developments, and in other cases motivated by a participant that has been experiencing operational problems. These spot checks examine the participant's governance and processes for resilience and business continuity. If a participant fails to implement any recommendations arising from a check, ASX may impose sanctions.

The Operating Rules and Procedures also require more broadly that participants have facilities, procedures and personnel that are adequate to meet technical and performance requirements. ASX's preferred approach to dealing with operational issues is to work collaboratively with the participant to educate them on their obligations. If the matter is serious, ASX may require that the participant address the weakness as a matter of priority. ASX may also impose conditions on participation, or require that the participant appoint an independent expert to assist with the remediation task.

Participants are involved in the contingency testing of ASX Clear's systems, as this testing is conducted in a live environment. ASX conducts comprehensive business continuity testing of key systems at least every two years, with participants being notified of the start and completion of testing. Participants are also involved in testing of major system changes or in

advance of the introduction of a new system. ASX Clear conducts regular connectivity tests and maintains an external testing environment for system changes.

17.7 A central counterparty should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, a central counterparty should identify, monitor, and manage the risks its operations might pose to other FMIs.

Interdependencies with participants and other FMIs

ASX identifies and monitors potential dependencies on participants in a number of ways: by holding regular discussions with participants on risk management processes (see Key Consideration 3.1); as part of its assessments of project-related risks (see Key Consideration 15.1); and through its general monitoring of risks under its risk management framework (see Key Consideration 3.1).

For ASX Clear, ASX has identified risks relating to its operational activities arising from participants' increased usage of third-party vendors for back-office systems, and participants outsourcing their back-office processing offshore.

- If multiple participants use the system of a vendor that experiences difficulties, these participants may have difficulty connecting to ASX's clearing and settlement infrastructure. If a vendor issue requires significant system changes, ASX Clear's operations may be affected for an extended period. This risk is managed in part through technical and business continuity requirements placed on participants, but there are limitations to this approach. As a result, and notwithstanding that there are no contractual relationships between ASX and vendors, ASX has implemented a program to develop stronger direct relationships with key participant vendors. This formalises steps taken by ASX to engage with participant vendors, for example to align margin calculations following the introduction of SPAN in late 2012. The program supports vendors' knowledge of ASX technical updates through early engagement before system changes are rolled out, as well as ASX's knowledge of vendor systems and business continuity arrangements.
- Participants' outsourcing of back-office processes and technology to overseas domiciled hubs or third-party vendors may complicate incident management due to differences in time zones and languages, and in some cases a lack of familiarity with local market practices and conventions. Such factors, if inadequately mitigated, could increase operational risk. ASX is examining options to mitigate these risks. As part of this, ASX Compliance has carried out a spot review on participants' outsourcing arrangements, benchmarking participants against a number of standards, including APRA's outsourcing prudential standard CPS 231. As a follow-up to the review, ASX is developing new guidance on participant outsourcing and has conducted site visits to selected overseas outsourcing providers.

ASX Clear has an operational interdependence with Austraclear, which is used to settle margin payments, and ASX Settlement, with which it shares the CHESS system (Principle 20). Operational risk associated with this interdependence is managed within the context of the ASX Group's operational risk management framework. ASX Clear does not have significant operational interdependencies with other FMIs.

Dependencies on service and utility providers

ASX has a formal policy that sets out the process for entering into, maintaining and exiting key outsourcing arrangements. If a key service is to be provided by an external service provider, ASX first conducts a tender process in which proposals from potential vendors are assessed against relevant criteria. Arrangements have been implemented under which ASX would consult with the Bank before entering into new agreements with third parties for critical services. ASX also provides the Bank with a list of critical outsourcing arrangements on an annual basis. Issues relating to outsourcing and service provision are escalated as appropriate to executive management via the ASX Technology vendor management group and the relevant operational support area.

ASX assesses the operational performance of its service providers on an ongoing basis against its own operational policies, to ensure that service providers meet the resilience, security and operational performance requirements of the FSS. ASX maintains current information on its service providers' operations and processes through ongoing liaison, and in turn provides relevant updates to service providers regarding ASX operations. Service providers are also assessed through software regression testing when there is a major system upgrade.[14] Contractual arrangements with critical service providers require the approval of ASX Clear before the service provider can itself outsource material elements of its service.

All core ASX Clear operational functions are performed within ASX. However, external suppliers are used for utilities, hardware maintenance, operating system and product maintenance, and certain security-related specialist independent services.

ASX has put in place a number of mitigants to address the risks associated with dependencies on utilities and service providers.

- Primary and backup data centres are connected to different electricity grids and telecommunication exchanges.
- Each data centre has backup power generators with capacity to run the site at full load for 72 hours.
- All external communications links to data centres are via dual geographically separated links.
- ASX conducts regular testing of backup arrangements. Major systems are tested on a two year cycle. Participants are notified of business continuity tests in advance through ASX notices.
- ASX also performs a periodic assessment of suppliers, including consideration of contingency arrangements should externally provided services not be available (such as the use of alternative suppliers), as well as incident escalation procedures and contacts.

ASX has developed a set of standard clauses for inclusion in contracts with third-party service providers of critical services to ASX Clear. Similar clauses are also included in the Support Agreement between ASX Clear and ASX Operations Pty Ltd, which provides all internal operational services for the facilities. The clauses seek to ensure that the agreements meet the resilience, security and operational performance requirements of the FSS (which align

[14] When a component of software is updated, 'regression testing' aims to perform checks on the full software to verify that the operation of other software components has not been inadvertently affected by the update.

with the Principles). ASX applies these clauses to all new agreements with service providers, and has incorporated them into all of its key existing service agreements. This includes ASX Clear's agreement with a third-party vendor for support of risk management software for cash market margining.

ASX's standard clauses for service providers require the provider to grant reasonable access to the Bank in respect of information relating to its operation of a critical function provided to ASX Clear. In the event that the Bank concluded that the terms of the service provider agreement did not meet FSS requirements, the clauses also require the service provider to negotiate acceptable new terms with ASX in good faith. The clauses require that providers give the Bank notice of any intention to terminate the agreement as a consequence of ASX Clear's failure to pay fees, or in the event of the insolvency of ASX Clear or any other relevant ASX entity. This is intended to give the Bank an opportunity to take action to remedy the breach or otherwise ensure continued service provision.

ASX Clear's arrangements to ensure continuity of operations in the event of a crisis will be shaped by the proposed introduction into Australian law of a special resolution regime for FMIs. This was foreshadowed in consultations undertaken by the Council of Financial Regulators and Treasury in 2011 and 2012. ASX Clear will need to ensure that its arrangements to support continuity of operations in a crisis are appropriately adapted to the proposed FMI resolution regime once finalised.

CPSS and IOSCO have developed a draft Assessment Methodology for the oversight expectations applicable to critical service providers.[15] Once finalised, this Assessment Methodology will provide a framework for considering how to apply the oversight expectations for critical service providers set out in Annex F of the PFMIs.

Disclosure

The nature and scope of ASX Clear's dependencies on critical service providers are disclosed to participants through: Operating Rules; Guidance Notes; Notices and Bulletins; technical documentation available on the ASX participant website; more general information available on the ASX public website; and in one-on-one meetings with participants, both during the induction process for new participants and on an ongoing basis.

Operational Support

ASX Clear provides telephone and email support to participants via a helpdesk, which operates from 8 am to 7:30 pm.

Principle 18: Access and participation requirements

A central counterparty should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 18. ASX Clear's access and participation requirements are described in further detail under the following Key Considerations.

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[15] The draft Assessment Methodology is available at <http://www.bis.org/publ/cpss115.htm>.

18.1 A central counterparty should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.

ASX Clear has objective and transparent participation requirements, which are publicly available and form part of its Operating Rules and Procedures. During 2013/14, ASX developed an internal policy and supporting standards that summarise the financial and operational requirements placed on participants under the Operating Rules and Procedures, and document the responsibilities of the CS Boards, CRPC, CRO and relevant departments for ensuring these requirements are met and periodically reviewed. The Operating Rules and Procedures provide for an appeals process should an application for participation be rejected or a participant's access be terminated.

At the end of June 2014, ASX Clear had 36 participants (excluding inactive participants) – nine of these were participants that offer clearing services to related entities or third parties.

18.2 A central counterparty's participation requirements should be justified in terms of the safety and efficiency of the central counterparty and the markets it serves, be tailored to and commensurate with the central counterparty's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, a central counterparty should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.

ASX Clear's participation requirements are designed to promote the safety and integrity of the CCP. They cover minimum capital and financial obligations; requirements related to legal structure, governance and regulatory status; business and managerial requirements; operational resources and capabilities; business continuity arrangements; and risk and liquidity management arrangements. ASX Clear's participation requirements promote the efficient operation of the facility and do not impose discriminatory or restrictive access constraints such as minimum turnover levels.

Participants are required to comply with a risk-based capital regime under which participants must hold 'liquid capital' in excess of a 'total risk requirement'.[16] Calculation of the total risk requirement considers counterparty risk, large-exposure risk, position risk and operational risk. Brokers that have insufficient capital, or that do not wish to undertake their own clearing, may use the services of a General Participant (see Principle 19). A General Participant is a participant that may offer clearing services to third-party trading participants.

Direct Participants, who do not clear for other brokers, must maintain a minimum of $5 million in 'core capital'.[17] ASX management has discretion to impose a higher requirement. Following consultation with participants in late 2013, ASX decided that a previously proposed increase in the minimum core capital requirement to $10 million was no longer appropriate due to recent enhancements to ASX's broader risk controls, including the introduction of cash market margining.

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16 'Liquid capital' is defined by ASX to comprise total tangible shareholders' funds held in liquid assets, net of any guarantees and indemnities.

17 'Core capital' is defined by ASX to be the sum of: all paid-up ordinary share capital; all non-cumulative preference shares; all reserves, excluding revaluation reserves; and opening retained profits/losses, adjusted for current year movements.

In the same consultation, ASX sought participant feedback on a proposal to introduce tiered core capital requirements for General Participants. The proposal was implemented in July 2014 and requires that General Participants hold $5 million in core capital for each trading participant for which it clears, up to a maximum of $20 million. That is:

- a General Participant that clears only for itself or for one other trading participant is required to hold $5 million in core capital
- a General Participant that clears for itself and one other participant, or on behalf of two third-party trading participants, is required to hold $10 million in core capital
- a General Participant is required to hold an additional $5 million in core capital for each additional trading participant that it clears for, to a maximum of $20 million.

Participants that clear only futures may elect to be covered by an alternative capital regime, which may be either a net tangible asset (NTA) requirement or a regime that recognises compliance with the requirements of a prudential supervisor. Since August 2013, the alternative of compliance with the requirements of a prudential supervisor has been made available to General and Direct Participants that clear any product in ASX Clear. This change was intended to encourage domestic ADIs to become active participants for the full range of products cleared by ASX Clear. At the end of June 2014, all but two of ASX Clear's 38 participants were subject to the risk-based regime, with one participant subject to each of the alternative regimes.[18]

In the second half of 2013, ASX reviewed the continued need to calculate a risk-based formula for capital requirements, in light of the increase in the core capital requirement in recent years. ASX also reconsidered how well the formula quantified the risks generated by participants – particularly those of larger participants. A decision on removing or altering this risk-based capital requirement was ultimately deferred.

Under the Operating Rules and Procedures, a potential participant must satisfy ASX Clear that it has (or will have) the relevant managerial, operational and financial capacity and appropriate complementary business continuity arrangements in place to be able to meet its ongoing obligations. A participant must also demonstrate that it has the capacity to make an immediate transfer of funds, on demand, should this be required to meet its obligations.

18.3 A central counterparty should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.

The CRM department, which covers both CCPs and reports to the CRO, is responsible for risk management of exposures to clearing participants. CRM monitors day-to-day developments regarding, among other things, financial requirements, risk profiles, open positions and settlement obligations to the CCPs. Within CRM, the Counterparty Risk Assessment team is responsible for monitoring, assessing and investigating matters relating to financial requirements, including monitoring participants' monthly financial statements for any matters of concern.

[18] The number of participants includes two inactive participants excluded for the purpose of Key Consideration 18.1, since these remain subject to capital requirements.

CRM also carries out a range of participant monitoring spot checks and other initiatives designed to validate the accuracy of the financial and operational information that participants submit to ASX Clear. Participants are required to inform ASX if at any stage their capital falls below the minimum requirement. CRM is also responsible for determining and reviewing participants' ICRs, drawing in part on information provided by participants in their regular financial returns to ASX, and coordinating a 'watch list' of participants deemed to warrant more intensive monitoring (see Key Consideration 4.1). In addition Operations and ASX Compliance perform regular and ad hoc compliance monitoring activities.

ASX Clear has wide-ranging powers to sanction its participants. ASX Clear may restrict, suspend or terminate a participant's authority to clear some or all market transactions in the event of a default, or in the event of a breach of the Operating Rules and Procedures that may have an adverse effect on the CCP. The action taken will depend on a number of factors, including the materiality of the incident, the participant's financial and operational capacity, as well as the participant's history of compliance. Where a breach has been identified and the participant has taken appropriate steps to rectify it, ASX Clear will typically continue to monitor the participant closely for a period of time. Significant breaches are also referred to ASIC and, depending on the nature of the breach, may be investigated by ASX Compliance for formal disciplinary action. For example, during 2013/14 a participant in ASX Clear cleared a large concentrated cash market transaction that caused it to breach its CBPL. Although the participant was able to meet its ordinary margin requirements on the trade, it did not have sufficient funds available to meet an additional CBPL-related margin call. ASX imposed restrictions on the participant's admission as an ASX Clear participant and it continues to engage with the participant on the adequacy of its governance framework and risk control systems. The apparent misconduct is subject to ongoing investigation.

Principle 19: Tiered participation arrangements

A central counterparty should identify, monitor, and manage the material risks to the central counterparty arising from tiered participation arrangements.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 19. ASX Clear's approach to tiered participation arrangements is described in further detail under the following Key Considerations.

19.1 A central counterparty should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the central counterparty arising from such tiered participation arrangements.

ASX Clear operates an individually segregated account structure for equity derivatives products (see Key Consideration 14.2). This facilitates the gathering of information on indirect clearing of these products, since the positions, collateral and margin requirements of clients are recorded in individual accounts.

There are, however, practical limitations in the analysis of indirect participation in cash securities clearing. In particular, with a commingled house/client account structure (see Key Consideration 14.2), ASX is unable to separately identify client positions, neither at an aggregate nor an individual level. However, ASX Clear has identified that tiered participation

risks arising from cash market transactions are less material than those arising from derivatives transactions (see Key Consideration 19.4). In addition, ASX Clear is able to monitor significant changes to indirect participation arrangements in both cash and derivatives markets through its regular risk discussions with participants, including third-party clearers. Business Development, ASX Compliance, Clearing and Settlement Operations and CRM are each involved in the discussion of changes to participants' business models, including those that relate to tiered participation arrangements. For instance, ASX's discussions with third-party clearers over recent years have identified situations in which clients of a trading participant clearing via a third-party clearer have taken large options positions, and in which a third-party clearer took on significant new third-party business over a short period. In both situations ASX increased monitoring of the participants' positions and investigated whether the participants in question had adequate resources and risk management arrangements in place to properly manage the additional risks posed by these situations.

If required, ASX Clear may request more detailed information on any indirect client from that client's clearing participant. This information may include further details about the indirect participant's profile or activities including, but not limited to, its intentions as to open positions or physical delivery. In addition, ASX Clear also has an ongoing program of 'thematic' participant reviews, covering risk topics of interest or concern. These could potentially examine tiering risks if ASX Clear were to perceive an increased risk from indirect relationships. ASX Clear currently considers the risks from concentration of indirect participants to be low.

19.2 A central counterparty should identify material dependencies between direct and indirect participants that might affect the central counterparty.

As noted under Key Consideration 19.1, ASX Clear monitors dependencies arising from tiered participation indirectly through a variety of means. These include regular discussions with participants on developments in their business and risk management activities, participants' own risk assessments, discussions with new participants as part of the induction process, monitoring of delivery risk (e.g. options expiries), and ASX Clear's broader array of risk management data collection and monitoring activities, including the daily monitoring of client-level data on derivatives-related exposures. Based on this information, ASX Clear has not identified any material dependencies between direct and indirect participants. As discussed under Key Consideration 19.4, ASX Clear monitors the proportion of a participant's derivatives business attributable to a particular client and sets triggers for further action based on the proportion of initial margin attributable to that client.

19.3 A central counterparty should identify indirect participants responsible for a significant proportion of transactions processed by the central counterparty and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the central counterparty in order to manage the risks arising from these transactions.

An important potential source of tiered participation risks in ASX Clear arises in the context of the third-party clearing market. There are a small number of participants offering third-party clearing services in the derivatives market, while in the cash market, much of the activity in third-party clearing is concentrated in a single participant. Although there is a greater dispersion of third-party clearing activity for derivatives, the largest third-party clearer in the cash market represented a relatively small proportion of total positions held at ASX Clear during 2013/14. ASX monitors this participant, and the third-party clearing market more

broadly, in the context of its participant monitoring activities described under CCP Standard 18.1. However, in light of the greater exposures in the derivatives market, ASX monitors concentration in this market on a daily basis (see Key Consideration 18.4).

ASX encourages participants to develop appropriate risk control measures in managing their relationships with indirect participants. ASX does not set thresholds, either formal or informal, at which it would encourage direct participation by an indirect participant. ASX's general approach to managing risks associated with participants' business activities is based on a framework that can flexibly detect and respond to new risks as they arise, rather than setting firm *ex ante* activity limits. This approach has worked well in managing risk events in recent years. During 2013/14, ASX Clear's participant enforcement was important in managing the clearing of a client cash equities position that resulted in a CBPL-related AIM call that the participant could not meet in a timely manner (see Key Consideration 18.3).

19.4 A central counterparty should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.

During 2013/14, ASX conducted a review of its concentration risk policy. This included further consideration of its approach to the risks arising from tiered participation. As a result of this review, ASX developed a formal Concentration Risk Standard, setting out a risk-based approach to monitoring tiered participation risks.

On the basis of the relatively low exposures generated by cash market transactions, ASX concluded that the risks to ASX Clear from tiered participation arrangements in the cash market were low. ASX Clear therefore monitors tiering risks for the cash market as part of its ongoing monitoring of participant credit exposures, investigating whether identified issues are due to client positions (see Key Consideration 4.2).

ASX has, however, identified two main sources of tiering risk in the clearing of derivatives products in ASX Clear.

- For low exercise price options, the potential for large mark-to-market margin requirements when in delivery may be a particular issue where there is a concentration of positions in individual client accounts.
- For ETOs more generally, clients of participants may execute strategies, such as selling deep-out-of-the-money put options for premium income, that have the potential to trigger significant margin obligations in the event of large price movements.

ASX Clear therefore monitors indirect participation in the derivatives market on a daily basis, using concentration indicators based on initial margin. If a client's ETO initial margin accounts for over 25 per cent of the clearing participant's total ETO initial margin, further investigation is triggered. The Concentration Risk Standard notes that indicators may return a number of false positives and escalation of any breaches of triggers will be based on a number of factors, including the materiality of the breach and the credit standing and activity profile of the participant involved.

Principle 20: FMI links

A central counterparty that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 20. ASX Clear's management of link-related risks is described in further detail under the following Key Considerations.

20.1 Before entering into a link arrangement and on an ongoing basis once the link is established, a central counterparty should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.

Identifying link-related risks

ASX Clear maintains two links with other FMIs, both of which are in the ASX Group. A link for the purposes of this principle is any connection that is made to another FMI according to a set of contractual and operational arrangements, irrespective of the complexity or otherwise of the link and whether it is directly with the FMI or through an intermediary.

The first link is with Austraclear. This link supports AUD funds transfers other than the settlement of securities-related payments, such as margin payments. Cash transfers are entered into Austraclear by ASX Clear, and then matched in Austraclear against the respective clearing participants' cash settlement instructions. Regular margin collections and intraday margin calls, which make up the majority of cash transfers, are submitted automatically to Austraclear by ASX Clear's margin and collateral systems.

The second link is with ASX Settlement for the settlement of securities transactions, including DvP settlement of novated securities trades and the lodgement of non-cash collateral. Instructions for these transactions are entered into CHESS, which operates across both ASX Clear and ASX Settlement.

Managing operational risk

The links to ASX Settlement and Austraclear are subject to the same operational risk management framework that applies for all the ASX CS facilities. This addresses operational risks associated with software, infrastructure or network failures and manual processing errors. An incident report is required for any significant technical or operational incident, including an assessment of mitigating actions to reduce the risk of reoccurrence. In addition, six-monthly risk profile assessments are prepared and presented to the Audit and Risk Committee, and an independent system-controls audit is conducted annually. Austraclear operations are also covered by the Austraclear System Business Operations Plan, which includes a 'Step-in and Service' agreement with the Bank (see Appendix A2.2, Principle 17).

Managing financial risk

ASX Clear does not assume any direct financial risks from its links to other FMIs.

20.2 A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its design and provides adequate protection to the FMIs involved in the link.

ASX Clear's links to ASX Settlement and Austraclear have their legal basis in the ASX Settlement Operating Rules and Procedures, and the Austraclear Regulations and Procedures. The finality of settlements via these links is supported, respectively, by approvals of Austraclear under Part 2 of the PSNA, and ASX Settlement under Part 3 of the PSNA (see Key Consideration 1.4).

20.3 **Linked central securities depositories should measure, monitor, and manage the credit and liquidity risks arising from each other. Any credit extensions between central securities depositories should be covered fully with high-quality collateral and be subject to limits.**

Key Consideration 20.3 is not relevant to central counterparties.

20.4 **Provisional transfers of securities between linked central securities depositories should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.**

Key Consideration 20.4 is not relevant to central counterparties.

20.5 **An investor central securities depository should only establish a link with an issuer central securities depository if the arrangement provides a high level of protection for the rights of the investor central securities depository's participants.**

Key Consideration 20.5 is not relevant to central counterparties.

20.6 **An investor central securities depository that uses an intermediary to operate a link with an issuer central securities depository should measure, monitor, and manage the additional risks (including custody, credit, legal, and operational risks) arising from the use of the intermediary.**

Key Consideration 20.6 is not relevant to central counterparties.

20.7 **Before entering into a link with another central counterparty, a central counterparty should identify and manage the potential spill-over effects from the default of the linked central counterparty. If a link has three or more central counterparties, each central counterparty should identify, assess, and manage the risks of the collective link arrangement.**

ASX Clear does not have links with other CCPs.

20.8 **Each central counterparty in a central counterparty link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked central counterparty and its participants, if any, fully with a high degree of confidence without reducing the central counterparty's ability to fulfil its obligations to its own participants at any time.**

ASX Clear does not have links with other CCPs.

20.9 **A trade repository should carefully assess the additional operational risks related to its links to ensure the scalability and reliability of IT and related resources.**

Key Consideration 20.9 is not relevant to central counterparties.

Principle 21: Efficiency and effectiveness

A central counterparty should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Rating: Observed

ASIC's assessment is that ASX Clear observes the requirements of Principle 21. ASX Clear's arrangements for ensuring its efficiency and effectiveness are described in further detail under the following Key Considerations.

21.1 A central counterparty should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.

ASX Clear offers a range of participation options designed to suit market demand, and tailors its participation application process and governance framework to the products, client structure and markets being cleared. An ASX Clear participant may either be a Direct Participant or a General Participant (Principle 18). A Direct Participant can only clear cash market products or derivatives for itself, its own clients and wholly owned group entities and their clients; a General Participant may also clear for third-party participants and their clients. The recent introduction of tiered core capital requirements for General Participants is intended to stimulate competition and may result in new third-party clearers entering the market to provide clearing services to retail brokers.

ASX's Code of Practice for cash equities clearing and settlement is intended to address transparency and accessibility in the provision of these services and to formalise avenues for user engagement (Key Consideration 2.7). The Forum established under the Code is also intended to ensure that the ongoing development of cash market clearing and settlement infrastructure and services meets the needs of users and is consistent with global standards.

ASX has also established a Business Committee and a Technical Committee to support the Forum. The Business Committee is comprised of representatives from ASX, clearing and settlement participants, and market platform operators. These representatives have a deep understanding of the clearing and settlement business, for example, at the Chief Operating Officer level. The Business Committee has provided business and operational input on the forward work program of the Forum and has progressed issues of interest to the industry, such as the design of technology solutions (via the Technical Committee) and more flexible participant structures.

The Technical Committee is comprised of relevant technical experts from organisations represented on the Business Committee and back-office system vendors. These key groups help determine the needs of ASX Clear stakeholders and the technical requirements of service providers and software vendors. This information is then provided to the ASX Clear Board to inform possible service enhancements.

ASX Clear undertakes regular customer engagement to supplement its formal user governance arrangements via the Forum. For example, ASX Clear engages customers on matters related to exchange-traded options via its ETO Advisory Committee and the ETO subcommittee of the Stockbrokers Association of Australia. Participant feedback provides an important input for ASX Clear to assess its performance against efficiency and effectiveness standards, particularly in relation to proposed new services and products, and changes to Operating Rules and Procedures (see Key Consideration 21.2).

ASX Clear maintains a comprehensive governance and reporting framework that includes:

- transparent processes to operate ASX Clear, with well-defined controls, underpinned by written policies and procedures
- the maintenance of sufficient resources (financial, technological and human resources) to operate the facility properly and to meet its obligations under its CS facility licence.

ASIC concluded that these resources were adequate when preparing its 2013 ASX Group Assessment Report[19]

- conflict handling arrangements that are reviewed and adapted to changing circumstances
- processes to monitor and enforce participants' compliance with the Operating Rules (see Key Consideration 18.3)
- liaison processes with ASIC and the Bank
- a continuous improvement program.

ASX's TAS provides a mechanism for AMOs, such as Chi-X Australia Pty Ltd, to submit trades to ASX Clear and ASX Settlement, respectively, for clearing and settlement via CHESS in relation to ASX quoted securities.

21.2 A central counterparty should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.

The ASX Limited Board sets group-level strategic direction and business priorities, including via a three-year strategic plan, which is reviewed on a continuous basis. The ASX Clear Board sets goals and objectives specific to its clearing service, and reviews and provides governance of ASX Clear's risk management processes, internal controls and compliance systems. The ASX Clear Board is also responsible for overseeing the production of the management accounts of ASX Clear, which are prepared on a quarterly and half-yearly basis, as well as audited full year financial reports and statements. The ASX Clear Board is also responsible for the management of clearing risks (see Principles 2, 3).

Under the Code, ASX has committed to publishing audited management accounts for the clearing and settlement of cash equities at least annually. ASX published the first such set of accounts for the 2012/13 financial year in August 2013, along with its internal cost allocation and transfer pricing policy. Unaudited half-yearly ASX Clear management accounts for cash equities clearing are also released publicly.

ASX Clear measures its progress against goals and objectives in a number of ways.

- ASX Clear measures the effectiveness of its services via participant and user feedback. ASX Clear uses customer engagement and consultative processes described under Key Consideration 21.1 to ensure that it achieves its goals in relation to meeting the requirements of participants.
- ASX Clear has set availability targets for critical systems such as CHESS, DCS and the TAS, which are monitored and reported to relevant governance committees, including the ASX Audit and Risk Committee and the ASX Clear Board, on a regular basis (see Key Consideration 17.3).
- Senior management report to each meeting of the ASX Clear Board, and periodically to the Enterprise Risk Management Committee and the Audit and Risk Committee, on the

[19] ASIC's 2013 *Market Assessment Report: ASX Group*, released 28 July 2014, is available at <https://www.asic.gov.au/asic/asic.nsf/byheadline/Reports?openDocument>.

status of ASX Clear's risk management goals and objectives. Reporting and measurement mechanisms include risk model reviews, international benchmarking, risk profiling and analysis, internal audit reviews, regulatory assurance reviews, and periodic analysis and reporting of key system service availability and capacity utilisation metrics (see Principles 3, 15, 17).

- Operating Rules and Procedures, together with other participant communications such as market notices, provide transparency to participants and other stakeholders regarding the operation of the ASX Clear facility (see Principle 23).

The Audit and Risk Committee has responsibility for considering management reports regarding the effectiveness of ASX Clear's risk management framework and processes. The Committee is assisted in this area by Internal Audit, Enterprise Risk and Regulatory Assurance. The Audit and Risk Committee considers reports from these departments on the appropriateness and effectiveness of internal controls, and action taken or proposed in response to assessments conducted by ASIC or the Bank.

21.3 A central counterparty should have established mechanisms for the regular review of its efficiency and effectiveness.

In addition to periodic reporting to the CS Boards and relevant committees under ASX Group's corporate governance framework (see Principle 2 and Key Consideration 21.2), relevant Group Executives also report to the CEO on a monthly basis. Metrics contained within these reports include key measures of system availability and capacity utilisation, key clearing and settlement statistics (such as netting efficiency and settlement efficiency), technical incident reporting, new issues/admissions/listings and option expiry data. Other issues recorded and measured include the cause and resolution of settlement failures, problems or delays related to the payment and receipt of cash settlements and margin calls, operational incidents and participant complaints.

The business service availability target for both CHESS and the TAS is 99.80 per cent. Capacity utilisation is continually monitored to maintain capacity headroom of 50 per cent above peak utilisation. The average monthly availability of the TAS between November 2011 and June 2014 was 99.99 per cent; average availability of the TAS was also 99.99 per cent over 2013/14. CHESS has had 100 per cent availability since June 2012. The availability performance and capacity utilisation of CHESS is discussed under Key Consideration 17.3.

In June 2014, ASX released the results of a study comparing the cost of ASX Clear's cash equities clearing services against an international peer group. The study, undertaken by an independent consultant under the Code, concluded that the fees charged by ASX Clear for post-trading services were within the range charged by comparable international CCPs.

Responsibility for the regular review of ASX Clear's efficiency and effectiveness is shared between a number of committees and departments within the ASX Group.

- CROCC oversees matters relating to ASX Clear's fair and effective obligations under its Australian CS facilities licence. Section 821E of the Corporations Act requires ASX Clear to provide a report to ASIC within three months of the end of its financial year on the extent to which the licensee has complied with the conditions of its licence.
- CALCO oversees the structural integrity and efficient use of liquidity, on-and-off-balance sheet assets, liabilities and the capital resources of the ASX Group, including ASX Clear.

- As part of its commitment to continuous improvement, the ASX Operations and Risk divisions have adopted a comprehensive suite of policies and procedures to support the governance and internal review of ASX Clear. These policies and procedures are reviewed on a regular basis (see Principles 2, 3).
- ASX Compliance monitors and enforces participants' compliance with the ASX Clear Operating Rules. Other departments within ASX Group assist ASX Compliance in monitoring ASX Clear's performance of its licence obligations.

Principle 22: Communication procedures and standards

A central counterparty should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

Rating: Observed

ASIC's assessment is that ASX Clear observes the requirements of Principle 22. ASX Clear's approach to communication procedures and standards is described in further detail under the following Key Consideration.

22.1 A central counterparty should use, or at a minimum accommodate, internationally accepted communication procedures and standards.

ASX Clear has procedures in place to determine the impact of and actions required to accommodate changes in internationally accepted communications protocols. ASX Clear also has processes and procedures for the notification of changes to users and other relevant stakeholders, including system vendors. Notification may take the form of consultation papers, software vendor workshops, notices to clearing participants and settlement participants, and bilateral contact with software developers. Each new business requirement is analysed in order to identify the most appropriate means of integrating changes to communication protocols, with a particular focus on standardisation and open connectivity.

ASX Clear supports the CHESS messaging standard and the DCS open interface specification, both of which are ASX proprietary communication protocols. The use of ASX proprietary messaging systems for CHESS and DCS reflects the primarily domestic orientation of the cash equities and exchange traded options clearing services that these systems support.

CHESS operates as a computer-to-computer system which relies on an electronic message exchange over publicly available communications networks using proprietary encryption software. CHESS's proprietary software is utilised both at ASX Clear and within the back-office systems of participants, payment providers and registries.

Although the CHESS messaging format is proprietary and does not follow any particular standard, it was originally developed following a review of communications standards in the finance industry. Elements of those standards were used in the design of the CHESS messaging format (for example, the use of a bitmap structure). Relevant communication standards have evolved significantly since CHESS was first introduced over fifteen years ago; for example, one of the standards on which the original CHESS messaging format was based, ISO 7775, has since been replaced (by ISO 15022 which in turn was recently replaced by ISO

20022).[20] Nevertheless, ASX considers that the CHESS messaging format has continued to achieve its key objectives in the areas of system/messaging capacity, ease of validation, adaptability and functionality.

CHESS is able to accommodate the use of relevant, internationally accepted communications standards via third-party software 'adapters/translators'. These have been developed to convert CHESS proprietary messages into internationally accepted SWIFT message protocols and vice versa. However, this approach is expensive for participants and other market stakeholders and involves contracting third-party software vendors to develop the required translators. Irrespective of preferred messaging standards, many participants also rely on third-party vendors for the back-office systems used to connect to CHESS (see Key Consideration 17.7).

At its August 2013 meeting, the Business Committee expressed support for the introduction of a global messaging standard on the basis that it reduces costs for participants that operate in multiple markets, and which are currently required to either operate a separate back-office system in Australia or use a translator. The Business Committee recommended a move to the ISO 20022 SWIFT messaging protocol, particularly as this would align with the standard used for ASX's ReferencePoint product.[21]

In February 2014, the Business Committee recommended that a move to the new ISO 20022 SWIFT communications protocol be linked to a proposed CHESS replacement initiative. The Technical Committee has provided ASX Clear with initial feedback on a transition to an ISO 20022-based CHESS replacement with an indicative project timeline of up to three years. The Committee set out a range of options for the replacement of CHESS, options for the deployment of ISO 20022 standard messaging (either independently or in conjunction with the replacement of CHESS) and a potential go-live strategy.

Although ASX Clear meets the minimum requirements of Principle 22 as they apply to a domestically oriented CCP, a move to ISO 20022 standard messaging has the potential to reduce operating costs and increase efficiency for participants once the initial cost of changing standards has been absorbed. Globally active participants could potentially save costs from straight through processing and the removal of redundant local back-office systems. In addition, potential cost savings may also arise from greater competition among back-office system vendors able to utilise standardised connectivity. In the spirit of continuous improvement, ASX Clear is therefore encouraged to migrate to the ISO 20022 SWIFT messaging standard over the medium term (approximately within the next three years).

Principle 23: Disclosure of rules, key procedures, and market data

A central counterparty should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks,

[20] ISO 20022 is the International Organization for Standardization's standard for financial services messaging. It defines a methodology for the development of financial message standards for financial business processes and transactions. Further information on ISO 20022 can be found at: <http://www.iso20022.org/about_iso20022.page>.

[21] ReferencePoint is an ASX data service providing subscribers with information on a broad range of corporate actions, prices and reference data across the ASX market. Further details are available at: <https://www.asxonline.com/marketinfo/Doco/referencepoint_brochure.pdf>.

fees, and other material costs they incur by participating in the central counterparty. All relevant rules and key procedures should be publicly disclosed.

Rating: Observed

ASIC's and the Bank's assessment is that ASX Clear observes the requirements of Principle 23. ASX Clear's disclosure of rules, key policies and procedures, and market data is described in further detail under the following Key Considerations.

23.1 A central counterparty should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.

ASX Clear's Operating Rules and Procedures form the basis of all material aspects of the CCP's service to participants. The Operating Rules and Procedures are disclosed on the ASX public website.[22] The Operating Rules and Procedures are also made available on the ASX participant website.

To assist participants in their understanding of the risks of participating in ASX Clear, and for the information of other interested stakeholders, ASX publishes a range of additional material on its public website. Information specific to ASX Clear includes information about risk management, default management, margins and capital-based position limits, and business continuity arrangements. More general information includes: the ASX Group's regulatory framework requirements of the Corporations Act for provision of services in a 'fair and effective' way; the ASX Group's other obligations under the Corporations Act; and ASX Group's compliance with the Principles. ASX also operates a dedicated website that discloses information relevant to the clearing and settlement of cash equities, to support its disclosure responsibilities under the Code of Practice. During 2013/14, ASX redesigned its website, one element of which involved centralising links to information required to be disclosed under the Principles.

Specific disclosure requirements are dealt with under Key Considerations 1.3, 2.2, 13.3, 14.4, 16.4, 18.2 and 18.3.

23.2 A central counterparty should disclose clear descriptions of the system's design and operations, as well as the central counterparty's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the central counterparty.

General descriptions of ASX Clear's system design and operations are available on the ASX public website, including as part of ASX's response to the CPSS-IOSCO Disclosure Framework (see Key Consideration 23.5).[23] The Disclosure Framework document describes the ASX group structure, provides a general description of the CS facilities and their roles, system design and operations, outlines the legal and regulatory framework for clearing and settlement, and provides a description of steps taken by ASX to ensure compliance with the Principles and the corresponding FSS. The ASX public website provides additional information on system design and operations, including descriptions of the cash market clearing and settlement process, and margining approaches for both securities and derivatives products.

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22 Available at <http://www.asx.com.au/regulation/rules/asx-clear-operating-rules.htm>.

23 Available at <http://www.asx.com.au/documents/regulation/pfmi_disclosure_framework.pdf>.

ASX maintains on its public website an overview of how the CCPs would manage a clearing participant default, which includes information about the purpose of novation, the point at which novation occurs, and the scope of contractual arrangements.[24] Section 12 of ASX Clear's Operating Rules sets out the arrangements for registration of market contracts, including the point at which a contract is considered to be registered and at which ASX Clear assumes the risk exposure of a trade for transactions on the ASX or Chi-X markets, or OTC equity options (see Key Consideration 1.4).

23.3 A central counterparty should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the central counterparty's rules and procedures and the risks they face from participating in the central counterparty.

All applicants for participation in ASX Clear are provided with a comprehensive application pack, which includes information regarding key requirements of the facilities. Applicants are provided with access to the Operating Rules, Procedures and Guidance Notes via the ASX website, as well as publicly available information about the facilities, services and participation requirements. When ASX Clear has completed an initial assessment of an application, the applicant is also invited to attend formal 'on boarding' meetings with the Compliance, Clearing Risk Management and Operations departments to discuss key areas of importance for participants.

As part of the formal admission process, the applicant must provide supporting evidence of its capacity to comply with the rules. This is reviewed and discussed with the applicant prior to approving admission. For example, ASX Clear and ASX Settlement participants are required to have a management plan which outlines the governance, risk and compliance arrangements of the participant. When reviewing the submissions, ASX will make enquiries of participants about their risk assessments, the design of the controls to mitigate those risks, and details of participants' arrangements to ensure compliance with the Operating Rules and Procedures.

Where ASX becomes aware or suspects that a participant lacks a satisfactory understanding of the Operating Rules and Procedures, or the risks of participation, ASX will generally work collaboratively with the participant to educate them on their obligations. ASX may become aware of issues through its routine risk monitoring activities or through its regular discussions with participants. Examples of matters that might raise concerns are if a participant was slow in making required payments, or had a high frequency of intraday margin calls arising from delays in the intraday allocation of client positions. Steps available to ASX to address serious matters may include: ASX Clear calling for AIM or additional cover from the participant; requiring the participant to hold additional capital; requiring the participant to remediate the weakness; imposing conditions on participation; or requiring that the participant appoint an independent expert to assist with the remediation task (see also Key Consideration 17.7).

23.4 A central counterparty should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The central counterparty should provide clear descriptions of priced services for comparability purposes.

A full breakdown of the various fees ASX Clear charges for the individual services it offers, including available discount and incentive schemes, is published on the ASX website. Fee

[24] Available at <http://www.asx.com.au/documents/clearing/131001_Default_Management_-_Public_Information_Document_v1.pdf>.

schedules are available for each CS facility ASX operates.[25] Separate fees are charged for clearing, settlement and ancillary services related to cash market products (e.g. equities, warrants and structured products). Fees charged on exchange-traded derivatives (e.g. futures and exchange traded options) are generally bundled as a single registration fee, although separate fees are charged for futures cash settlements, and options exercise and assignments.

ASX Clear publishes a description of its priced services and how its fee structure has been calculated in a variety of ways, including on the ASX website, via participant notices, via Guidance Notes and in information brochures.

As a general rule, ASX Clear publicly notifies changes to its fee structure in a timely manner, sometimes with as much as three months' notice. However, the ASX Clear Operating Rules allow ASX Clear to make changes to its fee structure at any time, provided the changes are notified in advance to participants.

The Code (see Key Consideration 2.7) requires ASX Clear to publish fee schedules, in a clear and accessible form, for all clearing and settlement services covered under the Code. The published schedules include a brief description of each service and the applicable terms, conditions and eligibility criteria of any rebates, revenue-sharing arrangements and discounts applicable to each service.

ASX Clear also makes available worked examples, tools and other information as appropriate to assist users to anticipate:

- the expected cost impacts of any pricing changes
- the expected cost impacts associated with new products and initiatives
- the impact of discounts, rebates and revenue-sharing arrangements for different user groups and different activity profiles.

In accordance with the Code, ASX Clear publishes its audited management accounts for clearing of cash equities on an annual basis, together with ASX's full year financial results (see Key Consideration 21.2). ASX Clear has also committed under the Code to provide non-discriminatory pricing to all customers and potential users. ASX Clear's fees, including rebates, revenue-sharing arrangements and discounts applicable to the use of these services, do not discriminate between ASX-affiliated and other customers or potential third-party users of its services.

ASX Clear has distributed a report containing the results of the independent cost benchmarking exercise carried out under the Code (see Key Consideration 21.2) to its customers, stakeholders and the Council of Financial Regulators, and has published the report on the ASX website.

23.5 A central counterparty should complete regularly and disclose publicly responses to the CPSS-IOSCO *Disclosure framework for financial market infrastructures*. A central

[25] The ASX Clear fee schedule is available at <https://www.asxonline.com/intradoc-cgi/groups/participant_services/documents/information/asx_015359.pdf>.

counterparty also should, at a minimum, disclose basic data on transaction volumes and values.

ASX has published its response to the CPSS-IOSCO Disclosure Framework, including information describing how its CS facilities observe the applicable Principles. This document was revised during 2013/14, expanding on a previous version that summarised ASX's approach to observance of the Principles with greater detail as to how the CS facilities meet the Principles. ASX plans to update this document quarterly and further enhance its disclosure as necessary from time to time.

ASX currently reports basic risk and activity data for the CS facilities via a monthly activity report, as well as through additional data published on both its main website and dedicated website on clearing and settlement of cash equities. In December 2013, CPSS and IOSCO published a draft set of quantitative disclosure standards for CCPs that are intended to complement descriptive disclosures under the Disclosure Framework. Once a finalised version of these standards comes into effect, ASX Clear will be expected to expand the range of quantitative risk and activity data that it publicly discloses.

Principle 24: Disclosure of market data by trade repositories

A trade repository should provide timely and accurate data to relevant authorities and the public in line with their respective needs.

Rating: Not applicable

Principle 24 is not relevant to central counterparties.