A1.2 ASX Clear (Futures)

ASX Clear (Futures) is a wholly owned subsidiary of ASXCC, itself a wholly owned subsidiary of ASX Limited (see 'ASX Group Structure' in Appendix A). ASX Clear (Futures) acts as the CCP for all futures and options products that are traded on the ASX 24 market. ASX Clear (Futures) also offers a clearing service for OTCIRD.

Summary of Ratings and Recommendations

The following table summarises the Bank's 2015/16 Assessment of ASX Clear (Futures) against the FSS using the rating system set out in the *Principles for Financial Market Infrastructures: Disclosure framework and assessment methodology*. The table includes the recommendations made by the Bank for ASX Clear (Futures) to observe or continue observing the requirements under the FSS, as well as recommendations to further strengthen ASX Clear (Futures)' observance of the FSS.

Table 12: ASX Clear (Futures) Ratings and Recommendations

Standard	Rating	Recommendations
1. Legal basis	Observed	
2. Governance	Observed	ASX Clear (Futures) is encouraged to continue enhancing the documentation of the key elements of its financial risk management framework, including clear articulation to participants and regulators (and, where appropriate, the public) of the analytical basis and rationale for the choice and calibration of key margin and stress test model parameters and assumptions. ASX Clear (Futures) is encouraged to review its governance arrangements in light of forthcoming CPMI-IOSCO guidance on resilience and recovery of CCPs.
3. Framework for the comprehensive management of risks	Observed	ASX Clear (Futures) is encouraged to continue to refine the documentation of its recovery plans, including considering further elaborating: stress scenarios; communications procedures; the methodology for determining critical services; how structural weaknesses are identified and addressed; and links to other FMIs.
4. Credit risk	Observed	ASX Clear (Futures) is encouraged to complete its review of spread, concentration and liquidity add-ons for its credit stress test models and incorporate these add-ons as appropriate. ASX Clear (Futures) is encouraged to continue to progress planned enhancements to its risk management systems, including to deliver the capability to calculate credit stress test exposures on a near real-time basis. ASX Clear (Futures) is encouraged to review its framework for credit stress testing, including its interpretation of 'extreme but plausible' market conditions and its framework for determining the adequacy of its prefunded financial resources, in light of forthcoming CPMI-IOSCO guidance on resilience and recovery of CCPs. ASX Clear (Futures) is encouraged to review the assumptions it makes regarding the value of its prefunded financial resources in extreme but plausible market conditions, in light of any changes to its collateral haircuts.
5. Collateral	Observed	
6. Margin	Observed	ASX Clear (Futures) is encouraged to complete its review of spread, concentration and liquidity add-ons for its margin models, and incorporate these add-ons as appropriate. ASX Clear (Futures) is encouraged to continue to progress planned enhancements to its risk management systems, including the ability to calculate exposures and margin requirements using a range of models and parameters on a near real-time basis. ASX Clear (Futures) is encouraged to review its margin models in light of forthcoming CPMI-IOSCO guidance on resilience and recovery of CCPs.

Standard	Rating	Recommendations
7. Liquidity risk	Observed	In order to continue to observe CCP Standard 7, ASX Clear (Futures) should implement plans to expand and refine its liquidity-specific stress scenarios and integrate these into its liquidity stress test framework. The expanded scenarios should include stress testing of non-AUD liquidity exposures. ASX Clear (Futures) should also ensure that it has processes in place to respond promptly to any breaches of target liquidity coverage; these processes should be clearly documented. ASX Clear (Futures) is encouraged to regularly test its procedures for accessing its liquid resources, including the on-market liquidation or repo of non-cash collateral and collateral investments and potential repo of eligible securities at the Bank. ASX Clear (Futures) is encouraged to continue to progress planned enhancements to its risk management systems, including the ability to calculate liquidity stress test exposures on a near real-time basis. ASX Clear (Futures) is encouraged to review its frameworks for liquidity stress testing and determining the adequacy of its liquid resources in light of the forthcoming CPMI-IOSCO guidance on resilience and recovery of CCPs.
8. Settlement finality	Observed	
9. Money settlements	Observed	
10. Physical deliveries	Observed	
11. Exchange-of-value settlements	Observed	

Standard	Rating	Recommendations
12. Participant default rules and procedures	Observed	ASX Clear (Futures) should continue enhancing its approach to the testing and review of its default management arrangements. Such enhancements should include increasing the complexity and scope of its default management fire drills. ASX Clear (Futures) should also ensure that these fire drills involve all relevant internal and external stakeholders and committees, and test the interaction between all relevant stakeholders. ASX Clear (Futures) should more prominently involve its default brokers in the testing of default management arrangements for exchange-traded products. On an annual basis, ASX Clear (Futures) should engage with its default brokers on their proposed method for closing out the hypothetical portfolio used in the fire drill, including expected close-out prices and timeframes. ASX Clear (Futures) should also involve the Risk Consultative Committees and other clearing participants in future default management fire drills that test ASX Clear (Futures)' recovery arrangements. As part of its annual review of the DMF, ASX Clear (Futures) should assess the potential implications of any changes to the resolution regimes that govern its participants. This includes the resolution regimes of any offshore-based participants. ASX Clear (Futures) should also review its DMF in light of the proposed establishment of a special resolution regime for FMIs in Australia, once the regime has been finalised. ASX Clear (Futures) is encouraged to complete its review of the DMF and finalise planned enhancements to the relevant documents. ASX Clear (Futures) is encouraged to continue examining ways in which its new risk management system could be used to facilitate, and mitigate risks arising in, the default management process. ASX Clear (Futures) is encouraged to continue developing the system functionality over time, integrating learnings from fire drills and other enhancements identified by the DMSG. In the meantime, ASX Clear (Futures) is encouraged to continue to explore options to improve the effectiveness of the default management process within its existing systems. ASX Clear (Futures) is encouraged to carry out plans to sign on an additional default broker for the ASX 24 market. ASX Clear (Futures) is encouraged to carry out its plans to enhance participant and client education and communication regarding its default management arrangements. As part of this, ASX Clear (Futures) is encouraged to complete its planned updates of existing participant disclosures on the key aspects of its default management arrangements. Any disclosures should be easily accessible, preferably in a centralised location. ASX Clear (Futures) should validate through its testing and review processes its expectation that its default management arrangements take appropriate account of stability interests in other jurisdictions in which it has material activity, most notably in New Zealand.
13. Segregation and portability	Observed	
14. General business risk	Observed	ASX Clear (Futures) is encouraged to review its assumptions in respect of the reliability and timeliness of payments under its insurance policies in calculating its general business risk capital.

Standard	Rating	Recommendations
15. Custody and investment risks	Broadly observed	In order to fully observe CCP Standard 15, ASX Clear (Futures) should implement plans to: • limit unsecured exposures to individual non-government investment counterparties/issuers to the level of capital set aside for non-participant-default or general business risk losses • ensure that other investments are with government-related obligors or secured by assets issued by government-related or other highly creditworthy obligors, subject to prudent concentration limits • ensure that ASX Clear (Futures)' minimum liquid resource requirement (under CCP Standard 7.3) is invested in or secured by government/semi-government securities or cash. Other investments should be able to address effectively any additional liquidity shortfalls (e.g. be investments in, or secured by, securities eligible for repo with the Bank). ASX Clear (Futures) is encouraged to review its risk management arrangements applicable to commercial settlement banks, and consider establishing a formal framework for the management of these risks.
16. Operational risk	Observed	In order to continue to observe CCP Standard 16, ASX Clear (Futures) should review its cyber risk management arrangements in light of forthcoming CPMI-IOSCO guidance on cyber resilience for FMIs. As part of this review, ASX Clear (Futures) should: • consider developing participant requirements in the area of cyber resilience, liaising as appropriate with the Bank and other relevant authorities • develop concrete plans to improve its capability to meet the two-hour recovery time objective following an extreme cyber attack. ASX Clear (Futures) will also need to review its operational arrangements in light of the proposed special resolution regime for FMIs in Australia, once the regime has been finalised. In particular, ASX Clear (Futures) will need to ensure that its operations are organised in such a way as to facilitate effective crisis management actions under that regime.
17. Access and participation requirements	Observed	
18. Tiered participation arrangements	Observed	ASX Clear (Futures) is encouraged to review its approach to monitoring concentration risks in tiered participation, including triggers for further investigation and actions, and it processes for ongoing review of concentration risk.
19. FMI links	Observed	
20. Disclosure of rules, key policies and procedures, and market data	Observed	
21. Regulatory reporting	Observed	

Standard 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.

ASX Clear (Futures) is a separate legal entity within the ASX Group that solely provides clearing services (CCP Standard 1.1). ASX Clear (Futures)' legal basis is founded on clear and understandable rules that operate within the framework of relevant laws and regulations (CCP Standards 1.2, 1.3). The certainty of this legal basis in relevant jurisdictions is reinforced by supporting legislation, including protections afforded to ASX Clear (Futures) as a 'netting market' under the PSNA and the protection

of money settlement finality through Austraclear under the same legislation. ASX Clear (Futures)' legal basis is subject to periodic review by ASX Legal (CCP Standards 1.2, 1.5). ASX Clear (Futures) has publicly outlined the key features of its legal basis on its website, and from time to time, for information, may provide legal opinions to participants or other stakeholders in respect of the legal basis of significant new services (CCP Standard 1.4). ASX has not identified any material risks arising from potential conflicts of law relating to the operations of ASX Clear (Futures) (CCP Standard 1.6).In May 2016, Parliament passed the Resilience Act. Among other things, this Act amended the PSNA to enhance the protections afforded to netting markets, including ASX Clear (Futures), to protect the exercise of recovery powers and default fund contributions of participants should participants subsequently enter administration (CCP Standard 1.5). The amendments also provide additional legal certainty for RTGS systems approved under the PSNA, such as Austraclear.

1.1 A central counterparty should be a legal entity which is separate from other entities that may expose it to risks unrelated to those arising from its function as a central counterparty.

ASX Clear (Futures) is a wholly owned subsidiary of ASXCC, which is itself a wholly owned subsidiary of ASX Limited. As a separate legal entity, ASX Clear (Futures)' 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 (Futures)' services are limited to CCP clearing of futures and options products that are traded on the ASX 24 market and certain OTC derivatives, in accordance with the ASX Clear (Futures) Operating Rules and Procedures, the OTC Rules and the OTC Handbook. Accordingly, ASX Clear (Futures) does not provide any services that have a distinct profile from, or pose additional risks to, its activity of operating a CCP.

1.2 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 (Futures) 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 (Futures) holds a CS facility licence under Part 7.3 of the *Corporations Act 2001*. This licence is administered by ASIC in consultation with the Bank. The Minister acts as ultimate decision-maker on licensing matters, although this responsibility has been delegated to authorised ASIC officers since April 2016.
- ASX Clear (Futures) has defined Operating Rules and Procedures. Under section 822B of the Corporations Act, these Rules have effect as a contract under seal between: ASX Clear (Futures) and each of its participants; and each participant and each other participant. The Operating Rules and Procedures set out the rights and obligations of participants and ASX Clear (Futures), including in the event of default or suspension.
- ASX Clear (Futures) is protected as a 'netting market' under Part 5 of the PSNA (see also CCP Standard 1.5).

While ASX Clear (Futures) has been recognised as a third-country CCP by ESMA and has been exempted from registration as a Derivatives Clearing Organisation (DCO) by the Commodity Futures Trading Commission (CFTC) in the US, its legal basis is governed by Australian law.

ASX Clear (Futures) has identified no legal risks arising from recognition or exemption in other jurisdictions.

The legal basis of ASX Clear (Futures)' activities is reviewed by ASX Legal whenever there are material amendments to the Operating Rules or Procedures. Five such reviews occurred for ASX Clear (Futures) during the Assessment period.

Rights and interests

The rights and interests of ASX Clear (Futures), its participants and, where relevant, its participants' customers in cleared positions and collateral are defined in ASX Clear (Futures)' Operating Rules and Procedures, OTC Rules and OTC Handbook. The OTC Handbook sets out the procedures, timings, contract terms and other details of the OTC derivatives clearing service. Customers of participants have a contractual right to deal directly with ASX Clear (Futures) in the event of the default of the direct participant that acts as their clearing agent (see CCP Standard 13.3). ASX Clear (Futures) has obtained legal advice confirming the enforceability of these arrangements and establishing that the arrangements do not interfere with protections for 'close-out netting' arrangements between participants and their customers under Part 4 of the PSNA.

The capacity to deal with cash or non-cash collateral held by ASX Clear (Futures) in circumstances of a participant default is an important risk protection. The ASX Clear (Futures) Operating Rules provide ASX Clear (Futures) with the right to deal with collateral of a defaulted participant to address losses or costs, or to meet other obligations arising from the default management process. Part 5 of the PSNA protects the enforcement of security interests held by CCPs in the event of a participant default (see also CCP Standard 1.5).

1.3 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. Operating Rule changes are subject to a Ministerial disallowance process, although the Minister's role in this process has been delegated to authorised ASIC officers since April 2016.[1] The Corporations Act also establishes how any inconsistency between the licensed facility's rules and applicable laws and regulations (in particular, derivative transaction rules and derivative trade repository rules) would be resolved.

The ASX Clear (Futures) Operating Rules and Procedures, OTC Rules and OTC Handbook are published on the ASX public website and the Customer Portal, ASX's restricted participant website. These documents are supplemented with explanatory material, to support participants' (and prospective participants') understanding of the risks they face through participation in the system. In addition to the Operating Rules and Procedures, publicly available material includes high-level descriptions of ASX Clear (Futures)' risk management framework, the SPAN margining methodology, business continuity arrangements and the CCP 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.

[1] While the Minister has delegated responsibility for certain decisions under Chapter 7 of the Corporations Act to authorised ASIC officers, the Minister may still exercise the powers delegated by 'calling up' the matter.

There is a clear process for changing ASX Clear (Futures)' Operating Rules and Procedures. Proposed rule changes may be submitted informally to ASIC. In consultation with the Bank, ASIC considers the changes and advises ASX of any regulatory concerns. Once such concerns are satisfactorily addressed, ASIC invites formal submission of the proposed Operating Rule changes, which triggers a 28-day 'disallowance' period (referred to above), during which the Minister may choose to disallow the Operating Rule changes. The Minister or delegate must consider a number of factorswhen deciding whether to disallow Operating Rule changes, including whether the proposed changes are consistent with the public interest.[2] In addition, the Minister or delegate must ensure that there has been adequate consultation with the Bank when deciding whether to disallow Operating Rule changes, and consider any advice and recommendations from the Bank and ASIC staff. If changes to the Operating Rules are not disallowed by the Minister or delegate, they are notified to participants via the ASX website.

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

The legal basis for the activities of ASX Clear (Futures) and the facility's protection as an approved netting market under the PSNA (see also CCP Standard 1.5) are described on ASX's public website in its Disclosure Framework document, which sets out in detail how each CS facility meets the requirements of each Principle within the PFMI developed by CPMI and IOSCO (see CCP Standard 20.5).[3]

On behalf of each licensed entity within the ASX Group, including all CS facilities, ASX Limited 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 (Futures) may seek independent legal opinions on relevant legal matters relating to significant new services, including any implications that 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.

1.5 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, including in the event that the central counterparty enters into external administration or that one or more of its participants defaults or is suspended.

The ASX Clear (Futures) Operating Rules and Procedures, OTC Rules and OTC Handbook set out how the CCP assumes risk in relation to its participants, arrangements for netting offsetting exposures and obligations of participants, and the risk controls that apply in respect of participants' net exposures. Payment obligations arising from clearing, including those

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2 For more information see 'Guidelines for the Exercise of Powers Delegated to ASIC under Chapter 7 of the Corporations Act 2001', available at: <http://treasury.gov.au/~/media/Treasury/Publications%20and%20Media/Publications/2016/Guidelines%20for%20the%20exercise%20of%20powers%20delegated%20to%20ASIC/Downloads/PDF/Guidelines_ASIC_ch7.ashx>.

3 Available at <http://www.asx.com.au/documents/asx-compliance/pfmi-disclosure-framework.pdf>. Prior to 1 September 2014, CPMI was known as the Committee on Payment and Settlement Systems (CPSS).

related to margin obligations, are settled in Austraclear. The point at which settlement of these obligations is final and irrevocable is established in Austraclear's Regulations. Measures that contribute to ensuring a high degree of certainty in respect of these aspects of ASX Clear (Futures)' activities are detailed below.

Settlement finality

Payment obligations arising between ASX Clear (Futures) and its participants are settled in Austraclear. The legal certainty of settlement finality is supported by Austraclear's approval as an RTGS system under Part 2 of the PSNA. This approval provides protection against application of the so-called 'zero-hour rule' in insolvency law, whereby transactions settled after the point at which an insolvency is legally determined to have started could potentially otherwise be reversed. Any interbank transactions arising from these settlements are settled in real time in RITS, across 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. NZD obligations are settled through NZClear, with the finality of settlement protected under Part 5C of the *Reserve Bank of New Zealand Act 1989* (NZ) (see CCP Standard 8.1).

In May 2016, Parliament passed the Resilience Act. The Resilience Act amends the PSNA to provide additional legal certainty for RTGS systems that have been approved under the PSNA, such as Austraclear and RITS. The amendments facilitate the ongoing participation by institutions in 'non-terminal' external administration (e.g. statutory management) by clarifying that the protections under the PSNA continue to apply.

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 (Futures) is an approved netting market. Part 5 provides protection for several aspects of the netting of exposures and payments under the ASX Clear (Futures) Operating Rules:

- the process of reducing each participant's contracts to a net exposure (reflecting the CCP's 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.

Assumption of risk

ASX Clear (Futures) assumes risk on cleared trades through the process of novation, whereby matched trades between participants are replaced by separate contracts between the buyer and the CCP, and the seller and the CCP. Through novation, the obligations of ASX Clear (Futures) are to each participant as principal, although client clearing arrangements also establish a legal relationship between clients and the CCP (see CCP Standard 13). Equally, participants' obligations are to ASX Clear (Futures) for all transactions that have been novated (i.e. both proprietary and client transactions).

The point of novation is established by ASX Clear (Futures)' Operating Rules and OTC Rules. For exchange-traded derivatives, ASX Clear (Futures)' Operating Rules specify that a transaction on the ASX 24 market is novated upon the registration of a matched trade by the market, which occurs in ASX 24's SYCOM system. Likewise, ASX 24's Operating Rules state

that trades executed on the trading platform are extinguished and replaced by contracts with ASX Clear (Futures) upon registration of the trades with ASX Clear (Futures). Non-market trades are novated once their details have been approved and registered by ASX Clear (Futures). Acceptance rules for registration of OTC derivatives trades are set out in the OTC Rules. Requirements include, for example, that the OTC transaction has been submitted in accordance with procedures and eligibility criteria in the OTC Handbook, that participants are authorised and not in default, and that the transaction passes limit checks. If an OTC transaction satisfies the requirements and is accepted by ASX Clear (Futures) for registration, the transaction is novated with effect from the time at which the transaction details were received by ASX Clear (Futures).

Part 5 of the PSNA protects the effectiveness of the process of novation outlined in the ASX Clear (Futures)' Operating Rules and OTC Rules, by virtue of ASX Clear (Futures)' status as an approved netting market.

Enforceability of rules under external administration or recovery

The enforceability of ASX Clear (Futures)' Operating Rules (including the OTC Rules) in circumstances when a participant has entered external administration is protected by Part 5 of the PSNA. This protection ensures that ASX Clear (Futures) can enforce key rights under its Operating Rules (including netting or termination of obligations and enforcement of security) in relation to a participant in external administration, despite any provision of insolvency law that might otherwise interfere with such rights. The Resilience Act amended the definition of external administration in Part 5 of the PSNA to explicitly cover resolution measures for bank and non-bank financial institutions.

ASX Legal has analysed the legal enforceability of ASX Clear (Futures)' Operating Rules upon the CCP's entry into external administration. ASX Clear (Futures) has also obtained legal advice to confirm the enforceability under Australian law of Operating Rules under which novated contracts may be closed out in the event that ASX Clear (Futures) was subject to an insolvency event. No material legal risks to enforceability have been identified. The ASX Clear (Futures) Operating Rules give participants the right to terminate novated contracts in the event that ASX Clear (Futures) defaulted on its obligations, with calculation of a net obligation to or from each participant on termination (i.e. 'close-out netting' rights). The rules do not interfere with ASX Clear (Futures)' proposed arrangements for addressing a liquidity shortfall (see CCP Standard 7.9). The continued appropriateness of close-out netting rights will need to be assessed in light of future developments in FMI resolution.

ASX Legal has carried out analysis on the legal basis of tools available under ASX Clear (Futures)' recovery plan (see CCP Standards 3.5, 4.8, 7.9 and 14.3). This analysis has not identified any material legal risk to enforceability of these tools or the application of protections under Part 5 of the PSNA to payment haircutting, termination powers or the allocation of investment losses.

The Resilience Act enhances the protections afforded to ASX Clear (Futures) as a netting market. In particular, the changes protect the exercise of recovery powers and default fund contributions of participants should participants subsequently enter administration.

1.6 A central counterparty conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflicts of law across jurisdictions. A central counterparty should provide the Reserve Bank with a legal opinion that demonstrates the enforceability of its rules and addresses relevant conflicts of law across the jurisdictions in

which it operates. This should be reviewed on a periodic basis or when material changes occur that may have an impact on the opinion, and updated where appropriate.

Participants of ASX Clear (Futures) include Australian subsidiaries and branches of entities that are domiciled in foreign countries (including France, Germany, Hong Kong, Switzerland, United Kingdom and United States), as well as one participant clearing remotely from the United Kingdom. However, the Operating Rules are governed by Australian law and require that all participants submit to the exclusive jurisdiction of New South Wales courts. ASX has obtained an external legal opinion in relation to foreign participation that has identified no material legal risks.

Standard 2: Governance

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

ASX Clear (Futures) pursues objectives that place a high priority on risk management, through compliance with relevant FSS and the broader Corporations Act requirement to do all other things necessary to reduce systemic risk. ASX Clear (Futures) also acknowledges public policy objectives directed at financial market and payments system integrity, as well as the interests of customers and other stakeholders (CCP Standard 2.1). ASX Clear (Futures)' governance arrangements are documented and publicly disclosed. These arrangements give ultimate responsibility for the oversight of the operations and risk management of ASX Clear (Futures) to the ASX Limited Board and the ASX Clear (Futures) Board (see 'ASX Group Structure' in Appendix A). Board and committee charters document Board roles and lines of responsibility and accountability (CCP Standards 2.2, 2.3). The performance of each relevant Board is reviewed at least annually for both individual directors and the Board as a whole. The relevant Boards each include a majority of independent non-executive directors and the ASX Clear (Futures) Board includes directors appointed for their expertise in clearing and settlement matters. Board remuneration is designed to attract and retain appropriately skilled and qualified directors (CCP Standard 2.4).

The reporting lines of management are set out in the CS Boards' Charter, along with roles and responsibilities of key management personnel. Remuneration of senior management in risk management roles is structured to provide appropriate incentives for sound and effective risk management (CCP Standard 2.5). ASX maintains a clear and documented risk management framework, subject to regular internal and external review. Governance of this risk management framework is supported by a participant Risk Consultative Committee (CCP Standard 2.6). Key processes and internal controls are subject to review by ASX's Internal Audit department, which is itself subject to periodic external review (CCP Standard 2.7). ASX utilises formal and informal consultation processes which help to ensure that the design and decisions of ASX Clear (Futures) reflect the interests of participants and other stakeholders, including engagement with the participant Risk Consultative Committee (CCP Standard 2.8). ASX has conflict-handling procedures in place to address potential conflicts of interest that may arise by virtue of its group structure. These require that staff and directors act in the best interests of each facility as appropriate. The composition of the CS Boards supports the effective handling of any conflicts that might arise (CCP Standard 2.9).

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

The high-level objectives of ASX Clear (Futures) 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 (Futures)' responsibility for complying with relevant FSS.

ASX Clear (Futures)' 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 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 Boards' public interest responsibilities, as well as ASX Clear (Futures) obligations under Part 7.3 of the Corporations Act. These include that ASX Clear (Futures), 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 provide its services in a fair and effective way.

To support the interests of its customers, ASX maintains 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 (Futures)' governance arrangements allow for appropriate consideration of stakeholder views. When considering new services or major operational or risk management changes, ASX uses stakeholder forums and other formal and informal consultation processes to communicate proposed changes to relevant stakeholders (see CCP Standard 2.8). Consultations and non-confidential responses to consultations are made available on the ASX public 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.

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, the Reserve Bank and other relevant authorities, participants and, at a more general level, the public.

The governance arrangements of ASX Clear (Futures) are documented on the ASX public website. This documentation includes the Charters of the ASX Limited Board, the CS Boards (which include the ASX Clear (Futures) Board), and other subsidiary boards and committees. The charter documents provide information about the role and composition of the CS Boards and board committees. The CS Boards are responsible for the oversight and risk management of the ASX CS facilities (see CCP Standard 2.3). The board committees advise the ASX Limited Board on a number of matters:

- The Audit and Risk Committee is responsible for the oversight of ASX Group enterprise-wide risk. The Committee monitors ASX's financial management, internal controls, audit function and legal compliance, and assists the CS Boards in fulfilling their responsibility for the oversight of risk management of the ASX CS facilities.

- The Remuneration Committee oversees the remuneration and incentive framework for the Managing Director and CEO, non-executive directors, senior executives, and ASX staff more generally (see CCP Standard 2.5).
- The Nomination Committee is responsible for reviewing matters relating to board composition and performance, succession planning, and training for non-executive board members (see CCP Standard 2.4).

The charter documents also provide information about the key senior managers of the clearing facilities; namely, the Managing Director and CEO, the CRO, and the GE, Operations 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. Each of the charters of ASX Limited and the CS Boards is reviewed and approved by the respective board on an annual basis.

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 the CPMI-IOSCO Principles; group and business structure, including biographies of senior Group Executives; and risk management policies (in summary form). ASX's response to the CPMI-IOSCO Disclosure Framework also summarises key governance and risk management arrangements (see CCP Standard 20.5).

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 (Futures), including when a person changes from one of those positions to another. Changes to these positions and 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 regularly review both its overall performance and the performance of its individual board members.

Ultimate responsibility for the oversight of risks faced by ASX Clear (Futures) lies with the ASX Limited Board and the ASX Clear (Futures) Board. The ASX Limited Board is accountable for the overall management of the ASX Group. Its responsibilities include:

- reviewing the Group's corporate strategy and approving major initiatives
- overseeing and monitoring the Group's performance consistent with its strategic goals, licence obligations and public policy objectives
- reviewing and approving financial plans, and monitoring financial performance
- appointing and assessing the performance of the Managing Director and CEO
- overseeing the risk management, internal control, and compliance functions, including the implementation of ASX's enterprise risk management policy
- ensuring that appropriate mechanisms are in place for identifying, controlling, monitoring and reporting significant risks

- reporting to, and communicating with, shareholders.

The ASX Limited Board Charter delegates certain responsibilities to the ASX Clear (Futures) Board, including the review and oversight of the risk management, internal control and compliance functions related to ASX Clear (Futures)' clearing- and settlement-related risks, and ensuring ASX Clear (Futures)' compliance with the FSS. The CS Boards' Charter elaborates on the roles and responsibilities of the ASX Clear (Futures) 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 (Futures) Board meets regularly and receives detailed reports on ASX Clear (Futures)' business and operations, risk management and financial performance. During 2015/16, the ASX Clear (Futures) Board had seven formal meetings and four workshops.

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 may be used, including 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 of the CS Boards. If there is a real possibility of a material conflict of interest and duty on a matter subject to vote 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 comprise 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 the Assessment period, the ASX Limited Board had eight members, comprising the Chairman and seven non-executive directors. At the end of the Assessment period, the ASX Clear (Futures) Board comprised of nine independent non-executive directors, five of whom were members of the ASX Limited Board. Three new directors were appointed during the Assessment period and one resigned at the end of the Assessment period. The ASX Clear (Futures) and Austraclear Boards share common directors; all but four of these directors also serve on the ASX Clear and ASX Settlement Boards.

The differences between the composition of the CS Boards, and between the CS Boards and ASX limited, are primarily for business reasons, but also supports ASX's conflict-handling arrangements (see CCP Standard 2.9).

Prior to his resignation in March 2016, the previous ASX Managing Director and CEO was an executive member of the ASX Limited and ASX Clear (Futures) Boards, as well as the other CS Boards (see Section 3.5.3). ASX announced in August that a new Managing Director and CEO, Dominic Stevens, had been appointed. During the interim period, the ASX Chairman, Rick Holliday-Smith provided oversight and board-level input to the Deputy CEO and Group General Counsel, who together had assumed the day-to-day running of the company. Under these interim arrangements, the Chairman did not have day-to-day responsibilities within ASX, but served as a point of contact for senior external stakeholders, including regulators. Although the ASX Limited Board had determined that the Chairman brought independent

judgement to bear on matters before the Board, it had treated the Chairman 'as if' he was not independent during the interim period.

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. Five of the non-executive directors of ASX Clear (Futures) 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 helps to ensure that directors have the capacity to conduct informed independent review of relevant issues. The directors of ASX Clear (Futures) have experience in senior roles across a range of financial sectors globally, including international banking, asset management, and financial, derivatives and capital markets.

The CS Boards' Charter sets out the ASX policy that the majority of directors on each CS Board must be independent. The Board Policy and Guideline to Relationships Affecting Independent Status is available on the ASX website.[4] The independence of directors is assessed according to this 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 each independent director 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 past three years the director was 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.[5]

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. The Boards also receive regular briefings at Board meetings, workshops, customer engagement meetings and site visits. This helps to ensure that directors are kept informed of relevant market and industry developments, and assists in developing the skills and technical knowledge of the Board.

Directors' fees at both ASX Limited and ASX Clear (Futures) are considered at regular intervals by the ASX Limited Remuneration Committee, which aims to ensure that it has in place a fee scale that enables ASX to attract and retain appropriately skilled and qualified non-executive directors and recognises the workload and level of skill and expertise that a director must have to effectively meet their responsibilities. Remuneration of directors is determined in private session by the ASX Limited Board on the recommendation of the Remuneration Committee. 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. There were no changes to directors' fees following the latest fee review in June 2016.

4 Available at <http://www.asx.com.au/documents/regulation/ASXL_guidelines_affecting_independent_status.PDF>.
5 Available at <http://www.asx.com.au/about/board-and-management.htm>.

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 effectively discharge its responsibilities for the operation and risk management of the central counterparty. Compensation arrangements should be structured in such a way as to promote the soundness and effectiveness of risk management.

ASX has clear and direct reporting lines between management and the CS Boards. These are set out in the CS Boards' Charter, along with the roles and responsibilities of the Managing Director and CEO, the CRO, and the GE, Operations. In the normal course, 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.

In March 2016, the Managing Director and CEO of ASX resigned (see Section 3.5.3). ASX announced in August that a new Managing Director and CEO, Dominic Stevens, had been appointed. During the interim period, the Deputy CEO and Group General Counsel jointly led the day-to-day running of the company and reported to the Chairman. Under these arrangements, the CRO and CCO reported directly to the Group General Counsel, while the CFO and GE, Operations reported to the Deputy CEO.

ASX has a 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 certain matters under ASX's remuneration and incentive framework, including succession plans, recruitment, retention and termination strategies. The Committee also reviews the remuneration arrangements of the ASX Group directors and all ASX staff, including the Managing Director and CEO, the Deputy CEO, Group Executives and General Managers. 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. Since June 2015, ASX's compensation arrangements for senior executives, including the CRO and GE, Operations, have placed greater weight on longer-term incentives. This has not affected the Key Performance Indicators of either the CRO or GE, Operations, which remain aligned with the objectives of sound and effective risk management.

ASX carries out succession planning and management processes in order to promote 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, including through the maintenance of a separate and independent internal audit function.

ASX has a documented risk management framework, which is described under CCP Standard 3.1. The CS Boards are responsible for approving and reviewing high-level risk management policies 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 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 relevant to CCP risk are distributed as follows:

- Key policies and standards, such as margin policy, stress test 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 independent audit program (see CCP Standard 2.7); this 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 risk management policies and standards are reviewed on an annual basis.
- The Audit and Risk Committee has responsibility for the oversight of the Enterprise Risk Management Framework.
- The ERMC, comprising executives from various 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. Documented policies and standards specify requirements for periodic formal review. 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 the normal course, 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 (see CCP Standard 2.5). There are four functional departments with at least some responsibility for CCP financial risk management: the Clearing Risk Development department; the CRQ department; the CRPM department; and the Portfolio Risk Manager (see 'ASX Group Structure' in Appendix A). 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. The participant Risk Consultative Committee (see CCP Standard 2.8) also provides advice to the ASX Clear (Futures) Board on risk management matters, consistent with the Bank's supplementary interpretation of this sub-standard (see Introduction to Appendix A).

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 test 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 (Futures) include SPAN margining for exchange-traded derivatives, the OTC IRS Filtered Historical Simulation Value at Risk (FHSVaR) model for OTC derivatives, the pricing system for derivatives, and the credit and liquidity stress test models. 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 score. The approach to model validation is based on objective statistical tests, including backtesting and sensitivity analysis (see CCP Standards 4.5, 4.6, 5.3, 6.5, 6.6 and 7.8), with each model validation strategy to be reviewed and approved by an internal management committee known as the RQG. Model validation reviews are coordinated by Internal Audit, and may include the use of external experts as required under the framework or where this is deemed necessary by the RQG or Internal Audit. Independent model validations were carried out for collateral valuation and haircuts, capital stress testing, liquidity stress testing and SPAN during the 2015/16 Assessment period. ASX Clear (Futures)' approach to independent model validation is discussed in more detail under CCP Standards 4.5 and 6.7.

2.7 A central counterparty's operations, risk management processes, internal control mechanisms and accounts should be subject to internal audit and, where appropriate,

periodic external independent expert review. Internal audits should be performed, at a minimum, on an annual basis. The outcome of internal audits and external reviews should be notified to the Reserve Bank and other relevant authorities.

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 Management Framework, business continuity framework and enterprise compliance framework, using the 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 every two years and made available on the ASX public website.

Internal Audit is a separate department within ASX the principal objective of which 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. Internal Audit reports to the Audit and Risk Committee and Managing Director and CEO for audit purposes and to the CRO for administrative purposes. The department's reporting structure also includes reporting lines to the CS Boards and ASX Compliance Board. The General Manager of Internal Audit has direct access to the Audit and Risk Committee, CS Boards and ASX Compliance Board. If a potential conflict arises between Internal Audit and the CRO, Internal Audit would use the reporting lines to the Managing Director and CEO, Audit and Risk Committee, CS Boards or the 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, conducted out in October/November 2014, concluded that Internal Audit was appropriately carrying out its role as the key provider of assurance services within ASX, and was operating in accordance with the *International Standards for the Professional Practice of Internal Auditing*. The performance of the General Manager, Internal Audit is also assessed each year by the Audit and Risk Committee.

ASX has a clearly defined methodology for internal audit, based on the International Professional Practices Framework set out by the Institute of Internal Auditors.[6] 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

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

Manager, Internal Audit and the Audit and Risk Committee consider. The ASX Compliance Board and the CS Boards may also request ad hoc reviews.

2.8 Governance arrangements 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. Governance arrangements should provide for consultation and stakeholder engagement through appropriate forums on operational arrangements, risk controls and default management rules and procedures. 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 (Futures) 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. ASX Clear (Futures) has formalised in its Operating Rules a requirement that it consult participants on proposed rule amendments, except those requested by its regulators or required to enable ASX Clear (Futures) to comply with its CS facility licence or other regulatory obligations.

ASX Clear (Futures) also maintains several standing structures for participant consultation.

- The ASX Clear (Futures) Risk Consultative Committee, comprising representatives from 18 futures and OTC participants, is a self-governing body chaired by an elected member. Client representatives must have held an individual client account for at least six months with an average initial margin requirement of at least $10 million over that period; currently there are no clients that meet these criteria. The Risk Consultative Committee is consulted on material changes to default management processes, the margining methodology, the default fund, position or liquidity limits, participation criteria, new products, and other changes affecting ASX Clear (Futures)' risk management practices or related rules. The Risk Consultative Committee's proposals and recommendations are presented to the ASX Clear (Futures) Board, which is not obliged to accept the Risk Consultative Committee's advice but is required to provide reasons for any decision not to follow such advice. During the Assessment period, the Risk Consultative Committee discussed a range of issues including: changes to the intraday margining regime; proposals for enhanced replenishment arrangements; enhancements to the credit stress test framework; outcomes of the OTC default management fire drill; the group-wide technology transformation project; and the development of new participant disclosure tools.

- The ASX Rates Product Advisory Committee advises ASX Clear (Futures) on matters related to exchange-traded and OTC IRD products, including business, operational and technical aspects of new interest rates product and service offerings and material changes to the ASX Clear (Futures) Operating Rules. The Committee meets on a quarterly basis. The Committee's proposals and recommendations are presented to the ASX Clear (Futures) Board, which is not obliged to accept the Committee's proposals or recommendations but is required to provide reasons for any decision not to do so. ASX is

also advised on matters related to specific asset classes by a number of other committees representing key participants and end users: the ASX 24 Futures Clearing Committee; the Energy Product Advisory Committee; and the Agricultural Product Advisory Committee.

- ASX Clear (Futures) has also established a DMG, comprised of experts from OTC participants selected on a rotational basis, each for an annual term (see CCP Standard 12.1). The DMG is consulted on aspects of the default management process as set out in the Operating Rules, and while the ASX Clear (Futures) Board is not obliged to accept the DMG's advice, it is required to provide reasons for any decision not to follow such advice. The DMG most recently met in July 2016 for the annual OTC default management fire drill (see CCP Standard 12.4).

2.9 A central counterparty that is part of a group of companies should ensure that measures are in place such that decisions taken in accordance with its obligations as a central counterparty cannot be compromised by the group structure or by board members also being members of the board of other entities in the same group. In particular, such a central counterparty should consider specific procedures for preventing and managing conflicts of interest, including with respect to intragroup outsourcing arrangements.

ASX has conflict-handling arrangements to help manage potential conflicts of interest that its directors and staff may face. 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, including observance of the FSS. 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 structure of the CS Boards further limits the potential for conflict. Two directors are able to form a quorum of the ASX Clear (Futures) 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.

Standard 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.

ASX maintains an Enterprise Risk Management Policy that sets out its framework for managing the full range of strategic, legal, financial and operational risks faced by ASX Clear (Futures). This high-level framework is supported by more granular policies and a governance structure to oversee

ASX Clear (Futures)' risk management activities (CCP Standard 3.1). ASX Clear (Futures)' risk management framework imposes proportional, risk-based obligations such as initial margin and contributions to pooled risk resources that are related to exposures, and places incentives on participants, including additional collateral requirements where required, to control the risks that they bring to the CCP (CCP Standards 3.2, 3.3). As part of its risk management framework, ASX Clear (Futures) reviews risks associated with interdependencies with other entities on an ongoing basis and, in relation to new initiatives, applies appropriate tools to manage these risks (CCP Standard 3.4). ASX Clear (Futures) has developed enhanced loss allocation and replenishment arrangements, and has updated its recovery plan, to align the CCP's recovery arrangements with CPMI-IOSCO guidance on recovery planning (CCP Standard 3.5).

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. This risk management framework 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 CCP Standard 2.6).[7] 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; or exceeding ASX's risk tolerance.

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 ERMC, the General Manager, Enterprise Risk and managers of individual departments. Managers of each department are responsible for identifying and monitoring risks relevant to their unit's activities, as well as for designing and implementing risk management policies and controls to manage identified risks. Department managers assess the appropriateness and

7 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.

operational effectiveness of these controls twice a year; these assessments are reviewed by the ERMC.

ASX's 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 (Futures). 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.

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

- *The CS Boards*. Each CS facility has a board (see CCP Standard 2.3 and 'ASX Group Structure' in Appendix A), which shares members with the other ASX CS facilities. The CCPs' boards have oversight of the Clearing Risk Policy Framework, and are responsible for any significant amendments. Policies and designated key standards under the Framework are also governed by the CS Boards.

- *The CRPC*. The CRPC reviews and approves material 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. If required, it will generally meet quarterly in line with meetings of the CS Boards.

- *The 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 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.

- *RQG*. The RQG is chaired by the General Manager, CRQ (or in his absence, the CRO) and is made up of key staff from ASX's CRQ, Clearing Risk Development and CRPM 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 the outcomes and recommendations of regular reviews of margining and stress test models. The group meets at least on a monthly basis or more frequently as required.

- *DMSG.* The DMSG is chaired by the CRO and comprises key representatives from ASX Legal, Compliance, Operations and Risk. The DMSG provides oversight of the CCPs' DMF. The DMSG currently meets at least on a quarterly basis or more frequently as required.

ASX Clear (Futures) also maintains a participant Risk Consultative Committee, which is consulted on material changes to default management processes, the margin methodology, the default fund, position or liquidity limits, participation criteria, new products, and other

changes affecting the risk model or related rules (see CCP Standard 2.8). The Risk Consultative Committee's proposals and recommendations are presented to the ASX Clear (Futures) Board for consideration. The Committee meets three times per year.

Information and control systems

ASX Clear (Futures) employs information systems that are designed to 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 (Futures) uses the CME SPAN system for margining of exchange-traded derivatives and the FHSVaR based Calypso margin system for OTC derivatives (see CCP Standard 6).
- *Credit and liquidity stress testing*. Stress testing is carried out daily to gauge the adequacy of ASX Clear (Futures)' financial resources and to monitor the risks associated with individual participants' positions. Credit stress testing estimates the loss that would result from default of two participants and their affiliates in extreme but plausible market conditions (see CCP Standard 4). Liquidity stress testing estimates the liquidity exposures that would arise under such circumstances (see CCP Standard 7).

ASX Clear (Futures) monitors daily risk management reports produced by its information management systems to identify changes in positions that may require mitigating action. ASX Clear (Futures)' 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, third-party vendors use this information to provide margin estimation software to participants. ASX has also developed a web portal to estimate margin requirements for OTC derivatives portfolios.

Internal controls

ASX's documented risk management policies and standards specify requirements for periodic formal review, 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. Clearing risk policies and standards are reviewed on an annual basis by Clearing Risk Policy within CRPM. Final approval of reviews for enterprise-wide policies and standards is the responsibility of the ERMC. 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. An external review of ASX's enterprise risk framework was conducted during the Assessment period.

The Enterprise Risk Management Policy is reviewed by the Audit and Risk Committee on a two-year cycle, with the most recent review taking place in August 2015.

3.2 A central counterparty should ensure that financial and other obligations imposed on participants under its risk management framework are proportional to the scale and nature of individual participants' activities.

Financial obligations are imposed upon participants through ASX Clear (Futures)' *ex ante* and *ex post* risk controls. These are position-based controls.

ASX Clear (Futures) collects initial margin from participants based on actual positions. ASX Clear (Futures) may also collect AIM where positions produce relatively high stress test losses (beyond a predetermined threshold; see CCP Standards 4.2 and 4.4) or are high compared with the participant's underlying capital. Since margin is proportional to the size and volatility of a participant's positions, it is proportional to the scale and nature of individual participants' activities.

Futures participants' contributions to ASX Clear (Futures)' prefunded pooled financial resources, or 'default fund', are currently $100 million (see CCP Standard 4.4), with each participant contributing a fixed component of $2 million and a variable component that is recalculated quarterly based on each participant's share of average initial margin over the previous quarter. OTC participants' prefunded contributions to the default fund are also $100 million. Each OTC participant's contribution is currently fixed at $12.5 million. However, once aggregate initial margin in the OTC derivatives clearing services exceeds $500 million and at least four participants each contribute 15 per cent of initial margin, each participant's contributions will instead comprise a fixed component of $5 million and a variable component that is recalculated quarterly based on each participant's share of average initial margin over the previous quarter. At 30 June 2016, aggregate initial margin from OTC participants totalled $195 million.

Furthermore, the order in which survivors' default fund contributions would be used (i.e. the default waterfall) is proportional to the profile of the defaulter's activities. The proportion of futures and OTC participant contributions that would be used after each tranche of ASX Clear (Futures) capital is based on the defaulter's share of initial margin for exchange-traded compared with OTC derivatives products (including portfolio-margined futures) over the previous 90 days (see CCP Standard 12). ASX reviews at least annually the appropriateness of supporting both exchange-traded and OTC products with a single default fund. OTC participants are also required to bid competitively in any auction of a defaulted participant's OTC derivatives portfolio; otherwise, their default fund contributions may be used ahead of the contributions of other non-defaulting participants (see CCP Standard 12.1).

Under enhancements to ASX Clear (Futures)' recovery arrangements that came into effect in October 2015, participants may be required to meet a Recovery Assessment should a loss caused by a participant default exhaust ASX Clear (Futures)' default fund (see CCP Standard 4.8). The value of an assessment would be capped at the level of each participant's default fund contribution for a single default, ensuring that any amount called would be proportional to the scale and nature of each participant's activities, with the cap rising to three times this amount if multiple defaults occur within 22 business days of completion of the default management process in relation to a default. Should ASX Clear (Futures) suffer losses estimated to exceed even the loss absorbing capacity of its assessment powers, participants may be required to absorb further losses via payment haircutting (pro rata reductions to expected payment receipts; see CCP Standard 4.8). This is a position-based tool.

Participants may also be required to contribute to the replenishment of ASX Clear (Futures)' default fund if these were drawn upon in a default scenario. Initially, during a 22-business-day 'cooling off' period, such replenishment obligations would be linked to each participant's credit stress test exposures (see CCP Standard 4.8). Subsequent to this cooling off period, obligations would be in proportion to each participant's initial contribution and therefore linked to the scale of its activities prior to the default.

ASX Clear (Futures)' Operating Rules also set out non-financial participation requirements, such as operational requirements. These requirements are not prescriptive, and take into account the size and nature of a participant's business.

3.3 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 AIM at ASX Clear (Futures) creates an incentive for participants to manage the exposures that they bring to the CCP, as does the requirement to contribute to the default fund in proportion to initial margin obligations. 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 CCP Standard 4.2).

ASX Clear (Futures) 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.

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

ASX Clear (Futures) 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 CCP Standard 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 CCP Standards 14.1, 16.4).

For instance, over the past few years, ASX Clear (Futures) has monitored and managed 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 (Futures) has also monitored and managed risks arising from interdependencies with service providers. ASX Clear (Futures)' response to these interdependencies is outlined in CCP Standard 16.5.

Interdependencies with Austraclear for the settlement of margin and other payment obligations are managed within the context of ASX Group's broader risk management framework (see CCP Standard 19).

3.5 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.

During the 2015/16 Assessment period, ASX Clear (Futures) implemented enhancements to its Operating Rules to align the CCP's recovery arrangements with CPMI-IOSCO guidance on recovery planning published in October 2014. The enhancements to ASX Clear (Futures)' Operating Rules gave the CCP the power to:

- comprehensively address uncovered credit losses and liquidity shortfalls via Recovery Assessments, payments haircutting and (as a last resort) complete termination of contracts (CCP Standards 4.8 and 7.9)
- restore a matched book via partial or complete termination of contracts if normal close-out processes cannot be carried out (CCP Standard 12.1); complete termination is also available if payment obligations that are not eligible for haircutting exceed available prefunded financial resources and Recovery Assessments
- replenish its default fund via a combination of ASX and participant contributions (CCP Standards 4.8 and 12.1)
- address non default-related losses via business risk capital and the allocation of certain treasury investment losses in excess of $75 million to participants (see CCP Standard 14.3).

These rule changes came into effect in October 2015. Further amendments to the replenishment arrangements were implemented in June 2016. In developing its new recovery tools, ASX performed an assessment in an attempt to ensure the tools: were comprehensive, effective and transparent; provided appropriate incentives; and minimised negative impacts on participants and markets.

Recovery plan

During the Assessment period, ASX has taken steps to update the documentation of its Recovery Plans. The update reflects the expanded set of recovery tools introduced in October 2015, as well as the new replenishment arrangements. Alongside this update, ASX has developed some information management tools to support decision making in a recovery scenario. ASX has also integrated the testing and review of the Recovery Plan into its broader framework for testing and review of risk and default management policies and processes.

The Recovery Plan identifies scenarios that could threaten the ASX CS facilities' ongoing provision of critical clearing services, describes events that would trigger the activation of the Recovery Plan, and sets out how ASX would respond to such scenarios. It also describes the suite of tools available to the CS facilities in recovery and details the governance arrangements both for the use of these tools and for review of the recovery planning framework.

Standard 4: Credit risk

A central counterparty should effectively measure, monitor and manage its credit exposures to participants and those arising from its clearing processes. A central counterparty should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence.

ASX Clear (Futures) maintains a comprehensive framework for managing its credit exposures to participants (CCP Standard 4.1). Under this framework, ASX Clear (Futures) regularly monitors information on participants' credit standing through financial reporting requirements, public information, and further investigation where required. Monitoring of participants' credit standing is risk based, and ASX maintains a list of participants deemed to warrant more intensive monitoring (CCP Standard 4.2). In responding to any issues identified through monitoring, ASX Clear (Futures) is able to impose activity restrictions or additional controls, including calls for additional collateral (CCP Standard 4.3).

ASX Clear (Futures) also monitors and manages the magnitude of exposures to participants through both daily and intraday initial and variation margin calculations (CCP Standard 4.2), and through daily stress tests that measure the effects of extreme but plausible scenarios on exposures (CCP Standard 4.5). ASX Clear (Futures) aims to hold sufficient financial resources to cover its largest potential credit exposure to any two participants and their affiliates in the extreme but plausible scenarios covered in its stress tests ('Cover 2'), consistent with obligations for a facility that is systemically important in multiple jurisdictions (CCP Standards 4.4, 4.6). ASX Clear (Futures) has the capacity to call additional margin from participants in the event that their stress test exposures exceed predetermined STELs. ASX Clear (Futures) conducts monthly reverse stress tests to supplement the existing daily and formal annual review of scenarios. Responsibility for increasing ASX Clear (Futures)' default fund in response to persistent and widespread STEL breaches that exceed ASX Clear (Futures)' prefunded financial resources lies with the CS Boards and the ASX Limited Board (CCP Standard 4.7). During the Assessment period, ASX Clear (Futures) has implemented enhanced powers to comprehensively address uncovered credit losses and replenish its default fund (CCP Standard 4.8).

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

ASX Clear (Futures) maintains a comprehensive framework for managing credit exposures to its participants. The core components of this framework comprise: a stress test regime (see CCP Standards 4.5 to 4.7); the use of variation margin to mark positions to market (see CCP Standard 6); and the maintenance of prefunded financial resources. These financial resources comprise initial margin (see CCP Standard 6), other collateral calls based on participants' positions, and a fully prefunded default fund of $650 million (see CCP Standard 4.4). Financial resources received in cash are invested in high-quality assets in accordance with ASXCC's treasury investment policy (see CCP Standard 15). ASX Clear (Futures) also has in place comprehensive arrangements to address any credit losses in excess of its prefunded resources (see CCP Standard 4.8).

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. To assist in this process, a central counterparty should ensure it has the capacity to calculate exposures to participants on a timely basis as required, and to receive and review timely and accurate information on participants' credit standing.

ASX's CRPM department is responsible for monitoring participants' credit standing and ASX Clear (Futures)' credit exposures to participants.

Within CRPM, the Exposure Risk Management team monitors day-to-day developments in, among other things, open positions, market prices and settlement obligations to the CCPs. Participants' positions are marked to market and ASX Clear (Futures) calculates initial and variation margin requirements at the end of each business day. ASX Clear (Futures) also has in place intraday margining processes that enable the CCP to calculates and manages credit risk exposures on a timely basis.

For both exchange-traded and OTC products, ASX Clear (Futures) performs automated intraday margin calculations (at 8.05 am, 11.10 am and 1.30 pm since August 2015), and may also perform ad hoc calculations if there is significant movement in the prices of individual contracts (see CCP Standard 6.4). ASX Clear (Futures) calls for additional collateral in response to these intraday runs where the erosion in the margin cover provided by individual participants and the nominal call amount exceed certain predefined thresholds.

In addition to the three routine intraday margin runs, ASX Clear (Futures) also recalculates its exposures to participants on an approximately hourly basis for OTC derivatives positions and portfolio-margined futures. Unlike the other margin runs, this recalculation is a 'for-information' calculation; the results of this run are not reviewed in real time and do not trigger calls for additional collateral. ASX uses the information from these hourly recalculations to inform its intraday policy, especially in respect of identifying and mitigating risks associated with its overnight activity.

To manage the additional credit risk exposure arising from offering real-time novation of OTC products, ASX Clear (Futures) places a limit on the interest rate sensitivity of new transactions (currently set to $500 000 per basis point), conducts frequent portfolio exposure checks and may prevent further novation until an intraday margin call is met. By imposing pre-novation limits on the interest-rate sensitivity of each trade (set using the maximum present value of a basis point shift in interest rates), ASX Clear (Futures) minimises the possibility that novating a single large trade results in a significant increase in credit exposure.

ASX Clear (Futures) 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, AIM is called (see CCP Standard 4.4).

The CRA team is responsible for ongoing monitoring, assessment and investigation of matters relating to financial requirements (including participants' monthly financial statements). The CRA team reports directly to the General Manager, Participants Compliance and, on a secondary basis, to the Senior Manager, Clearing Risk Policy and Management. 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 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). ASX Clear (Futures) may call additional margin from a participant with a large portfolio

relative to its NTA, or where it has other counterparty credit risk concerns (see CCP Standard 4.3).

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 (Futures) may decide to place restrictions on a participant's trading, clearing and settlement activities (see CCP Standard 4.3). During the 2015/16 Assessment period, there were no ASX Clear (Futures) participants on the watch list.

ASX's Concentration Risk Standard sets out a risk-based approach to monitoring concentration risks in three areas:

- Concentrations in participants' exposures to their clients (see CCP Standard 18).
- 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. CRPM monitors the concentration of participants' exchange-traded positions in single products, by number of contracts or value of underlying positions. 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. CRPM monitors the market shares of participants in each exchange-traded 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 product) 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 (see CCP Standard 4.3).

Under its risk-based approach to monitoring concentration risk, ASX Clear (Futures) has prioritised formal concentration monitoring for exchange-traded products over OTC products. This reflects the currently relatively low level of exposures generated by OTC derivatives transactions. ASX Clear (Futures) nevertheless monitors concentration risks in OTC products via its ongoing monitoring of participant credit exposures.

For details of ASX Clear (Futures)' other participation requirements and participant monitoring arrangements, see CCP Standard 17.

4.3 A central counterparty should have the authority to impose activity restrictions or additional credit risk controls on a participant in situations where the central counterparty determines that the participant's credit standing may be in doubt.

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 credit stress test exposure (see CCP Standard 4.7)). CRA typically also carries out a detailed credit review of participants on the watch list.

Similar steps may be taken, at ASX's discretion, where a participant exceeds a trigger under the Concentration Risk Standard.

ASX Clear (Futures) will also call CBPL AIM from a participant with a large portfolio (measured by initial margin requirements) relative to its NTA, or may make an additional cover call where it has other counterparty credit risk concerns.

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 CCP Standard 5 on collateral and CCP Standard 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.

ASX Clear (Futures)' $650 million default fund consists of (in order of application in the event of a futures participant default): $120 million of own equity; $100 million from futures participants; $150 million of own equity; $100 million from OTC participants (the ordering of OTC and futures participant contributions would be switched in the event of an OTC participant default); and $180 million of own equity. Prior to 30 June 2016, $90 million of ASX Clear (Futures)' default fund had consisted of a fully drawn subordinated loan from ASXCC, which was ultimately funded by a subordinated loan from ASX Limited. The CS Boards approved the conversion of the subordinated debt tranche of ASX Clear (Futures)' default fund into equity during the 2015/16 Assessment period.

ASX Clear (Futures) conducts daily stress tests to determine whether the level of its prefunded financial resources would be sufficient to cover the default of the two participants (and their affiliates) that would potentially cause the largest aggregate credit exposure to the CCP under a wide range of scenarios (see CCP Standards 4.5 to 4.7). In practice, ASX Clear (Futures)' Cover 2 credit stress test exposures are typically well below the CCP's level of prefunded financial resources, providing the CCP with a 'buffer' in its coverage of potential

future credit exposures. The sizing of this 'buffer' reflects ASX's view of the potential growth in activity (and hence exposures) at ASX Clear (Futures) over time.

Since ASX Clear (Futures) clears primarily transactions in exchange-traded futures and OTC IRS derivatives, the Bank does not consider that ASX Clear (Futures) is involved in activities with a complex risk profile. Nonetheless, the Bank has concluded that ASX Clear (Futures) is systemically important in multiple jurisdictions and is therefore subject to higher financial resource requirements (i.e. Cover 2). This conclusion reflects that ASX Clear (Futures) is recognised as a foreign CCP in the EU by ESMA and the Bank's supplementary interpretation of the FSS identifies the need to seek 'recognition' in other jurisdictions as one possible indicator of systemic importance in multiple jurisdictions.[8] In addition, the Reserve Bank of New Zealand (RBNZ) has also stated that ASX Clear (Futures) may be of systemic importance in New Zealand and may therefore be designated for oversight as an offshore FMI under the RBNZ's proposed new oversight regime for FMIs.[9]

Under ASX Clear (Futures)' 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 CCP Standard 4.7). 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 ASX Clear (Futures)' default fund. 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 CCP Standard 4.7).

4.5 A central counterparty should, through rigorous stress testing, 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. 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 counterparty's 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 (Futures) uses daily credit stress tests to monitor risk exposures to individual participants and the adequacy of its financial resources. Credit stress tests are based on a

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8 For more information, see 'Supplementary interpretation of CCP Standards' in Appendix A.

9 For more information, see 'Summary of submissions and final policy proposals on the Consultation Paper: Oversight of Designated Financial Market Infrastructures', available at <http://www.rbnz.govt.nz/-/media/ReserveBank/Files/regulation-and-supervision/financial-market-infrastructure-oversight/regulatory%20developments/summary-of-submissions-and-final-policy-proposals-FMI-oversight-dec-2015.pdf?la=en>.

range of scenarios covering extreme price moves and volatility shifts in equity, interest rate and electricity contracts (see CCP Standard 4.6). The scenarios have been developed based on statistical analysis of historical market movements, which takes into account correlations between contracts and uses a 'student t' distribution (allowing for more extreme events than a normal distribution), complemented by a set of forward-looking scenarios based on hypothetical macroeconomic or market-wide events (see CCP Standard 4.6). Other key underlying parameters and assumptions include that:

- profits in client accounts (including client omnibus accounts) cannot be used to offset house losses, or losses on other client accounts
- exchange-traded derivatives can be closed out within three days (previously one day, prior to July 2015), and OTC derivatives can be closed out within five days.

On a daily basis, ASX reviews the scenarios that underpin the credit stress test regime for ASX Clear (Futures), and on a monthly basis RQG 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 the ASX Clear (Futures) default fund and to cross-validate the credit stress test scenarios (see CCP Standard 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 CCP Standard 2.6). Under this framework the credit stress test model must be validated using an external expert annually. ASX's second credit stress test model validation was conducted in June 2016 using an external expert.

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 (Futures) uses its credit stress tests to establish the overall adequacy of prefunded financial resources and to determine whether a participant is required to post AIM (see CCP Standard 4.4). ASX Clear (Futures)' stresstesting framework includes both 'for-information' scenarios and 'active' scenarios; prefunded financial resources are sized to cover the Cover 2 losses under the active scenarios, and only active scenarios may trigger an AIM call.

Active stress test scenarios

The stress test regime comprises a suite of portfolio and single-contract stress test scenarios based on statistical analysis of historical market movements. Scenarios are tailored to ASX Clear (Futures)' risk tolerance, as defined by its Board. Stress test scenarios are based on either historical observations or, for forward-looking scenarios, a mix of (domestic or overseas) historical moves and non-historical correlations, and aim to capture extreme market moves

that have a probability of occurrence of once-in-20 years. A holding period of three days is used for exchange-traded derivatives, allowing for the fact that it may not be possible to close out portfolios in a single day under stressed market conditions, while OTC derivatives are assumed to be closed out within five days. In February 2016, ASX Clear (Futures) modified its stress test framework to incorporate intraday price movements. Prior to the enhancement, price changes were calculated using the most extreme change in closing prices over the holding period. Price changes are now based on the most extreme close-to-high or close-to-low price movements observed over the relevant three- or five-day holding period.

To meet the targeted level of coverage, single-asset stress test scenarios use the most extreme observed movement in the previous 20 years. Multi-asset scenarios are calibrated to cover 99.98 per cent of a simulated distribution of price and volatility movements, based on a sample of 20 years of price and volatility data. In ASX's view, this look-back period remains relevant to the current structure of the market. Review of scenarios used in ASX Clear (Futures)' credit stress test against observed market movements occurs on a daily basis and against overall market conditions on a monthly basis (see CCP Standard 4.5).

ASX Clear (Futures) currently uses 48 scenarios that involve movements of price and volatility across the SPI 200 equity index futures, the five AUD interest rate futures contracts (20-year bond, 10-year bond, 3-year bond, 90-day bank accepted bill and 30-day interbank cash), and Australian electricity derivatives. Together, these contracts cover 98 per cent of ASX Clear (Futures)' potential future risk exposure (measured by initial margin requirements).

- Four 'multi-asset' scenarios combine movement in the SPI 200 with parallel shifts in the yield curve, represented by approximately equal shocks to the 30-day, 90-day, 3-year,10-year and 20-year contracts. For example, 'equities down, parallel up' includes a fall in the SPI 200 of 9.8 per cent, and yield increases of between 10.1 and 12.9 per cent for the interest rate futures contracts.

- Sixteen 'multi-asset' scenarios model combinations of price movements across the five major contracts (SPI 200, 90-day, 3-year,10-year and 20-year). These scenarios model a range of tilts, twists and bends of the yield curve, as represented by different price shocks across the 90-day, 3-year, 10-year and 20-year contracts; for example, the 'tilt (back end up)' scenario has progressively increasing price shocks from short-term to long-term interest rate contracts, with a 0 per cent move in the price of the 90-day contract, a 4 per cent move in the price of the three-year contract, a 7 per cent move in the price of the 10-year contract, and a 7 per cent move in the price of the 20-year contract.

- Twelve 'single contract' scenarios model extreme price movements in the SPI 200 and five interest rate contracts individually.

- Two scenarios model large movements in the interest rate contracts with no movement in equities.

- Four 'forward-looking' hypothetical scenarios represent macroeconomic or market-wide events, such as commodity price collapse, or an offshore sovereign default.[10]

10 A fifth forward-looking scenario, involving a shock to electricity prices, is included in the two electricity contract scenarios under the next point.

- Two scenarios cover a 30 per cent change in the price of electricity contracts.
- Eight 'multi-asset' scenarios combine movements in the SPI 200 and electricity contracts with parallel shifts in the yield curve.

For participants that clear OTC derivatives, ASX Clear (Futures) applies the same multi-asset scenarios, with extensions to capture movements in BBSW and AONIA for overnight indexed swaps. Accordingly, the scenarios test shocks to exchange-traded derivatives and IRS simultaneously. The BBSW and AONIA curves are split into segments based on differences in participation and activity in the underlying market. The price shocks are calibrated using 20 years of data history for the Australian IRD market, and take into account the assumed five-day holding period for OTC derivatives transactions. As for the futures-only scenario, the combined futures and OTC scenarios are sized to be equivalent to once-in-20-year events.

In addition to the scenarios mentioned above, OTC derivatives portfolios are currently subject to 12 scenarios that consider various forms of basis risk. Four scenarios model the basis risk that results from a potential change – either temporary or permanent – in the economic relationship between interest rate futures and IRS. Two other scenarios model the effect of a change in the spread between AONIA and BBSW rates at various tenors, while six scenarios model changes in the tenor spread for BBSW. Each pairwise basis risk spread has been sized to a once-in-100-year event.

In August 2016, ASX Clear (Futures) introduced a set of new scenarios for exchange-traded derivatives, and modified its existing scenarios for OTC derivatives and portfolio-margined futures, to incorporate absolute (i.e. basis point) shocks to yields. Prior to this change, ASX's stress test scenarios applied only relative (i.e. percentage) shocks to yields; this approach could have understated the magnitude of potential shocks to yields in a low interest rate environment.

For-information scenarios

In order to better understand the impact of potentially severe market events, ASX also includes 20 additional 'for-information' stress test scenarios. These include hypothetical event-based scenarios representing macroeconomic or market-wide events – such as a cyber attack on the ASX exchange – and other scenarios based in full or in part on historical market movements both within and outside the 20 year lookback used for credit stress testing. These scenarios are considered by ASX to go beyond the level of 'extreme but plausible'; accordingly, AIM is not called based on the results of these scenarios. For-information scenarios may nevertheless influence management decisions on the adequacy of ASX Clear (Futures)' prefunded financial resources. For-information stress tests are run on a daily basis by ASX Clear (Futures), with the results of these tests reviewed and presented to the CS Boards on a semi-annual basis.

In addition to the active scenarios for OTC derivatives, ASX applies 30 internal scenarios which model shocks affecting a single tenor, the effect of assuming an increased holding period and the impact of an absolute interest rate shock.

Reverse stress testing

ASX Clear (Futures) conducts reverse stress testing of its credit stress test model in order to identify scenarios under which stress test exposures would exceed prefunded financial resources. The reverse stress test takes into account the impact of systematic shocks across multiple contracts and considers changes to other model assumptions. For instance, an

assumed change in equities prices (up or down), which affects the size of exposures on SPI 200 positions, is combined with an assumed change to the level or shape of the interest rate curve (e.g. to steepen, twist, or effect a parallel shift up or down) which affects the major interest rate futures contracts. In developing these combinations of market movements, ASX considers the prevailing credit stress test scenarios, and observed historical and statistical relationships between the relevant market variables. The reverse stress test then simulates a level shift to this fixed combination of market movements to discover the point at which the default fund would be exhausted.

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 certain products or a highly directional interest rate exposure. ASX can also vary the size of participant positions in its reverse stress tests, and additionally conducts tests of extreme hypothetical portfolios that would generate losses sufficient to exhaust the default fund under plausible market scenarios.

In interpreting the results of reverse stress testing, ASX considers the plausibility of any scenarios that could exhaust the default fund. Any recommended changes to stress test scenarios or the size of the default fund would first be considered by ASX management and then escalated to the Clearing Boards for approval, where warranted. A summary of reverse stress test outcomes is reported alongside the monthly margin backtesting and credit stress test review reports and included in quarterly risk management reports to the Clearing Boards. In addition to its routine monthly reverse stress testing, ASX Clear (Futures) has developed a flexible framework for reverse stress testing that allows it to define particular combinations of assumptions that can be varied for the purposes of ad hoc analysis. These include increases in the size, or changes in the direction, of participants' positions and the magnitude of shocks applied to these positions, as well as changes to the number of participants that are assumed to default.

4.7 A central counterparty should have clearly documented and effective rules and procedures to report stress-test information to appropriate decision-makers and ensure that additional financial resources are obtained on a timely basis in the event that projected stress-test losses exceed available financial resources. Where projected stress-test losses of a single or only a few participants exceed available financial resources, it may be appropriate to increase non-pooled financial resources; otherwise, where projected stress-test losses are frequent and consistently widely dispersed across participants, clear processes should be in place to augment pooled financial resources.

Credit 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 (Futures)' AFR, 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 the default fund where this is considered necessary (see below).

Each participant in ASX Clear (Futures) is allocated a STEL based on its ICR. The maximum STEL represents one half of ASX Clear (Futures)' default fund, reflecting that ASX Clear (Futures) holds prefunded resources to cover two participant defaults.

Where the projected stress test losses of a participant exceed its STEL, ASX will call for STEL AIM. STEL AIM is calculated overnight, notified to participants by approximately 8.00 am the next day, and must be met by 10.30 am. Participants may meet these obligations using cash or non-cash collateral (see CCP Standard 5.1).

In deciding whether ASX Clear (Futures) has sufficient prefunded pooled financial resources, ASX considers the size, frequency, duration and distribution of AIM calls across participants. ASX Clear (Futures) 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 (Futures) would generally rely on additional collateral collected under the AIM regime.

4.8 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.

To fully address any uncovered credit losses that ASX Clear (Futures) might face (despite partial mitigants such as adjustments to STELs and the collection of additional margin), ASX Clear (Futures) has developed enhanced loss allocation and replenishment arrangements as part of its broader package of enhanced recovery measures that came into effect in October 2015 (see CCP Standard 3.5). In June 2016, ASX Clear (Futures) implemented an enhanced approach for replenishing its default fund to return to the full level of cover following a participant default on a more timely basis.

Allocation of credit losses

Uncovered credit losses would initially be addressed via Recovery Assessments called from surviving participants. These would be capped at the level of participants' default fund contributions, if assessments were called in relation to a single default (a maximum of $200 million in aggregate); or at three times the level of participants' default fund contributions (a maximum of $600 million in aggregate), if assessments were called in relation to multiple participants defaulting within a defined default period.[11]

If there was a reasonable expectation that Recovery Assessments could be insufficient to address an uncovered loss, ASX Clear (Futures) would have the power to reduce (haircut) outgoing payments to participants in order to allocate losses suffered on the defaulting participant's portfolio. For example, a haircut could be applied to variation margin payments due to participants with net in-the-money positions in the event of mark-to-market loss on the

11 The cap on assessments for multiple defaults remains in place until the expiry of a 'default period' that commences with the default of the first participant and concludes 22 business days after completion of the default management process for the final defaulting participant, where each default is separated from completion of the default management process for the preceding one by 22 business days or less.

defaulter's portfolio. Payment haircuts could be applied to a broad range of ASX Clear (Futures)' payment obligations, excluding the return of initial margin. There is no cap on the use of payment haircutting to allocate uncovered losses, although ASX Clear (Futures) would consult with the Risk Consultative Committee in determining whether to continue payment haircutting if losses allocated via this tool exceed $650 million or where haircutting continued for a period of more than seven business days.

Any residual losses that could not be addressed via Recovery Assessments or payment haircutting would be allocated to participants via a power to completely terminate all open contracts. Complete termination would be reserved as a last resort tool if there was no other means of addressing an uncovered loss (including via intervention of the Reserve Bank as resolution authority if current proposals for a special resolution regime for FMIs are implemented). Under complete termination all open contracts at the CCP would be settled with participants at their current market value, with any residual losses of the CCP allocated by haircutting settlement payments to participants. Reliance on complete termination is extremely unlikely, since payment haircutting provides an uncapped mechanism to allocate losses associated with market risk on the defaulter's portfolio.

Replenishment

In June 2016, ASX implemented an enhanced approach for replenishing ASX Clear (Futures)' financial resources following a participant default (see Box A). The new approach relies on mandatory contributions from both the CCP and its participants. As soon as practicable following the conclusion of the default management process, ASX Clear (Futures) would make an 'initial interim replenishment' contribution to restore its default fund up to at least the Minimum Fund Size of $100 million. At the end of a 22-business-day 'cooling-off period', the default fund would be fully replenished to $400 million.[12] In order to maintain the required level of financial cover during the interim period, ASX would supplement its initial contribution with AIM called from participants. ASX would also have the discretion to call a 'further interim replenishment' contribution from participants during the cooling-off period; this would be capped at the level of the Minimum Fund Size. Individual participant contributions to interim replenishment would be proportional to, and capped at, the level of each participant's default fund contribution prior to the default (see CCP Standard 3.2).

The composition of the default fund following final replenishment at the end of the cooling-off period would depend on the amount to be replenished; the larger the initial drawdown, the closer would be the post-replenishment composition to a 50/50 split of ASX and participant contributions. Total replenishment contributions (i.e. including both interim and final contributions) would be capped at $200 million for each of ASX Clear (Futures) and its participants, with individual participant contributions capped at twice the level of their default fund contribution prior to the default.

If further increases to the default fund were subsequently required, these would be met 50/50 by ASX and participant contributions as part of a quarterly recalibration of the default fund. ASX's plans for recapitalisation include the use of existing group cash reserves and raising additional capital through an equity issuance by ASX Limited. To support the legal

12 The cooling-off period concludes 22 business days after the conclusion of the final default management process initiated during the period. Subsequent defaults within this period would therefore extend the cooling-off period by a further 22 business days from the point at which the subsequent default management process was successfully concluded.

certainty of its new replenishment arrangements, ASX Clear (Futures) established an intragroup Replenishment Deed, which governs the provision of funds for ASX Clear (Futures)' replenishment obligations by ASX Limited. ASX's plans to fulfil its obligations to replenish the ASX Clear (Futures) default fund include the use of existing group cash reserves and raising additional capital through an equity issuance by ASX Limited.

Standard 5: Collateral

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

ASX Clear (Futures) limits the assets it routinely accepts as collateral to cash, or assets with low credit, liquidity and market risks (CCP Standard 5.1). Assets accepted as collateral are commonly accepted in the Australian market and there is sufficient depth in these assets that their eligibility as collateral is not considered to have any material market impact (CCP Standard 5.2). ASX Clear (Futures) applies haircuts to collateral that are calibrated to stressed market conditions, to limit the need for procyclical adjustments (CCP Standards 5.3, 5.4). Non-cash collateral comprises only a small proportion of total collateral received by ASX Clear (Futures). In addition, these collateral holdings are not sufficiently concentrated as to impair ASX Clear (Futures)' ability to liquidate such assets quickly without significant adverse price effects (CCP Standard 5.5). ASX Clear (Futures) retains discretion over whether to accept foreign currency collateral on a case-by-case basis, and takes into account concentration limits in exercising this discretion (CCP Standard 5.6). ASX Clear (Futures) employs systems that adequately support the movement of collateral for securities and derivatives trades (CCP Standard 5.7).

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

ASX's approach to collateral is documented 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.

The acceptable collateral depends upon the type of margin called.

- Futures participants generally meet their initial margin obligations using AUD cash, although they may also use high-quality non-cash collateral, such as eligible debt securities, and deposits in major foreign currencies. The acceptable types of non-cash collateral are Australian Government and some semi-government securities, and US Treasury bills. Acceptable foreign currencies are NZD, European Union euro (EUR), Japanese yen (JPY), United States dollar (USD) and United Kingdom pound (GBP). Acceptable collateral is reviewed annually, with haircuts applied to all non-cash collateral posted and all cash collateral that is not in the same currency as the product being covered.
- Participants may meet STEL AIM obligations using AUD cash or non-cash collateral, including Australian Government and some semi-government securities, bank bills and negotiable certificates of deposit from ADIs. Foreign currencies are not eligible for STEL AIM calls.
- Variation margin and intraday margin must be settled in cash.

ASX Clear (Futures) does not accept collateral that is issued by a clearing participant or associated entity for any margin calls. This reduces the possibility that it might face the default of both a clearing participant and a collateral issuer ('wrong-way risk'). ASX Clear (Futures) does not accept bank guarantees or letters of credit as collateral.

5.2 In determining its collateral policies, a central counterparty should take into consideration the broad effect of these policies on the market. As part of this, a central counterparty should consider allowing the use of collateral commonly accepted in the relevant jurisdictions in which it operates.

ASX Clear (Futures) takes into account market liquidity in determining the eligibility of collateral. ASX Clear (Futures) considers the debt securities that it will accept as collateral – Australian Government and some semi-government securities, US Treasury bills, bank bills and negotiable certificates of deposit issued by Australian ADIs – 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 (Futures) would also expect to be able to liquidate such collateral in a timely fashion as required. These assets are also commonly accepted in the Australian market, including by the Bank.

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

Since the eligible assets for non-cash collateral at ASX Clear (Futures) – Australian Government and some semi-government securities, US Treasury bills, bank bills and negotiable certificates of deposit from Australian ADIs – are highly liquid, price information is readily available. ASX revalues non-cash collateral on a daily basis using end-of-day prices.

In June 2016, ASX Clear (Futures) revised its definition of 'stressed market conditions' for haircut setting purposes. Under the revised approach, ASX Clear (Futures) sets haircuts on non-cash collateral to cover a fall in the collateral value of securities over a three-day period at a 99.9 per cent confidence level, based on 20 years of price history, where available. This coverage is equivalent to the fifth worst price move over the 20 years of price history. ASX also applies haircuts using the same methodology, although using a one-day holding period, to cash collateral lodged to meet margin requirements for products denominated in a currency other than the collateral (currently between 3 and 6 per cent, depending on the currency). ASX had previously calibrated haircuts to cover the largest price fall over the 20 years of price history, which is consistent with the methodology used to calculate price falls of contracts in credit stress test scenarios (see CCP Standard 4.6). To account for this change in its credit stress test framework, ASX Clear (Futures) is planning to introduce the capability to additionally stress collateral in credit stress testing to cover once-in-20-year events. These changes will be implemented through enhancements to its risk management system (see Section 3.5.1). Alongside these changes, ASX has changed the frequency for review of collateral haircuts from annually to at least semi-annually.

5.4 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 (Futures)' collateral haircutting policy is designed to cover stressed market conditions based on the fifth-most extreme market price and volatility movement 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. Prior to June 2016, haircuts had previously been set to cover the largest price fall over the 20 years of price history.

5.5 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.

Cash remains the sole form of collateral utilised by the majority of participants. The maximum holding of non-cash collateral during the Assessment period was $247.5 million (around 7.4 per cent of total initial margin). ASX also considers that the assets eligible for non-cash collateral – Australian Government and some semi-government securities, US Treasury bills, bank bills and negotiable certificates of deposit from Australian ADIs – are sufficiently liquid that concentration is unlikely to be a significant concern. Concentration risk in foreign currencies is considered whenever a participant approaches ASX for approval to lodge foreign currency collateral (see CCP Standard 5.6).

ASX maintains a risk-based policy for managing concentration risks in its CCPs (see CCP Standards 4.2, 18.4). However, this policy does not address concentrations in collateral holdings in ASX Clear (Futures) since non-cash collateral currently makes up only a small proportion of total collateral received. Should the materiality of non-cash collateral increase, ASX would expect to apply a similar policy on concentration limits to that applied in the investment mandate (see Standard 15.4). The Bank will continue to discuss with ASX its approach to monitoring collateral concentration risks.

5.6 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 (Futures) accepts cross-border collateral for initial margin; namely, selected foreign currencies and US Treasury bills. During the Assessment period, maximum foreign cash holdings were around $370 million (AUD equivalent) in comparison to average total collateral holdings of around $3.70 billion (daily average of collateral holdings during 2015/16), while no US Treasury bills were held.

ASXCC's Investment Mandate specifies metrics for large or concentrated holdings of non-AUD collateral which trigger escalation to senior management. Escalation is triggered if non-AUD holdings exceed 25 per cent of liquid assets held by ASXCC, or if the net present value of a basis point in any single non-AUD currency exceeds $5000. Haircuts are applied to both foreign cash collateral and US Treasury bills (see CCP Standard 5.3). Participants must lodge a request to post foreign currency, which is reviewed and then approved or denied by the Portfolio Risk Management team. In making this determination, the Portfolio Risk Manager takes into account the limits on foreign currency, as well as the concentration risk in accepting the request.

ASX Clear (Futures) has the ability to use foreign exchange swaps to facilitate the timely use of collateral in foreign currencies. Arrangements for the settlement of foreign currencies are described in CCP Standard 9.

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

Collateral management system

ASX Clear (Futures) manages the calculation and execution of margin calls through internal risk analysis and margin management systems. These are linked to its core Genium system for information on positions, SPAN Margin Engine Service for margin parameters and margining, and Austraclear's EXIGO system for the lodgement of settlement instructions. These systems monitor initial and variation margin levels and flows on an intraday basis. The direct link to Austraclear facilitates the timely deposit, withdrawal and substitution of non-cash collateral and settlement of cash collateral.

ASX Clear (Futures)' participants can also make use of ASX's collateral management service, ASX Collateral, for the management of non-cash collateral lodged with the CCP. However, ASX Collateral was not used for the lodgement of any collateral at ASX Clear (Futures) during the Assessment period.

Re-use of collateral

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

Standard 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.

ASX Clear (Futures) applies initial and variation margin to derivatives exposures, using margin systems that are tailored to the particular attributes of the cleared products (CCP Standard 6.1). Timely price data are available for most products subject to ASX Clear (Futures)' margin systems, and ASX Clear (Futures) applies appropriate models to estimate prices when timely and reliable data are not available (CCP Standard 6.2). ASX Clear (Futures)' margin models target a single-tailed confidence level of at least 99 per cent of the estimated distribution of future exposure for exchange-traded financial instruments, and 99.5 per cent of the estimated distribution of future exposure for OTC derivatives, applying appropriate and conservative assumptions regarding holding periods, product risks, portfolio effects, product offsets and floors to limit the need for procyclical changes (CCP Standards 6.3, 6.5). In addition, ASX Clear (Futures) applies variation margin to derivatives positions daily, and may call intraday margin as part of scheduled processes or in the event of significant market movements (CCP Standard 6.4).

ASX Clear (Futures) performs daily and periodic backtesting of its margin models to assess the adequacy of initial margin against the targeted level of cover and performs an annual review of margin policy. ASX Clear (Futures) uses sensitivity analysis to validate the assumptions underpinning margin models, including to test the reliability of implicit or explicit product offsets (CCP Standard 6.6). ASX Clear (Futures) regularly reviews and validates its margin models. An external expert conducted a comprehensive review of ASX Clear (Futures)' margin models in 2014/15; the second validation of the SPAN model was completed in July 2016 using an external expert (CCP Standard 6.7). The operating hours of ASX Clear (Futures)' margin systems are consistent with those of related payment and settlement systems in Australia (CCP Standard 6.8). Consistent with the Bank's supplementary interpretation of CCP Standard 6.3, ASX Clear (Futures) applies a greater than 99.5 per cent confidence interval and a five-day holding period to its calibration of margin for OTC derivatives.

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 (Futures) applies initial and variation margin to all derivatives products. Initial 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 to reflect observed price movements (current exposure); it is collected from the participant with a mark-to-market loss and (typically) passed through to the participant with a mark-to-market gain.

Exchange-traded derivatives

ASX Clear (Futures) has adopted a variant of the internationally accepted SPAN methodology for calculation of initial margin. For exchange-traded derivatives products, initial margin rates are calibrated to cover the higher of 3 standard deviations of the 60-day and 252-day historical distributions of price movements, using the higher of one- or two-day movements. Margin rates are reviewed on a three-monthly cycle for all products except SPI futures, which are reviewed on a monthly cycle. Regular margin rate reviews are supplemented with ad hoc reviews during especially volatile market conditions. ASX Clear (Futures) also levies variation margin on positions at least daily to reflect observed price movements.

OTC derivatives

ASX Clear (Futures) margins OTC derivatives portfolios (including interest rate futures that have been allocated for portfolio margining with OTC derivatives positions (see CCP Standard 6.5)) using an FHSVaR model within the Calypso margin system. The OTC IRS FHSVaR margin model is calibrated so as to cover the 99.7th percentile of the historical distribution of five-day price movements observed since June 2008. By calculating initial margin requirements on a portfolio basis using the historical distribution of price movements, this methodology adjusts for observed price volatility and correlation. The five-day holding period reflects the lower liquidity in OTC derivatives products. This approach is closely aligned with the methodology used at other OTC derivatives CCPs internationally.

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 (Futures) has access to timely price data for its exchange-traded products.

To value cleared OTC derivatives products, ASX Clear (Futures) uses a range of BBSW, ICAP and Reuters pricing points, as well as the official cash rate, pricing from 90-day bank bill futures contracts, and swap yields for contracts greater than three years. These sources provide sufficient pricing points to value the OTC derivatives products that ASX Clear (Futures) clears, even when some pricing data are not readily available or reliable. Prices are also compared against Bloomberg prices for second source validation. Prices for the OTC IRS margin system are updated hourly. Participants are given all information necessary to create the end-of-day yield curve and independently calculate the net present value of any contract.

OTC valuations and exposures based on these prices are combined with data covering other positions cleared on ASX Clear (Futures) to calculate each participant's overall margin requirement. This task may be performed on a scheduled basis (e.g. at open, at midday or at end of day), or ad hoc as market conditions warrant.

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, the requirement should be met for corresponding distributions of future exposure. The model should: 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); have an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products; and to the extent practicable and prudent, limit the need for destabilising, procyclical changes.

Exchange-traded derivatives

ASX Clear (Futures) calculates initial margin requirements for exchange-traded derivatives using the SPAN methodology. The SPAN methodology calculates initial margin requirements that reflect the total risk of each portfolio – for ASX Clear (Futures), each house, omnibus client or individual client account is considered a separate portfolio. The key parameters in the SPAN methodology are the PSR and VSR. These scanning ranges are individually 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 (Futures) bases the scanning ranges on key volatility statistics; namely, the higher of 3 standard deviations (a confidence interval greater than 99.7 per cent) of a 60-day or 252-day sample distribution, using the higher of one- or two-day price movements.[13] The sample periods seek to balance incorporating recent market conditions with avoiding destabilising procyclical changes. The inclusion of two-day price movements reflects an assumption that a defaulter's positions may take up to two days to close out.

ASX Clear (Futures) 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

13 ASX assumes a normal distribution of prices in specifying its desired confidence level in standard deviations.

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 (Futures) also applies offsets designed to account for reliable and economically robust correlations across different contract types (see CCP Standard 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. For example, for 10-year bond futures relative to 90-day bank bill futures, a spread ratio of 1:4 and a concession rate of 40 per cent would mean that one net position in the 10-year bond contract is offset against four net positions in the 90-day bank bill contract, and that the concession for that pairing will be 40 per cent of the scanning risk of the contracts subject to the offset. ASX calculates these parameters in the same manner as the price movement for the intra-commodity spread charge.

- *Other adjustments*. ASX Clear (Futures) 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.

ASX targets the major inputs (including the PSR and VSR) to a minimum 99.7 per cent confidence level. Other inputs are calibrated to the requirements of the standard to exceed a 99 per cent confidence interval.

Under ASX's internal Margin Standard, management discretion can be used if the 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. Where such a statistical override is made outside of a RQG approved margin review, it must be authorised by the Senior Manager of CRPM or the Manager of Exposure Risk Management with notification to the CRO and the General Manager, CRQ. The ASX Margin Standard also allows exceptions to the normal margin rate-setting process based on a broader risk assessment – where such exceptions are made outside of a RQG approved margin review, they require the approval of the Senior Manager of CRPM and the General Manager of CRQ.

OTC derivatives

ASX Clear (Futures) uses an FHSVaR model to calculate margin requirements for OTC derivatives, based on the historical sample period since June 2008. Observations within the sample period are scaled based on the relative volatility of the current period to that of the historical period. These relative volatilities are calculated using an exponential decay factor

(currently 0.97), which places greater weight on more recent observations. To assist in ensuring that the methodology remains conservative and to limit the need for procyclical changes, ASX Clear (Futures) continues to include the extreme observations from the second half of 2008 within its sample period, by fixing the beginning of the sample period at June 2008. ASX also imposes an explicit floor on the volatility scaling factor. This floor is currently set at one, which ensures that historical observations can only be scaled in a way that increases the volatility of returns. ASX Clear (Futures) calibrates initial margin based on a 99.7 per cent confidence interval with an assumed holding period of five days, consistent with the Bank's supplementary interpretation of this sub-standard.

ASX applies a liquidity multiplier to the FHSVaR model requirement, to account for any additional costs that might arise from the close-out of an illiquid portfolio (defined as a portfolio with a margin requirement that exceeds a particular threshold, with higher multipliers applying to portfolios with larger margin requirements). The size of the applicable liquidity multipliers are calculated as a percentage of initial margin requirements, based on participant estimates of the market capacity and liquidity costs that may be faced in a close-out scenario.

Under ASX Clear (Futures)' client clearing arrangements for OTC derivatives, initial margin requirements for client portfolios may be subject to an additional add-on. Where this add-on is applied, initial margin requirements for client portfolios are calculated by applying a scaling factor to the margin settings used for participants' house positions, which effectively increases the holding period for client positions to seven rather than five days.

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 for both futures and OTC participants are calculated overnight, with variation margins based on closing prices each day, and notified to participants the next morning. All margin obligations are settled via Austraclear and regular calls must be met by 10.30 am.

ASX Clear (Futures) may make intraday calls where there is significant erosion in the margin cover provided by individual participants. Intraday margin calls reflect changes in participants' positions and price movements. Participants are notified of the call by phone and email, and must make the payment within two hours of notification. In August 2015, ASX adjusted the timing of intraday margin calculations and introduced a third additional intraday margin run, in order to take into account price movements and changes in positions later in the day, with revised payment to be made within one hour of notification. Intraday margin runs are now conducted for both futures and OTC participants at 8.05 am, 11.10 am and 1.30 pm. Alongside these changes, ASX also introduced the capability to return in the third run any intraday margin posted to house accounts during earlier runs. This would most commonly occur where a call had been made on the house account of a participant due to client trades that had not yet been allocated at the time of the margin run. This may occur when the clearing and allocation of an executed trade was in progress during an intraday margin run.

Intraday margin is called if a participant's margin balance is eroded by more than a predefined percentage threshold or by more than a predefined dollar value threshold, and the call amount exceeds $1 million. The percentage erosion threshold is 25 per cent for

participants that clear exchange-traded products only, 10 per cent for participants that clear OTC derivatives products only and 20 per cent for participants clearing both OTC and exchange-traded products. The dollar value threshold varies depending on the ASX's ICR of the participant; it also varies across a participants' house and client positions. It is currently set at $15 million for the house accounts of A- and B-rated participants, and $35 million for the client accounts of these participants. For C-rated participants, this threshold is set at $6 million for house accounts and $14 million for client accounts.

In addition to the scheduled intraday margin runs, ASX Clear (Futures) may conduct an ad hoc intraday margin run for if price moves exceed certain specific thresholds intraday. Ad hoc runs are triggered if the change in price of an individual contract exceeds 100 per cent of its margin rate (the PSR in SPAN))[14] or the ASX SPI 200 index price changes by 1 per cent or more intraday. Furthermore, under ASX Clear (Futures)' AIM methodology (discussed above in relation to CCP Standard 4), a participant is 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 CCP Standards 4.3 and 4.7).

If a margin payment is not made by the required time, ASX will contact 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 CCP Standard 12).

ASX Clear (Futures) also recalculates its exposures to participants on an approximately hourly basis as a 'for-information' calculation. Unlike the other margin runs, this recalculation does not trigger calls for additional collateral and the results of these calculations are not reviewed in real time. ASX uses the information from these for-information runs to inform its intraday risk management policy, particularly in respect of identifying and mitigating risks associated with participants' overnight activity.

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 a central counterparty enters into a cross-margining arrangement with one or more other central counterparties, appropriate safeguards should be put in place and steps should be taken to harmonise overall risk management systems. Prior to entering into such an arrangement, a central counterparty should consult with the Reserve Bank.

In applying the SPAN methodology to futures transactions, ASX allows offsets in the form of 'inter-commodity spread concessions' (see CCP Standard 6.3). These offsets reduce margin requirements to account for reliable and economically robust correlations observed across related contracts. Inter-commodity spread concessions are only applied where measures of correlation between contracts exceed 30 per cent and the correlation is based on economic fundamentals. ASX uses sensitivity analysis to verify the reliability of assumed correlations

[14] For the NZ 90-day bank bill traded on the New Zealand Futures & Options Exchange, an ad hoc run is triggered if the change in the price of the contract exceeds 50 per cent of its margin rate.

between products used in calculating inter-commodity spread concessions. 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, and are subject to a cap to mitigate the risk of correlation instability.

ASX Clear (Futures) also allows OTC participants to recognise portfolio offsets between directly cleared interest rate futures and OTC derivatives. To recognise these offsets, futures positions must be reallocated from a participant's futures portfolio to its OTC derivatives portfolio. To be eligible for reallocation to the OTC portfolio, the futures positions must be risk-reducing in the OTC portfolio. Futures positions that have been reallocated to a participant's OTC derivatives portfolio are margined under the OTC IRS FHSVaR model, rather than using the SPAN methodology. While Value at Risk (VaR) margining can result in less conservative estimates of correlations, interest rate futures in the pool under the OTC IRS FHSVaR methodology are subject to a five-day rather than a one- to two-day holding period assumption. As a result, ASX has indicated that, absent an offset, outright portfolio-margined interest rate futures would generally be subject to higher margin requirements under the OTC IRS FHSVaR methodology than under the SPAN methodology.

In January 2016, ASX introduced a tool to automatically optimise the allocation of futures positions to a participants OTC derivatives portfolio. This tool identifies and allocates eligible futures contracts within a participant's portfolio that will, if reallocated to the participant's OTC derivatives portfolio, lead to a reduction in total calculated exposure – and therefore also total initial margin – across both portfolios. Prior to the introduction of this tool, participants had to manually identify and allocate specific futures contracts for portfolio-margining.

Portfolio-margining recognises the economic relationship between AUD IRS and AUD interest rate futures and, to the extent that positions are indeed offsetting, would be expected to result in a reduction in the amount of initial margin required relative to the case in which positions were margined independently. Notwithstanding the economic relationship between AUD IRS and AUD interest rate futures, analysis of historical data demonstrates that the basis does vary over time, particularly during times of stress. This observed change of basis is captured through the Historic VaR margining process. The robustness of the empirical relationship between AUD IRS and AUD interest rate futures in stressed market conditions is addressed through the introduction of stress test scenarios that capture basis risk, as discussed above under CCP Standard 4.6. In addition, margin sensitivity analysis that varies the length and composition of the historical simulation period is used to test the effect on margin coverage of variations in observed correlations across products over time. In particular, the inclusion of periods of stress in the historical simulation period tests whether changes in the relationship between products in times of stress affects margin coverage (see CCP Standard 6.6).

ASX Clear (Futures) 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.

Backtesting

Under ASX's Model Validation Standard, daily backtesting of both the SPAN and the OTC IRS FHSVaR margin models is used to test, on an ongoing basis, whether the margin models reliably cover price movements to at least a 99 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 a representative participant or client against actual variation margin calculated over the following one or two days (for SPAN), depending on which is the larger amount, or the following five days for the OTC IRS FHSVaR model. One limitation of using variation margin on dynamic portfolios to model changes in the value of a portfolio over the holding 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 used to hold the portfolio composition constant over time. When static portfolios are used, 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 static portfolio. The static portfolio used may be an actual portfolio held by a representative participant or client, or it may be a purely hypothetical portfolio; for example, one designed to examine the implications of directionality in positions or concentrations of exposures. Under both types of backtest, when variation margin is greater than initial margin an 'exception' is recorded. CRPM compares the number of exceptions to the expected number of exceptions, based on a 99.7 per cent confidence interval for static portfolios, a 99.5 per cent confidence interval for dynamic OTC participant portfolios, and a 99 per cent confidence interval for dynamic exchange-traded futures portfolios.

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. 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 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.

Sensitivity analysis

ASX applies sensitivity analysis to its SPAN and FHSVaR margin models on a monthly basis. 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, holding period and look-back period. In addition, ASX investigates the impact of varying the historical simulation period for the OTC IRS FHSVaR model, the impact of varying the key inputs and methodology used in determining inter-commodity spread concession rates, and the application of floors to model parameters in SPAN. If varying particular inputs reveals weaknesses in the model, as evidenced by a larger number of exceptions than expected, ASX considers 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 (Futures)' margin methodologies are also subject to a comprehensive annual validation and ongoing review under ASX's Model Validation Standard (see CCP Standard 4.5). The RQG is responsible for reviewing the regular reviews of models carried out by CRQ, 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 CCP Standard 2.6). Under this framework the SPAN model must be validated using an external expert on an annual basis, while the OTC IRS FHSVaR model must be validated by an independent internal expert once every two years. During the 2014/15 Assessment period, ASX engaged external experts for a three-year period to conduct annual validations of ASX's key risk models, including both the SPAN and OTC IRS FHSVaR margin models. The first independent validations of the SPAN and OTC IRS FHSVaR models were completed in June 2015 and July 2015 respectively using an external expert, and a second validation of the SPAN model was completed in July 2016 also using an external expert. The Bank will continue to monitor the outcome of these validations.

At ASX, the margining process is governed by an internal Margin Policy and 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. ASX also provides a margin simulator that allows OTC participants to estimate margin requirements on OTC derivatives and portfolio-margined futures positions.

6.8 In designing its margin system, a central counterparty should consider the operating hours of payment and settlement systems in the markets in which it operates.

ASX Clear (Futures) primarily provides clearing services for the Australian-based ASX 24 market and, from July 2013 the AUD-denominated OTC interest rate swap market. ASX Clear (Futures)' timetables for margin calculation and collection are consistent with the operating hours of the

relevant payment and settlement systems (Austraclear and RITS, as well as NZClear for NZD margin).

Standard 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.

ASX Clear (Futures) maintains a framework for managing its liquidity risk (CCP Standard 7.1). Under this framework, ASX Clear (Futures) provides participants with information to assist them in managing their liquidity needs and risks, and employs an experienced Portfolio Risk Manager to monitor and manage ASX Clear (Futures)' own settlement and funding flows (CCP Standard 7.2). ASX Clear (Futures) aims to hold sufficient liquid resources to meet its payment obligations on time in the event that the two participants and their affilates with the largest aggregate payment obligation to the CCP were to default in the extreme but plausible scenarios envisaged in its stress tests (CCP Standards 7.3, 7.8). This level of cover reflects the Bank's supplementary interpretation of CCP Standard 7.3, including the Bank's view that ASX Clear (Futures) is systemically important in multiple jurisdictions. The liquid resources held to cover liquidity obligations under these stressed scenarios comprise a portfolio of high quality assets managed by ASXCC on ASX Clear (Futures)' behalf, supported by procedures to ensure timely and reliable access to liquidity from the portfolio as required (CCP Standards 7.4, 7.6). A validation of ASX Clear (Futures)' liquidity stress test models was completed using an external expert in June 2016. To enhance its management of liquidity risk, ASX Clear (Futures) has access, via ASXCC as an ESA holder, to AUD liquidity from the Reserve Bank against eligible collateral (CCP Standard 7.7). ASX Clear (Futures) implemented in October 2015 enhanced powers to comprehensively address uncovered liquidity shortfalls, as part of broader enhancements to its recovery arrangements (CCP Standard 7.9).

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 (Futures) 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 typically take the form of initial and variation margin, although they may also relate to the cash settlement of contracts.

ASX Clear (Futures) also faces liquidity risk from the reinvestment of pooled prefunded resources and the portion of margin posted by participants in the form of cash. These assets are reinvested and held by ASXCC, the holding company for the two CCPs, according to a defined treasury investment policy and investment mandate (see CCP Standard 7.3). Liquidity risk arises since ASXCC would have to convert its assets into cash to meet any obligations arising from a participant default or for day-to-day liquidity requirements, such as the return of cash margin to participants.

ASX Clear (Futures) does not rely on commercial bank money settlement agents, nostro agents, custodians or liquidity providers in meeting its AUD payment obligations.

Managing liquidity risk

ASX Clear (Futures) minimises the size of its liquidity obligations to participants through daily and intraday settlement of variation margin. This prevents the build-up of large liquidity (and credit) exposures. ASX Clear (Futures)' framework for managing its remaining liquidity risks involves the monitoring of liquidity exposures through daily stress testing (see CCP Standard 7.8) and the maintenance of sufficient liquid resources to be able to meet payment obligations arising from the default of two participants and their affiliates in extreme but plausible market conditions, and to meet day-to-day liquidity requirements (see CCP Standard 7.3).

ASX Clear (Futures) 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 margin parameter file that allows participants to estimate payment obligations associated with margin requirements for actual or hypothetical portfolios. ASX provides advance warnings and communications in respect of calls for additional margin, and margin rate changes. For example, participants are notified if their stress test results approach their STELs. Additionally, ASX liaises closely with participants ahead of implementing any new obligations that could affect their liquidity needs.

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 a Portfolio Risk Manager. In addition, the CRPM 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 and foreign currency lodgements, are also monitored in real time by the CRPM and Treasury functions.

Portfolio Risk Management uses reports provided by CRPM to monitor SPAN-calculated margin flows originating from ASX Clear (Futures)' Collateral Management System, 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. Post Trade 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 matched in Austraclear by 10.30 am and settled by 11.00 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).

7.3 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.

Reflecting the Bank's supplementary interpretation of the FSS, the Bank has concluded that ASX Clear (Futures) is systemically important in multiple jurisdictions and therefore subject to the higher financial resource requirement that it should maintain additional liquid resources to cover liquidity needs in the event of the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.

Consistent with this requirement, the objective of the ASX Liquidity Risk Policy is for ASX Clear (Futures) to maintain, with a high degree of confidence, sufficient liquidity to conduct day-to-day activities and manage the default of two participants and their affiliates. In practice, the CCP aims to hold sufficient liquid sufficient to cover the sum of:

- *The DLR across the ASX CCPs.* The DLR for ASX Clear (Futures) is the amount required to cover the estimated payment obligations for the CCP in the event of the joint default of the two largest participants (as measured by payment obligations to the CCP) and their affiliates under the stressed market conditions envisaged in the CCP's liquidity stress test (see CCP Standard 7.8). The DLR is estimated by summing:
  - the aggregate margin requirement of the two largest participants and their affiliates, used to cover payment obligations associated with variation margin or the close-out of positions in normal market conditions
  - additional payment obligations that would be required to meet variation margin or cash flows on the close-out of positions in extreme but plausible market conditions
  - an adjustment for the variation margin payable by, or due to, those participants (see CCP Standard 7.8).

  The calculation of ASX Clear (Futures)' DLR is described in Appendix A1.1, CCP Standard 7.3.
- *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 investment portfolio. This portfolio comprises both CCPs' default funds as well as the cash margins posted at both CCPs. This is calibrated to the maximum margin outflow in normal market conditions in the ASXCC cash collateral portfolio (as a percentage of portfolio value) over the previous 12 months and is reviewed annually.

While ASX Clear (Futures)' pooled prefunded resources, as well as over 93 percent of margin posted by participants, are in the form of cash, these funds are reinvested by ASXCC (of which ASX Clear (Futures) is a subsidiary; see 'ASX Group Structure' in Appendix A). Accordingly, to support the ASX Liquidity Risk Policy, ASXCC's treasury investment policy requires that a portion of ASXCC investments must be invested in liquid assets, such that ASXCC holds sufficient liquid assets to meet the minimum liquidity resource requirement across both ASX CCPs (CCP Standard 7.4). ASXCC's Investment Mandate establishes a clear definition of liquid assets:

liquid assets comprise cash available for use within two hours, and securities traded in a liquid market which can be sold for same day value with settlement proceeds available within two hours and which are eligible for repurchase with the Reserve Bank.

7.4 **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 (Futures) and ASX Clear (see CCP Standard 7.7). As an ESA holder, ASXCC is eligible for access to AUD 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 (Futures)' minimum liquid resource requirements, consistent with the definition of qualifying liquid assets under this standard (see CCP Standard 7.3). Liquid assets must be cash at creditworthy commercial banks that is available for use within two hours or held in a restricted set of highly liquid securities eligible for repurchase transactions with the Bank. Securities that could be used to meet the minimum liquid resource requirement include: certain fixed bonds, discount bonds and floating rate notes that have been issued in Australia and are eligible for repurchase transactions with the Bank; and bank bills and negotiable certificates of deposit eligible for repurchase transactions with the Bank. Eligible investment counterparties are discussed under CCP Standard 15.

ASXCC has made amendments to its investment mandate to clarify how ASX's portfolio will change over 2016/17 to meet the Bank's expectations for the credit and liquidity risk profile of ASX treasury investments (see CCP Standard 15.4). These changes will introduce a distinction between ASX's 'Core' liquidity (held to meet the Ordinary and Default Liquidity Requirements across the ASX CCPs) and 'Additional' liquidity (held to meet uncovered liquidity shortfalls across the CCPs). By 30 June 2017, assets eligible for Core liquidity will be restricted to cash held in accounts at central banks or creditworthy commercial banks and securities issued by the Australian or State Governments (held outright or via repo).

7.5 **A central counterparty may supplement its qualifying liquid resources with other forms of liquid resources. If the central counterparty does so, 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 part of its liquidity plan.**

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

7.6 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.

ASX Clear (Futures) does not rely on private liquidity providers in determining the size of its qualifying liquid resources. Nonetheless, consistent with the guidance to the Financial Stability Standards for CCPs, ASX has internal procedures for using its liquidity resources to complete settlement during a liquidity shortfall. 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 Default Management Standard (see CCP Standard 12.1) provides a high-level summary of the factors to be considered in the 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 AUD cash first, followed by non-cash and foreign currency collateral. The order of liquidation of non-cash and foreign currency 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. Non-cash collateral is limited to highly liquid government securities (see CCP Standard 5.1).

7.7 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. A central counterparty that the Reserve Bank determines to be systemically important in Australia and has obligations in Australian dollars should operate its own Exchange Settlement Account, in its own name or that of a related body corporate acceptable to the Reserve Bank, to enhance its management of Australian dollar liquidity risk.

ASXCC holds an ESA. Accordingly, ASX Clear (Futures) may, via ASXCC, access AUD 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 (CCP Standard 15).

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

7.8 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 commercial bank money settlement agents, nostro agents, custodians, 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 (Futures) uses a daily liquidity stress test model to assess the adequacy of its liquidity arrangements. This model, which is based on ASX Clear (Futures)' credit stress tests (described under CCP Standard 4), tests the sufficiency of liquid resources against the joint default of the two participants, and their affiliates (including affiliations between participants involved in OTC and futures clearing) that would create the largest liquidity exposure for the CCP. The liquidity stress tests assume that a default occurs just prior to receipt of the previous day's variation margin payments, if owed by the defaulter, or just after any variation margin payments have been paid, if owed to the defaulter. The stress tests thereby make a worst-case assumption with respect to the timing of AUD variation margin flows under each stress test scenario.

All stress test scenarios are based on historical moves and have been set so that they replicate extreme market moves that have a probability of occurrence of once in 20 years (see CCP Standard 4.6). Scenarios cover single-asset price moves, as well as movements in price and volatility occurring jointly across the equity index futures, AUD interest rate futures, and electricity futures contracts. In addition, scenarios also cover movements in the AONIA and BBSW rates that are used as the reference rates for OTC IRS. Additional scenarios account for various forms of basis risk between futures and OTC prices, and the AONIA and BBSW curves at various tenors. Scenarios also cover a range of hypothetical macroeconomic and market events, such as a commodity collapse, or sovereign default. In February 2016, ASX Clear (Futures) modified its stress test scenarios to reflect intraday (rather than close-to-close) price movements. Price changes are now based on the most extreme close-to-high or close-to-low price movements observed over the relevant holding period.

The results of the liquidity stress tests generate the DLR, which is compared with ASX Clear (Futures)' AFR (set to $650 million; see CCP Standard 4.4). A stress test result above the AFR 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 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 Senior Manager, CRPM; the General Manager, Finance; and the Portfolio Risk Manager. A sustained or widely distributed breach may lead to a review of the adequacy of the AFR.Over the Assessment period, there were no liquidity stress test breaches.

Consistent with the findings of a CPMI-IOSCO report monitoring the implementation of the Principles, and also reflecting the Bank's own analysis and observations arising from ASX's independent validation of its liquidity stress tests, during the Assessment period, the Bank has discussed with ASX how its liquidity stress test approach may be enhanced to better reflect liquidity-specific risks. In light of these discussions, ASX has recently commenced work on a set of enhancements to its liquidity stress test and risk management framework (see Section 3.5.1).

Review and validation

Since stress scenarios are common across both the credit and liquidity stress tests for ASX Clear (Futures), the same reverse stress testing approach is used in sensitivity analysis of both models (see CCP Standard 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 CCP Standard 2.6). Under this framework the liquidity stress test model must be validated every two years using an external expert. A validation of ASX Clear (Futures)' liquidity stress test model was completed using an external expert in June 2016.

7.9 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.

ASX Clear (Futures) has developed arrangements designed to to comprehensively address a liquidity shortfall as part of its broader package of recovery measures that came into effect in October 2015 (see CCP Standard 3.5). Under these arrangements, prefunded liquid resources are supplemented by three additional tools.

- A remaining liquidity shortfall resulting from a participant default would initially be addressed, where possible, via Recovery Assessments called in cash from surviving participants (see CCP Standard 4.8). These would be capped at the level of participants' default fund contributions (a maximum of $200 million in aggregate), if assessments were called in relation to a single default; or at three times the level of participants' default fund contributions (a maximum of $600 million in aggregate), if assessments were called in relation to multiple participants defaulting within a defined default

period.[15] ASX Clear (Futures) would have the flexibility to call for assessments where it anticipates a liquidity shortfall resulting from a participant default, increasing the likelihood that these funds will be available to meet liquidity needs on a timely basis.

- ASX Clear (Futures) would also have the power to reduce (haircut) outgoing payments to participants. For example, a haircut could be applied to variation margin payments due to participants with net in-the-money positions in the event of mark-to-market loss on the defaulter's portfolio. Payment haircuts could be applied to a broad range of ASX Clear (Futures)' payment obligations, excluding the return of initial margin. There is no cap on the use of payment haircutting to address a liquidity shortfall, although ASX Clear (Futures) would consult with the Risk Consultative Committee in determining whether to continue payment haircutting if losses allocated via this tool exceed $650 million.
- Any residual liquidity shortfall that could not be addressed via Recovery Assessments or payment haircutting would be addressed via a power to completely terminate all open contracts. Complete termination would be reserved as a last resort tool if there was no other means of addressing a liquidity shortfall (including via intervention of the Reserve Bank as resolution authority if current proposals for a special resolution regime for FMIs are implemented). Under complete termination all open contracts at the CCP would be settled with participants at their current market value, with any residual liquidity shortfall of the CCP addressed by haircutting settlement payments to participants. Reliance on complete termination is extremely unlikely, since payment haircutting provides an uncapped mechanism to address liquidity obligations associated with the majority of payment flows.

Standard 8: Settlement finality

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

The vast majority of ASX Clear (Futures) settlements involve AUD cash payments between participants and the CCP for the purposes of margin payments and the settlement of cash-settled derivatives contracts. Each day, ASX Clear (Futures) calculates the net end-of-day obligations of each of its participants. Those participants with a net obligation to the CCP are required to settle payments to ASX Clear (Futures) by 11.00 am, for both AUD- and NZD-denominated contracts. Intraday margin payments must be met within the notified timeframe, which is generally one hour for futures derivatives and two hours for OTC derivatives. Once these payments have been received, ASX Clear (Futures) makes payments to those participants with a net obligation from the CCP. AUD cash settlements occur via Austraclear, with interbank obligations settled on an RTGS basis across ESAs at the Bank, via RITS.

In some cases, the settlement of derivatives contracts cleared by ASX Clear (Futures) involves the transfer of a security or physical asset, with a corresponding transfer of cash. For each type of security or asset, ASX Clear (Futures)' arrangements ensure that delivery occurs if, and only if, payment occurs. For 90-day bank bill futures, ASX Clear (Futures) utilises the standard settlement process in

15 The cap on assessments for multiple defaults remains in place until the expiry of a 'default period' that commences with the default of the first participant and concludes 22 business days after completion of the default management process for the final defaulting participant, where each default is separated from completion of the default management process for the preceding default by 22 business days or less.

Austraclear. For grain contracts, delivery is via commodity warehouses, with ASX Clear (Futures) retaining title documentation until payment has been made.

ASX Clear (Futures) also accepts as collateral for initial margin certain highly liquid debt securities, such as Australian Government securities, and cash collateral in NZD and a small number of other foreign currencies. ASX Clear (Futures) has accounts at Austraclear and NZClear, an SSF owned and operated by the RBNZ, for settling AUD- and NZD-denominated collateral, respectively. Collateral denominated in other currencies is settled indirectly via relationships with commercial banks.

ASX Clear (Futures) defines the point at which settlement is final through contract specifications set out in its Operating Rules and Procedures, and those of ASX 24. The finality of its money settlements is further defined in the Austraclear and NZClear rules, supported by finality legislation in the relevant jurisdictions (CCP Standard 8.1). Contract specifications set out in ASX Clear (Futures)' and ASX 24's Operating Rules and Procedures also specify procedures and timetables for final settlement (CCP Standard 8.2). ASX Clear (Futures) does not allow settlement instructions to be revoked (CCP Standard 8.3).

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 (Futures) is final according to the terms of ASX Clear (Futures)' and, for exchange-traded derivatives, ASX 24's Operating Rules and Procedures, which set out the means of settlement. For payments and securities obligations settled in Austraclear, settlement is final according to Austraclear's Regulations and Procedures and supported by Austraclear's approval under Part 2 of the PSNA. This approval protects the finality of payments made through Austraclear in the event of a participant entering external administration (see Appendix A2.2, SSF Standard 7.1). Any interbank transactions arising from these payments are settled in real time across ESAs held with the Bank. Payments within this system are also final and irrevocable; this is again supported by the approval of RITS under Part 2 of the PSNA (see CCP Standard 1.2). 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.

In May 2016, The Resilience Act amended the PSNA to provide additional legal certainty for RTGS systems, such as Austraclear and RITS, that have been approved under the PSNA. These amendments facilitate the ongoing participation by institutions in 'non-terminal' external administration (e.g. statutory management) by clarifying that the protections under the PSNA continue to apply (see Standard 1.5).

NZD and NZD-denominated transactions that are settled through NZClear are deemed final in accordance with its System Rules. In particular, NZClear System Rule 11.8 provides that final and irrevocable settlement occurs when the requirements of a trade have been matched and the trade is recorded in the relevant accounts of the respective members. The NZClear settlement system has been declared a 'designated settlement system' for the purposes of Part 5C of the *Reserve Bank of New Zealand Act 1989* (NZ), which gives legislative backing to the finality of settlements effected in accordance with the rules of the system..

8.2 A central counterparty should ensure final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk.

The settlement of obligations in ASX Clear (Futures) is governed by ASX Clear (Futures)' and, for exchange-traded derivatives, ASX 24's Operating Rules and Procedures. These set out settlement arrangements, including detailed procedures and timetables.

Margin payments and settlement of cash-settled derivatives

The majority of settlements in ASX Clear (Futures) are cash settlements made on a net basis (as described above) for the purposes of regular margin payments and settlement of payments arising from derivative transactions.

During the Assessment period, the majority of settlements of margin were in cash (AUD or foreign denominated). End of day initial and variation margin requirements are calculated overnight based on each day's closing contract prices supplemented by additional pricing data for OTC derivatives (see CCP Standard 6.2), and are notified to participants by 6.00 am the next day for payment on that day. Should ASX Clear (Futures)' exposures change significantly during the day, initial and variation margin can be called intraday (see CCP Standard 6.1). Intraday margin payments must be paid in cash within the notified timeframe, which is generally one hour for futures derivatives and two hours for OTC derivatives. End-of-day and intraday margin is settled via Austraclear for AUD payments, and NZClear for NZD payments.

Settlement values for cash-settled derivatives are calculated according to contract specifications. Futures are generally settled on the last trading day, or within one or two days after the last trading day. For example, for ASX SPI 200 Index Futures, ASX Clear (Futures) publishes the final settlement price of the contract on the first business day after expiry, with the associated cash flows settled on the second business day after expiry (the value date for this contract). By contrast, an OTC IRD contract can involve payments at regular intervals during the life of the contract, as well as payments at expiry. These payments are calculated overnight and settled on the next business day, along with margin payments.

Settlement-related, as well as margin-related, cash flows are settled in Austraclear or NZClear in real time with finality (see CCP Standard 8.1).

Physical delivery

With regard to deliverable contracts, ASX Clear (Futures)' arrangements for physical delivery are described under CCP Standard 10. ASX Clear (Futures) has procedures in place to ensure that margin of matched participants is not released until ASX can confirm that both participants have fulfilled their obligations. ASX Clear (Futures) also monitors and enforces compliance with delivery procedures.

The details of final settlement of deliverable contracts vary according to the contract specifications. For example, trading in the contract for 90-day bank accepted bills ceases on noon of the last trading day. This is followed by the exchange of reconciliation and advice notices between participants and the CCP, with final settlement of securities occurring in real time in Austraclear by 3.00 pm on the day after the last trading day (the value date for this contract).[16] By contrast, the delivery period for grain contracts commences on the second business day of the contract month, ending at 3.00 pm on the third Thursday of the contract month, with real-time final cash settlement scheduled to occur on the day after delivery.

16 The seller is required to enter the 90-day bank bill into Austraclear by 10.00 am. This must be matched by the buyer by 11.00 am and settled by 3.00 pm.

Options delivery

All options on futures that are cleared by ASX Clear (Futures) either automatically exercise or are abandoned on expiry. In-the-money options automatically exercise unless the holder requests otherwise, and the holder and writer of the options receive their respective positions in the underlying futures contract. All cash flows related to the exercise of options contracts are included in daily settlement flows (along with initial and variation margin payments). There are no up-front premium payments associated with the options over futures contracts that are cleared by ASX Clear (Futures).

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 (Futures).

Standard 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.

ASX Clear (Futures) conducts its AUD money settlements, which constitute 97 per cent of its settlement flows, via Austraclear instructions. Interbank payments arising from these instructions settle across ESAs at the Bank, via RITS. NZD money settlements are also conducted in central bank money via the NZClear system (CCP Standard 9.1). Other foreign currency settlements take place in commercial bank money (CCP Standard 9.2). Commercial banks involved in the settlement of foreign currency transactions must be highly rated and subject to prudential regulation to minimise associated credit, liquidity and operational risks (CCP Standard 9.3). Arrangements with commercial banks are also governed by standard legal agreements that include general information regarding the timing and availability of funds (CCP Standard 9.5).

9.1 A central counterparty should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks. A central counterparty that the Reserve Bank determines to be systemically important in Australia and has Australian dollar obligations should settle its Australian dollar obligations across an Exchange Settlement Account held at the Reserve Bank, in its own name or that of a related body corporate acceptable to the Reserve Bank.

AUD and NZD money settlements in ASX Clear (Futures) are settled in central bank money, but collateral in other currencies (currently EUR, JPY, USD and GBP) is lodged via arrangements with commercial banks.

AUD settlements, which represent the vast majority of money settlement in ASX Clear (Futures), are initiated via the submission of standard settlement instructions to Austraclear. Any interbank settlements arising from these instructions occur on an RTGS basis across ESAs at the Bank, via RITS. ASX Clear (Futures) uses ASXCC's ESA to settle its obligations in RITS.

NZD settlements are undertaken in NZClear. ASXCC is a non-bank participant in NZClear. Non-bank participant interbank obligations are settled on an RTGS basis, via the Exchange Settlement Account System (ESAS), across accounts of a commercial settlement bank (known as a 'Participating ES Accountholder') at the RBNZ. Transfers are made in ESAS between the

RBNZ Exchange Settlement account of ASXCC's Participating ES Accountholder and the RBNZ Exchange Settlement accounts of ASX Clear (Futures) participants or their Participating ES Accountholders. Settlement of these transfers occurs in central bank money in real time. ASX Clear (Futures) manages credit and liquidity exposures in respect of post-settlement balances held with its Participating ES Accountholder in accordance with the ASXCC investment mandate (see CCP Standard 15).

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.

Cash payments in foreign currencies other than NZD (i.e. EUR, JPY, USD and GBP) are settled in commercial bank money via arrangements with commercial banks. Commercial bank money settlement agents and commercial settlement banks used for settlement of foreign currency transactions must be highly rated and subject to appropriate prudential regulation in order to limit any credit or liquidity risk associated with settlement in commercial bank money (see CCP Standard 9.3).

9.3 If a central counterparty settles in commercial bank money or its participants effect settlements using commercial settlement banks, it should monitor, manage and limit credit and liquidity risks arising from the commercial bank money settlement agents and commercial settlement banks. In particular, a central counterparty should establish and monitor adherence to strict criteria for commercial banks appropriate to their role in the settlement process, taking account of matters such as their regulation and supervision, creditworthiness, capitalisation, access to liquidity and operational reliability. A central counterparty should also monitor and manage the concentration of its and its participants' credit and liquidity exposures to commercial bank money settlement agents and settlement banks.

A commercial bank must meet certain criteria before it can be used by ASX Clear (Futures) as either its commercial settlement bank for NZD settlements in ESAS, or its money settlement agent for other foreign currency payments. Commercial banks must have a minimum S&P short-term rating of A1+ and offer a banking platform and connectivity that are compatible with ASX processes and procedures. Commercial banks used by ASX Clear (Futures) are ADIs regulated by APRA, and therefore subject to prudential standards encompassing, for example, capital adequacy, liquidity, credit quality, business continuity management and public disclosure. ASX Clear (Futures)' commercial settlement bank in NZClear must also meet operational requirements set by the RBNZ. Arrangements for settlement of foreign currencies other than the NZD make use of standard web interfaces for banking, with instructions via phone available as a contingency.

All foreign currency lodgements are monitored by ASX Clear (Futures)' risk management and treasury functions, and ASX Clear (Futures) is in regular contact with the participant until funds are received. ASX Clear (Futures) imposes limits on the amount of collateral held that is denominated in foreign currency as a portion of ASX CCPs' total liquid assets (see CCP Standard 5.6). Participants must lodge a request to post foreign currency, which is reviewed and then approved or denied by the Portfolio Risk Management team. In determining whether the foreign currency cover request is approved or denied, the Portfolio Risk Manager will take into account the limits on foreign currency, as well as the concentration risk in accepting the request.

It is standard practice for participants that lodge foreign currencies other than NZD to lodge excess funds with ASX Clear (Futures). This avoids having to make daily (or frequent) margin settlements. ASXCC also maintains funds in foreign currencies to cover its exposure to liquidity risk if it needed to repay a participant in a foreign currency. During the Assessment period, foreign currency holdings peaked at around $370 million (AUD equivalent) – around 10 per cent of average total collateral levels at ASX Clear (Futures) during the year. The aggregate level of foreign currency payments at ASX Clear (Futures) is low, comprising around 3 per cent of total money settlements.

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 (Futures) does not conduct money settlements on its own books.

9.5 A central counterparty's legal agreements with any commercial bank money settlement agents should state clearly when transfers on the books of the relevant commercial bank 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.

Payments in foreign currencies made via commercial banks are generally covered by standard terms and conditions for commercial accounts at those banks, including general information about timing of transactions and availability of funds. ASX maintains close contact with its commercial banks in order to monitor and manage the risk of its foreign currency payments. As noted, standard practice is for participants to lodge excess foreign currency margin, thereby reducing credit and liquidity risk to the CCP and liquidity risk to the participant.

Standard 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.

ASX Clear (Futures)' Operating Rules and Procedures clearly state its own and its participants' obligations with respect to the delivery of physical instruments or commodities (CCP Standard 10.1). In accordance with these rules and procedures, ASX Clear (Futures) monitors and enforces compliance with delivery procedures (CCP Standard 10.2).

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

In some cases, the settlement of derivatives contracts cleared by ASX Clear (Futures) involves the transfer of a security or physical asset. Examples of contracts that require delivery are 90-day bank accepted bills futures, deliverable swap futures, wheat and other grain futures, and renewable energy certificates. ASX Clear (Futures)' Operating Rules and Procedures clearly state its obligations with respect to physical delivery.

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.

ASX Clear (Futures)' Operating Rules and Procedures define detailed mandatory arrangements for delivery of a security or physical asset. Securities delivered for the 90-day bank accepted bill contract must meet ASX Clear (Futures)' specifications, which include the acceptable types of paper, maturity dates, parcel sizes and approved banks. Deliveries of commodities must follow a maturity calendar, approved warehouses and locations, guides for buyers and sellers, and rules for delivery documentation (including appropriate certification).

ASX Clear (Futures) mitigates the risks associated with physical delivery by minimising its involvement in the storage and delivery process. Participants that have delivery obligations are matched with those due to receive the commodities or documents, and any legal recourse of the receiving participant in respect of the delivered goods is to the delivering participant. Participants may cash settle contracts in the event of a default by the delivering party.

ASX Clear (Futures) nevertheless monitors and enforces compliance with delivery procedures. In particular, there is regular monitoring of deliveries by Post Trade Operations in the lead up to expiry, including a daily review and reconciliation of contracts versus holdings via a physical position reconciliation report. Overnight reporting to participants occurs on current commodity holdings. ASX Clear (Futures) communicates directly with participants to confirm their intentions on delivery and lodgement of physical assets. In addition, compliance reviews are undertaken on targeted topics, as well as ad hoc compliance investigations arising from referrals from ASX's operations areas. These compliance checks aim to ensure that participants have the necessary systems and resources to be able to fulfil their physical delivery obligations.

Standard 11: Exchange-of-value settlements

If a central counterparty is involved in the settlement of transactions that comprise two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by ensuring that the final settlement of one obligation is conditional upon the final settlement of the other.

ASX Clear (Futures) eliminates principal risk in the settlement of derivatives contracts involving the transfer of a security or physical asset in exchange for cash by ensuring that delivery occurs if and only if payment occurs (CCP Standard 11.1). For transactions involving securities transfers, ASX Clear (Futures) employs the DvP Model 1 settlement mechanism in Austraclear (CCP Standard 11.2).

11.1 A central counterparty should eliminate principal risk associated with the settlement of any obligations involving two linked obligations by ensuring that the payment system or securities settlement facility employed operates in such a way 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 securities settlement facility settles on a gross or net basis and when finality occurs.

In those cases where settlement of derivatives contracts involves the transfer of a security or physical asset with a corresponding transfer of cash, ASX Clear (Futures)' arrangements ensure that delivery occurs if and only if payment occurs. For 90-day bank bill futures, ASX Clear (Futures) utilises the standard DvP settlement process in Austraclear; that is, sellers deliver and receive payment for their bills, and buyers pay for and take delivery of the bills as a single

exchange of value (see Appendix A2.2, SSF Standard 10). For grain contracts, delivery is via commodity warehouses, with ASX Clear (Futures) retaining title documentation until payment has been made.

11.2 A central counterparty should eliminate principal risk associated with the settlement of linked obligations by ensuring that it employs an appropriate delivery versus payment (DvP), delivery versus delivery (DvD) or payment versus payment (PvP) settlement mechanism.

Settlement of ASX Clear (Futures) derivatives transactions that involve securities transfers occurs on a DvP Model 1 basis in Austraclear. This involves the simultaneous transfer of cash and securities obligations between the buyer and seller on a transaction-by-transaction basis through the settlement cycle.

Standard 12: 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.

ASX Clear (Futures) has powers under its Operating Rules and Procedures to manage a participant default, and has documented an internal framework setting out its default management approach (CCP Standard 12.1). Powers available to ASX Clear (Futures) include powers to suspend a defaulted participant, apply margin and pooled financial resources to meet losses, and employ a range of close-out and hedging strategies, including the auction of the defaulter's OTC derivatives positions to surviving participants (CCP Standards 12.1, 12.2). Participants are required to report default events or an expected default to the CCP. ASX Clear (Futures) has published its Operating Rules that set out its default management powers, as well as a high-level overview of its approach to default management and a fact sheet outlining the rights of clients in the event of their clearing participant's default (CCP Standard 12.3). Default management procedures are tested and reviewed on at least an annual basis. Participants clearing OTC derivatives are represented on a DMG that participates in annual tests of OTC default management arrangements, including the auction process (CCP Standard 12.4). ASX Clear (Futures)' default management arrangements are designed for the particular characteristics of its primarily Australian-based activities, and take into account potential impacts on relevant markets (CCP Standard 12.5).

12.1 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. A central counterparty should ensure that financial and other obligations created for non-defaulting participants in the event of a participant default are proportional to the scale and nature of individual participants' activities.

Rules and procedures

The Operating Rules and Procedures provide ASX Clear (Futures) with the authority and flexibility to deal with a participant default using a variety of methods to manage its exposure. For exchange-traded derivatives, ASX Clear (Futures) has the ability to close out any open positions, exercise or terminate open contracts, or seek to transfer (port) client positions. For OTC derivatives, ASX Clear (Futures) is able to manage a participant default

through a process of hedging then auctioning the defaulter's OTC portfolio. The specific method for managing ASX Clear (Futures)' exposures may depend on a number of factors, including market conditions and the composition of the defaulted participant's portfolio.

The formal Rules and Procedures form part of ASX's CCP DMF, a collection of internal and public documents that set out the guiding principles and procedures for managing a clearing participant default. In 2015/16, ASX undertook a wide-ranging review of its DMF documentation. As part of this review, ASX developed a new Default Management Policy and Default Management Standard, applicable to both ASX Clear and ASX Clear (Futures), to assist in the management of a clearing participant default. These new documents, together with any updates to the existing DMF documentation arising from the review, are due to be finalised in 2016/17.

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 ASX, its participants and the broader market. The DMSG provides oversight and review of the DMF, including discussion of proposed changes prior to submission to the CS Boards.

The Default Management Standard and accompanying procedures provide guidance on 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. The Standard is intended to be flexible, rather than prescriptive, allowing ASX to adapt its default management approach to the specific circumstances as appropriate.

The DMF outlines the key roles and responsibilities in managing a clearing participant default. The ASX Group has established a DMC, comprising senior management from relevant areas within ASX, 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.

In the event of the default of an OTC participant, ASX Clear (Futures) would convene the relevant DMG, which comprises non-defaulting clearing participants seconded on a rotating basis. Currently there is only one DMG, since ASX Clear (Futures) clears only one category of OTC derivatives (AUD IRD), comprising representatives of all the OTC participants. The DMG would advise and be consulted by ASX Clear (Futures) on the management of an OTC participant default. ASX Clear (Futures) is not obliged to follow the recommendations of the DMG, but would be required to provide reasoning where it did not accept the DMG's advice.

Default management – futures

Under the Operating Rules and Procedures, ASX Clear (Futures) is allowed to employ a variety of methods to close out or otherwise manage a defaulted participant's positions in exchange-traded futures. These include transfer, on- or off-market liquidation, expiry, exercise and hedging (see Section 4.4.1 for more information on close-out arrangements). If standard close-out processes could not be successfully carried out, ASX's enhanced recovery approach would allow ASX Clear (Futures) to terminate (on a pro rata basis to the extent practicable) positions held by non-defaulting participants that were opposite to those that the CCP had inherited from the defaulter. These positions would be terminated at their current market value, restoring the CCP to a matched book. As a last resort, ASX Clear (Futures) would have the power to completely terminate all open contracts in order to restore its matched book.

Default management – OTC derivatives

In the event of default of an OTC participant, ASX Clear (Futures) may first suspend the defaulted participant and would first look to hedge its exposure arising from the defaulting participant's portfolio. ASX Clear (Futures) may engage the relevant DMG to assist in this process. To close-out the defaulter's portfoilio, ASX Clear (Futures) may then conduct one or more auctions of the portfolio (including the hedges) to non-defaulted participants (see Section 4.4.1). ASX Clear (Futures) may set a reserve price on the default auction(s).

All OTC participants that have positions in the relevant products are required to bid in the auction of a defaulter's portfolio. ASX utilises a 'juniorisation' mechanism that is designed to ensure that non-defaulting participants bid competitively in the auction of a defaulter's portfolio. For the participants obliged to take part in the auction, the juniorisation mechanism determines the order in which their contributions to the ASX Clear (Futures) default fund would be applied to losses on the default in the event that the auction crystallises losses beyond the defaulter's margin and the first tranche of ASX capital. The order of application is related to the size of participants' bids in the auction, so that the winner of the auction has its contribution applied last and the participant with the lowest bid has its contribution applied first, subject to bids exceeding a minimum threshold determined by ASX. Participants that are not required to take part in an auction (for example, participants that lack the capacity to manage particular product types within an auction pool) would have their contributions applied at the same point as the winner of the auction. ASX Clear (Futures), in consultation with the DMG, could conduct the auction in one of the following forms:

- The defaulted participant's portfolio could be auctioned in a single pool to the single highest bidder, or split into multiple identical units auctioned off to several bidders. In the latter case, the order of application of participant contributions to losses would be based on the lowest bid for any unit within the pool.
- Alternatively, the defaulted participant's portfolio could be broken up into separate pools with shared characteristics (for example currency, product, tenor, carry or trade volume), with separate auctions in respect of each pool. Each of these pools could be auctioned off in a single unit or multiple identical units. The application of bidding participants' contributions to losses would be based on the ranking of bids in each of these pools, weighted according to the relative risk of each pool.

As an alternative to an auction, ASX Clear (Futures) could agree the transfer of equivalent contracts with a non-defaulting participant, but in doing so would seek to avoid crystallising losses that would require the application of non-defaulting participants' commitments. If neither an auction nor transfer could be successfully carried out, ASX's enhanced recovery approach would allow ASX Clear (Futures) to apply partial or (as a last resort) complete termination powers in order to restore its matched book.

Use and sequencing of financial resources

Following a declaration of default, ASX Clear (Futures) may suspend the defaulted participant's authority to clear. Suspension, rather than termination, ensures that the participant remains bound by the CCP's rules. ASX may restrict the clearing participant's access to trading, clearing, settlement and payment systems, and there would be no further payments or collateral movements to the participant. This enables the CCP 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 exposures to the defaulted participant.

In the first instance, ASX Clear (Futures) 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 CCP Standard 5.1). In the event that the defaulted participant's contributions were insufficient, ASX Clear (Futures) could draw upon its default fund (see CCP Standard 4). These resources are commingled across futures and OTC products. While not essential, the commingled default fund adopted by ASX Clear (Futures) simplifies the default management process when the defaulter's portfolio contains both OTC derivatives and portfolio-margined futures positions. ASX regards the commingling of financial resources as appropriate in light of the homogeneity of both the products to be cleared and the clearing participants. The order in which survivors' default fund contributions would be used (i.e. the default waterfall) would, however, be proportional to the scope of the defaulter's activities. The proportion of futures and OTC participant contributions that would be used after each tranche of ASX capital will be based on the defaulter's share of initial margin for exchange-traded compared with OTC derivatives products (including portfolio-margined futures) over the previous 90 days. ASX conducted the annual review of commingling arrangements in May 2015, which was presented to the Risk Consultative Committee and CS Boards. The review concluded that the arrangements remained appropriate, particularly as exposures generated by OTC derivatives remain small relative to futures.

In the event that its $650 million of prefunded resources were exhausted, ASX Clear (Futures) would have the power under its enhanced recovery approach to call up to a further $200 million in Recovery Assessments from participants for a single default, or up to $600 million if multiple participants were to default (see CCP Standard 4.8). Beyond this, ASX Clear (Futures) would be able to apply a haircut to a range of its outgoing payment obligations to participants to allocate remaining losses stemming from the default. As a last resort, ASX would have a power in recovery to allocate losses by reductions to settlement payments in the context of complete termination of all open contracts.

During the Assessment period, ASX Clear (Futures) implemented an enhanced approach for replenishing its default fund in the event that these were drawn upon during the management of a participant default (see CCP Standard 4.8 and Box A). As soon as practicable following the conclusion of the default management process, ASX Clear (Futures) would make an 'initial interim replenishment' contribution to restore its default fund up to at least the Minimum Fund Size of $100 million. At the end of a 22-business-day 'cooling-off period', the default fund would be fully replenished to $400 million.[17] In order to maintain the required level of financial cover during this period, ASX would supplement its interim contribution with AIM called from participants. ASX would also have the discretion to call an interim replenishment contribution from participants during the cooling-off period; this would be capped at the level of the Minimum Fund Size. If further increases to the default fund were required following full replenishment, these would be met 50/50 by ASX and participant contributions as part of the quarterly recalibration of the default fund.

The appropriate strategy for replenishing any CCP resources utilised during the default would be determined by the ASX Clear (Futures) Board, in consultation with the ASX Limited Board.

17 The cooling-off period concludes 22 business days after the conclusion of the final default management process initiated during the period.

ASX Clear (Futures)' plans for recapitalisation include the use of existing group cash reserves and raising additional capital through an equity issuance by ASX Limited. To support the credibility of its new replenishment arrangements, ASX established an intragroup Replenishment Deed, which governs the provision of funds for ASX Clear (Futures)' replenishment obligations by ASX Limited.

12.2 A central counterparty should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules. This requires that the central counterparty should:

(a) require its participants to inform it immediately if they:

(i) become subject to, or aware of the likelihood of external administration, or have reasonable grounds for suspecting that they will become subject to external administration; or

(ii) have breached, or are likely to breach, a risk-control requirement of the central counterparty; and

(b) have the ability to close out, hedge or transfer, a participant's open contracts in order to appropriately control risk of a participant that:

(i) becomes subject to external administration; or

(ii) breaches a risk-control requirement of the central counterparty.

To facilitate early identification of a default event, the ASX Clear (Futures) Operating Rules and Procedures require that a participant inform ASX Clear (Futures) immediately in the event of a default, or if there is a reasonable expectation of such an event occurring. This requirement is legally binding, including 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 scenarios in which the clearing participant becomes subject to external administration, is unable to meet obligations relating to open contracts, defaults at another CCP or exchange, or breaches the CCP's risk-control requirements, such as by failing to fulfil margin or other payment obligations to the CCP.

Although the ASX Clear (Futures) Operating Rules set out specific events of default, declaration of a default would never be automatic. Instead, ASX Clear (Futures) maintains the right to investigate a potential default fully, taking into account any extenuating circumstances. The process of investigating, and the subsequent handling of, a potential default would generally depend on its nature. Specifically, ASX distinguishes between 'financial', 'operational' and other 'compliance' defaults. This differentiation appropriately reflects the severity of the breach and potential ramifications of a declaration of default. The PIRC, which is chaired by the GE, Operations and made up of senior staff from operational, risk management, compliance and legal departments, is responsible for monitoring and managing clearing participant incidents and the escalation of potential default events to the DMC (see Appendix A2.1, SSF Standard 3.1 for further detail on the PIRC). Ultimately, the declaration of any default is the responsibility of the Managing Director and CEO of ASX (or relevant delegates), under delegated responsibility from the CS Boards.

The Operating Rules and Procedures allow ASX Clear (Futures) 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 and exercise. As a last resort, partial or

complete termination powers would be available to ASX Clear (Futures) under its enhanced recovery arrangements (see CCP Standard 12.1). For the OTC derivatives clearing service, ASX Clear (Futures) may conduct an auction of the defaulted participant's OTC derivatives positions.

There are advantages and disadvantages to each method for managing the defaulted participant's exposures. The specific method used in practice may depend on a number of factors, including market conditions and the composition of the defaulted participant's portfolio. For example, subject to other legal and practical impediments, the account structure used by the defaulted participant would be a relevant factor in determining whether client positions could be transferred following a default event. ASX Clear (Futures) offers individual client accounts for both OTC derivatives and exchange-traded derivatives, which are more likely to be able to support the transfer of client positions following a default (see CCP Standard 13). However, both OTC and exchange-traded derivatives clients can opt to clear via an omnibus account with net margining, which may make the transfer of individual client positions in a default event difficult due to possible under-collateralisation of individual positions. ASX Clear (Futures) provides a window of up to 24 or 48 hours for a defaulted participant's futures or OTC clients with individually segregated accounts to transfer their positions to another participant, although it retains the flexibility to either extend or shorten this window, depending on the prevailing circumstances. As described under CCP Standard 12.1, ASX policy establishes a preference for controlling the risk associated with a defaulted participant's OTC derivatives positions through a process of hedging then auction.

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

ASX Clear (Futures)' Operating Rules and Procedures and the OTC Rules and OTC Handbook are available on the ASX public website. These rules outline when ASX Clear (Futures) may take action against a participant and the powers of ASX Clear (Futures) in the event of a default, including its ability to transfer clients' positions to other participants. ASX Clear (Futures)' 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 clearing participant default on its website, as well as a client fact sheet that outlines the segregation and portability arrangements in ASX Clear (Futures) and the rights of clients in the event of their clearing participant's default. The OTC Handbook provides a description of the default management auction process for OTC derivatives, including numerical examples of the juniorisation process.

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.

12.4 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 and 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'. The fire drills assist in ensuring 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 both the exchange-traded and the OTC derivatives fire drill exercises conducted in mid 2016, and will continue to observe future fire drills. In recent years, the DMF has been updated on several occasions[18]:

- during the 2011/12 Assessment period, to incorporate experience gained from the default of MF Global
- in the 2012/13 Assessment period in anticipation of the launch of the OTC derivatives clearing service
- in 2014, to account for the use of offsetting transaction arrangements in ASX Clear, changes to client segregation arrangements, and the implementation of the 'juniorisation' mechanism
- in 2016, to reflect ASX's new recovery planning arrangements, the experiences gained from the BBY Limited default, and learnings from the 2016 ASX Clear (Futures) and ASX Clear fire drills.

A further update to the DMF is expected in due course to reflect the introduction of the proposed FMI resolution regime, after the regime is finalised.

Currently, participants are not directly involved in default management fire drills that test ASX Clear (Futures)' default management procedures for exchange-traded products. 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.

Separate fire drills for the OTC clearing service are conducted by the DMG, the most recent of which took place in July 2016. This fire drill utilised upgraded risk systems designed to better identify potential hedges for a defaulted participant's OTC portfolio. The DMG comprises representatives of all OTC clearing participants, who are tasked with periodically convening to review the default management process and recommend amendments. Each OTC derivatives clearing member is involved directly in simulations of the hedging and auction stages of the default management process.

ASX Clear (Futures)' default arrangements 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 resolution proceedings for ADIs and banks in several other jurisdictions on a CCP's default management processes. While acknowledging that bank resolution authorities may have broad powers to intervene in the arrangements of an insolvent bank participant, the analysis suggests that, in general, resolution proceedings should not impede a CCP's default management processes. ASX will be conducting further

[18] No fire drill was held in 2015 for exchange-traded derivatives, since default management arrangements more broadly were tested in the context of the default of BBY Limited in ASX Clear.

analysis on the interaction between ADI and FMI resolution once the proposed framework for FMI resolution has been finalised.

12.5 A central counterparty should demonstrate that its default management procedures take appropriate account of interests in relevant jurisdictions and, in particular, any implications for pricing, liquidity and stability in relevant financial markets.

The DMF identifies that the key aim in handling a default is to minimise the impact of the event on ASX Clear (Futures), its participants and the market. Since close-out decisions by the DMC are complex and involve careful consideration of the specific circumstances surrounding the default, documented default management procedures are not prescriptive. Rather, ASX Clear (Futures) would consider a range of high-level factors in a default situation, including: any systemic risk implications; potential contagion and implications for wider market liquidity; interdependencies with other entities; the impact on the CCP's risk profile and financial standing; additional risks that could be incurred by participants; and market conditions and default portfolio complexity.

Futures participants are predominantly large foreign banks or subsidiaries of these banks that have a significant domestic presence. However, in 2014/15, a futures participant commenced clearing remotely from the United Kingdom. All OTC participants are Australian banks, Australian branches of foreign banks or Australian incorporated subsidiaries of foreign banks. In addition, products cleared by ASX Clear (Futures) are AUD-denominated, with the exception of NZD contracts (which make up around 3 per cent of initial margin requirements). Accordingly, default management actions would be taken during the local time zone for all but one participant (taking into consideration the extended trading hours of the ASX 24 market). ASX has not identified any impediments to carrying out its default management processes in the event of the default of a remote clearing participant, although ASX would consider additional factors such as the potential impact of time zone differences, as well as interactions with foreign CCPs and external administrators.

Standard 13: Segregation and portability

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

ASX Clear (Futures) offers individual and omnibus segregation to customers (or 'clients') of its exchange-traded derivatives and OTC clearing participants (CCP Standard 13.2). Individual segregation provides protection to clients not only in the event of the default of their clearing participant, but also the concurrent default of a fellow client (CCP Standard 13.1). The availability of individually segregated client accounts, margined on a gross basis at the clearing participant level, also increases the likelihood that client positions could be transferred in the event of a participant default (CCP Standard 13.3). During the Assessment period, ASX Clear (Futures) introduced arrangements that support the posting of excess client collateral, consistent with the Bank's supplementary interpretation of CCP Standards 13.2 and 13.3. ASX Clear (Futures) has produced a fact sheet on its segregation and portability arrangements, which it requires that participants make available to their clients. This is published on ASX's website (CCP Standard 13.4).

13.1 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 (Futures) offers clients of both OTC and exchange-traded futures participants the choice of holding their positions in either an individually segregated account or a client omnibus account.

While in the standard individually segregated structure client positions are held in individual accounts, the collateral posted to support these positions is held in a single commingled account at the participant level. ASX nevertheless maintains a record of the value of initial margin attributable to each segregated client account and guarantees each client the transfer or return of this value (net of any close-out costs), even if the return of the specific securities posted is not possible (see CCP Standard 13.2). This approach is similar to the 'Legally Segregated Operationally Commingled' segregation model mandated in the US by the CFTC.

As a matter of convenience, many participants lodge excess collateral such that the value of collateral held does not align with the record of initial margin. In September 2015, ASX Clear (Futures) implemented system changes that extend individual segregation to include cover for collateral lodged in excess of margin requirements, should participants choose to offer this option to their clients. Under these arrangements, ASX Clear (Futures) would transfer or return the 'collateral value' (i.e. margin requirements plus the value of excess collateral) that had been attributed to an individual client account in the event of a participant default (see CCP Standard 13.2).

ASX Clear (Futures) has the capacity to transfer (port) participants' clients' positions and collateral under its Operating Rules (see CCP Standard 13.3). Part 5 of the PSNA supports the transfer of client collateral in the event of the default of a clearing participant as provided for in its Operating Rules without the need to seek approval from the defaulted participant's external administrator. ASX maintains an internal policy governing the segregation and portability arrangements at ASX Clear and ASX Clear (Futures), which formally aligns these with the requirements of this standard.

13.2 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, or equivalent.

ASX Clear (Futures) offers clients of both OTC and exchange-traded futures participants the choice of holding their positions in either an individually segregated account or a client omnibus account. Initial margin is calculated separately for positions held in each individual or omnibus client account. Portfolio-margining of interest rate futures against OTC positions (see CCP Standard 6.5) is only permitted for clients that have individual client accounts for both types of products with the same participant.

Under the standard individually segregated account structure, only positions are segregated at the individual client account level. Operationally, collateral is not segregated; gross collateral requirements are aggregated across all client accounts and managed by the participant within a single commingled client collateral account. In the event of a default, the value of the initial margin applied to the client's position in an individual client account would

either be transferred to another participant or returned to the client (net of any close-out costs). Under standard arrangements, any excess collateral would be returned to the administrator of the defaulted participant. That is, ASX Clear (Futures) guarantees only the transfer or return of the value of each client's collateral, not the individual collateral securities that may have been posted.

In September 2015, ASX Clear (Futures) introduced arrangements that extend the standard account structure by providing clearing participants with the option to attribute cash and securities lodged as margin or excess collateral to individual client accounts. While all client collateral will continue to be operationally managed in a single commingled account under these arrangements, ASX Clear (Futures) would transfer or return the 'collateral value' for an individual client account (that is, the greater of the initial margin requirement or the value of attributed assets, net of any close-out costs). Subject to exceptions set out in the rules, ASX Clear (Futures) would transfer or return to the client equivalent (*in specie*) securities to those that had been attributed.

Under the individually segregated account structure, however, variation margin payments (and other cash flows) to and from clearing participants are netted. Accordingly, there is a risk that a participant could default before passing on to each client the gross flows underlying the net payment. Despite this, ASX's individually segregated model (with the option of asset attribution) provides significant protections for client collateral posted to the CCP relative to the omnibus segregation structure.

Since under either an individually segregated or an omnibus structure, the positions and collateral of clients are separate and identifiable from those of clearing participants, clients are not directly exposed to losses related to their participant's proprietary (house) activity in the event of that participant's default. Where a client opts to use an individually segregated account, its positions are also separately identifiable from those of other clients, as is the value of its margin obligations and any attributed excess collateral.

Clearing participants are not obliged to offer both individually segregated and omnibus client accounts, but must provide their clients with a client fact sheet, developed by ASX, which explains the types of accounts that are available, and the advantages and disadvantages of each option (see CCP Standard 13.4). Participants that offer individually segregated accounts are also not obliged to support the segregation of excess client collateral or attribute collateral to an individual client.

13.3 To the extent reasonably practicable under prevailing law, 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 (Futures) has the power under its Operating Rules to transfer client positions and collateral following a participant default. This power is further supported by Part 5 of the PSNA (see CCP Standard 13.1). The availability of individually segregated client accounts for both OTC and exchange-traded derivatives increases the likelihood that client positions and collateral could be transferred to another participant in the event of a clearing participant default. Under individual client segregation, margin requirements are calculated on a gross basis (i.e. individually for the positions held by each client). This supports portability by making it more likely that clients would have sufficient collateral transferred with their positions to ensure that their full margin requirements could be met after transfer.

Conversely, a fully-collateralised transfer of an individual client's positions within an omnibus account is unlikely, since these positions are margined on a net basis. ASX would therefore expect to manage a defaulted participant's client omnibus account as a single client account – that is, no individual client within an omnibus account would be transferred separately from the others. Since porting requires the consent of the receiving participant and each individual client, the simultaneous transfer of all clients within an omnibus account would be challenging.

ASX Clear (Futures) has established a direct legal relationship with clients to underpin the acceptance of instructions in the event of a participant default. In the absence of a default, ASX Clear (Futures) does not interact directly with clients, and the participant remains responsible as principal for its clients' obligations to ASX Clear (Futures). However, if the participant were to default, its clients would have the right to communicate with ASX and directly enforce the Operating Rules relating to segregation and portability of client positions and the associated value of initial margin or attributed collateral held on their behalf.[19] To accommodate structures involving indirect clients – that is, clients of clients – ASX Clear (Futures) allows clients to hold multiple individually segregated accounts and to nominate, as appropriate, an end client for each account. In the event of the default of the relevant clearing participant, the nominated end client would have the right to communicate directly with ASX in relation to the porting of positions in that individually segregated account (and associated value of initial margin or attributed collateral).

However, portability cannot be guaranteed since it relies on clients having established arrangements with alternate clearing participants and the willingness and capacity of those participants to take on the affected clients within a short period of time. In the event of a default, ASX allows a window of up to 24 hours for porting of exchange-traded derivatives client positions and up to 48 hours for OTC derivatives client positions. Clients may nominate in advance an alternative ('back-up') clearing participant to which it would seek to port its positions (and any associated collateral value) in the event of its clearing participant default. Advance nomination of a back-up clearing participant is optional and, even if nominated, a 'back-up' clearing participant may in the event be unwilling or unable to take on the positions. However, given the short timeframe for decisions in the event of a default, pre-nomination should increase the likelihood that a successful transfer could be achieved.

In the event that a transfer could not be achieved, ASX Clear (Futures) would hedge, close out and/or auction client positions as it would those of the defaulted clearing participant (see CCP Standard 12). The Operating Rules give ASX Clear (Futures) flexibility to either extend or close the porting window, since ASX would remain exposed to market risk until such time as a defaulted participant's client positions were ported or closed out (see CCP Standard 12). For example, ASX may reduce the porting window if it became clear that a transfer could not be achieved, or if market conditions dictated that it would be beneficial to proceed with other default management processes to reduce ASX Clear (Futures)' exposure.

13.4 A central counterparty should disclose its rules, policies and procedures relating to the segregation of a participant's customers' positions and related collateral. In particular, the central counterparty should disclose whether customer collateral is segregated on an individual or omnibus basis. In addition, a central counterparty should disclose any

19 This right is limited to clients that maintain individual client accounts and are not themselves in default.

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 described in the ASX Clear (Futures) Operating Rules and Procedures (including the OTC Rulebook and Handbook). ASX also publishes an overview of clearing participant default arrangements, which outlines the implications of different account structures and discloses the current operational constraints to portability.[20]

ASX has published a client fact sheet outlining segregation and portability arrangements in ASX Clear (Futures) and the rights of clients in the event of a default. In January, ASX updated the fact sheet to take into account enhancements to protect excess client collateral. Participants are required make this fact sheet available to all of their direct clients. The fact sheet is also available on ASX's public website.[21] In addition, during the current and previous Assessment periods, ASX has publicly consulted stakeholders on segregation and portability arrangements for both OTC and exchange-traded derivatives. These consultations have outlined the implications of different account structures used by ASX Clear (Futures) and identified operational constraints to portability.

Standard 14: General business risk

A central counterparty should identify, monitor and manage its general business risk and hold, or demonstrate that it has legally certain access to, 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.

ASX Clear (Futures) identifies, monitors and manages its general business risks in the context of its overall Enterprise Risk Management Policy (CCP Standard 14.1). It has access to funds held at group level calibrated to support continued operations as a going concern if it incurs general business losses. These funds are backed by equity and invested in liquid assets. The legal basis of ASX Clear (Futures)' access to funds held at group level is set out in the ASX Group Support Agreement (CCP Standards 14.2, 14.3, 14.4). During the Assessment period, ASX Clear (Futures) made enhancements to its recovery arrangements in line with the CPMI-IOSCO guidance on recovery planning (CCP Standard 14.3). ASX maintains viable arrangements to raise additional equity for its CS facilities, as required (CCP Standard 14.5).

14.1 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 CCP Standard 3). Under the framework, formal policies are in

20 Available at: <http://www.asx.com.au/documents/clearing/131001_Default_Management_-_Public_Information_Document_v2.pdf>.

21 The client fact sheet is available at <http://www.asx.com.au/documents/clearing/ASXClientClearingClientFactSheet22January2016.pdf>. A related fact sheet describing the legal model used in ASX Clear (Futures)' client clearing arrangements is available at <http://www.asx.com.au/documents/clearing/ClientProtectionModelFactSheet_31August2015.pdf>.

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 arising from changes in market variables such as interest rates and foreign exchange rates. Mitigants for market risk include hedging of foreign exchange and interest rate risks, 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 arises from the Group's time-critical payables. This is mitigated by ASX's liquidity management arrangements, including forward planning and forecasting of liquidity requirements.
- ASX may be exposed to capital risk if equity in its group entities falls below prudent or regulatory minimum levels. ASX manages its capital at a group level, 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 group-wide technology transformation project and enhancements to the OTC derivatives clearing service. 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 CCP Standard 16.4). 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 covering both project delivery risks and impacts to business activities. 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 relevant management every six months. CALCO also monitors actual and forecast capital and liquidity requirements on a quarterly basis, including requirements related to new projects.

14.2 A central counterparty should hold, or demonstrate that it has legally certain access to, 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, or have access to, 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 $245.6 million for operational and business risk across the four ASX Group CS facilities, $40 million of which has been attributed specifically to ASX Clear (Futures)' 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. The ASX Group Support Agreement places an obligation on ASX to maintain sufficient capital to support ASX Clear (Futures)' continued operations in the event of general business losses, supporting the legal certainty of ASX Clear (Futures)' access to business risk capital as required.

Following a review of its operational and business risk capital levels in April 2016, ASX decreased the level of operational and business risk capital set aside for ASX Clear (Futures) from $60 million to $40 million. In determining the sufficiency of the $40 million, ASX has estimated the capital required to cover: six months of current operating expenses (see CCP Standard 14.3); operational and legal risk; non-covered credit and counterparty credit risk; non-covered market risk; business risk; and an additional capital buffer. It has calculated these components consistent with the methodology used by CCPs in the EU, under EMIR.[22]

ASX Clear (Futures) also undertakes periodic loss scenario analysis which aims to ensure that the level of operational and business risk capital is sufficient to meet the single largest uninsured business loss event for the CCP. ASX has in place a number of insurance policies to reduce its exposure to a broad range of risks, including professional indemnity, fraud, and operational risks such as computer manipulation and equipment failure. In calculating the required quantum of operational and business risk capital, the loss scenario exposures are reduced by the level of insurance coverage. ASX Clear (Futures)' approach assumes full reliability and timeliness of payout under these insurance policies.

14.3 A central counterparty should maintain a viable recovery or orderly wind-down plan and should hold, or have legally certain access to, sufficient liquid net assets funded by equity to implement this plan. At a minimum, a central counterparty should hold, or have legally certain access to, 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 CCP Standard 4 on credit risk and CCP Standard 7 on liquidity risk. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.

In October 2015, ASX Clear (Futures) implemented enhanced recovery planning arrangements, developed with reference to the CPMI-IOSCO guidance on recovery planning

22 The EMIR methodology requires, for example, that ASX Clear (Futures) set aside funds for: winding down or restructuring the business based on monthly gross operating expenses multiplied by the time span required to wind down or recover; operational and legal risk based on a basic indicator approach (e.g. a percentage of average income over several years) or advanced measurement approach; non-covered credit and counterparty credit risk based on a percentage of risk-weighted exposure amounts; non-covered market risk based on own capital requirements; and business risk based on the higher of the CCP's own estimate or one quarter of annual gross operating expenditures.

(see CCP Standard 3.5). ASX updated the documentation setting out its recovery and orderly wind-down plans during the Assessment period, to take into account its expanded suite of recovery tools. In calculating the quantum of business risk capital described under CCP Standard 14.2, ASX has sought to ensure access to sufficient liquid net assets to fund operations during the execution of ASX Clear (Futures)' recovery plan or to cover a minimum of six months of current operating expenses.

ASX Clear (Futures)' enhanced recovery approach establishes arrangements to address non-default losses that arise from losses on treasury investments or a range of general business risks.

- In the case of investment losses (other than those resulting from fraud of, or material non-compliance with the investment policy of the ASX CCPs; see CCP Standard 15), ASX would apportion any losses in excess of $75 million between participants (see CCP Standard 14.5).
- Other non-default, general business losses to ASX Clear (Futures) would be absorbed by ASX through application of general business risk capital. Unlike investment losses (referred to above), general business losses from causes such as a decline in revenues or an increase in operating expenses are likely to be relatively slow-moving in nature. This recovery approach takes into account that ASX has in place a number of insurance policies to reduce its exposure to a broad range of risks (see CCP Standard 14.2). ASX Limited has also committed to maintaining adequate levels of business risk capital for the CCPs and SSFs, recapitalising these funds as required (see CCP Standard 14.5).

14.4 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; Australian Government securities; 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.

14.5 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 a participant default.

ASX Clear (Futures)' enhanced recovery approach depends on timely and reliable recapitalisation processes to address general business losses. ASX Clear (Futures) reviewed its recapitalisation arrangements during 2015/16 to ensure consistency with its enhanced recovery plan, including its new replenishment arrangements (see Section 3.5.1). This plan is supported by an intragroup service agreement which commits ASX Limited to maintaining adequate levels of business risk capital for the CCPs, recapitalising these funds as required. ASX's plans to fulfil its obligations to recapitalise ASX Clear (Futures) include the use of existing group cash reserves and raising additional capital through an equity issuance by ASX Limited.

In the case of investment losses, reliance on recapitalisation alone is unlikely to be sufficiently timely to address losses in excess of general business risk capital. ASX would apportion any losses (other than those resulting from fraud of, or material non-compliance with the investment policy of, the ASX CCPs; see CCP Standard 15) in excess of $75 million (an amount equal to the ASX CCPs' total general business risk capital) between participants. This would be done in proportion to the amount of cash each participant has provided to the CCPs (including margin, default fund contributions and excess cash).

Standard 15: 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.

The assets of ASX Clear (Futures) and its participants are administered and held within the ASX Group in accordance with group-wide controls (CCP Standard 15.1). A portion of these assets is held in liquid form to facilitate prompt access as required (CCP Standard 15.2). ASXCC invests the assets of ASX Clear (Futures) and its participants according to its Investment Mandate in instruments with low credit, market and liquidity risk. ASX Clear (Futures) is in the process of reducing the degree of its reliance on unsecured investments concentrated in the large domestic banks. During the 2015/16 Assessment period, ASXCC's Board endorsed further staged revisions to its treasury investment policy in order to meet the Bank's expectations regarding the credit and liquidity risk profile of ASXCC's treasury investment portfolio by the end of June 2017 (CCP Standard 15.4). ASXCC does not use custodian banks for its investments (CCP Standard 15.3). ASX Clear (Futures)' investment strategy does not allow related entity investments and is designed to allow timely liquidation in periods of market stress, consistent with the Bank's supplementary interpretation of CCP Standard 15.4 (see Introduction to Appendix A).

15.1 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 (Futures) and its participants are administered and held within the ASX Group. Intragroup arrangements allow ASX Clear (Futures) 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 accounting practices, safekeeping procedures and internal controls to protect its own and its participants' assets (as described under CCP Standard 2.7).

Non-cash collateral is held in ASX Clear (Futures)' account in Austraclear. ASX Clear (Futures)' Operating Rules and Procedures define how collateral is used. ASX Clear (Futures) 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 (Futures) is a subsidiary (see 'ASX Group Structure' in Appendix A). ASXCC makes its investments in accordance with its Investment Mandate and ASX's Investment Risk Policy, which together define investment objectives, investment specifications, and audit and maintenance of the policy (see CCP Standard 15.4).

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

Assets invested on behalf of ASX Clear (Futures) and its participants are held within the ASX Group and subject to ASX's exclusive custody. ASX Clear (Futures) does not use external custodians to hold its assets or participants' assets. Cash investments are held directly by ASXCC, and non-cash collateral is lodged directly with ASX Clear (Futures) in Austraclear. In addition, the Operating Rules require that collateral from participants is unencumbered. These arrangements aim to ensure that ASX has prompt and legally certain access to participant collateral and its own contributions to prefunded financial resources, including in the event of a participant default.

15.3 A central counterparty should evaluate and understand its exposures to its custodians, 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 (Futures).

15.4 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 the high-level Investment Risk Policy document and the more detailed ASXCC Investment Mandate, articulates the basis for ASX Clear (Futures)' mitigation of investment-related credit, market and liquidity risks (see CCP Standard 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), or APRA-approved ADIs that are licensed banks in Australia under the *Banking Act 1959*. ADIs must also have an S&P short-term credit rating of A1 or above. The Investment Mandate does not permit investments in securities of ASX Group entities, consistent with the Bank's supplementary

interpretation of CCP Standard 15.4 (see Introduction to Appendix A). Nor is ASXCC permitted to create unsecured exposures to any other 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 the AFR, and whether eligible investment counterparties and their affiliates are also clearing participants. Individual unsecured exposures to non-government related issuers or counterparties will be lowered over 2016/17. At the end of June 2016, limits related to these counterparties will be set at the level of business risk capital held across the two CCPs ($75 million). Concentration limits are set on both the proportion of the portfolio and the absolute amount that can be invested with a single counterparty.

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 (Futures)' clearing activities (see CCP Standard 7.3). 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 CCP Standard 7.4). Such liquid assets include Australian Government securities, bank bills and certificates of deposit. The policy also sets a 'value-at-risk' limit. Cash collateral must be invested in the currency it is received in, and currency-specific limits are placed on relevant counterparties for the investment of NZD cash collateral.

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 Consultative Committees. The broad approach to investment and investment holdings are disclosed publicly in the ASX Annual Report. In accordance with the CPMI-IOSCO *Public quantitative disclosure standards for central counterparties*, ASX also discloses the high-level composition of ASXCC's investment holdings on a quarterly basis (see CCP Standard 21.2). In 2015/16, ASX enhanced its disclosure on investment risk to clarify participants' contingent exposure to CCP investment losses. Under ASX's enhanced recovery arrangements, ASX would allocate any losses in excess of $75 million between participants, in proportion to the amount of cash each participant has provided to the CCPs. The enhanced disclosure provides the steps a participant could take to calculate its contingent exposure if an investment loss greater than $75 million were to be realised.

In response to concerns from the Bank and its own review of its treasury investment policy in 2012/13, ASX has modified the ASXCC Investment Mandate each year since that time to reduce the unsecured limit on exposures to the large domestic banks in absolute terms. 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.

During 2014/15, the Bank continued to engage with ASX on changes to its treasury investment policy. This dialogue clarified the Bank's expectations for the credit and liquidity risk profile of ASXCC's investment portfolio that is required for ASX to fully observe Standard 15 (see above). In response, ASX has endorsed revisions to its treasury investment policy. The

most recent revision, approved by the ASXCC Board in May 2016, clarifies how ASX's portfolio will change over 2016/17 to meet the Bank's expectations for the credit and liquidity risk profile of ASX treasury investments. Under these changes by end 2016/17, over half of the investment portfolio would be invested in government or semi-government bonds, or reverse repurchase agreements secured by such bonds. The remainder of the portfolio would be primarily invested in Bank eligible securities, or held in deposits with ADIs. Individual unsecured exposures to non-government related issuers or counterparties would be limited to the level of business risk capital held across the two CCPs (currently $75 million), meaning that ASX could absorb losses arising from the default of any single investment counterparty or issuer without allocating losses to participants (see CCP Standard 14.3). While the majority of the transition to this new portfolio is expected to take place in 2016/17, ASX did make small changes to its investment profile in 2015/16 (see Section 3.5.4).

Standard 16: 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.

ASX Clear (Futures)' key operating systems are Genium INET (Genium) and Calypso. Genium replaced the previous SECUR system for the clearing of exchange-traded derivatives in May 2014. Calypso was first used for the clearing of OTC derivatives transactions in September 2013.

ASX Clear (Futures) manages its operational risks in the context of its group-wide Enterprise Risk Management Framework (CCP Standard 16.1). Responsibility for approving and reviewing operational risk management policy is shared between the ASX Limited and CS Boards, the Audit and Risk Committee and individual departments. The management of each department is responsible for implementing operational risk controls in their respective areas (CCP Standard 16.2). ASX Clear (Futures) sets clear operational reliability objectives and pursues policies designed to achieve those objectives. Key objectives for Genium and Calypso, such as minimum availability of 99.8 per cent and peak capacity utilisation of 50 per cent, were met during the Assessment period. ASX Clear (Futures) maintains physical and information security policies based on relevant domestic and international standards (CCP Standard 16.3). ASX Clear (Futures) considers that it has sufficient well-trained and competent personnel and other resources to operate Genium and Calypso. ASX Clear (Futures) prioritises its projects to ensure business development work does not risk the availability of these resources for key systems (CCP Standard 16.4).

ASX Clear (Futures) manages operational interdependencies with participants and with Austraclear through its participant monitoring processes and group-wide risk management framework, respectively (CCP Standard 16.5). Its dependencies on service providers and utilities are subject to ongoing monitoring and contingency arrangements where appropriate, including an escrow arrangement for Genium and Calypso source code subject to third-party vendor support. ASX Clear (Futures)' legal agreements with key outsourcing and critical service providers impose operational requirements on those providers equivalent to those under the FSS, provide for access to information for the Bank, and require that providers give notice to the Bank in the case of termination (CCP Standards 16.9, 16.10, 16.11).

ASX Clear (Futures) also maintains business continuity arrangements that provide a high degree of redundancy and, through the use of dual sites, target the resumption of operations within two hours following disruptive events. These arrangements are regularly tested in real time during live operations (CCP Standard 16.7). Participants are required to maintain appropriate operational and business continuity arrangements that complement ASX Clear (Futures)' own arrangements and are appropriate to the nature and scale of their business. ASX Clear (Futures) monitors participants' compliance with these requirements, and broader operational performance, on an ongoing basis (CCP Standards 16.6, 16.8).

Identifying and managing operational risk

16.1 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 CCP Standard 3.1). Under this framework, the ASX Limited Board is responsible for reviewing and overseeing the group's risk management systems (see CCP Standard 2.6). The Board delegates review of the Enterprise Risk Management Framework to its Audit and Risk Committee. An ERMC, 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 (see CCP Standard 16.2). 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.

Dedicated security teams have responsibility for assessing both physical and cyber security risks, and are overseen by the ERMC (see CCP Standard 16.3).

16.2 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 ERMC and individual departments.

Ultimate responsibility for the management of ASX's cyber-related risks lies with the ASX Limited Board, reflecting that different business areas share common vulnerabilities to cyber threats and that the response to such threats may require group-wide coordination. In practice, however, the Board delegates its ongoing oversight of cyber resilience to the ASX Limited Audit and Risk Committee, subject to the Board's stated very low tolerance for residual operational risks. The Board remains informed of significant cyber-related developments or issues, including where cyber incidents could threaten the availability or integrity of ASX systems, and in considering cyber risks in the approval of major projects. The

Audit and Risk Committee receives regular updates on information security matters and oversees the cyber resilience activities of ASX management and staff.

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. Scheduled reviews carried out by Internal Audit include business process and operational audits and information technology reviews. Internal Audit also reviews major projects and carries out special investigations as required (e.g. following a major operational incident). Audit findings may prompt a review of policy, which would be conducted in consultation with key stakeholders. Technology-related security processes are 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*, and the international standard *ISO 22301:2012 Business Continuity Management Systems*.
- The technology risk management framework is benchmarked against ISO 17799 (which covers principles for information security management) and ISO 27001 (requirements for information security management systems). 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, segregation of duties controls such as dual input checks and approval, management sign-off and processing checklists as the primary preventative controls, supported by reconciliations and management reviews of activity.

Change management and project management

ASX Clear (Futures) operates a separate test environment for its core systems (Genium and Calypso), and has a formal change management process which is documented in the ASX Technology Change Management Policy and Guideline. The Policy and Guideline covers the requirements for the notification, risk assessment, testing and implementation of technology changes for all ASX CS facilities, as well as the key roles and responsibilities in relation to technology change management. There are also defined procedures for communicating details of technology upgrade releases with participants and vendors, which include regular notices to participants of upcoming changes. Aspects of the change management process are reviewed each year by an external auditor.

Major projects are overseen by the 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. Project management of major projects is

undertaken by the PMO. 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 which are intended to ensure that all appropriate risk management controls are in place prior to live use of a new or updated system or service.

In February 2015, ASX announced a technology transformation program to upgrade all of its major trading and post-trading systems over the next three to four years (see Section 3.5.7). The program is intended to rationalise ASX's core technology onto a single services platform, removing interdependencies that currently exist between unrelated systems. The first phase of the program will upgrade ASX's trading, risk management and market monitoring systems. A subsequent phase of the technology transformation program will focus on ASX's clearing and settlement platforms.

Given the significance of the technology transformation program for ASX's critical trading, clearing, settlement and risk management systems, the ASX Limited Board and CS Boards will receive regular status updates throughout the life of the program, with executive-level oversight of project management provided by the EPSC. ASX's Audit and Risk Committee, together with the ERMC, oversees the management of operational and strategic risks associated with execution of the program, with internal and external audit providing review of key elements.

ASX has formally adopted an 'Agile project management' approach for its technology transformation. This seeks to streamline decision making by bringing together the human and technological resources that support the design, development and testing processes, and delivering project outputs in a series of incremental stages (so-called 'sprints').

The Bank is receiving detailed quarterly updates on the progress of the technology transformation program. These updates also provide an opportunity for the Bank to examine interdependencies with day-to-day business-as-usual processes and potential change-management issues.

16.3 A central counterparty should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives. These policies include, but are not limited to, having: exacting targets for system availability; scalable capacity adequate to handle increasing stress volumes; and comprehensive physical and information security policies that address all potential vulnerabilities and threats.

Operational reliability and availability

Availability targets are documented and defined formally for critical services. Genium and Calypso are required to meet a minimum availability target of 99.8 per cent; during the 2015/16 Assessment period, Genium was available 100 per cent of the time and Calypso was available 100 per cent of the time.

Operational capacity

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 to the CRO, CFO, CIO and GE, Operations on a monthly basis and to the Audit and Risk Committee on a quarterly basis. The average capacity utilisation of Genium during the Assessment period was 9 per cent, while peak utilisation was 16 per cent; average capacity utilisation of Calypso was 17 per cent, while peak capacity utilisation was 29 per cent. ASX Clear (Futures) considers that it has sufficient technical and human resources to operate Genium and Calypso during peak periods, including in the event of operational incidents or system failure.

Information and physical security

ASX's cyber resilience approach is defined by the Information Security Strategy approved by the Security Steering Committee, and more granular policies and standards set out in ASX's Information Security Policy Framework. The Information Security Strategy sets out six high-level objectives for ASX's information security approach:

- ensuring that information security supports enterprise-wide strategy and governance, safeguarding the confidentiality, integrity and availability of critical data and systems
- ensuring that information security is implemented using a risk-based approach
- ensuring that information security considers interdependencies with external stakeholders (including participants and regulators)
- supporting the development of a culture of security and the acceptance of information security responsibilities throughout the organisation
- ensuring information security is flexible enough to adjust to changing market demands
- pursuing continual improvement in the effective and efficient deployment of information security controls.

The Information Security Strategy and Policy Framework are reviewed on a regular basis by the IT Security Team, with formal review by the Security Steering Committee carried out on an ad hoc basis in response to material changes to the security environment. The last such review was in October 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 operates a suite of controls designed to prevent and detect cyber attacks on its systems, such as denial of service or malware threats. These controls include continuous monitoring of its network for cyber intrusions and malicious code, steps to monitor suspicious internet traffic, regular scans of both the network perimeter and system assets to confirm they remain secure, 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).

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. ASX's system architecture is designed to minimise the risk of a cyber threat spreading, via the segregation of critical systems. In 2015/16, ASX also implemented a new identity

management application to enhance the identity management capability and automate many of the set-up, maintenance and removal processes associated with user access administration.

Application testing is carried out in test environments (see CCP Standard 16.2). 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.

Physical access is controlled at both an enterprise and departmental level. The key systems supporting ASX's clearing and settlement processes are operated within secure buildings. 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.

16.4 A central counterparty should ensure that it can reliably access and utilise well-trained and competent personnel, as well as technical and other resources. These arrangements should be designed to ensure that all key systems are operated securely and reliably in all circumstances, including where a related body becomes subject to external administration.

Access to resources

ASX Clear (Futures) has arrangements in place which aim to ensure that it has well-trained and competent personnel operating Genium and Calypso. 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 (Futures) 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.

ASX has established a customer support centre within ASX's Australian Liquidity Centre.[23] The customer support centre brings together operations, technology and market surveillance staff in a single location, which is ASX's primary operations base and primary data centre.[24] To facilitate rapid recovery in the event of an operational disruption, around 20 per cent of ASX's operational staff are now based at its secondary operations site (formerly the primary operations site). 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.

ASX has also a Customer Experience team led by an Executive General Manager. This team brings together the main customer-facing functions from across ASX and is responsible for the development and delivery of the ASX customer experience.

23 The Australian Liquidity Centre provides market participants with the option to 'co-locate' their servers with ASX's data centre.

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

Resources shared with a related body

Within the ASX group structure, most operational resources are provided by ASX Operations Pty Limited, a subsidiary of ASX Limited (see 'ASX Group Structure' in Appendix A), under a contractual Support Agreement. ASX Operations is also required under the Support Agreement to provide the Bank with reasonable rights of access in respect of information relating to its operation of critical functions provided to ASX Clear (Futures) (see CCP Standard 16.10 in respect of broader rights of access provided to the Bank by ASX Clear (Futures)' critical service providers).

In the event that ASX Operations became subject to external administration, to the extent permissible by law, provisions within the Support Agreement provide for ASX Clear (Futures) and the other clearing and settlement corporate entities to retain the use of operational resources. Under proposals currently under consideration by the government in the context of establishing of a special resolution regime for CS facilities (see CCP Standard 16.11), the Bank would have the power to issue directions in day-to-day oversight, recovery and resolution to related entities such as ASX Operations that provide critical services to a CS facility under *ex ante* legal agreements. This proposed directions power would further safeguard ASX Clear (Futures)' access to critical services provided by ASX Operations.

Resourcing of major projects

The EPSC is 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 (see CCP Standard 16.2). In managing projects affecting core systems, such as the move from SECUR to Genium, the PMO rates projects to ensure that they receive appropriate access to resources.

For example, in its oversight of ASX's technology transformation program (see CCP Standard 16.2), the EPSC determines the prioritisation of resourcing for the different project phases. The Bank is receiving detailed quarterly updates on the progress of the technology transformation program. These updates also provide an opportunity for the Bank to examine prioritisation decisions and resourcing challenges.

16.5 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. A central counterparty should inform the Reserve Bank of any critical dependencies on utilities or service providers. In addition, a central counterparty should identify, monitor and manage the risks its operations might pose to its participants and other FMIs. Where a central counterparty operates in multiple jurisdictions, managing these risks may require it to provide adequate operational support to participants during the market hours of each relevant jurisdiction.

Dependencies on participants and other FMIs

ASX identifies, monitors and mitigates potential dependencies on participants in a number of ways:

- by holding regular discussions with participants on risk management processes (see CCP Standard 3.1)
- through participation requirements related to operational resources and capabilities, and business continuity arrangements (see CCP Standards 16.6 and 17.2)

- as part of its assessments of project-related risks (see CCP Standard 14.1)
- through general monitoring of risks under its risk management framework (see CCP Standard 3.1).

For example, over the past few years, ASX has been monitoring and managing risks relating to ASX Clear (Futures)' operational activities arising from participants' use of third-party vendors for back-office systems, and participants outsourcing their back-office processing offshore.

- If 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 (Futures)' 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. 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. To manage this risk, ASX has standardised its offshoring and outsourcing regime across its markets and CS facilities, including ASX Clear (Futures), and has published a guidance note setting out its expectations in relation to participants' offshoring and outsourcing arrangements.

ASX Clear (Futures) has an operational interdependence with Austraclear, which is used to settle margin payments (see CCP Standard 19). Operational risk associated with this interdependence is managed within the context of the ASX Group's operational risk management framework. ASX Clear (Futures) does not have significant operational interdependencies with other FMIs.

Dependencies on service 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 or 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, aiming 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.[25] Contractual arrangements with critical service providers require the approval of ASX Clear (Futures) before the service provider can itself outsource material elements of its service.

ASX Clear (Futures)' core exchange-traded derivatives clearing system, Genium, is provided by a third-party vendor. ASX Clear (Futures) has responsibility for business continuity arrangements and computer-system support. The vendor provides support where changes to the system components or underlying source code are involved, under an agreement which extends to 2019. ASX Clear (Futures) has an escrow arrangement in place that would allow it to access source code for Genium in the event that the vendor was unable to continue providing support.

All other ASX Clear (Futures) 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 annually. Participants take part in these business continuity tests and are notified of the 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.

Disclosure

The nature and scope of ASX Clear (Futures)' 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 (Futures) provides telephone and email support to participants via a helpdesk in its customer support centre. The service operates from 8.00 am to 7.30 pm.

16.6 A participant of a central counterparty should have complementary operational and business continuity arrangements that are appropriate to the nature and size of the

25 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.

business undertaken by that participant. The central counterparty's rules and procedures should clearly specify operational requirements for participants.

Business continuity requirements for participants are set out in the ASX Clear (Futures) Operating Rules and Procedures, supplemented by additional guidance issued by ASX. These require large participants to maintain adequate business continuity arrangements (see CCP Standard 16.8) to allow the recovery of usual operations preferably within two hours, and no more than four hours, following a contingency event. The targeted recovery time for smaller participants is preferably four hours, and no more than six. 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. Spot checks of participants' business continuity management are conducted if risk factors are identified, such as where a participant has experienced operational problems. These spot checks examine the participant's governance and processes for resilience and business continuity.

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 remediate the weakness as a matter of priority. ASX may impose conditions on participation, or require that the participant appoint an independent expert to assist with the remediation task.

Business continuity arrangements

16.7 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 systems can resume operations within two hours following disruptive events. Business continuity arrangements should provide appropriate redundancy of critical systems and appropriate mitigants for data loss. The business continuity plan should be designed to enable the central counterparty to facilitate 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 management

ASX Clear (Futures)' approach to business continuity is defined in the ASX Business Continuity Management Policy. This policy describes the incident management and business continuity arrangements for all ASX CS facilities, including the appropriate operational response to a CS facility disruption, and the key roles and responsibilities in relation to business continuity. The Business Continuity Policy is supported by a range of other internal documents, including the Business Resumption Plan, the Pandemic Response Plan, and the testing policy for ASX's Business Continuity and Disaster Recovery Plans.

The Group Business Continuity Manager is responsible for developing the ASX business continuity management policies and procedures, and coordinating business continuity activities and training across the CS facilities. The outcomes of these activities are overseen by the Business Continuity Steering Committee, which is chaired by the General Manager Enterprise Risk and includes the CIO, CRO, CFO and GE, Operations. The ERMC is responsible for approving ASX's overall business continuity strategy and any related policies.

ASX Clear (Futures) 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; these cover scenarios such as the loss of systems or site access (with or without damage to internal site infrastructure), mass unavailability of staff or a pandemic event.

ASX Clear (Futures) 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.[26] 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 errors by 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 the 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 synchronised replication of database records across both the primary and backup data centres. Furthermore, in the event that a significant part of a system or an operational site failed, ASX Clear (Futures) 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 (Futures) regularly tests its business continuity and technology disaster recovery arrangements against the range of identified business interruption scenarios. The testing requirements are set out in ASX's Business Continuity and Disaster Recovery Plans Testing Policy. Dual site operational teams across the primary and secondary operations sites effectively test backup operational processes on a continuous basis. These arrangements are supplemented by periodic desktop simulations, and exercises testing remote access and full attendance at the secondary site. ASX also participates in industry-wide tests of business continuity arrangements. For teams not located across both sites, connectivity and procedural testing of the secondary site are performed monthly by representatives from those teams. Live technology tests, where clearing services are provided in real time from the backup data centre, are conducted on a two-year cycle. The use of live tests ensures that participant connectivity to the backup data centre is also tested. Test results are formally documented and reported to ASX senior management and are also made available to internal and external auditors. In addition to receiving the results of business continuity tests, Internal

26 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.

Audit also reviews Technology operational incidents, contributes to business continuity policy updates, and helps ensure that business continuity elements have been considered in project risk assessments. ASX's business continuity framework is audited externally every three to five years; the most recent audit, completed in November 2015, found that ASX's business continuity standards were broadly consistent with widely recognised global standards and did not identify any major areas of concern.

Incident management

ASX Clear (Futures) has clearly defined procedures for crisis and event management. These procedures, as well as key roles and responsibilities for managing an incident, are documented in ASX's Major Incident Management Plan. The procedures cover incident notification (including notification and incident reporting to the Bank and ASIC), emergency response (including building evacuation), incident response (including overall incident assessment and monitoring), and incident management testing. 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.

The ASX Technology Incident Management Procedure would be invoked in the event of a high severity technology incident. The Incident Management Procedure provides guidelines for system recovery prioritisation and resource allocation, and the actions that would need to be taken in the event of an incident. The Procedure also outlines the key roles and responsibilities for managing an incident, as well as indicative communication and notification requirements.

16.8 A central counterparty should consider making contingency testing compulsory for the largest participants to ensure they are operationally reliable and have in place tested contingency arrangements to deal with a range of operational stress scenarios that may include impaired access to the central counterparty.

The ASX Clear (Futures) Operating Rules and Procedures 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 (see CCP Standard 16.6). It is ASX Clear (Futures)' expectation (set out in guidance) that this would be within two hours following a contingency event for large participants. These arrangements are reviewed as part of the participant admissions process. Participants are also subject to spot checks of their ongoing compliance with the ASX Clear (Futures) Operating Rules. 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. If a participant fails to implement any recommendations arising from a check, ASX may impose sanctions.

Participants are involved in the contingency testing of ASX Clear (Futures)' 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 (Futures) conducts regular connectivity tests and maintains an external testing environment for system changes.

Outsourcing and other dependencies

16.9 A central counterparty that relies upon, outsources some of its operations to, or has other dependencies with a related body, another FMI or a third-party service provider (for example, data processing and information systems management) should ensure that those operations meet the resilience, security and operational performance requirements of these CCP Standards and equivalent requirements of any other jurisdictions in which it operates.

ASX has developed a set of standard clauses for inclusion in contracts with third-party service providers of critical services to ASX Clear (Futures) (see CCP Standard 16.5). Similar clauses are also included in the Support Agreement between ASX Clear (Futures) and ASX Operations Pty Ltd, which provides all internal operational services for the facilities. The clauses seek to ensure that the service providers meet the resilience, security and operational performance requirements of the FSS. The clauses also allow the Bank to gather information from the service provider about the operation of critical functions (see CCP Standard 16.10). 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. Furthermore, if ASX Clear (Futures) were to become insolvent, the clauses provide for the Bank to negotiate with the service provider to continue service provision (see CCP Standard 16.11). 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 (Futures)' agreements with a third-party vendor for support of Genium, which also incorporates EXIGO software support, and another third-party vendor for support of Calypso.

16.10 All of a central counterparty's outsourcing or critical service provision arrangements should provide rights of access to the Reserve Bank to obtain sufficient information regarding the service provider's operation of any critical functions provided. A central counterparty should consult with the Reserve Bank prior to entering into an outsourcing or service provision arrangement for critical functions.

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 (Futures). ASX applies these clauses to all new agreements with service providers, and has incorporated them into all of its key existing service agreements, including its agreements with the vendors mentioned in CCP Standard 16.9.

16.11 A central counterparty should organise its operations, including any outsourcing or critical service provision arrangements, in such a way as to ensure continuity of service in a crisis and to facilitate effective crisis management actions by the Reserve Bank or other relevant authorities. These arrangements should be commensurate with the nature and scale of the central counterparty's operations.

Standard clauses in ASX Clear (Futures)' agreements with service providers (described in CCP Standards 16.9 and 16.10) require that providers give the Bank notice of any intention to terminate the agreement as a consequence of ASX Clear (Futures)' failure to pay fees, or in the event of the insolvency of ASX Clear (Futures) 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 (Futures)' 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. For example, under the proposed regime the Bank would have powers to direct related entities (such as ASX Operations) to perform obligations under *ex ante* agreements to provide critical services (see CCP Standard 16.4). The Government, on the advice of the CFR, progressed work on the proposed FMI resolution regime via a February 2015 consultation paper. Following the release of the conclusions to this consultation in November 2015, the government began developing legislative proposal to implement the regime. At the same time, the CFR continues to develop operational arrangements to support the regime once implemented.

Standard 17: Access and participation requirements

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

ASX Clear (Futures) has objective and transparent participation requirements set out in its Operating Rules and Procedures (CCP Standard 17.1). These include minimum capital and other financial requirements, as well as operational and risk management arrangements tailored to the specific activities of ASX Clear (Futures). Additional requirements apply for OTC derivatives clearing participants (CCP Standard 17.2). ASX Clear (Futures) monitors participants' compliance with requirements on an ongoing basis and has the authority to suspend or terminate participation or take other disciplinary or remedial action in the event of a breach of these requirements (CCP Standard 17.3).

17.1 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 (Futures) has objective and transparent participation requirements, which are publicly available and form part of its Operating Rules and Procedures. ASX has also issued formal guidance to assist applicants' and participants' understanding of the participation requirements. This includes guidance on: the admission process and criteria; notification obligations; offshoring and outsourcing arrangements; and business continuity requirements.

ASX has an internal policy and supporting standards that summarise the financial and operational requirements placed on participants under the ASX Clear (Futures) Operating Rules and Procedures (see CCP Standard 17.2), 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 2016, ASX Clear (Futures) had 19 participants, predominantly large domestic and foreign banks and their subsidiaries. Eight participants were OTC derivatives clearing participants, of which four cleared OTC derivatives only. One futures participant was clearing remotely from the United Kingdom under a pilot scheme (see CCP Standard 17.2).

17.2 A central counterparty's participation requirements should be justified in terms of the safety 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 (Futures)' 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.

Participants that clear futures only are subject to a minimum NTA requirement of $5 million. ASX management has discretion to impose a higher requirement.

Participation requirements for participants that clear OTC derivatives are set out in the publicly available OTC Rules and OTC Handbook. The capital requirement of $50 million for these participants is significantly higher than that for futures-only participants to reflect the increased complexity of OTC derivatives markets, and the potential for a default event to require the liquidation of less liquid products than those in the futures market. In particular, it is likely that OTC derivatives participants would be called upon to contribute to the close-out process, including by bidding in an auction of a defaulted participant's positions.

Under the Operating Rules and Procedures, the ASX Clear (Futures) Board must be satisfied that a potential participant has (or will have) the resources and processes to comply with its obligations as a participant. For these purposes, 'resources' include financial, technological and human resources, and 'processes' include management supervision, training, compliance, risk management, business continuity and disaster recovery processes. 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.

Since April 2015, ASX Clear (Futures) has been conducting a pilot scheme for the admission of participants that are incorporated and base their operations offshore. Such participants must demonstrate the capacity to meet all of the financial and operational requirements described above and that no conflicts of law would arise as a result of their participation. ASX will assess the outcomes from the pilot scheme (initially involving a single UK-based participant) prior to allowing such arrangements more broadly.

17.3 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 CRPM department, which covers both CCPs and reports to the CRO, is responsible for the risk management of exposures to clearing participants. CRPM monitors day-to-day developments regarding, among other things, financial requirements, risk profiles, open positions and settlement obligations to the CCPs.

The CRA team is responsible for monitoring, assessing and investigating matters relating to financial requirements, including monitoring participants' monthly financial statements for any matters of concern. The CRA team reports to the General Manager, Participants Compliance with a secondary reporting line to the Senior Manager, CRPM.

CRA 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 (Futures). Participants are required to inform ASX if at any stage their capital falls below the minimum requirement. CRA, working with CRPM, 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 CCP Standard 4.1).

In addition, Operations and ASX Compliance perform regular and ad hoc compliance monitoring activities, including monthly reviews of participants' financial returns. During the Assessment period, ASX also initiated additional risk-based validation reviews.

ASX Clear (Futures)' arrangements for monitoring and enforcing compliance with its Operating Rules are published on the ASX public website. Under these, ASX Clear (Futures) has wide-ranging powers to sanction its participants in order to preserve the integrity of the CCP. ASX Clear (Futures) may restrict, suspend or terminate a participant's authority to clear 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. Where a breach has been identified and the participant has taken appropriate steps to rectify it, ASX Clear (Futures) 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.

Standard 18: Tiered participation arrangements

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

ASX Clear (Futures) applies a risk-based approach to its monitoring of tiered participation arrangements. The focus of this monitoring is on client activity in exchange-traded derivatives, since there is currently no client clearing of OTC derivatives transactions. ASX Clear (Futures) has a formal standard that governs its risk-based approach to monitoring concentration in tiered participation arrangements and documents mitigating steps (CCP Standard 18.4).

During 2015/16, clients of ASX Clear (Futures)' participants represented 76 per cent of initial margin held by ASX Clear (Futures) to cover its credit exposures to both participants and (indirectly) their clients. In managing the risks associated with tiered arrangements, ASX Clear (Futures) is able to gather information on indirect participation, although with some limitations. The individually segregated account structure available for both OTC and exchange-traded derivatives will allow ASX Clear (Futures) to obtain better data to support its monitoring of indirect participation, although use of this account structure is currently limited. Where data limitations remain, ASX can also seek more detailed information from participants on an ad hoc basis (CCP Standards 18.1, 18.2). ASX Clear (Futures) does not maintain formal thresholds at which large indirect participants are encouraged to seek direct participation, but does actively manage risks posed by indirect participant activity through its relationship with the direct participant (CCP Standard 18.3). ASX Clear (Futures) conducts daily monitoring of its client-level data, with the use of predefined triggers for further action.

18.1 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 (Futures) gathers basic information on indirect participation in the form of a Daily Beneficial Ownership Report (DBOR) from participants. This report provides details of client positions. These data are aggregated and reviewed to identify positions that may be unusual, result in a concentration of risk, or breach position limits set by ASX Clear (Futures) for the expiry period. There are, however, practical limitations to the use of these data for the analysis of tiering; in particular, the account codes of a client or related clients may vary from participant to participant.

ASX Clear (Futures) offers the option of individually segregated client accounts for both OTC and exchange-traded derivatives (see CCP Standard 13.2). To date, use of this account structure has been limited. As participants and their clients make greater use of the individually segregated accounts, ASX will be able to gather better information on client positions to support its monitoring of tiered participation risks (see Standard 18.4).

If required, ASX Clear (Futures) may request more detailed information on any indirect client from that client's clearing participant. This information may include further details about the client's profile or activities, including its intentions regarding future open positions or physical delivery obligations. ASX Clear (Futures) 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 (Futures) were to perceive an increased risk from indirect relationships. ASX Clear (Futures) currently considers the risks from concentration of indirect participants to be low for OTC products and medium for futures products.

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

As noted under CCP Standard 18.1, ASX Clear (Futures) 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, expiry monitoring activities, monitoring of delivery risk (e.g. futures options expiries), and ASX Clear (Futures)' broader array of risk management data collection (including the DBOR) and monitoring activities. Based on this information, ASX Clear (Futures) has not identified any material dependencies between direct and indirect participants.

As discussed under CCP Standard 18.4, the use of individually segregated accounts will permit ASX Clear (Futures) to monitor the proportion of a participant's business attributable to a particular client and set triggers for further action based on the proportion of initial margin attributable to that client.

18.3 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.

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 the past, notably in managing the default of MF Global in late 2011.

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

ASX maintains a formal Concentration Risk Standard, which sets out a risk-based approach to monitoring concentration risks in a number of areas (see CCP Standard 4.2), including tiered participation.

Exposures arising from OTC derivatives clearing remain low relative to exchange-traded derivatives exposures, and there has not been any use of client clearing arrangements for OTC derivatives to date. Accordingly, ASX has focused on the risks from tiered participation arrangements in its exchange-traded derivatives clearing activities.

ASX Clear (Futures) reviews risks arising from tiered participation in exchange-traded derivatives on a daily basis using the DBOR client-level data. A number of predefined triggers are applied to these data to identify positions that may be unusual, result in a concentration of risk, or breach position limits set by the facility for the expiry period. The triggers are defined at the contract level, taking into account factors such as the nature of the contract, the market liquidity, whether the contract has position limits for expiry, and whether it is deliverable. Monitoring of the DBOR data, including the DBOR triggers, is conducted by ASX Participant Compliance as part of its daily monitoring of credit risk (see CCP Standard 4.2) and ASX's broader framework for management of risks (CCP Standard 3).

Once client use of individually segregated client accounts reaches a material level (see CCP Standard 13), ASX Clear (Futures) intends to enhance its monitoring of indirect participation in the exchange-traded derivatives market. In particular, on a daily basis, ASX Clear (Futures) monitors concentration indicators based on initial margin. If a client's initial margin accounts for over 25 per cent of its clearing participant's total initial margin, further investigation would be triggered. The Concentration Risk Standard notes that a number of factors will be considered when determining the appropriate response to any breaches of triggers, including the materiality of the breach and the credit standing and activity profile of the relevant participant. Clients that continue to clear via an omnibus client account will continue to be monitored using the DBOR data.

Standard 19: FMI links

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

ASX Clear (Futures) maintains links to three other FMIs: Austraclear, NZClear and DTCC Data Repository LLC (DTCC). ASX Clear (Futures) assumes no direct financial risks from these links, but is exposed to operational risks. These are managed in the context of the operational risk management practices of both FMIs (CCP Standard 19.1). The legal basis of each link is supported by finality legislation and contractual arrangements, including the Regulations, Operating Rules and Procedures

of the linked facilities (CCP Standard 19.2). All link arrangements have been discussed with the Bank (CCP Standard 19.3). ASX Clear (Futures) does not maintain links with any other CCPs (CCP Standards 19.4, 19.5).

19.1 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 the central counterparty is able to comply with these CCP Standards.

Identifying link-related risks

ASX Clear (Futures) maintains links with three other FMIs. A link for the purposes of this standard is any connection that is made to another FMI according to a set of contractual and operational arrangements, irrespective of the complexity of the link and whether it is made directly with the FMI or through an intermediary.[27]

- *Austraclear.* This link supports AUD funds transfers, lodgement of AUD-denominated non-cash collateral, and settlement of 90-day bank bill futures. Cash transfers are entered into Austraclear by ASX Clear (Futures), 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 (Futures)' margin and collateral systems. AUD-denominated non-cash collateral is lodged via a collateral lodgement form, and cannot be applied to margin requirements until the day following lodgement of this form. Once ASX Clear (Futures) has received the form, the relevant securities are transferred to ASX Clear (Futures) via a 'free of payment' trade in Austraclear. Settlement of 90-day bank bill futures takes place in Austraclear according to procedures set out in ASX 24's Operating Rules and Procedures. Sellers and buyers who are not full participants of Austraclear must appoint a full participant to act as their settlement agent.

- *NZClear.* This link supports the settlement of NZD payments. ASX Clear (Futures) maintains an account in NZClear to initiate and receive NZD margin payments, with settlement in central bank money via arrangements with a commercial settlement bank (see CCP Standard 9.1).

- *DTCC.* This link was established for the reporting of OTC IRS trades, and supports ASX Clear (Futures)' OTC trade reporting obligations to ASIC. The link also facilitates the reporting of OTC IRS trades involving US persons, which is a condition of ASX Clear (Futures)' August 2015 exemption from the requirement to register as a DCO in the US.

Managing operational risk

The link to Austraclear is subject to the same operational risk management framework that applies to all of the ASX CS facilities (see CCP Standard 16). 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

27 Links to payment systems are addressed in CCP Standard 9.

covered by the Austraclear System Business Operations Plan, which includes a 'Step-in and Service' agreement with the Bank (see Appendix A2.2, SSF Standard 14).

The potential impact of risks associated with ASX Clear (Futures)' link to NZClear is limited by the small value of NZD margin in comparison with total margin held by ASX Clear (Futures). NZClear is owned, operated and overseen by the RBNZ. Any operational issues that arise in NZClear are notified to all members, including ASX Clear (Futures), via email notification. NZClear has the ability to perform transactions on behalf of a member in the event of an operational disruption to ASX Clear (Futures)' link arrangements; in this case, ASX would advise NZClear to perform payment instructions via written instructions signed by ASX's authorised signatories. ASX Clear (Futures) has contingency arrangements that allow for late payment of margin on New Zealand futures products via Austraclear in AUD, with ASX Clear (Futures) applying a haircut to the NZD margin equivalent.

Managing financial risk

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

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

ASX Clear (Futures)' link to Austraclear has its legal basis in its Operating Rules and Procedures and the Austraclear Regulations and Procedures. The finality of settlements in Austraclear is supported by its approval under Part 2 of the PSNA (see CCP Standard 1.5).

The finality of settlement in NZClear is enshrined in the system rules of NZClear and supported by NZClear's designation under Part 5C of the *Reserve Bank of New Zealand Act 1989* (NZ) (see CCP Standard 8.1).

The Bank has formed the view that a CCP link to a trade repository for trade reporting purposes does not give rise to material legal risks. Nevertheless, the legal basis of ASX Clear (Futures)' link to DTCC is supported by contractual arrangements between the two FMIs.

19.3 Where relevant to its operations in Australia, a central counterparty should consult with the Reserve Bank prior to entering into a link arrangement with another FMI.

ASX Clear (Futures) has discussed its current link arrangements with the Bank.

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

ASX Clear (Futures) has no links with other CCPs.

19.5 A 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 (Futures) has no links with other CCPs.

Standard 20: Disclosure of rules, key policies and procedures, and market data

A central counterparty should have clear and comprehensive rules, policies and procedures and should provide sufficient information and data to enable participants to have an accurate understanding of the risks they incur by participating in the central counterparty. All relevant rules and key policies and procedures should be publicly disclosed.

ASX Clear (Futures) fully discloses its Operating Rules and Procedures (including the OTC Rules and OTC Handbook) to participants and publicly discloses its rules, guidance on its rules and a range of additional relevant information on its risk management procedures. ASX provides links to information that is subject to disclosure requirements from a central location on its public website (CCP Standard 20.1). This includes information regarding the process of novation, and general descriptions of system design and the roles and obligations of ASX Clear (Futures) and its participants (CCP Standards 20.2, 20.3). ASX Clear (Futures) provides new participants with comprehensive documentation, and verifies their understanding of their responsibilities as participants. Existing participants are also provided with education on their obligations where required (CCP Standard 20.4). ASX has updated its published response to the CPMI-IOSCO Disclosure Framework and plans to periodically review and enhance this document where appropriate. During the Assessment period, ASX Clear (Futures) began to publish risk and activity data in accordance with the CPMI-IOSCO quantitative disclosure standards for CCPs (CCP Standard 20.5). ASX Clear (Futures) has also developed additional disclosures to assist participants in understanding their contingent exposure to the use of ASX's expanded suite of recovery tools.

20.1 A central counterparty should adopt clear and comprehensive rules, policies and procedures that are fully disclosed to participants. Relevant rules and key policies and procedures should also be publicly disclosed (including specific requirements relating to CCP Standards 1.4, 2.2, 12.3, 13.4, 15.4, 17.2 and 17.3).

ASX Clear (Futures)' Operating Rules and Procedures form the basis of all material aspects of the CCP's service to participants. The Operating Rules and Procedures, ASX Guidance Notes, and the OTC Rules and OTC Handbook, are disclosed on ASX's public website.[28] The Operating Rules and Procedures are also posted on the Customer Portal, ASX's participant website. During the Assessment period, ASX enhanced the design and functionality of its participant website to better support the dissemination of non-public information to participants.

To assist participants in their understanding of the risks of participating in ASX Clear (Futures), and for the information of other interested stakeholders, ASX publishes a range of additional material on its public website; this includes required to be disclosed under the FSS. Information specific to ASX Clear (Futures) includes information about risk management, default management, margins and CBPLs, and business continuity arrangements. More general information includes: the ASX Group's regulatory framework; requirements of the FSS; 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 observance of the Principles. During the Assessment period, ASX developed a centralised list of links on its website to information related to its clearing risk management arrangements.

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

Specific disclosure requirements are dealt with under CCP Standards 1.4, 2.2, 12.3, 13.4, 15.4, 17.2 and 17.3.

20.2 A central counterparty's rules, policies and procedures should clearly identify the nature and scope of the risk exposure assumed by the central counterparty, such as by novation, open offer or other similar legal devices. A central counterparty's rules, policies and procedures should clearly identify the point in the clearing process at which the central counterparty assumes the risk exposure.

ASX maintains on its public website an overview of how the CCPs would manage a clearing participant default; this includes information about the purpose of novation, the point at which novation occurs, and the scope of contractual arrangements.[29] Part 3 of the ASX Clear (Futures) 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 (Futures) assumes the risk exposure of a trade (see CCP Standard 1.5). The conditions and timing for the novation of an OTC derivatives trade are outlined in the OTC Rules and the OTC Handbook.

20.3 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 (see CCP Standards 2.8 and 9.5).

General descriptions of ASX Clear (Futures)' system design and operations are available on the ASX public website, including as part of ASX's response to the CPMI-IOSCO Disclosure Framework (see CCP Standard 20.5). 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 implement the Principles and the corresponding FSS. The ASX public website provides additional information on system design and operations, including descriptions of the exchange-traded and OTC derivatives clearing processes and margining approaches.

The rights and obligations of ASX Clear (Futures) and its participants are defined in the ASX Clear (Futures) Operating Rules and Procedures, OTC Rules and OTC Handbook, which are published on the ASX public website and the Customer Portal. These documents are supplemented with explanatory material to support participants' understanding of the risks they face by participating in the system. There is a clear process for changing ASX Clear (Futures)' Operating Rules and Procedures, with any changes notified to participants via the ASX website (see CCP Standard 1.3).

During the Assessment period, ASX developed additional disclosures to assist participants in understanding their contingent exposure to the use of ASX Clear (Futures)' expanded suite of recovery tools, including tools to address uncovered credit losses and liquidity shortfalls (See Section 3.5.1).

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

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

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

As part of the formal admission process, the applicant is required to certify that it has resources and processes in place to comply with its obligations under the applicable Operating Rules and Procedures (see CCP Standard 17.2). This is reviewed and discussed with the applicant prior to approving admission. During ASX's review of the application, or otherwise at any time following admission, the applicant must be able to demonstrate, to the satisfaction of ASX, the basis on which the certification is, or was, provided.

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 Clear (Futures) to address serious matters include: calling for AIM 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 CCP Standard 16.5).

20.5 A central counterparty should complete regularly and disclose publicly responses to the CPSS-IOSCO *Disclosure Framework for Financial Market Infrastructures*.[30] A central counterparty also should, at a minimum, disclose basic risk and activity data, as directed by the Reserve Bank from time to time.

ASX has published its response to the CPMI-IOSCO Disclosure Framework, including information describing how its CS facilities observe the applicable Principles.[31] This document was revised during the Assessment period, in part to reflect the introduction of ASX's enhanced recovery arrangements. ASX plans to continue updating this document periodically (at least annually) and to further enhance its disclosure as necessary from time to time.

ASX reports publicly basic risk and activity data for the CS facilities via a monthly activity report, as well as through additional data published on its website. In December 2015, ASX Clear (Futures) began to publish an expanded set of quantitative risk and activity data in accordance with the CPMI-IOSCO *Public quantitative disclosure standards for central counterparties*, which are intended to complement the descriptive disclosures under the

30 The CPSS was renamed the CPMI in October 2014.

31 Available at <http://www.asx.com.au/documents/asx-compliance/pfmi-disclosure-framework.pdf>.

Disclosure Framework; these data will be updated on a quarterly basis.[32] Also in the Assessment period, ASX Clear (Futures) began to provide daily statements to participants detailing their individual margin requirements.

Standard 21: Regulatory reporting

A central counterparty should inform the Reserve Bank in a timely manner of any events or changes to its operations or circumstances that may materially impact its management of risks or ability to continue operations. A central counterparty should also regularly provide information to the Reserve Bank regarding its financial position and risk controls on a timely basis.

The Bank meets regularly with ASX Clear (Futures) to discuss matters relevant to its compliance with the FSS, and related aspects of its risk management and operational arrangements. The Bank has been kept informed of relevant developments during the Assessment period (CCP Standard 21.1). ASX Clear (Futures) provides the Bank with financial, activity, risk and operational data and reports on a regular and timely basis (CCP Standard 21.2).

21.1 A central counterparty should inform the Reserve Bank as soon as reasonably practicable if:

(a) it breaches, or has reason to believe that it will breach:

(i) a CCP Standard; or

(ii) its broader legislative obligation to do, to the extent that it is reasonably practicable to do so, all things necessary to reduce systemic risk;

(b) it becomes subject to external administration, or has reasonable grounds for suspecting that it will become subject to external administration;

(c) a related body to the central counterparty becomes subject to external administration, or if the central counterparty has reasonable grounds for suspecting that a related body will become subject to external administration;

(d) a participant becomes subject to external administration, or if the central counterparty has reasonable grounds for suspecting that a participant will become subject to external administration;

(e) a participant fails to meet its obligations under the central counterparty's risk control requirements or has its participation suspended or cancelled because of a failure to meet the central counterparty's risk control requirements;

(f) it fails to enforce any of its own risk control requirements;

(g) it plans to make significant changes to its risk control requirements or its rules, policies and procedures;

(h) it or a service it relies on from a third party or outsourced provider experiences a significant operational disruption, including providing the conclusions of its post-incident review;

[32] The quantitative disclosures for ASX Clear (Futures) are available at <http://www.asx.com.au/regulation/regulatory-compliance/asx-clear-futures.htm>.

(i) any internal audits or independent external expert reviews are undertaken of its operations, risk management processes or internal control mechanisms, including providing the conclusions of such audits or reviews;

(j) its operations or risk controls are affected, or are likely to be affected, by distress in financial markets;

(k) it has critical dependencies on utilities or service providers, including providing a description of the dependency and an update if the nature of this relationship changes;

(l) it proposes to grant a security interest over its assets (other than a lien, right of retention or statutory charge that arises in the ordinary course of business);

(m) it proposes to incur or permit to subsist any loans from participants or members unless such loans are subordinated to the claims of all other creditors of the central counterparty; or

(n) any other matter arises which has or is likely to have a significant impact on its risk control arrangements (see also CCP Standards 1.6, 16.10 and 19.3).

Three routine meetings are held between the Bank and ASX each quarter:

- executive-level meetings to discuss developments relevant to compliance with the FSS, involving the CRO and other relevant members of ASX's management team; representatives from ASIC attend these meetings to discuss matters of common interest
- risk management meetings, involving general managers and other staff responsible for clearing risk policy and the implementation of risk management arrangements
- operations meetings, involving members of the senior management team responsible for implementation of operational strategy, management of operational risk and business continuity planning.

These meetings provide a forum for the discussion of material developments, such as issues regarding participant compliance, changes to risk management controls, and the results of internal and external reviews. Matters discussed in the formal scheduled meetings are followed up, as appropriate, in more focused targeted sessions.

The Bank expects to be notified immediately of any significant developments in ASX Clear (Futures)' risk exposure; for example, if ASX Clear (Futures) has reason to believe that a participant default may be imminent or there is evidence of distress in markets cleared by ASX Clear (Futures). Notification to the Bank of significant developments is specified in many of ASX's key internal risk management policies. The Bank and ASX hold ad hoc meetings to discuss relevant matters as required. During the Assessment period, ASX and the Bank started work to formalise existing cooperation arrangements in the form of a Cooperation Letter. This work is expected to be completed in 2016/17.

During the 2015/16 Assessment period, ASX kept the Bank up to date with several minor operational incidents and the status of important project milestones, such as the introduction of enhanced recovery and replenishment arrangements and refinements to the credit stress test framework. The Bank is satisfied with its level of communication with ASX over this period.

21.2 A central counterparty should also provide to the Reserve Bank, on a timely basis:

(a) audited annual accounts;

(b) management accounts on a regular basis, and at least quarterly;

(c) risk management reports, including detailed information on margining and stress testing, on a regular basis, and at least quarterly;

(d) periodic activity, risk and operational data, as agreed with the Reserve Bank; and

(e) any other information as specified by the Reserve Bank from time to time.

Audited annual reports are published on the ASX public website. ASX also provides the Bank with quarterly statements of balance sheet, income, and collateral held for each CS facility.

ASX provides the Bank with a monthly risk management report, as well as detailed activity, risk and operational data on a quarterly basis. The risk management report includes information on stress test results, adequacy of financial resources, and developments in risk management policy. Data provided quarterly to the Bank include changes to participants' ICRs, daily margin collections (including intraday margin calls), stress test results, collateral holdings and any late payments. The quarterly risk management meetings between the Bank and ASX provide a forum for discussion of developments observed in the data.

From time to time, the Bank requests additional information from ASX Clear (Futures) on topics of interest, particularly regarding any operational incidents or the status of projects with significant risk implications.