

Attachment 2: Assessment against the Financial Stability Standards for Central Counterparties of LCH.Clearnet Limited's SwapClear Service

LCH.Clearnet Limited (LCH) was granted a clearing and settlement (CS) facility licence on 4 April 2013. This licence permits LCH to provide central counterparty (CCP) services for commodity, energy and environmental derivatives traded on the financial market to be operated by FEX Global Pty Ltd under *Australian Market Licence (FEX Global Pty Ltd) 2013* (the FEX market).

LCH has applied to vary its licence such that it may offer its SwapClear service for over-the-counter (OTC) interest rate derivatives to Australian-based participants. The following is a high-level assessment of LCH and its SwapClear service against the Reserve Bank of Australia's (the Bank) *Financial Stability Standards for Central Counterparties* (the CCP Standards).

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.

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.

LCH is a wholly owned subsidiary of LCH.Clearnet Group Limited (LCH Group), a private company, limited by shares, incorporated in the United Kingdom. LCH Group is 57.8 per cent owned by the London Stock Exchange (C) Limited, a wholly owned subsidiary of London Stock Exchange Group plc (LSEG), and 42.2 per cent owned by clearing participants and exchanges.

LCH acts as a CCP for a number of exchange-traded products and OTC derivatives. LCH provides clearing services for four UK derivatives trading platforms, one US derivatives trading platform and a number of equities trading platforms.¹ In OTC markets, LCH offers CCP services for interest rate swaps through its SwapClear service, purchase and repurchase (repo) agreements for European government and supranational bonds through RepoClear, non-deliverable foreign exchange (FX) forwards through ForexClear, and cash-settled OTC freight forwards through EnClear.

The LCH Group has two other wholly-owned subsidiaries that operate clearing services: LCH.Clearnet SA and LCH.Clearnet LLC². The three CCPs are legally separate entities, and each operates its own default funds. LCH is not exposed to risks unrelated to those arising from LCH's functions as 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.

LCH is primarily regulated by the Bank of England (BoE) as a Recognised Clearing House under the UK *Financial Services and Markets Act 2000*. The UK regime was amended in early 2013 to adopt the provisions in *Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories* (commonly known as EMIR) and associated technical standards drafted by the European Securities and Markets Authority. However, a UK CCP will only become subject to EMIR and the

¹ The clearing services for one of these UK derivatives trading platforms, NYSE Liffe, are due to be transferred from LCH to ICE Clear Europe from 1 July 2013. Those for the London Metal Exchange are due to be transferred from LCH to LME Clear from 22 September 2014. LCH will also provide clearing services for the FEX market when it becomes operational.

² Formerly the International Derivatives Clearinghouse LLC.

associated technical standards once it has been authorised under EMIR; prior to such time, LCH will continue to be subject to the existing 'Recognition Requirements' regime under the *Financial Services and Markets Act 2000*. To maintain its regulatory status, LCH must apply to the BoE for this authorisation by 15 September 2013. However, given the process to be followed by the BoE in assessing the application, a decision on authorisation may not be made until 2014.

LCH is registered as a Derivatives Clearing Organization under the US *Commodity Exchange Act*, and therefore it and its provision of the SwapClear service are directly regulated by the US Commodity Futures Trading Commission (CFTC) also.

All participants must enter into a Clearing Membership Agreement with LCH. The Clearing Membership Agreement is a contract between LCH and the participant, governed by English law. It requires the participant to comply with the terms of the LCH Rulebook. Accordingly, the relevant contractual rights and obligations as between LCH and its participants are contained in the LCH Rulebook.

The LCH Rulebook and the procedures contained therein (the LCH Procedures) cover all material aspects of SwapClear's activities, and aim to provide a clear and certain legal basis for its operations. In order to ensure that the Rulebook is enforceable in all jurisdictions in which SwapClear services are offered, LCH obtains a legal opinion for each new jurisdiction from a reputable lawyer based in that jurisdiction before participants are admitted.

LCH has provided a legal opinion to the Bank to the effect that where cash margin is paid to LCH, title in such cash passes to LCH on receipt by LCH in accordance with the terms of the LCH Rulebook. For non-cash collateral, LCH enters into a charge agreement governed by English law with participants. LCH seeks a legal opinion, from a reputable lawyer based in each relevant jurisdiction, on the capacity of participants in that jurisdiction to grant security pursuant to the charge agreement, and any material qualifications regarding enforceability under the laws of the jurisdiction. However, LCH has confirmed to the Bank that it does not propose to take security over any assets in Australia.

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

The LCH Rulebook governs the rights and responsibilities of LCH and its participants in respect of the clearing services provided by LCH. Proposed changes to the Rulebook are first disclosed on LCH's website or by email to participants for consultation.

The BoE has indicated publicly that its supervision of financial market infrastructures (FMIs) in the United Kingdom, including CCPs, covers both design of the FMI's rules and the use of management discretion in the application of the rules.³

LCH is in the process of ensuring that the Rulebook and its internal policies are consistent with requirements under EMIR and associated technical standards.

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.

LCH has provided the Bank with certain legal opinions regarding LCH's legal basis. These opinions address, among other things, the efficacy of the choice of English law and the enforceability of LCH's charge agreement subject to certain assumptions.

To ensure the basis for LCH's activities is known, LCH publishes the Rulebook on its website. The Rulebook refers to supporting legislative instruments where appropriate. Proposed changes to the Rulebook are also disclosed on the website or by email to participants. LCH's articles of association are available through Companies House, the UK company registrar.

LCH publishes key information about its regulatory status on its website and in its annual report. The details of the relevant regulatory frameworks under which LCH operates, including statutory instruments and stated policies, are publicly available on the BoE and CFTC websites.

³ See *The Bank of England's Approach to the Supervision of Financial Market Infrastructures*, available at <<http://www.bankofengland.co.uk/financialstability/Documents/fmi/fmisupervision.pdf>>.

- 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 LCH Rulebook is governed by English law. LCH requires each participant to enter into a Clearing Membership Agreement, which stipulates that English courts have exclusive jurisdiction for the enforcement of the Rulebook. Legal opinions are taken in all jurisdictions in which participants are incorporated to ensure that the laws of those jurisdictions would not present conflict-of-laws issues. See CCP Standard 1.6 for more detail.

Measures that contribute to ensuring a high degree of certainty in respect of specific aspects of LCH's activities are detailed below:

- *Settlement finality*: The Settlement Finality Regulations contained within the LCH Rulebook set out the conditions under which the settlement obligations in respect of registered exchange-traded contracts and OTC contracts are final and irrevocable. These regulations are supported by LCH's designation under the UK *Financial Markets and Insolvency (Settlement Finality) Regulations 1999*, which implement *Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems* (the Settlement Finality Directive). The Settlement Finality Directive seeks to reduce the risks associated with participation in payment and securities settlement systems by minimising the disruption caused by insolvency proceedings brought against a participant in such a system.
- *Assumption of risk*: LCH assumes the counterparty credit risk of SwapClear contracts through novation. Under the LCH Rulebook, novation occurs at the point of registration. Novation is recognised in English law and provides a legally certain basis for the assumption of risk; absent bad faith or other vitiating circumstances, novated contracts would not be voided or subject to stays.
- *Default of participants*: The application of LCH's default rules and procedures to the exclusion of the UK insolvency regime is protected by a number of statutory instruments.

LCH is protected by Part VII of the UK *Companies Act 1989* from general application of the UK insolvency regime. LCH is permitted to exercise its rights in respect of contracts registered with SwapClear consistent with its default management process, and is protected from interference, or subsequent claim, by the insolvency office holder of the defaulted party.

LCH's designation under the *Financial Markets and Insolvency (Settlement Finality) Regulations 1999*, among other things, seeks to ensure that LCH's default management processes take precedence over insolvency proceedings. In practice, this gives LCH the right to close out a defaulted participant's positions and to mitigate risk and loss to itself and other participants.

The UK *Financial Collateral Arrangements (No 2) Regulations 2003* seeks to prevent the placing of moratoriums under UK insolvency law on the enforcement of securities which are 'financial collateral arrangements'. LCH seeks to ensure that its security arrangements meet the relevant criteria for protection under these regulations.

- *Winding up of LCH*: The LCH Rulebook provides a netting arrangement in the event of LCH's insolvency, to provide participants with a clear and certain termination sum. As noted above, the Rulebook is governed by English law and LCH's default provisions are supported by a number of legislative instruments. Additionally, UK insolvency law provides for mandatory set-off provisions.

Separately, the SwapClear service closure procedures address circumstances where losses due to participant default exceed available resources, but where LCH remains solvent. Should this situation occur, LCH will calculate a net obligation between LCH and each non-defaulting SwapClear participant. Claims on LCH by participants are adjusted pro rata according to the assets available to the SwapClear service, with this payment constituting full and final settlement of those claims; see CCP Standard 12.1 for more detail.

- 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.

To minimise the legal risk from non-UK domiciled participants, agreements between LCH and its participants are governed by English law, and participants are required to submit to the jurisdiction of English courts.

LCH checks the adequacy of its legal framework for cross-border participants by obtaining legal advice regarding the enforceability of the Rulebook, the jurisdiction of English courts over non-UK domiciled participants, and the circumstances and extent to which an English law charge agreement will be enforceable under the laws of the jurisdiction. To date, LCH has obtained legal advice for Australia, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Italy, Netherlands, Norway, Sweden, Switzerland, England, Wales and the United States. To meet the requirements of EMIR, LCH is currently implementing a conflict-of-laws policy that will require legal opinions to be refreshed every three years or earlier if material changes occur to either the foreign jurisdiction or the Rulebook that could impact the outcome of the opinion.

LCH has provided the Bank with legal advice for Australia. This advice is to the effect that no matters have been identified which would indicate that an Australian court would not uphold the provisions in the Rulebook and any Clearing Membership Agreement specifying the governing law to be English law, and providing for a participant to submit to the jurisdiction of English Courts.

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.

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.

LCH's articles of association require that it be managed in a manner consistent with the operating principles set out in the Relationship Agreement between its parent, LCH Group, and the owner of its parent's majority shareholder, LSEG. These principles are to operate a safe and trusted clearing venue, and to comply with all applicable legal and regulatory obligations at all times. In fulfilling these principles, LCH must maintain appropriate risk management structures, policies and principles. LCH also holds as a core operating principle the offering of clearing services on terms that are fair, reasonable, open and non-discriminatory.

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.

LSEG

The Relationship Agreement between LSEG and LCH Group outlines the scope of LSEG's involvement in LCH Group and the parties' responsibilities with respect to one another. Broadly, the Relationship Agreement provides that LCH Group's business will be carried on independently of LSEG and transactions between the two will be carried on at arm's length.

The Relationship Agreement, and the relevant constitutional documents, grant LSEG representation on boards and committees throughout LCH Group and its subsidiaries, including:

- three directors on the LCH Group Board
- one director on the LCH Board
- one representative on the LCH Risk Committee
- one representative on each of the LCH Group Remuneration, Audit, and Nomination Committees.

Under the Relationship Agreement, LCH cannot pursue certain matters without LSEG's consent. These include steps likely to materially change capital, regulatory or liquidity policy; material variations from the business plan

or any change to the core operating principles; steps likely to result in reduction of annual earnings before interest and tax (EBIT) by €3 million; acquisitions or disposals greater than €10 million; capital expenditures in excess of €3 million; and new committed borrowing facilities.

In addition, LSEG can require that LCH Group Board decisions on certain matters be put to a shareholder vote.⁴ LSEG must first consult with the chairman of the LCH Group Board before issuing such a requisition notice and, if LSEG seeks to reverse a decision of the Board, the motion must get at least 60 per cent of the shareholder vote and at least 25 per cent of the votes cast by shareholders other than LSEG. This latter requirement ensures that LSEG cannot reverse a Board decision by itself.

Minority shareholder approval is required for material changes to the Relationship Agreement; LCH's articles of association; LCH's core operating principles; changes to LCH's outstanding share capital (subject to certain exceptions); or a proposal to wind up LCH. LSEG is entitled to speak at a meeting of minority shareholders, but cannot vote.

LCH and LCH Group

Some elements of LCH's operations are provided on a group-wide basis by LCH Group. Where this occurs, relevant executive management positions exist at both the LCH and LCH Group levels, with the LCH-level position reporting directly to LCH's Chief Executive Officer (CEO) as well as the LCH Group-level counterpart.⁵

LCH's CEO is responsible for the day-to-day management of LCH, in a manner consistent with the LCH Board's annual business plan and budget, while ensuring that sufficient resources are devoted to risk management. LCH's CEO has the power to choose his or her own management team, including LCH's Chief Risk Officer (CRO), with recommendations from the LCH Group Nomination Committee where appropriate (see CCP Standard 2.5 for more detail).

The LCH Board is responsible for overseeing the activities of LCH, and ensuring they are consistent with LCH Group's medium-term financial plan. This includes all decisions relating to risk management; the company's medium- and long-term strategy and budget; approving material contracts;⁶ oversight of internal controls and compliance; and the company's annual reporting. The CEO reports to the LCH Board for all decisions taken by LCH executive management. The composition of the LCH Board is set out in CCP Standard 2.4.

The LCH Group CEO (who is also currently the CEO of LCH) is responsible for the day-to-day management of LCH Group, both directly, and through delegation to functional heads throughout LCH Group and its subsidiaries. The LCH Group CEO works in conjunction with the subsidiary and business unit CEOs to implement LCH Group's medium-term financial plan. The LCH Group CEO is directly accountable to the LCH Group Board. Under the LSEG Relationship Agreement, LSEG is entitled to appoint and remove the LCH Group CEO.⁷

As a part of efforts to harmonise governance and operations across the subsidiaries of LCH Group, LCH Group operates an Executive Committee, formed under the authority of and chaired by the LCH Group CEO. The Executive Committee's remit is to advise and support the LCH Group CEO in the discharge of its responsibilities, and to assist the subsidiary CEOs where appropriate. The Executive Committee oversees and advises on group-wide compliance and performance relating to LCH Group's strategy; risk management; financial management and reporting; operational management, including regulatory compliance; internal and external audit; and supervision of the LCH Group level sub-committees, namely the Operations Committee, Financial Committee and Executive Risk Committee. In a similar vein, the Executive Risk Committee aids the LCH Group Board in its risk oversight. The Executive Risk Committee receives advice from and makes recommendations to the subsidiary risk committees and CROs, and advises the LCH Group Board and senior LCH Group-level management on risk-related matters. The LCH Group CRO and the CROs of the subsidiaries are members of the Executive Risk Committee.

⁴ These matters are expansion into new geographies; introduction of new trading venues as shareholders; changing pricing policy or intra-company funding policy; material contracts (greater than €10 million, or three-year term, among other criteria); and steps reasonably likely to reduce EBIT by more than €3 million.

⁵ For example, LCH's Chief Finance Officer (CFO) reports to both the LCH CEO and the LCH Group CFO.

⁶ Those exceeding €5 million, or IT investments exceeding €2 million.

⁷ LSEG retains this right while it holds at least 40 per cent of the shares. While it holds at least 20 per cent of the shares, it retains the right to be consulted on the appointment.

The LCH Group Board is responsible for setting strategy, objectives and policies, and approves budgets and significant business decisions.⁸ The LCH Group Board reviews on an annual basis the system of internal control. Reporting lines exist to the LCH Group Board via the LCH Group CEO and the Executive Committee on operational matters and via the LCH Group CRO and the Executive Risk Committee on risk management issues.

SwapClear

Although not a separate legal entity, SwapClear operates as a distinct business unit within LCH. SwapClear has its own executive management overseeing its operations, with LCH supplying certain, company-wide services. The SwapClear business unit consists of dedicated teams in management, marketing, IT change, commercial services and day-to-day risk monitoring. The SwapClear teams are overseen by the SwapClear CEO and SwapClear executive management. The remaining services necessary to provide the SwapClear service are supplied at the LCH level and are managed directly by LCH executive management.

LCH works with a group of its largest participants in the strategic development of SwapClear. LCH has formed arrangements for SwapClear under which the majority of the cost of developing and operating SwapClear is borne by these participants. Accordingly, some aspects of SwapClear's governance and some financial returns from SwapClear are shared with these participants. As part of its plans for authorisation under EMIR, LCH currently intends to publish a summary of these arrangements on its website.

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.

The conduct and procedures of the LCH Board are governed by LCH's articles of association. These articles cover, among other things, the conduct and rules of meetings, frequency of meetings, and appointment and powers of directors.

The responsibilities of the LCH Board, which cannot be delegated to executive management, are set out in a schedule of matters reserved. These matters include:

- determining medium- to long-term strategy
- approving the company's annual budget and contracts greater than €5 million
- approving, in consultation with the boards of LCH Group's other subsidiaries, any extension of the company's services
- reviewing and approving any changes to LCH's risk policies or risk appetite
- reviewing and approving any changes to the size and rules of LCH's default funds.

Conflicts of interest are dealt with by the articles of association and LCH's conflicts of interest policy. These documents detail the procedures to be followed to deal with conflicts, and require directors to absent themselves from any decision in which they have a material interest, unless the independent directors authorise their participation. The articles of association authorise directors to act in cases where conflicts arise solely because the director sits on more than one board across LCH Group and its subsidiaries or LSEG and its subsidiaries.

In accordance with the UK *Corporate Governance Code*, the LCH Board undertakes annual evaluation of its performance and that of its committees, chairman and individual directors.

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).

The LCH Board is comprised of a chairman, LCH Group's CEO, LCH's CEO (if different from LCH Group's CEO), LCH's CRO, three independent directors, up to two exchange representatives (approved by LSEG), two participant directors, and one LSEG representative.

The LCH Group Nomination Committee is responsible for recommending candidates for directors for all of the boards across LCH Group and its subsidiaries, with the board and shareholders of the relevant company

⁸ Those relating to contracts greater than €5 million or for longer than three years; mergers and acquisitions; and extension or cessation of a part of LCH Group's business.

responsible for approving the recommendations.⁹ The Nomination Committee's terms of reference require it to consider the importance of candidates with a variety of rich and complementary skills, product knowledge, and industry experience, and that a board should be representative of its company's key stakeholders.

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.

The roles and responsibilities of LCH's CEO are specified by LCH's policy on executive delegation. LCH's CEO is responsible for the day-to-day management of LCH, and is authorised to take any decision or action, provided it is not a matter reserved for the LCH Board. The CEO is also responsible for choosing LCH's management team.

The descriptions of other senior roles in LCH's management are broadly defined in LCH's list of delegated authorities. The SwapClear CEO is delegated powers from the LCH CEO, and is responsible for developing and implementing business strategy, operational plans, policies and budgets for SwapClear, and for the day-to-day management of SwapClear's resources and products, while having appropriate regard to business risks. Other key management positions in LCH include the CRO, CFO, and Chief Operating Officer. As discussed under CCP Standard 2.2, these positions report to both the LCH CEO and their LCH Group-level counterpart.

LCH has arrangements that seek to ensure that remuneration does not compromise sound risk management. The LCH Group Remuneration Committee, in conjunction with the LCH Group Board, is responsible for determining remuneration packages for all directors and executive management throughout LCH Group and its subsidiaries. The LCH Group Board ultimately approves all packages. The LCH Group Remuneration Committee's terms of reference require it to implement and maintain a remuneration policy that provides performance incentives that do not create incentives to relax risk standards and which promote sound and effective risk management. Additionally, the Remuneration Committee must ensure that risk management, compliance and internal audit personnel are compensated in a manner that is independent of business performance. Under the LSEG Relationship Agreement, the LCH Group Remuneration Committee consults LSEG's Remuneration Committee on a regular basis in respect of the broad policies and principles for remuneration. In addition, remuneration of the LCH Group CEO or a member of the Executive Committee must be approved by both the LCH Group Remuneration Committee and the LSEG Remuneration Committee.

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.

LCH's risk management is governed by the LCH Group Risk Governance Framework. This framework provides a comprehensive list of risks faced by LCH Group and its subsidiaries, and sets out for each: the LCH Group Board's tolerance; the personnel with responsibility for managing the risk; and reporting requirements.

The LCH Risk Committee has responsibility for establishing and overseeing the Risk Governance Framework in LCH. The LCH Risk Committee's remit is to review LCH's risk policies on haircuts, margins, liquidity, and risk appetite; deal with matters relating to default funds, including rules and size; review LCH's payment settlement arrangements; and confirm compliance with stated risk policies. The LCH Risk Committee is comprised of independent directors and representatives of participants and exchanges. Under the terms of the LSEG Relationship Agreement, LSEG is entitled to nominate the vice chair of the LCH Risk Committee.¹⁰ Members of LCH's senior management attend committee meetings in a non-voting capacity. The LCH Risk Committee meets at least six times a year, and typically does so more frequently.

LCH Group has sought to harmonise risk management across its subsidiaries through group-wide risk policies. These policies are set by the LCH Group Board, and adopted by the subsidiary risk committees. The subsidiary

⁹ Since LCH Group is the sole shareholder of LCH, shareholder approval of LCH directors is essentially automatic.

¹⁰ LSEG retains this right while it holds more than 40 per cent of the shares in LCH Group.

risk committees oversee implementation and tailor the policies to their respective business units and regulatory regimes. This approach means key risk policies (in particular those relating to risk appetite, liquidity, collateral, margining and treasury investment) are identical across subsidiaries. To further aid this harmonisation, the LCH Risk Committee and the LCH.Clearnet SA Risk Committee have the same independent chairman and deputy chairman.

Day-to-day risk matters relating to SwapClear are managed at an operational level by the SwapClear risk team. SwapClear risk is overseen by LCH's CRO, who reports to LCH Group's CRO and, ultimately, the LCH Risk Committee and LCH Board.

Crisis situations affecting business continuity are addressed by LCH's Crisis Management Plan. This plan sets out crisis management teams, responsibilities, and procedures to be followed. Default management is handled in accordance with the default management policy. LCH's CEO is the only person authorised to place a participant of SwapClear into default, and cannot delegate this responsibility.¹¹

The LCH Group CRO is responsible for periodically assessing the performance against the Risk Governance Framework of LCH Group and its subsidiaries. LCH's Risk Committee assesses LCH against LCH Group's risk policies.

LCH maintains an Internal Audit Unit, overseen by the LCH Audit Committee, which monitors operational risks, including whether the risk management departments are adequately resourced.

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.

The internal audit function is overseen and conducted by a number of bodies across LCH Group and its subsidiaries. Both LCH and LCH Group have audit committees, with participation criteria determined by the LSEG Relationship Agreement, and the committees' terms of reference.¹² In order to harmonise the approach across LCH Group and its subsidiaries, LCH Group, LCH, and LCH.Clearnet SA hold combined audit committee meetings. The LCH Audit Committee reports regularly to the LCH Board. The remit of the LCH Audit Committee is defined in its terms of reference, and covers the review of LCH's financial statements and external auditor; Internal Audit Unit, including the charter and audit plan; regulatory compliance; internal controls; and business continuity planning. The LCH Audit Committee meets at least quarterly, or more frequently as needed.

Internal audits are conducted by the Internal Audit Unit, within the scope of LCH's audit charter. The Director of Internal Audit reports directly to the LCH Audit Committee Chairman on functional matters and to the LCH CEO for operational matters.

The audit plan determines the areas that the Internal Audit Unit will consider. The audit frequency ranges from annual to every three years depending on several factors including the inherent and residual risk assessments, mandatory (e.g. regulatory) requirements, emerging risks, and the extent of changes experienced and planned. The audit plan is reassessed annually by the LCH Audit Committee.

LCH's financial statements are audited annually, as required by UK company law. The external auditor may request a special meeting with the LCH Audit Committee at any time. LCH's external auditors review various processes and controls, including LCH's internal control mechanisms and risk management processes, as a part of their annual external audit.

¹¹ Except in circumstances when the CEO cannot be contacted, the CRO is authorised to do so.

¹² LSEG is entitled to one LSEG director on LCH's Audit Committee under the Relationship Agreement.

- 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.**

LCH provides participants with input into decision-making through a number of channels. These channels include representation on the LCH and LCH Group Boards. The terms of reference of the LCH Group Nomination Committee require that the LCH Group Board have five directors who are representatives of participants and up to three directors who are representatives of exchanges for which subsidiaries of LCH Group provide clearing services. The terms of reference also require that the LCH Board has two directors from participants, and up to two from exchanges. LSEG also has representation on these boards.

Participants are included on LCH's Risk and Audit Committees; the terms of reference for the relevant committee set out the degree of participant representation. Selected participants are also included on the Risk Working Group and Operations Working Group, which meet on an ad hoc basis and are formed by the Risk Committee or Operations Committee from time to time.

LCH has established a number of SwapClear User Engagement Forums to consult with participants. LCH intends to set up an Australian user group to provide advice and guidance on matters relating to the Australian market.

SwapClear communicates all service changes via the SwapClear Programme Update every fortnight, and all rule proposals are published on LCH's website.

- 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.**

LCH Group and its subsidiaries have a number of measures in place to ensure that the group structure does not compromise decisions taken by either LCH or SwapClear.

LCH Group and LCH currently share a common CEO, although this is not required by any governance procedures. To ensure that the interests of each business line are adequately represented and considered in the group context, LCH appoints CEOs for each of its business lines, who are eligible to serve on the Executive Committee.

The group-wide risk policies described under CCP Standard 2.2 seek to ensure that the approach across all three subsidiaries and the business units they house is as consistent as possible, while still allowing each subsidiary and business unit to tailor specific procedures and policies to their environments where needed. In addition, the terms of reference of each subsidiary's risk committee deal with harmonisation issues and the manner in which they are to be resolved. Where subsidiaries are unable to agree on harmonisation issues, the subsidiary board and the LCH Group Board are responsible for the final determination. In order to aid harmonisation, the subsidiary risk committees have the same independent chairman and deputy chairman.

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.

- 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.**

LCH's overarching approach to risk management is administered according to the LCH Group Risk Governance Framework. Designed to harmonise risk management across the LCH Group and its subsidiaries, this framework attempts to comprehensively identify the range of risks to which the group is potentially exposed and designate

responsibility for these risks. Through the framework, the LCH Group Board defines tolerance levels for each category of risk. The framework also sets guidelines for internal reporting to provide assurance that the framework is observed. The LCH Group Board reviews compliance with the framework and the framework itself on at least an annual basis.

The framework is given effect by more targeted and detailed LCH Group policies, each reviewed at least annually and adopted by all LCH Group subsidiaries, which address:

- counterparty credit risk
- liquidity risk
- general market risk, including concentration, sovereign and wrong-way risks
- FX risk
- model risk
- default management risk
- settlement and payment risks
- investment and custody risks
- general business and operational risks.

See CCP Standard 2.6 for details of LCH's risk governance.

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.

Each SwapClear participant's default fund contribution (see CCP Standard 4.4) and initial margin requirement (see CCP Standard 6) is proportional to LCH's risk exposure to that participant's portfolio, which is a function of the size, volatility and correlations of that participant's cleared positions. In this way, each SwapClear participant's obligation to LCH under SwapClear's risk management framework is proportional to the scale and nature of that participant's activities.

Furthermore, the sequence in which SwapClear participants' default fund contributions would be utilised in the event of a default will depend on each participant's contribution to LCH's risk exposure to positions denominated in each currency (see CCP Standard 12 for more detail on loss mutualisation in the event of default).

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.

Since initial margin and default fund requirements are proportional to risk, each SwapClear participant has an incentive to manage and contain the risks it poses to LCH in order to reduce its financial obligations. LCH's application of margin multipliers, which increase initial margin requirements with credit, liquidity, concentration and sovereign risks that exceed base assumptions, provides an additional incentive to avoid particularly risky portfolios.

Incentives to contain risks also arise from the design of SwapClear's loss-sharing mechanism, which prioritises SwapClear default fund contributions according to the scale of participants' contributions to LCH's risk exposure to positions denominated in each currency and the competitiveness of participants' bids in the auction of a defaulter's portfolio (see CCP Standard 12 for more detail on loss mutualisation in the event of default).

In the event that LCH's routine risk monitoring identifies instances in which a portfolio's sensitivity to price movements exceeds certain participant-specific tolerances, LCH informs these participants and helps organise voluntary, mutually risk-reducing trades between participants.

- 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.**

The LCH Group Risk Governance Framework contemplates risks posed by other entities. In particular, LCH seeks to manage risks posed by payment and settlement intermediaries (see CCP Standard 9), custodians (see CCP Standard 15), essential service providers (see CCP Standard 16), and other FMIs (see CCP Standard 19).

By managing risks posed to its solvency and orderly operation, LCH limits the risks that it poses to other entities and financial markets.

- 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.**

Not applicable: this sub-standard is effective from 31 March 2014.

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.

- 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.**

LCH manages its credit exposures to SwapClear participants through the maintenance of prefunded financial resources, the enforcement of participation criteria, and regular monitoring. In addition, the LCH Rulebook allows LCH to call for additional funds from participants under certain conditions.

To access SwapClear, an institution must become a 'SwapClear Clearing Member'. Participation criteria include minimum net capital of US\$50 million, as well as a satisfactory assessment of financial and operational capabilities by LCH. LCH calculates internal credit ratings for each participant through an assessment of both quantitative and qualitative factors. These ratings influence LCH's Risk Management Department's response to more specific risks identified by daily monitoring, and also determine the frequency of future assessments of each participant. These internal credit ratings are also considered by the Executive Risk Committee. LCH additionally requires that each SwapClear participant have, within its corporate group, at least one credit institution or investment firm licensed by the competent authority of a member state of the European Union, or an equivalent outside the European Union subject to prudential rules considered by LCH to be at least as rigorous.

LCH may impose further conditions on participants, including requirements to provide additional collateral. LCH has the right to request additional financial information from a participant if LCH reasonably suspects that it may no longer satisfy the participation criteria.

- 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.**

LCH's Risk Management Department is responsible for reviewing each participant's creditworthiness and financial condition. LCH utilises an internal credit scoring framework which considers a set of market indicators and is updated on a daily basis. Participants' positions are monitored continuously, with particular focus on the

size of each participant's cleared positions relative to its capital and to the total open interest in a particular contract.

LCH monitors participants' compliance with the net capital requirement on an on-going basis and SwapClear participants are obliged to provide certain financial information for this purpose under the LCH Rulebook. In the case of UK-regulated entities, LCH has access to this information through the automated, regular receipt of regulatory returns. All SwapClear participants are also obliged to immediately notify LCH in the case of a significant reduction in its shareholders' funds or net capital as compared to their previous financial returns.

All SwapClear positions are marked to market on at least a daily basis using LCH's published zero-coupon yield curves; variation margin equal to the change in the net present value of each participant's portfolio is then paid to or by LCH. This practice ensures that LCH's valuations of SwapClear participant positions remain current and that losses do not accrue over time (which would otherwise impair the ability of LCH's financial resources to cover market risk in the event of a default). Rates are typically sourced from four to eight banks or brokers via Reuters, with a representative mid-price obtained with the use of a modified averaging function.

LCH collects initial margin to cover potential losses incurred during the close-out of a defaulted participant's positions. Initial margin requirements for SwapClear are calculated using the Portfolio Approach to Interest Rate Scenarios (PAIRS) model. The model calculates the average of the six largest potential losses on a portfolio over an assumed five-day holding (close-out) period, based on approximately 10 years of historical market data. The model also accounts for historical FX rate movements relative to the GBP, to address the FX risk of positions denominated in other currencies.

SwapClear's initial margining also incorporates a margin multiplier framework that requires extra margin to cover any credit, liquidity, concentration and sovereign risks not captured by the PAIRS model. Further, initial margin requirements on the positions of a participant's customer (i.e. 'client' positions) are scaled by a factor of 1.18 to reflect market risk due to an assumed additional two-day holding (close-out) period.

Initial margin is called at least daily. LCH makes additional intraday margin calls when margin liabilities exceed predetermined credit thresholds, based on portfolio revaluations conducted multiple times each day.

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.

The LCH Rulebook provides LCH with the right to impose a number of additional credit risk controls, including the right to impose additional initial margin requirements; require a reduction in positions; require prior LCH authorisation for trades above a particular size; and to declare the default of a participant.

As described under CCP Standard 4.2, LCH imposes a margin multiplier on SwapClear participants with particularly large or concentrated positions. LCH has the right to request additional financial information from a participant if LCH reasonably suspects that the participant may no longer satisfy the participation criteria, including the US\$50 million net capital requirement.

- 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.

The Bank considers LCH to qualify as a CCP that is systemically important in multiple jurisdictions, as well as being involved in activities with a more complex risk profile.

LCH's risk controls include a range of financial resources to cover its credit exposures arising from its SwapClear service. These consist of margin provided by participants in respect of their outstanding positions; capital contributions from LCH; and a segregated, pooled default fund of paid-up contributions from SwapClear participants. These resources would be used in the following order to cover loss due to a SwapClear participant's default: the defaulted participant's margin and default fund contributions; LCH's capital contribution; and contributions from non-defaulting participants to the SwapClear default fund.

The LCH Rulebook provides for the segregation of the SwapClear default fund from the financial resources of other LCH clearing services under a limited recourse structure; accordingly, the financial contributions of non-defaulting participants in respect of the SwapClear service cannot be utilised to meet losses arising from the default of non-SwapClear participants. Further, this segregation provides for the continuation of LCH's other services should the SwapClear service close. The default funds for LCH's ForexClear and RepoClear services are similarly segregated. LCH also plans to segregate the remaining default fund, the General default fund, subject to regulatory approval and a participant ballot; this process is expected to be completed in Q3 2013.

The size of the SwapClear default fund was approximately £2.1 billion as at June 2013. It comprises two components: a core component (£1.7 billion) and an additional component that supports the intraday provision of credit needed to facilitate 'real-time' trade registration (£400 million):

- The core component is sized to cover the sum of the two largest SwapClear participant stress-test losses (and the stress-test losses of their affiliates and clients) in excess of margin, plus an additional buffer of 10 per cent. However, the core component is subject to a floor of £1 billion and a cap of £5 billion. Given the mutualised nature of the fund, any proposal to alter the size of the core component beyond the agreed floor or cap would be subject to a participant ballot. The core component is resized monthly with reference to a rolling look-back period of 60 business days.

The proportion of the core component that each SwapClear participant is obliged to contribute is calculated according to the average initial margin requirement for the previous month (based on its house positions only, as opposed to both house and client positions) as a share of SwapClear participants' total initial margin requirements. Margin multipliers are ignored for this calculation. However, contributions are subject to a minimum of £10 million per legal entity. On a monthly basis, contributions are rebalanced to account for changes in relative shares of participants' initial margin requirements.

- In accordance with CFTC requirements, new trades are able to be registered (i.e. novated) through SwapClear every 60 seconds, subject to LCH holding sufficient collateral to cover the incremental margin requirement or the incremental margin requirement being within specified tolerance limits for the relevant participants based in part on internal credit ratings. By extending credit to participants through tolerance limits, the frequency with which LCH can register trades is less restricted by the frequency with which LCH can collect margin.

LCH mitigates the credit risk that arises from offering trade registration tolerance limits through an additional component in the default fund. This additional component is sized to cover the sum of the two largest SwapClear participant stress-test losses (and the stress-test losses of their affiliates and clients) arising from the extension of intraday tolerance limits. The proportion that each participant is obliged to contribute is based on its tolerance limit utilisation relative to that of other participants over the prior 20 business days, subject to a floor of £3 million and a cap of £30 million. Participant contributions to the additional component are rebalanced on the same timeline as those to the core component.

The LCH Rulebook allows LCH to call from SwapClear participants pre-specified amounts of additional capital to replenish default fund resources utilised as a result of a participant's default. See CCP Standard 12.1 for more detail.

- 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.**

LCH assesses the sufficiency of the SwapClear default fund through daily stress testing. Sufficiency is assessed with reference to the sum of the two largest stress-test losses under extreme but plausible scenarios, plus the stress-test losses of their affiliates and clients. This process involves the daily re-valuation of each SwapClear participant's portfolio using a set of historical and theoretical stress-test scenarios incorporating price and volatility shifts to estimate a worst-case loss in excess of that participant's initial margin.

The stress-testing framework is reviewed annually, with a full review of the coverage of the contracts cleared, model assumptions and parameters. This process also involves a review of stress-test scenarios to ensure their plausibility and accuracy. In addition, ad hoc reviews are carried out when it is deemed that a change in the market may have a material impact on any scenario's plausibility.

- 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.**

LCH maintains a record of historical stress-test scenarios covering financial crises and exceptional trading days from 1987 onwards. From these, LCH's Risk Management Department is responsible for selecting those historical periods that are sufficiently extreme to include as stress-test scenarios. These selections are subject to approval by both the Executive Risk Committee and the LCH Risk Committee. In addition, the Executive Risk Committee reviews and adds new periods of increased market volatility to the set of stress-test scenarios as soon as practicable.

Stress testing for SwapClear currently considers 61 extreme but plausible scenarios, comprising the most volatile five-day periods since 1992, as well as a number of theoretical stress scenarios, including Eurozone break-up scenarios. The theoretical scenarios are currently the main driver of the SwapClear default fund's size.

- 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.

Stress testing is incorporated as part of the routine oversight and monitoring of SwapClear participants. Stress-test results are assessed daily by senior management and must be signed off by the LCH Director of Risk (or in his or her absence, the Manager of Risk Policy). Daily stress-test results that exceed certain predefined thresholds must be escalated to LCH's CEO and Risk Committee. In the normal course, a summary of the stress-test results and accompanying analysis is presented to the LCH Risk Committee for review on a quarterly basis.

LCH's Risk Management Department has the right to call additional margin from any SwapClear participant with projected stress-test losses that exceed predefined thresholds based on that participant's LCH internal credit assessment. In addition, participants with projected stress-test losses that exceed the size of the default fund are called for additional margin on the amount of the breach.¹³

- 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.**

Not applicable: this sub-standard is effective from 31 March 2014.

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.

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

The LCH Group collateral policy places restrictions on the classes of collateral that may be accepted by LCH:

- LCH may accept cash where it encounters no legal issues holding the currency, where the issuing government has an average credit rating (determined by the average of available long-term ratings from Moody's, Standard & Poor's and Fitch) of at least A-, and where there are sufficiently reliable FX market prices such that LCH can calculate an appropriate FX haircut. LCH currently accepts GBP, EUR, USD, CAD, CHF, JPY, SEK, DKK and NOK. LCH is considering extending its list of acceptable collateral to AUD cash in conjunction with plans to open an Exchange Settlement Account (ESA) at the Bank.
- LCH may accept tradeable securities if they are issued in the home country of the issuer and in the domestic currency; are able to be reliably marked to market; and are sufficiently liquid. In practice, this means that the security must have prices that are updated at least daily, with a bid-ask spread in a range deemed acceptable at LCH's discretion. Additionally, the issuer must have an average credit rating of A- or higher and there must be no legal barriers to LCH holding or liquidating the security. LCH also refuses to accept securities close to maturity or subject to specific corporate events. LCH currently accepts government securities from 17 countries, including Australia, government-guaranteed securities from three US Government Sponsored Enterprises (GSEs) and one German GSE, US Mortgage Backed Securities (MBS) issued or guaranteed by the Government National Mortgage Association (GNMA), and government-guaranteed bonds and certificates of deposit from eight countries. GSE/Agency securities are subject to concentration limits (see CCP Standard 5.6). LCH does not accept equities as collateral.

¹³ Since stress testing occurs after SwapClear closes at midnight, additional margin is collected the next morning. See CCP Standard 9 for more details on SwapClear's daily margin processes.

- Currently, LCH accepts performance bonds as collateral. However, from 1 October 2013 these will no longer be acceptable. This is consistent with the requirement under the CCP Standards that bank guarantees should not be routinely accepted.

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.

LCH Group's collateral policy acknowledges the importance of commercial and operational considerations relating to the acceptance of collateral, and the need to provide flexibility in collateral eligibility without compromising risk. In accordance with these considerations, either domestic currency or home sovereign securities are accepted as collateral for initial margin in 10 of the 17 currencies in which SwapClear products are denominated.¹⁴ Variation margin obligations must be met at least daily in cash in the currency of the position; accordingly, cash in all 17 currencies is accepted for variation margin.

LCH consults with its participants before making any changes to its collateral acceptability where such changes could have a material market impact.

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

LCH marks its collateral holdings to market daily, using available market prices. In accordance with LCH Group's collateral policy, LCH will not accept a currency or security for collateral unless there is readily available market data from an authorised source. Only in certain circumstances will LCH use a proxy data point; for instance, where a specific day's data are not available due to there being a holiday, the previous day's data point is typically used. On a normal business day, any missing values are investigated by the Risk Management Department to determine a representative closing value.

Haircuts are applied to non-cash collateral to account for market risk and are currently calibrated to cover the largest two-day price movement over the past five years with 99.7 per cent confidence. To ensure haircuts are appropriate for stressed market conditions, the history used to calibrate haircuts includes the Lehman default and the European sovereign debt crises of 2010 to 2011.

Cash is currently not subject to haircuts for market or FX risk. To account for any FX risk between the collateral and the position, an incremental haircut is applied to all non-cash securities, irrespective of the currency denomination of the asset, which is calibrated to cover a two-day price movement with 99.7 per cent confidence over a five-year price history; this haircut is currently 4 per cent. Where there are novel risks to holding a particular security, these are explicitly accounted for in setting the haircut. Overall, haircuts currently range from approximately 4 per cent for certain short-term government securities to approximately 18 per cent for GNMA MBS.

Haircuts are reviewed by LCH's Risk Management Department and signed off quarterly. They are also subject to an informal check monthly; issues are escalated to Group risk management if necessary. The Executive Risk Committee reviews the appropriateness of the LCH Group collateral policy and the performance of haircuts against historical price and FX moves on an annual basis. LCH is also implementing instrument level and portfolio backtesting. The results of these backtests will be part of a quarterly report to the Executive Risk Committee.

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.

Haircuts are calculated to cover two-day price movements with 99.7 per cent confidence over a five-year history. Moreover, this five-year history includes periods of market stress, including the Lehman default and the sovereign debt crises.

¹⁴ The remaining seven currencies for which no form of collateral in the same denomination is accepted are CZK, HKD, HUF, NZD, PLN, SGD and ZAR.

- 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.**

LCH Group's collateral policy identifies the need to monitor participants' collateral portfolios for concentration risk, both within the portfolio of securities lodged as margin, and combined with the participant's cleared portfolio. Additionally, LCH reserves the right to place concentration limits on particular asset types and to manage specific concentrations in clients' collateral portfolios. Where positions are considered to be excessively concentrated, participants will be contacted to re-align their portfolio.

Currently, concentration limits do not apply to cash, while those on government securities only apply in limited circumstances under a framework for managing sovereign risk. Concentration limits apply to all other accepted collateral securities. GNMA MBS are restricted to the lesser of 20 per cent of the total margin requirement, excluding variation margin, or US\$500 million. US Agency securities are restricted to the same, cumulatively across the three accepted agencies,¹⁵ and Euro Agency¹⁶ securities are also limited to the lesser of 20 per cent of the total margin requirement, or €500 million.

- 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.**

LCH obtains legal advice in relevant jurisdictions regarding its ability to enforce its rights in respect of the collateral it receives from participants.

In accordance with LCH Group's liquidity policy, LCH determines a daily target for liquidity in each 'material' currency,¹⁷ to manage cross-border liquidity and FX risks. The liquidity policy also calls for consideration of linkages with FMIs, including cross-border FMIs, by requiring liquidity sufficient to cover operational incidents involving central securities depositories (CSDs).

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

LCH operates its own online, proprietary collateral management system. Participants are able to view their current cash and security balances via a web interface, although only cash balances used to cover initial margin, and not variation margin calls, are shown. The collateral management system also allows participants to send instructions for LCH to lodge, release, or substitute non-cash securities as collateral, and to deposit and withdraw cash.¹⁸ Securities may be delivered via supported CSDs.

The collateral management system allows instructions to be input at any time, but instructions are only actioned during the Collateral and Liquidity Management Department's operating hours: 07:00 to 23:00 (UK time). Additional CSD specific deadlines apply for same-day settlement.

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.

- 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.**

LCH requires each participant to post initial margin to cover potential losses arising in the event of that participant's default. Initial margin requirements for each LCH clearing service are calculated using different models appropriate for each cleared market. For SwapClear, LCH utilises the PAIRS model.

The PAIRS model calculates initial margin requirements to cover potential losses to LCH as a result of closing out a defaulted SwapClear participant's portfolio. The model uses historical price movements to simulate potential adverse changes in the value of a SwapClear participant's current cleared portfolio over the assumed five-day

¹⁵ Federal National Mortgage Association, Federal Home Loan Mortgage Corporation (FHLM) and Federal Home Loan Banks (FHLB).

¹⁶ Kreditanstalt für Wiederaufbau (KfW).

¹⁷ Currently USD, EUR, and GBP. LCH treats a currency as 'material' if either liabilities or assets in that currency within LCH are greater than or equal to 20 per cent of the total.

¹⁸ Participants approved for client clearing have sub-accounts for their clients and are able to transfer cash and securities across the client sub-accounts.

holding (close-out) period (see CCP Standard 6.3 for more detail). The model also considers historical FX rate movements to incorporate FX risk. A SwapClear participant's base initial margin requirement is equal to the average of its six largest simulated losses calculated in GBP.

In addition to the base requirement, LCH employs a margin multiplier framework that requires SwapClear participants to post additional margin to cover credit, liquidity, concentration and sovereign risks that exceed the close-out assumptions of the PAIRS model. Further, initial margin requirements for client positions are scaled upwards to reflect incremental market risk arising from a longer assumed holding (close-out) period of seven days.

Total initial margin held by LCH in respect of SwapClear was approximately £21 billion on average during May 2013.

On a daily basis, LCH monitors the wrong-way risk of government bonds with a rating of less than AAA posted as collateral. LCH reports on wrong-way risk to the Executive Risk Committee, as well as the LCH Risk Committee and Assets and Liabilities Committee.

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.

For the valuation of SwapClear participants' positions, LCH sources price quotes from a number of banks and brokers via Reuters and Bloomberg. Upon receipt, each quote is subject to validation checks to ensure that bid and ask prices are quoted correctly and that each price is within a predefined range relative to the previous price received. Quotes that satisfy all checks are then consolidated using a modified averaging function to produce a single reference price.

LCH generally restricts its clearing services to currencies, products and tenors for which there are readily available and reliable market data. However, under circumstances in which an observation is deemed inaccurate or is not available, a proxy data point will be substituted – this will typically be the previous day's observation.

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.

Base initial margin requirements for SwapClear provide LCH coverage equal to the average of a participant's six largest simulated losses. This is calculated by the PAIRS model, which simulates changes to the value of a SwapClear participant's portfolio based on historical price moments from the most recent 2500 business days (approximately 10 years). This implies coverage of potential future exposures with a confidence level of at least 99.8 per cent.

The PAIRS model uses an assumed holding (close-out) period of five days for the positions of direct SwapClear participants. For client positions, this close-out assumption is increased to seven days; initial margin requirements for client positions are scaled upwards to reflect this. LCH additionally applies margin requirement multipliers by participant to cover further credit, liquidity, concentration and sovereign risks that exceed the assumptions of the base calculation.

The need for procyclical margining changes in the PAIRS model is mitigated through features such as the averaging of the largest simulated losses; the use of a relatively long look-back period; and the use of exponentially weighted moving average volatility scaling.

Initial margin is called at least daily. Portfolios are also re-valued at least once intraday to take account of changes in both prices and positions; LCH makes intraday margin calls when margin erosion exceeds predetermined, participant-specific thresholds.

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.

All SwapClear positions are marked to market on at least a daily basis using LCH's published zero-coupon yield curves; variation margin equal to the change in the net present value of each participant's portfolio is paid to or by LCH. This practice ensures that LCH's valuations of SwapClear participant positions remain current and that losses do not accrue over time (which would otherwise impair the ability of LCH's initial margin to cover market risk in the event of a participant default).

LCH has the authority and operational capacity to make intraday variation margin calls and payments. The LCH Rulebook allows LCH to call additional intraday margin any time within the operational day.

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.

SwapClear's initial margin methodology calculates requirements at the portfolio level; effectively, margin is offset across currencies and products within the same asset class. However, the PAIRS model is based on historical price movements, and thus margins are only offset to the extent that a reliable correlation is observed between the various cleared interest rate products.

LCH does not allow margin offsets between interest rate products and other asset classes, nor does LCH allow the cross-margining of SwapClear positions against positions cleared by 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.

Initial margin must be sufficient to cover 99.7 per cent of observed price movements. This coverage is backtested on a daily basis against actual and hypothetical portfolios, with backtest results reviewed by the LCH Risk Management Department at least monthly and reported to the LCH Risk Committee at least quarterly. If backtesting suggests the margin coverage target cannot be met, LCH will conduct further investigation into the performance of the margin model. Additional backtesting is performed on a monthly basis to investigate underlying causes of margin coverage breaches and identify any model weaknesses with respect to specific products, risk factors and market conditions.

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

LCH's independent model validation team reviews all models on an annual basis, considering data over the past year. Independent review of margin models considers all available backtesting and stress-testing results. In addition, it tests the performance of the models across various levels of confidence, and tests and calibrates the

underlying parameters of models such as PAIRS. In addition, LCH's margining policies and outcomes are reviewed on a regular basis by the LCH Audit and Risk Committees.

The model review evaluates the validity of the margin model in theory and its performance in practice, and also appraises its parameters and assumptions. The review considers any changes in market practice and recent market conditions. The outcome of the model review is reported to the Executive Risk Committee for approval.

Material changes to margin methodology are subject to LCH's full risk governance process, which includes both internal review and external validation of the model, and must receive approval from both the Executive Risk Committee and the LCH Board. The initial margin model for SwapClear was externally validated by Ernst and Young in December 2012.

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.

SwapClear settles all margin payments through its Protected Payments System (PPS) banking arrangements (see CCP Standard 9 for more detail). Currently, LCH's operating hours exclude the Australian business day. Consequently, when a bilateral trade is executed and submitted during the Australian business day, it will remain queued for registration until the SwapClear service next opens. However, LCH plans to extend its operating hours to accommodate the Australian time zone with respect to SwapClear. The planned extension of operating hours will be supported by a comprehensive upgrade of LCH's cash, collateral and liquidity management systems. The upgrade will, among other things, support 24 hour operations. Implementation of the extended operating hours is expected in 2014.

LCH is seeking to open an ESA with the Bank and has acknowledged that it must use this account to settle AUD obligations if the Bank determines that it is systemically important in Australia.

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.

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.

LCH identifies two potential sources of liquidity risk: stressed outflows from daily operations; and management of participant defaults. The main daily operational liquidity flows for the SwapClear service consist of the repayment of cash collateral to participants and cash flows resulting from investment activities. SwapClear's participant default liquidity risks arise from: the fulfilment of the obligations of the defaulted participant; cash flows relating to any hedging transactions executed in regard to the defaulter's portfolio; and losses due to the close-out of the defaulted participant's cleared positions. In addition, liquidity pressures may be exacerbated by any FX mismatches. Operational liquidity flows are managed on a day-to-day basis by LCH's Collateral and Liquidity Management Department in accordance with LCH Group's liquidity policy.

LCH sets daily operational liquidity targets for each material currency based on operational stress-test results to ensure outflows related to normal business activity can be met. LCH currently defines material currencies to include USD, EUR and GBP. The operational liquidity target is calculated based on current portfolio size, results from daily operational stress tests, and current and historical net outflows data. The historical data are reviewed by LCH's Assets and Liabilities Committee every three weeks to identify and remove any outlier data points; the largest remaining observation forms the basis for the minimum level for the daily operational liquidity target. In addition, the target takes into account possible requests for the return of excess collateral from day to day. LCH Group's liquidity policy states that the operational liquidity target is to be met by cash either maturing or available in each currency each day and collateral available for same-day repo. In practice, LCH typically maintains a level of liquidity at least three times higher than this target.

LCH also calculates liquidity requirements under stress scenarios including the default of the two participants that would give rise to the largest liquidity requirement on the first day following a default. LCH expects to be able to generate liquidity from the sale or repo of highly liquid debt securities from a defaulted participant's portfolio within two days of a default.

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.

LCH monitors liquidity on a real-time basis through its Collateral and Liquidity Management Department's systems. A daily minimum liquidity target is set based on current and historical outflows; portfolio size; and operational stress-test results, which are performed daily based on both business-as-usual and stressed environments. The baseline operational liquidity target and the available liquid resources are reported to the Collateral and Liquidity Management Department on a daily basis. This reporting must be reviewed by the Executive Risk Committee, and any breaches must receive formal approval.

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.

Not applicable: this sub-standard is effective from 31 March 2014.

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.

LCH's primary liquid resources consist of cash and highly marketable securities provided by participants as collateral. As at June 2013, cash collateral comprised 37 per cent of aggregate initial margin cover. To assist the normal clearing process in services involving the settlement of securities, LCH holds committed lines of credit with the CSDs that it utilises, including Clearstream International, Euroclear Bank, Euroclear UK & Ireland, and SIX SIS. These comprise unsecured lines of credit of approximately £940 million and approximately £10 billion on a secured basis.

LCH's liquid resources are held in compliance with its investment and liquidity policies. Investments are managed such that maturing investment cash flows each day are sufficient to cover baseline operational needs as well as the first day's liquidity needs in the event of a participant default. Cash investments are primarily undertaken in the same currency as cash received as collateral; where cash is invested in a different currency for liquidity management purposes, FX risk is hedged with FX swaps, subject to reporting to both the Executive Risk Committee and the Assets and Liabilities Committee.

LCH possesses reciprocal repo documentation and relationships with over 20 banks. LCH periodically repos securities to test its access to funding and is also active in high-quality government bond markets as part of its liquidity management.

- 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.**

To supplement its primary liquid resources, LCH has access to uncommitted lines of credit with a total value of approximately £100 million and FX facilities to transact approximately US\$1 billion. These facilities are held with commercial banks which meet LCH's investment policy criteria. However, LCH judges that these may not be available under stressed market conditions, and are not counted in meeting liquidity stress-testing targets.

- 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.**

LCH does not place reliance on prearranged funding arrangements with participants or third parties for its liquidity requirements. Rather, LCH relies primarily on cash flows from maturing investments of participant collateral.

LCH tests its procedure for accessing liquidity through daily financing operations. This includes the sale and repo of treasury bills and bonds from LCH's proprietary portfolio, which takes place on an approximately weekly basis.

- 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.**

LCH maintains an account with the BoE in its role as concentration bank for GBP and EUR payments in the PPS (see CCP Standard g for more detail). The BoE also facilitates LCH's settlement of UK securities in Euroclear UK & Ireland.

LCH has signalled to the Bank its intention to open an ESA.

- 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.

LCH carries out daily default liquidity stress tests based on both business-as-usual and stressed environments, and models its liquidity profile out to 30 days. Scenarios considered for SwapClear comprise 61 extreme but plausible scenarios, including the most volatile five-day periods since 1992, as well as a number of theoretical stress scenarios. The model considers the default of the two participants that would give rise to the largest first day liquidity requirement. The model assumes that losses on the defaulted participant's portfolio over the holding (close-out) period are equal to the defaulter's variation margin. It is also assumed that variation margin obligations related to the defaulter's portfolio are spread equally across each day in the assumed holding (close-out) period (e.g. five days for SwapClear). Default liquidity stress testing takes into consideration whether a SwapClear participant is a repo counterparty that provides LCH liquidity. LCH also conducts intraday stress testing to model the liquidity impact of investments maturing overnight not being available.

LCH conducts daily stress testing that models the failure of its concentration banks and other PPS banks; LCH is working to integrate this into its main default liquidity stress testing to capture any potential correlations.

The results of liquidity stress testing are reported to senior management in LCH's Collateral and Liquidity Management Department on a daily basis. In addition, weekly liquidity stress-test result summaries are reported to LCH's Risk Management Department and monthly reviews are provided to the LCH Assets and Liabilities Committee.

- 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.**

Not applicable: this sub-standard is effective from 31 March 2014.

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.

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

The Settlement Finality Regulations contained within the LCH Rulebook set out the conditions under which the settlement obligations in respect of registered exchange-traded contracts and OTC contracts are final and irrevocable. These regulations are supported by LCH's designation under the UK *Financial Markets and Insolvency (Settlement Finality) Regulations 1999*, which implement *Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems* (the Settlement Finality Directive). The Settlement Finality Directive seeks to reduce the risks associated with participation in payment and securities settlement systems by minimising the disruption caused by insolvency proceedings brought against a participant in such a system.

LCH instructs payments to and from participants via 'Payment Transfer Orders', sent via the SWIFT messaging system to the relevant participant's settlement bank in LCH's PPS (i.e. the participant's PPS bank); see CCP Standard 9 for more details on the PPS. Under LCH's Settlement Finality Regulations, a Payment Transfer Order becomes irrevocable once a SWIFT confirmation message is sent by the PPS bank to LCH. The LCH Procedures specify that a participant's obligation to LCH will be deemed met only when funds have been transferred from the PPS bank to LCH's concentration bank, and any time permitted by the relevant payment system for the recall of any such payment has expired. Further, the Procedures specify that LCH's obligation to a participant

will be deemed met when funds have been transferred from LCH's concentration bank to the participant's PPS bank.

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.

For each revaluation of participants' obligations where a net call is made on a participant, the participant's PPS bank is required to make an irrevocable commitment to fund the obligation due to LCH by 09:00 UK time if the call was made overnight or within one hour if the call was made intraday. Where a call is made in GBP, EUR, USD or CAD, the PPS bank is required to send a payment to LCH at the concentration bank through the appropriate payment system within two hours. Where the obligation is denominated in another currency, an irrevocable commitment occurs on the same timeline but actual payment is not made until the following day due to time-zone differences. Where the net obligation is in favour of participants at a PPS bank, payment flows from the concentration bank to that PPS bank according to the same timelines as outlined above.

LCH can issue PPS calls on every day that SwapClear is open,¹⁹ regardless of whether that day is a business day for the relevant currency; however, where it is not a business day in the relevant currency, the value date of that payment is deferred to the next business day.

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.

As described under CCP Standard 8.1, Payment Transfer Orders through the PPS are irrevocable under LCH's Settlement Finality Regulations once the PPS bank has confirmed the commitment via SWIFT message. This confirmation must be made by 09:00 UK time if the call was made overnight or within one hour if the call was made intraday.

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.

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.

The settlement arrangements for obligations relating to SwapClear involve arrangements to settle:

- Obligations between LCH and its participants; for example, initial margin, default fund contributions and participation fees. These payments result in a net increase or net decrease in funds held by the CCP.
- Obligations notionally between participants; for example, variation margin and cash settlement of contracts. If there are no defaults, these payments flow from one participant to another via LCH.

Obligations to and from SwapClear participants are settled through the PPS. The PPS provides for settlement of margins and other payments between LCH and each participant on a real-time gross settlement (RTGS) basis. In summary, LCH calls funds from, or pays funds to, participants across the books of PPS banks acting on behalf of those participants. PPS banks then make (or receive) payments to the LCH 'concentration bank' via the relevant RTGS system for each currency (using a correspondent bank if they do not have a local presence). Note that any payments to or from the concentration bank represent the net position against LCH of all of the participants that use a given PPS bank.²⁰ The concentration bank is the BoE for GBP and EUR, Citibank and BNY Mellon for USD, and HSBC for other currencies.

For each revaluation of participants' margin requirements where a net call is made on a participant, the PPS bank is required to make an irrevocable commitment to fund the obligation due to LCH by 09:00 UK time or

¹⁹ SwapClear is open on any day that is not simultaneously a UK and US public holiday.

²⁰ For example, consider a PPS bank that acts on behalf of just two participants. If one participant is owed \$1 from LCH, and the other participant owes \$1 to LCH, there will be no payment from the PPS bank to the concentration bank.

within one hour of an intraday call being made. Notwithstanding this irrevocable commitment by the PPS bank, the obligation of the participant to LCH is only extinguished when the PPS bank has performed its concentration function, and any time permitted by the relevant payment settlement system for the recall of any such payment has expired.

Where a call is made in GBP, EUR, USD or CAD, the PPS bank is required to send a payment to LCH at the concentration bank through the appropriate payment system (typically the local RTGS system) within two hours. Where the obligation is denominated in another currency, an irrevocable commitment occurs on the same timeline but actual payment is not made until the following day due to time-zone differences. Where LCH owes net margin to participants at a PPS bank, payment flows from the concentration bank to that PPS bank according to the same timelines as outlined above.

SwapClear is open for the receipt of new trades between 07:30 and 00:00 UK time. New trades are able to be registered (i.e. novated) every 60 seconds, subject to LCH holding sufficient collateral to cover the incremental margin requirement or the incremental margin requirement being within specified tolerance limits for the relevant participants based in part on internal credit ratings.

The PPS operates in the UK from 09:00 to 16:00 UK time, and then in the US from 16:00 to 21:00 UK time.²¹ For new trades submitted between 21:00 and 00:00, these will only be registered if the relevant participants already have sufficient collateral posted or the relevant, participant-specific tolerance limits are not breached. If not, these will be included in the overnight margin run and registered the following day once overnight calls and pays are concluded.

Currently, LCH's operating times exclude the Australian business day, although LCH plans to extend its operating hours to accommodate the Australian time zone. The planned extension of operating hours will be supported by a comprehensive upgrade over 2013 and 2014 of LCH's cash, collateral and liquidity management systems. The upgrade will, among other things, support 24 hour operations. Implementation of the extended operating hours is expected in 2014.

LCH has signalled to the Bank its intention to open an ESA, and has acknowledged the requirement under this CCP Standard that it must use this account to settle AUD obligations if the Bank determines that it is systemically important in Australia. LCH is also investigating the calling of AUD cash initial and variation margin through its ESA, and whether the ESA could be used in a PPS arrangement similar to those in place in the United Kingdom and United States. LCH is aiming to have proposed arrangements defined and agreed in Q3 2013 with a view to implementation in 2014.

A total of around £3.2 billion was called across all currencies through the PPS each day on average in 2012. The breakdown by currency was 39 per cent in USD, 36 per cent in GBP, 21 per cent in EUR, 1 per cent in AUD, and 4 per cent in other currencies.²²

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.

The PPS involves transitional settlement across the books of the commercial banks that act as PPS banks. See CCP Standard 9.3 for a description of the risk management applied by LCH in respect of its PPS arrangements.

²¹ Citibank is the concentration bank for USD when the PPS is operating in the United Kingdom. BNY Mellon is the concentration bank for USD when the PPS is operating in the United States. Other concentration banks remain the same.

²² Sum is greater than 100 per cent due to rounding.

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.

The rules governing the PPS ensure that LCH does not have a credit exposure to PPS banks. A participant's obligation to LCH will only be deemed met once funds have been transferred from the PPS bank to LCH's concentration bank and any time permitted by the relevant payment system for the recall of any such payment has expired. A participant remains responsible for the obligation in the event of the PPS bank's failure. LCH's obligations to a participant will be deemed met once funds have been transferred from LCH's concentration bank to the PPS bank. LCH's credit exposure to concentration banks begins once the funds are received from the PPS bank, and continues until the funds are transferred by the concentration bank to another entity to complete an LCH treasury investment.

LCH sets risk-based criteria for PPS banks. They include:

- an average credit rating of at least A across Fitch, Standard & Poor's and Moody's, or a guarantee from a sovereign government or parent company with an average credit rating of at least A²³
- operational requirements around accounting and SWIFT messaging
- a requirement to adhere to LCH procedures.

LCH reserves the right to apply more stringent criteria when, in its assessment, a PPS bank's financial resources or operational capability are not commensurate with its level of business. In the event that a PPS bank is downgraded below the minimum long-term rating criterion or it fails to meet the operational capability criteria outlined above, the PPS bank will be required to leave the service. LCH envisages that this exit process will take no longer than three months, and will ultimately depend on how quickly affected participants can establish arrangements with another PPS bank. In the event that a bank no longer wishes to participate in the PPS, a minimum of three months' notice must be given and arrangements made with LCH for an orderly wind-down. To deal with an unexpected and immediate exit of a PPS bank (e.g. due to insolvency), all participants are required to have contingency plans such that they can continue to meet obligations to LCH on an ongoing basis. These arrangements are recorded in LCH's Membership Department, and would be temporary until replacement PPS arrangements were established.

LCH does not impose concentration limits on the volume of payment activity that flows through individual PPS banks. Participants choose their own PPS banks, remain liable for meeting obligations due to LCH until funds have been transferred to LCH's concentration bank, and must maintain contingency arrangements for meeting obligations to LCH in the event that a PPS bank fails or experiences an operational disruption.

LCH's preference is to use central banks as concentration banks (e.g. the BoE in the United Kingdom). Where this is not possible, LCH uses commercial banks that meet the following criteria:

- an average credit rating of at least A+ across Fitch, Standard & Poor's and Moody's
- demonstrable operational suitability.

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

By maintaining internal cash accounts for participants, LCH is able to net financial obligations between LCH and its participants. This reduces credit and liquidity risks by removing the need for gross settlement through the PPS of offsetting obligations. This notwithstanding, net cash obligations to or from LCH are ultimately discharged through the PPS.

²³ LCH intends to replace external credit rating requirements for banks involved in the PPS with requirements based on internal credit scoring.

- 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.

LCH executes a standardised set of binding terms and conditions (i.e. a 'PPS Agreement') with the commercial banks that participate in the PPS.²⁴ The PPS Agreement requires PPS banks to confirm PPS calls made to participants for whom they provide PPS services; calls made overnight UK time must be confirmed by 09:00 the following morning, and intraday calls must be confirmed within one hour of the call being received by the PPS bank. For concentration banks, the PPS Agreement sets out requirements around any onward transfer of funds in LCH's account upon instruction from LCH.

The BoE's concentration bank role is governed solely by a specific agreement executed by the BoE and LCH. Similarly, a specific agreement on concentration activities was executed with BNY Mellon as an addendum to the PPS Agreement already in place. LCH considers that the standard PPS Agreement remains sufficient to govern the concentration activities of Citibank and HSBC.

As noted above, LCH does not have a credit exposure to PPS banks. However, participants' credit exposures to individual UK PPS banks are limited by a requirement in the terms and conditions that all PPS transfers onwards to the concentration bank in EUR, GBP, USD and CAD should be made within two hours of the transfer request being made by LCH. US PPS banks must perform the concentration process if requested by LCH and must do so before the US close of business.

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.

- 10.1 A central counterparty's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.
- 10.2 A central counterparty should identify, monitor and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.

Not applicable: the SwapClear service does not involve physical deliveries.

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.

- 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.
- 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.

Not applicable: the SwapClear service does not involve exchange-of-value settlements.

²⁴ Different agreements exist depending on whether the bank participates in the PPS in the United Kingdom or the United States.

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.

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.

The LCH Rulebook provides for a Default Management Process (DMP) to govern LCH's response to the default of a SwapClear participant. The DMP addresses the declaration of a participant default, the management of a defaulted participant's positions, and the attribution of any losses to SwapClear's financial resources. It also establishes a right to call for additional financial resources from non-defaulting SwapClear participants and further actions in the event that all SwapClear financial resources are exhausted.

The DMP is coordinated by the LCH Default Management Group (DMG). The DMG comprises the managing director and other directors of LCH's Risk Management Department, as well as a revolving group of senior traders that would be seconded to LCH from participants in the event of a default. In addition, the DMG executes SwapClear default fire drills, which are conducted twice annually to increase familiarity with the DMP. All SwapClear participants are required to participate in these fire drills.

Under the LCH Rulebook, a participant may be declared in default if that participant undergoes insolvency or administration; fails to make a required payment to LCH; or breaches any of LCH's rules or procedures. Once a default is declared, informational firewalls are erected between seconded DMG participants and their firms, and a series of auctions is conducted to sell the defaulter's portfolio. The DMG has the discretion to hedge the defaulted participant's currency portfolios and split these into sub-portfolios.

To ensure obligations created for non-defaulting participants under the DMP are proportional to the scale and nature of a participant's activities, each participant's SwapClear default fund contribution is apportioned into Auction Incentive Pools (AIPs) as part of the DMP. Each AIP is linked to the auction of a specific currency portfolio and represents funds prioritised to absorb losses resulting from that auction. The size of the allocation of a participant's funds to a particular AIP is proportional to the risk of that participant's cleared positions in that currency. Thus, the SwapClear default fund contributions of a participant without non-AUD positions will only become available to absorb losses arising from non-AUD portfolio auctions after the contributions of participants with positions in those currencies are completely exhausted. LCH will inform each participant of the size of its allocation to each AIP and where its allocation ranks relative to other participant allocations to that AIP. Accordingly, non-defaulting participants with large positions in a certain currency will be incentivised to bid competitively in the auction of a defaulter's portfolio in that currency. However, there is no legal obligation for non-defaulting participants to bid on any auction portfolio.

If the best bid received during an auction would result in losses that exceed the AIP allocated to that auction, the auction is deemed to have failed and the positions are re-auctioned at a later time. However, the DMG has the discretion to accept any bid if it is believed to be in the best interest of LCH. Default losses crystallised by the auction process in excess of the defaulter's financial resources and LCH's capital contribution are mutualised by non-defaulting SwapClear participants. Mutualised losses are attributed to non-defaulters' resources sequentially in tranches, with the competitiveness of a participant's bidding during the auction process determining the extent to which their default fund contributions are at risk.

If default losses do not exceed the defaulted participant's initial margin and default fund contribution, the remaining defaulter resources are transferred back to the defaulter (or its bankruptcy administrator).

If it is expected that at least 25 per cent of the SwapClear default fund would be used up as a result of executing the DMP, LCH has the right to call additional funds from non-defaulting SwapClear participants ('unfunded contributions'). The value of unfunded contributions that LCH may call from each SwapClear participant in respect of a given default is capped at that participant's funded contribution to the SwapClear default fund at

the time of the default. Additionally, unfunded contributions may not be called by LCH in regard to more than three defaults in any six-month period.

In the event that all the available funded and unfunded SwapClear default fund resources are exhausted, the SwapClear service will proceed to further distribute losses by haircutting variation margin owed to non-defaulting SwapClear participants. Haircutting will continue until default losses are completely absorbed or pre-specified value limits are reached – at which point, unless there is a unanimous decision by SwapClear participants to resume the haircutting process, the SwapClear service will close. In the event of service closure, LCH will calculate a net obligation in respect of amounts owing between the LCH and each non-defaulting SwapClear participant; this calculation will include amounts not received by participants due to the loss distribution haircutting. Claims on LCH by SwapClear participants will be adjusted pro rata according to the assets available to LCH related to the SwapClear service, with the net obligation calculated constituting full and final settlement of those claims.

Following the completion of the DMP and after a 30-day cooling off period, LCH will call for additional resources (a 'replenishment') to bring the level of the SwapClear default fund to its proper level (as determined by the SwapClear default fund sizing methodology described under CCP Standard 4). However, if another default occurs within the 30-day cooling off period, the DMP will again be implemented and the replenishment is cancelled; accordingly, SwapClear participants would be obliged to pay any assessment called in relation to the new default and participate in the loss distribution process if applicable.

LCH will continue to stress test the SwapClear default fund as usual throughout the DMP and during the 30-day cooling off period. If any SwapClear participant's stress-test losses exceed 50 per cent of remaining funds, LCH will call for additional margin from those participants to cover the excess stress-test losses.

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**

LCH's Clearing Membership Agreement establishes the notification requirements that SwapClear participants must meet in relation to specified events. In particular, a SwapClear participant must notify LCH when it becomes aware of a petition for bankruptcy or administration order; it ceases, or believes it may cease, meeting the criteria for admission; or there has been a change in its business that would affect the participant's ability to perform its obligations under the LCH Rulebook.

- (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.**

Under its Rulebook, LCH has the right to manage the outstanding contracts and market risk associated with a defaulted SwapClear participant. This includes the right to close out or hedge contracts registered to a defaulter. LCH may also facilitate a transfer of client accounts to a non-defaulting participant with the approval of the client and recipient participant. Protections under the UK *Companies Act 1989* and the UK *Financial Markets and Insolvency (Settlement Finality) Regulations 1999* seek to give priority to LCH's default arrangements over insolvency proceedings.

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

SwapClear's DMP is detailed in the LCH Rulebook, which is publicly available on LCH's website. The Rulebook sets out the rights and obligations of both LCH and SwapClear participants in relation to a default, as well as

defining events that may trigger the declaration of a participant default. LCH is required to notify its participants of any amendments to the Rulebook.

- 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.**

LCH conducts SwapClear default fire drills at least twice annually, in which all SwapClear participants are required to participate. These fire drills test participants' ability to load, price and bid on a potentially large number of trades. Fire drills also allow LCH to assess their stress models and assumptions about market liquidity.

- 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 LCH Rulebook specifies that, in the event of a default, the financial resources of the defaulted participant across all LCH services are utilised to prior to the resources of non-defaulting participants. In addition, as a result of LCH's AIP mechanism, the financial resources of non-defaulting SwapClear participants are utilised with a priority based on the riskiness of their cleared positions in each currency (see CCP Standard 12.1 for more detail).

In managing a defaulted participant's positions, the DMG carries out portfolio hedging and splitting actions with the intention of forming relatively risk-neutral portfolios for auction. This seeks to mitigate the risk to be assumed by successful bidders in the auction, which facilitates the auction's timely completion and therefore assists in reducing the disruption to the market.

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.

- 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.**

Not applicable: this sub-standard is not effective until 31 March 2014.

- 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.**

Not applicable: this sub-standard is not effective until 31 March 2014.

- 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.**

Not applicable: this sub-standard is not effective until 31 March 2014.

- 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 constraints, such as legal or operational constraints, that may impair its ability to segregate or port a participant's customers' positions and related collateral.**

Client accounts ensure that clients' positions and related collateral remain separate from those of the participant. Client accounts in SwapClear may be operated either on an Individual Segregated Account (ISA) or

Omnibus Net Segregated Account (OSA) basis. The former segregates clients' positions and related collateral from those of other clients, while the latter nets combined client positions in order to reduce margin requirements.²⁵

Participants may determine which types of client account to offer, but must be authorised by LCH's Membership Department before offering client clearing.

LCH discloses key information about client clearing arrangements in the publicly available LCH Rulebook and Notice to End Users for Client Clearing. In particular, the distinction between the two account types is explained.

LCH's Notice to End Users for Client Clearing outlines potential constraints on the portability of a client's position in the event that their direct participant defaults. A client in an OSA cannot have its positions ported individually, as they are combined with those of other clients of the participant; however, positions in an OSA may be collectively ported if all clients in the OSA agree on the same participant to be adopted as backup. The porting of client positions in an ISA is only restricted by the possibility that the relevant, nominated backup participant(s) refuses to accept them; this constraint also applies to clients in an OSA. Under either account structure, if a defaulter's client positions cannot be ported, they will be managed via the DMP.

Standard 14: General business risks

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.

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.

The LCH Group Risk Governance Framework requires that business risk be monitored on a continuous basis, with significant issues to be reported to the LCH Group Board. LCH's capital is available to cover losses arising from a crystallisation of business risk, as well as from the following risks that are also unrelated to the default of a participant:

- credit risk and interest rate risk from investment activities
- payment risk from PPS banks or concentration banks
- settlement risk from custodians' settlement entities
- operational risk.

The potential losses from the default of an investment counterparty are mitigated by LCH's investment policy, which requires the majority of investments to be secured against high quality collateral and the application of haircuts (see CCP Standard 15). LCH mitigates payment and settlement risks by setting operational and credit risk-based acceptance criteria for payment and settlement intermediaries. In addition, the LCH Rulebook provisions deem that payment obligations of participants to LCH will only be extinguished once their PPS bank has transferred funds to the appropriate concentration bank (see CCP Standard 9 for more detail on the PPS system). LCH tests key systems regularly and monitors the operational capability of participants on an ongoing basis. LCH also has in place business continuity arrangements, comprised of a set of recovery plans for key support services and critical business units (see CCP Standard 16). For more information on LCH's internal controls and risk governance, see CCP Standard 3.

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

²⁵ Currently, LCH separately identifies just the value of total collateral posted in relation to client accounts. Under EMIR, LCH will be required to separately identify the value of each type of collateral posted in relation to client accounts.

achieve a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.

Under the *Financial Resources Requirements for Recognised Bodies*, the BoE requires LCH to hold an amount of capital equal to nine months' operating expenses in order to facilitate an orderly wind-down. This amount corresponds to €181.6 million. LCH's total assets funded by share capital and retained earnings is €466.5 million. In addition, funds maintained at the LCH Group level could be used in extremis to support LCH, subject to the LCH Group Board's discretion. LCH Group has a total capital base of €744.1 million, including issued share capital of €82.2 million.

Under EMIR, the amount of capital that LCH will be required to hold against business risk is at least 25 per cent of its annual gross operational expenses.

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.

Not applicable: this sub-standard is effective from 31 March 2014.

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.

LCH's capital is invested in accordance with the LCH Group's investment and liquidity policies. On average each month, at least 95 per cent of LCH's investments must be secured with, or purchases of, highly marketable securities. All sovereign, explicitly guaranteed or supranational security purchases must be eligible for repo with the relevant central bank or a commercial counterparty. Furthermore, with the exception of government-guaranteed securities dominated in USD, EUR or GBP, all security purchases are restricted to those with overnight maturities.

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.

LCH is currently developing a specific plan related to equity capital raisings to meet requirements under EMIR. LCH's policy on financial resources against default and other risks covers capital. Application of this policy by LCH's Risk Management Department is subject to periodic internal audit with reporting to the LCH Board.

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.

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.

LCH's cash, including cash posted to it by participants, are either held at commercial banks, invested in tri-party repos, or used to purchase high-quality securities. LCH restricts its investment activities to counterparties that meet a minimum internal credit rating; investments are further subject to counterparty-specific limits. In addition, the Executive Risk Committee has the discretion to exclude, or place conditions on, LCH's investment with any counterparty. Currently, investment counterparties include central banks, sovereigns and commercial banks subject to prudential supervision.

Non-cash collateral is held in CSDs, with the exception of US Treasuries, which are held with a custodian bank. The financial condition and procedures of custodian banks and CSDs are reviewed by LCH at least every two years. Currently, LCH's non-cash collateral is held by BONY Mellon, Citibank, Clearstream, Euroclear Bank, and Euroclear UK & Ireland.

LCH maintains a custodian due diligence framework, which provides guidelines that seek to ensure that custodian relationships provide adequate protection of LCH's assets.

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

LCH's cash is invested according to LCH Group's investment and liquidity policies (see CCP Standard 15.4 for more detail on the investment policy). On average each month, at least 95 per cent of LCH investments must be secured via reverse repo or through purchases of highly marketable securities, and this proportion must be at least 90 per cent at any point in time. All sovereign, explicitly guaranteed or supranational security purchases must be eligible for repo with the relevant central bank or a commercial counterparty. Furthermore, with the exception of government-guaranteed securities dominated in USD, EUR or GBP, all security purchases are restricted to those with overnight maturities.

LCH's non-cash collateral is held in CSDs, with the exception of US Treasuries, which are held with a custodian bank. LCH's custodian due diligence framework states that its custodian relationships must allow for prompt access to all deposited securities. LCH has agreements and procedures in place for the liquidation of participants' collateral.

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.

The SwapClear service does not clear trades involving physical deliveries; accordingly, LCH's exposures to custodians in relation to SwapClear are limited to custody and investment of participant collateral. LCH invests cash collateral in accordance with LCH Group's investment and liquidity policies, which provide that the principal objectives of investments are capital preservation and minimisation of liquidity risk. The LCH Risk Committee reviews LCH's investment, liquidity and collateral custody arrangements at least annually.

LCH identifies diversification as an important principle for its investment activities. LCH Group's investment policy recognises the need to find an appropriate balance of investments using different instruments and counterparties in order to decrease concentration of risks. However, the investment policy provides that diversification is secondary to the requirement that investments be of high quality and in secured instruments.

LCH's Risk Management Department calculates internal credit ratings for each investment counterparty, which are reviewed daily. The Risk Management Department also periodically reviews specific country risks to anticipate the potential impact of macroeconomic factors on the credit risk of investment counterparties. LCH assesses exposures to investment counterparties, taking into account all relationships with each counterparty. LCH enforces investment concentration limits which are monitored daily, with results reported to senior management in Risk Management Department and Collateral and Liquidity Management Department. The Risk Management Department also monitors the collateral received from reverse repo counterparties with particular attention to wrong-way risks related to the security issuer.

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.

LCH Group's investment policy identifies capital preservation as a primary objective. In achieving this, LCH restricts its investment to a set of high quality counterparties; sets investment concentration limits and appropriate haircuts for reverse repo collateral; and manages the composition of its overall investment portfolio based on investment type and maturity dates. The investment policy further specifies the minimisation of liquidity risk as an objective and emphasises LCH's preference for secured transactions and highly marketable securities.

LCH sets concentration limits for its investment activities, including restrictions on exposures to particular counterparties, measured at the group level; the proportion of investments representing an exposure to a particular sovereign; and exposures to reverse repo collateral, by security type and issuer. Additionally, LCH sets exposure limits specified at the investment counterparty level by transaction type (e.g. reverse repo, FX swap) and by maturity. All investment limits are reviewed regularly by LCH's Risk Committee to ensure that they remain in line with LCH's risk appetite.

LCH manages the balance of maturity dates in its overall investment portfolio to ensure sufficient liquidity is available to meet operational and contingency requirements (see CCP Standard 7 for more detail).

LCH restricts investments to those denominated in currencies in which LCH clears transactions, up to the value of the collateral received in that currency and subject to the judgement of the Collateral and Liquidity Management Department. LCH largely restricts cash investments to the same currency as the cash received, although LCH may invest in a different currency for liquidity management purposes subject to hedging using FX swaps and reporting to the Executive Risk Committee and the Assets & Liabilities Committee.

LCH's cash deposits with commercial banks are limited to overnight terms. All sovereign, explicitly guaranteed or supranational security purchases must be eligible for repo with the relevant central bank or a commercial counterparty. Furthermore, with the exception of government-guaranteed securities dominated in USD, EUR or GBP, all security purchases are restricted to those with overnight maturities. In addition, on average each month, at least 95 per cent of total investments with commercial banks must be on a secured basis, and this proportion must be at least 90 per cent at any point in time. The LCH Risk Committee will be notified of any breaches of these limits.

LCH policy specifies haircuts for reverse repo collateral based on the investment counterparty's credit rating. Additional haircuts are applied according to security type, calculated by the Risk Management Department based on the larger of one- or two-day price movements over the previous five years at a 99.7 per cent confidence level. LCH is currently developing a framework for the backtesting and review of these haircuts.

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.

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.

LCH is subject to the LCH Group's operational risk management policy.²⁶ Under the policy, LCH Group's goal is to 'manage operational risk so as to offer services to customers:

- without creating undue risk for clients and [LCH Group] itself, by protecting its critical assets, its operational continuity and financial stability
- while maintaining the chosen balance between operational risk, quality and cost of services to clients
- while aiming to meet operational risk management industry practices and in particular to meet its legal and regulatory obligations, within the chosen Operational Risk Management approach.
- In so doing, the objectives of the operational risk management policy is to define a framework that ensures that [LCH Group] takes the necessary measures to effectively assess and manage operational risk and to limit exposure to operational losses.'

²⁶ It is intended that a revised policy be submitted to the LCH Group Board for approval in October 2013. Planned revisions will include simplifying and improving the risk assessment and reporting processes outlined in the policy.

The policy applies to all business functions, legal entities and locations in the LCH Group, including all material products, businesses, activities, processes and systems. New products, processes and systems are subject to an operational risk management assessment.

The policy considers seven types of 'loss event': internal fraud; external fraud; employment practices and workplace safety; clients, products and business practices; damage to physical assets; business disruption and system failures; and execution, delivery and process management.

To protect against these loss events, the policy provides for a framework involving several key components: risk and control self-assessment, embedded in the day-to-day operation of each department; the recording of data on actual operational risk losses; monitoring and reporting of risks; and key control identification and monitoring.

Ultimately, the operation of systems and implementation of controls in all business units must meet the policy.

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 LCH Board approves LCH's operational risk appetite annually. This appetite is then translated into practical and enforceable guidelines by LCH management under the delegated authority of the LCH Board. The responsibility to review the adequacy of LCH's risk management is delegated from the Board to the LCH Audit Committee.

The operational performance of LCH is reviewed on a quarterly basis by LCH's Audit and Risk Committees. The LCH Group Operating Committee assists these committees and, via them, the LCH Board in fulfilling its oversight responsibilities by addressing issues in relation to LCH's operational performance and risk controls.

Key IT systems are tested for security and operational reliability (see CCP Standard 16.3). Systems and procedures for business continuity are also tested (see CCP Standard 16.7).

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.

LCH's IT Operations team conducts regular internal and external security penetration testing, assisted by external consultants. External-facing infrastructure is security tested at least annually, and was tested on three occasions in 2012. The tests revealed some vulnerabilities, although these have since been rectified and no outstanding issues remain.

A comprehensive test environment has been established to test new developments outside live systems. Further, all user access to LCH systems is monitored to minimise the likelihood of unauthorised changes being introduced into the system.

Regular stress testing is performed on key systems using multiples of peak daily volume. While capacity targets are left to individual business areas to determine, the general approach is to maintain double the required capacity. LCH also sets availability targets for its key systems that are in excess of 99.5 per cent, and reviews availability statistics on a monthly basis. There were 18 instances of a system not meeting its availability target in a given month across LCH's 12 key systems in the 12 months from March 2012 to February 2013. However, system availability was regularly 100 per cent and availability never fell below 97.5 per cent for any system in a given month.

The LCH Group information security policy sets out guidelines for the security controls to be applied to a number of areas, including the storage of information; personnel security; physical security; and access and communications.

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.

As described above, key systems and their performance are regularly tested and reviewed. LCH does not rely on any related body in the operation of key systems.

LCH's staff are evaluated through an annual Performance Management Review (PMR) programme. The PMR programme establishes standards of performance against which an individual can be objectively assessed; staff members are required to provide evidence of demonstrated competencies during the review process, upon which they are rated. The PMR programme is also used to identify the training needs of staff.

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.

LCH monitors the operational capability of its participants on an ongoing basis. Participants must maintain the operational capacity to meet their obligations under the LCH Rulebook, to which they are bound by the Clearing Membership Agreement. Specific operational requirements are set out in section 1 of the LCH Procedures. Prospective SwapClear participants must demonstrate their operational capability in respect of default management before they are allowed to join (i.e. pass a 'driving test').

LCH considers reliance on SWIFT messaging infrastructure as its only critical dependency. LCH maintains a framework of operational risk controls relating to SWIFT, consisting of a number of specific requirements to be met in order to mitigate the impact of a SWIFT infrastructure failure.

Operational risks posed by utility providers are managed in the context of business continuity. LCH's head office is supplied by multiple external electricity feeds, while LCH also has an uninterruptible power supply for critical areas. Telecommunications services are provided without a single point of failure from BT into LCH's data centres, and from LCH's data centres to LCH's Wide Area Network (WAN).

LCH offers participants and clients support during the core service hours of 07:30 and 00:00 across both London and New York. LCH will look to extend these support hours in line with the plans to extend the operating hours of the SwapClear service by operating a participant and client services team locally in Sydney. In addition to SwapClear client services support, LCH also plans to have a treasury and collateral management team in Sydney to support the ESA and local collateral services.

LCH does not outsource any critical functions.²⁷

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

The operational capability required of participants is described under CCP Standard 16.5. In relation to business continuity requirements, although LCH does not mandate specific requirements, most participants (including all participants of the SwapClear service) are regulated banks and financial institutions which typically have in place business continuity arrangements to meet their prudential regulatory requirements.

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

²⁷ LCH co-sources some IT support and data processing services with Tata Consulting Services in Bangalore, India. See CCP Standard 16.9 for more detail.

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.

LCH has in place business continuity arrangements, comprised of a set of recovery plans for key support services and critical business units. The LCH Group business continuity management policy outlines the objectives, scope and responsibilities for business continuity planning.

All business platforms have disaster recovery backup and all have specified maximum times for recovery; the maximum time is 2 hours for critical systems. LCH maintains three geographically diverse data centres for its core clearing, risk management and banking systems: two are in London and one is in Paris. The systems operated at each data centre have redundancy that allows for data processing to continue unaffected when routine maintenance is performed or some unplanned outages occur.²⁸ Data are mirrored across the London sites to ensure no loss of data in the event of a contingency. SwapClear also has the ability to transfer its operations between its London and New York offices to ensure operational resilience. Two work area recovery sites for the continuation of other business functions are also maintained, one in the London CBD and one that is in excess of 20km away.

LCH undertakes regular testing of its business continuity arrangements. A yearly plan is developed to encompass live system operation from backup sites, staff relocation exercises and connectivity tests. Market-wide exercises in conjunction with other UK market infrastructures and the UK regulators have been undertaken in the past at the request of the regulator. Two such exercises were conducted in 2012. The business continuity arrangements are reviewed annually and following any major incidents, the identification of any significant new vulnerabilities, fundamental changes to the technical infrastructure, or major organisational changes. LCH's most recent failover exercise between its London data centres was undertaken in September 2012, and identified a number of minor issues ranging from an incorrect address setting on an email gateway to users not having correct permissions. All issues were resolved either during the failover or within two weeks. In March 2013, LCH undertook its first failover test to its 'out of region' data centre in Paris. This test was independently audited and demonstrated that LCH could recover the SwapClear service on a next-day recovery basis in the event of a significant metropolitan event in London. LCH is looking to speed up its recovery time such that its next test, currently scheduled for mid September, is completed within 2 hours. LCH's most recent work area recovery exercise was held in April 2013 and some minor weaknesses (e.g. access to external systems such as Bloomberg) are being reviewed and addressed.

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.

In 2013, LCH plans to invite participants and other third-party dependants (e.g. trading platforms) to participate in a synchronised test (i.e. when multiple parties will simultaneously connect to LCH's secondary data centre). To date, participants have been invited but not required to connect to the secondary data centre during test failovers.

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.

LCH's outsourcing policy seeks to ensure that LCH will retain effective control over any outsourced activities and will continue to meet legal and regulatory requirements.

LCH's procurement operating policy sets out the process for entering into third-party service provider arrangements. The policy states that the LCH CEO is responsible for ensuring that any regulatory requirements relating to outsourcing are met before entering into such arrangements.

²⁸ Serious outages would require failover to a different data centre.

LCH does not outsource any critical function, but does co-source some IT support and data processing services with Tata Consulting Services (TCS) in Bangalore, India. Under the arrangement, TCS provides application and infrastructure support. The team in India comprises of TCS employees who have been trained by LCH. Management, control, responsibility and accountability for the operation of the service lie with LCH, and all data remain in the European Union and with none transmitted to India. The arrangement was reviewed by LCH's primary regulator prior to 1 April 2013, the UK Financial Services Authority, and is covered by the LCH Group *IT Outsourced Activities, Risk Monitoring and Quality of IT Production Report*, which is presented to the LCH Audit Committee. The most recent report, considered by the Audit Committee in April 2013, raised no risk-related issues in regard to TCS.

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.

LCH does not outsource any critical function.

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.

Not applicable: this sub-standard is effective from 31 March 2014.

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.

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.

Requirements for participation in SwapClear are based on risk-related principles, and are designed to ensure that all participants are of suitable financial standing with sufficient operational capabilities. Final approval for all participation applications rests with the Executive Risk Committee, subject to the LCH Risk Committee being notified of approvals. Where the Executive Risk Committee refuses an application, the applicant may appeal to the Risk Committee.

A SwapClear participant must have at least US\$50 million in net capital and must make a minimum contribution of £10 million to the core component of the SwapClear default fund plus £3 million to the additional, trade registration component. All new SwapClear participants are also subject to an internal LCH credit assessment.

In terms of operational capability, all participants must have adequate back office infrastructure to support a high volume of transactions, and must open accounts with eligible PPS banks, to pay and receive cash obligations to and from LCH.²⁹ Typically, this requires appropriate systems to manage the participant's clearing activities, and staff with sufficient knowledge and experience with the systems. Prior to going live, all participants receive operational capability training if the Membership Department deems it necessary. All participants must also demonstrate their operational capability by participating in a 'driving test' of the DMP prior to admittance. Further, LCH conducts default 'fire drills' twice a year; a failure to participate or perform in a drill may lead to suspension from SwapClear. Participants can, in lieu of participation in a fire drill, demonstrate that they have an affiliated participant or an 'Approved Outsourcing Agent'³⁰ that has participated on the participant's behalf. These drills have been designed to test the participant's ability to load, price and bid on a fixed number of trade sides.

²⁹ See CCP Standard 9.1 for an explanation of the PPS arrangements.

³⁰ Where a participant chooses to appoint an outsourcing agent to participate on its behalf in fire drills, LCH requires the participant to appoint at least three outsourcing agents. Approval of an outsourcing agent is at LCH's discretion. Outsourcing agents can also conduct the DMP on the participant's behalf.

To gain further comfort with regard to financial and operational standing, LCH also requires a SwapClear participant (or a related entity in the same corporate group) to be subject to prudential or securities regulation in its home jurisdiction.

LCH reserves the discretion to impose additional conditions on participants and may at any time vary or withdraw any such conditions. These conditions may include a requirement to post additional collateral or a requirement for prior authorisation for trades above a defined ceiling.

Indirect participation in SwapClear is possible via SwapClear's client clearing model. LCH imposes no restrictions on indirect participant eligibility; requirements for indirect participants are at the discretion of the relevant participant. In order to offer client clearing, a participant must first apply to LCH's Membership Department, either as part of its initial application or as an extension of its activities. Before authorising a non-UK participant to offer client clearing, LCH obtains an independent legal opinion to gain comfort that SwapClear's client clearing arrangements will be enforceable in the participant's jurisdiction. LCH has not yet sought such an opinion in relation to Australia.

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.

LCH's participation requirements are designed to mitigate the risks that LCH faces as a CCP.

Net capital requirements ensure that participants have adequate financial resources to withstand unexpected losses. To achieve a balance between open access and risk, LCH continuously monitors a wide range of credit indicators for participants, including capital-to-risk ratios, and applies real-time risk management controls such as concentration limits and margin multipliers, rather than relying solely on hurdle-based participation criteria. In addition, SwapClear's DMP seeks to ensure that a participant's contingent obligations in the event of default are commensurate with the nature and scale of its cleared activity.

Default fund contributions are determined with reference to a participant's initial margin requirements, which are in turn determined with reference to the nature and scale of a participant's cleared activity. The floor for default fund contributions seeks to ensure that all participants have enough capital at risk such that they have an appropriate incentive to monitor and control the risks that they bring to the SwapClear service. Operational requirements focus on participants' ability to engage in the DMP.

All participation requirements are publicly disclosed in the LCH Rulebook.

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.

LCH monitors compliance with participation requirements on a continuous basis. The Clearing Membership Agreement requires participants to notify LCH if they no longer meet the participation requirements.

The LCH Rulebook contains notification and disclosure requirements to ensure compliance with the financial requirements for SwapClear participation. Each participant must provide LCH with its annual accounts, and must promptly notify LCH of any development which would materially affect its ability to comply with the participation requirements. Fire drills are conducted bi-annually to ensure participants' operational capabilities continue to meet LCH's minimum standards.

The LCH Rulebook outlines the actions that LCH can take if it suspects that a participant no longer meets the participation requirements, including more detailed monitoring; increased margin requirements; prior authorisation for trades above a specified size; position reduction; position transfer to other participants; trading for liquidation only; and the declaration of default. Where a participant is in breach of the participation requirements, but has not defaulted on payments to LCH, LCH may allow a 30-day grace period (or longer as LCH sees fit) for the participant to remedy the breach before issuing a default notice. LCH does not have to allow this grace period and, under the default rules, can declare a member in default as soon as it believes the

participation requirements are breached. Once a default notice has been issued, withdrawal of the participant occurs in accordance with the DMP.

In the case of voluntary withdrawal by a participant, at least 90 days' notice is required. The participant must terminate all open contracts registered with SwapClear within this period. If after 90 days the portfolio has not been closed out, the participant is required to remain in the service until all remaining contracts can be terminated.

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.

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.

SwapClear primarily uses a principal-to-principal model of clearing participation, which means that LCH has no direct exposure to the default of a participant's client.³¹ Participants must be authorised by LCH's Membership Department to allow indirect participation through SwapClear's client clearing arrangements. Before authorising a non-UK participant to offer client clearing, LCH obtains an independent legal opinion to gain comfort regarding the enforceability of SwapClear's client clearing arrangements in the participant's jurisdiction.

LCH requires participants who offer client clearing to hold segregated house and client accounts for positions and margins. As discussed under Standard 13.4, client accounts in SwapClear can be operated either on an ISA or OSA basis. In addition, house and client transactions are reported to LCH separately, with individual clients identifiable to LCH through the trade recording structure.

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

LCH produces daily reports that monitor client positions and associated cash flows. LCH can apply margin multipliers, or realignment, where a participant's client portfolio is deemed to be highly concentrated. LCH also mitigates indirect exposures by requiring direct participants to call margin from their clients at least at the level called from the participant by LCH.

To mitigate disruptions resulting from the default of a participant, LCH allows clients that use ISAs to nominate backup participants. In the event of a default by its participant, a client may opt to have its position ported to its backup participant, provided the participant accepts them. Client positions in OSAs may be collectively ported if all clients in the OSA agree on the same backup participant, and that participant accepts the positions. Under either account structure, if a defaulter's client positions cannot be ported, they will be managed via the DMP.

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.

The SwapClear account structure enables LCH to identify the positions held by indirect participants. If monitoring gives rise to concerns about the size of positions in a participant's client account, LCH will seek further information from the participant. If LCH determines that a client account position is highly concentrated, the same margin multipliers³² are applied as would apply to house positions.

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

Day-to-day market risk of client portfolios is monitored on an ongoing basis, as described in CCP Standard 18.3. LCH will take mitigating steps, such as calling additional margin, where it identifies a need to do so.

³¹ SwapClear also offers the CFTC-recognised Futures Commission Merchant (FCM) model of clearing participation to participants that have US-based clients. Should a clearing participant using the FCM model default, LCH would seek to – under advice and approval from the CFTC – port the participant's clients to another FCM clearing participant.

³² See CCP Standard 6.1 for more detail.

The LCH Risk Committee reviews any proposed changes to the structure of SwapClear's client clearing arrangements.

Standard 19: FMI links

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

- 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.
- 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.
- 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.
- 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.
- 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.

LCH does not maintain links to execution facilities, CSDs or other CCPs in relation to SwapClear. The only FMI link that LCH has in place that relates to SwapClear is an arrangement with the Depository Trust and Clearing Corporation (DTCC) for the reporting of cleared OTC transaction data via straight-through-processing. This link is unlikely to present a material risk to the solvency of LCH or the operation of the SwapClear service.

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.

- 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).

The LCH Rulebook governs the rights and responsibilities of LCH and its participants in respect of the clearing services provided by LCH. The Rulebook is published on LCH's website, together with proposed changes.

LCH's key policies are reflected in information available on LCH's and SwapClear's websites. This includes the expected coverage of initial and variation margin requirements; the process for managing a participant's default; acceptable collateral and haircuts; and participation requirements. LCH Group's corporate structure, as well as the board membership and primary regulator for each LCH Group entity, is also outlined on LCH's website.

- 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.

The LCH Rulebook outlines the nature and scope of novation. Specifically, upon registration of an original contract, LCH will replace this single contract with two open contracts on the same terms as the original contract. Each party contracts as principal to these contracts, irrespective of whether the participant is

transacting on behalf of a client. As a result of novation, LCH becomes counterparty to each open contract and it is obliged under the LCH Rulebook to perform its obligations under the terms of such open contracts as principal.

- 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).**

LCH's and participants' rights and obligations are detailed in the Rulebook, which is publicly available on LCH's website. Also disclosed on the website is the structure of the LCH's default waterfalls and an explanation of LCH's PPS arrangements, as well as the list of current PPS banks and PPS bank requirements. In addition, SwapClear provides its participants access to a margin calculation tool to estimate initial margin obligations.

LCH provides each SwapClear participant with the SwapClear Service Description, which provides an overview of the SwapClear service and its operational features. The document covers key aspects such as trade validation and registration; SwapClear clearing fees; margining; default management; LCH's PPS; and SwapClear's daily operational timeline. Detailed information regarding SwapClear data available to participants, SwapClear margin multipliers and the pricing of SwapClear products is also featured.

- 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.**

In addition to providing the service description discussed under CCP Standard 20.3, LCH runs an introductory training course twice a year for participants, designed as a comprehensive guide to the mechanics of cleared markets and products for new entrants and participant staff not directly involved in derivatives. Additional training courses offered by LCH focus on specific exchanges and markets for which LCH acts as CCP.

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

Following the EMIR authorisation process, LCH will be required to provide to the BoE self-assessments against the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organization of Securities Commissions (IOSCO) *Principles for Financial Market Infrastructures* (the Principles) at least annually. Under the Principles, an FMI is expected to meet the requirements of the *CPSS-IOSCO Disclosure Framework for Financial Market Infrastructures*.

General information on SwapClear's activities and operations is publicly disclosed on LCH's website. This information includes a list of direct SwapClear participants; the set of interest rate products cleared; acceptable collateral; and an overview of the overall risk management framework. Also disclosed are clearing fees, minimum default fund contribution requirements, as well as application costs and procedures. Basic SwapClear data are also publicly available on the website, such as transaction volumes, notional outstanding values and end of day mark-to-market prices.

The Bank receives information and data as a member of the recently established Multilateral Arrangement for International Regulatory Cooperation on LCH SwapClear, a cooperative oversight body comprising SwapClear's home and overseas regulators.

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.

- 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;
 - (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).
- 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.

LCH has undertaken in the Bank's favour to meet the reporting requirements set out in this CCP Standard.