



CPMI-IOSCO Principles for Financial Market  
Infrastructure Disclosure  
2020

**Responding Institution:**

LME Clear Limited

**Jurisdiction(s) in which the FMI Operates:**

United Kingdom

**Authority Regulating, Supervising or Overseeing the FMI:**

The Bank of England, London, United Kingdom.

The date of this Disclosure Document is October 2020. This Disclosure Document can be found at <http://www.lme.com/lme-clear/rules-and-regulations/disclosure/>.

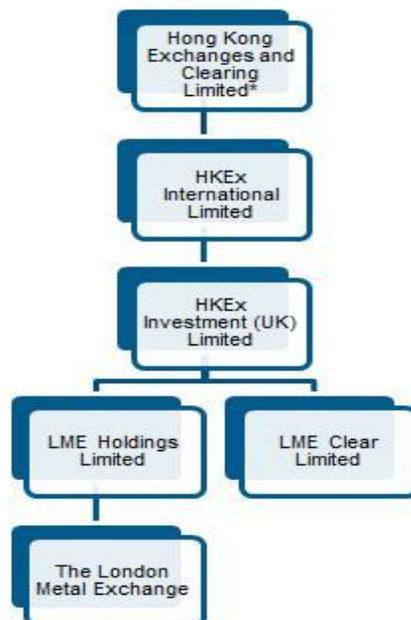
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# I. Executive Summary

1. LME Clear Limited is a private company incorporated in England and Wales on 21 April 2011, under registered number 07611628 (“**LME Clear**”). LME Clear’s registered office and head office is at 10 Finsbury Square, London, EC2A 1AJ.
2. LME Clear was launched on 22 September 2014 as the Clearing House for the London Metal Exchange (the “**LME**”). It has been designed and built in consultation with its Members and users of the LME and in compliance with Regulation No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC Derivatives, Central Counterparties and Trade Repositories (“**EMIR**”) and related technical standards as well as UK regulatory requirements applicable to central counterparties (“**CCPs**”).
3. LME Clear operates as a CCP to clear all classes of contracts that are traded on the LME. LME Clear has also been approved to provide CCP clearing for over-the-counter transactions in precious metals (initially gold and silver bullion) but does not currently clear these contracts.
4. LME Clear is a wholly-owned subsidiary of Hong Kong Exchanges and Clearing Limited (“**HKEX**”). The immediate parent of LME Clear is HKEX Investment (UK) Limited (“**HKEX UK**”), a company registered in England and Wales. HKEX International Limited, a company incorporated in Hong Kong and a direct wholly-owned subsidiary of HKEX, is the parent of HKEX UK.



5. HKEX and its subsidiaries (the “HKEX Group”) consist of HKEX and a number of directly or indirectly owned subsidiaries. Except for three wholly-owned subsidiaries which are incorporated in the People’s Republic of China, the LME Group (being LME Holdings Limited, the LME and LME Clear) and HKEX UK, all HKEX Group companies are incorporated in Hong Kong.

6. The legal basis for LME Clear’s clearing activities is contained in a number of statutory provisions contained in primary legislations and regulations, specifically:
  - authorisation as a CCP under EMIR<sup>1</sup>;
  - recognition as a recognised CCP under section 290 of the Financial Services and Markets Act 2000 (FSMA);
  - designation as a designated system under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999 (the Settlement Finality Regulations)<sup>2</sup>; and
  - recognition as a CCP for the purposes of Part VII of the Companies Act 1989.
7. LME Clear has implemented a comprehensive risk management framework which is designed to ensure the financial performance of all cleared Contracts. LME Clear has a Board Risk Appetite Statement (“**RAS**”) which defines and documents LME Clear’s approach to risk management. The Statement has identified 20 key Risk Types, including the core CCP risks of market, credit and liquidity but also including operational, IT & Cyber, legal, custody, investment, general business and settlement risks. It details the risks LME Clear is prepared to accept and those which it is not. It includes details of monitoring and measurement and clear lines of accountability and responsibility amongst the Executive Management team and through the governance structure. This creates a strong risk management culture of awareness and transparency that is supported by an Enterprise Risk Management (“**ERM**”) framework that utilises the 20 key Risk Types to ensure that the risks to the business are identified, assessed and mitigated wherever necessary. Underpinning this, LME Clear operates a ‘3 lines of defence’ model that encourages management responsibility along with challenge from a strong second line and periodic review by Internal Audit.
8. LME Clear’s approach to observing each applicable principle set out in CPMI-IOSCO’s<sup>3</sup> Principles for Financial Market Infrastructure published in April 2012 (the “**PFMI**”) is summarised in this disclosure document (the “**Disclosure Document**”). This Disclosure Document is written pursuant to and in accordance with the guidelines set forth in the “Disclosure Framework and Assessment Methodology” issued by CPSS-IOSCO in December 2012.
9. Unless otherwise defined herein, capitalised terms used in this Disclosure Document shall have the same meaning as where used in LME Clear Rules and Procedures.

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<sup>1</sup> Note that as at 1 January 2021, LME Clear will be Recognised as an EMIR Third Country CCP following the end of the Brexit transition period

<sup>2</sup> Note that as at 1 January 2021, LME Clear will also be approved as a third-country system under French law for the purposes of the Settlement Finality Directive

<sup>3</sup> Previously CPSS-IOSCO

## II. Summary of Major Changes since the Last Update of the Disclosure

10. This is LME Clear's fourth Disclosure Document since commencing operations on 22 September 2014.
11. In accordance with CPMI-IOSCO's recommendation for each Financial Market Infrastructure ("FMI") to review its responses to the disclosure framework at least every two years or following material changes to the system or environment, LME Clear has reviewed and updated its Disclosure Document.
12. Key changes to the Disclosure Document include:
  - Entire document – general editorial changes;
  - III. General Background – table of products updated to include new cash settled futures;
  - Principle 1: Legal Basis - reference to LME Clear's status as an authorised CCP under EMIR migrating to being Recognised as a Third-Country CCP as of 1 January 2021;
  - Principle 3: Framework for the comprehensive management of risks - update to LME Clear's 'risk types' within the Risk Appetite Statement, and inclusion of the new Technology and Operational Resilience Board Committee;
  - Principle 4: Credit Risk - management of credit exposures to members;
  - Principle 8: Settlement Finality – clarifying comment regarding Settlement Finality protections;
  - Principle 17: Operational Risk - Inclusion of the Technology and Operational Resilience Committee and Audit Committee responsibilities, method of recording operational risks and incidents and elaboration on LME Clear's information security policies.

### III. General Background – LME Clear

#### General Description of LME Clear and the Markets it serves

13. As a CCP, LME Clear interposes itself as a buyer to every seller and the seller to every buyer of both sides of a Transaction. If either party defaults on the Transaction, LME Clear owns the defaulting party's risk and becomes accountable for its liabilities. In the event of default, Collateral held by LME Clear is used to fulfil the defaulting party's obligations, which ensures that the non-defaulting party to the Transaction is not negatively impacted by the Default Event. During the life of a Transaction, LME Clear processes all cash flows and marks the Transaction to market, calling variation and initial margin in relation to the risk of the portfolio.
14. The decision to build LME Clear was driven by several strategic and business considerations:
  - i. the global regulatory environment continues to emphasise the importance of effective clearing and regulators increasingly recognise the role of clearing houses in ensuring both market and systemic stability;
  - ii. regulatory developments impacting both OTC and on-exchange activity are creating commercial opportunities with respect to clearing and reporting obligations and are driving activities towards exchanges and centralised clearing;
  - iii. the ownership of a clearing house has become a key opportunity for global exchanges, providing greater flexibility in relation to business development, launch of new products and the strategic direction of LME and HKEX; and
  - iv. increased transparency and control over the complete LME value chain delivers improved end-to-end processing, risk control and higher levels of service and information to the LME's Members.
15. LME Clear's strategy continues to focus on clearing existing contracts transacted on the LME. In addition, LME Clear seeks to clear any new products developed by the LME and diversify its clearing services to existing and prospective Members. LME Clear seeks to assist HKEX in its vision to build a leading global multi-asset class exchange and to prepare for the opening of China's capital account.
16. The critical driver in building LME Clear was strategic. However, a necessary condition of a robust and resilient operation is that the clearing house should be financially robust and as such ensuring that LME Clear could be a profitable operation was also a key consideration. The changing regulatory and economic environment creates commercial opportunities for the clearing house to add strategic and financial value to the HKEX Group, whilst recognising and actively managing an appropriate balance of commercial and risk management mandates.
17. LME Clear operates in a highly regulated, competitive and technology-intensive environment. Against this background, LME Clear continues to seek to offer robust and resilient clearing services and improve its offering to its Members and the LME market.
18. LME Clear works closely with market users to understand their needs. Through this inclusive and consultative approach, combined with a focus on offering cost-effective solutions, LME Clear seeks to ensure its clearing offering remains competitive. It utilises leading edge risk management technology to provide resilient, innovative and cost-effective clearing house services which meet the needs of market users.
19. LME Clear closely monitors regulatory developments, arising from the European Union and further afield that could impact its business. It places a high emphasis on regulatory compliance in all jurisdictions in which it operates, and seeks to promote active and co-

operative relationships with its regulators. It acknowledges the need to promote and maintain high degrees of operational and system efficiency and resilience. Therefore, LME Clear continues to make significant investments in this area.

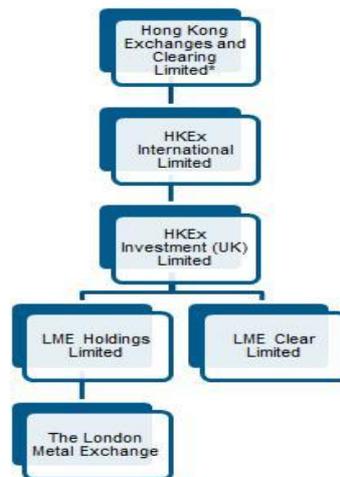
## Organisational Structure of LME Clear

20. The immediate parent of LME Clear is HKEX UK.

- HKEX UK's ultimate parent company is HKEX. HKEX is a listed company on the SEHK. The HKEX Group consists of HKEX a number of directly or indirectly owned subsidiaries.

21. The principal subsidiaries of HKEX are:

- the three exchange companies, being The Stock Exchange of Hong Kong Limited (the "SEHK"), Hong Kong Futures Exchange Limited (the "HKFE") and the LME. SEHK and HKFE are recognised exchanges under the Securities and Futures Ordinance of Hong Kong ("SFO"), and the LME is a recognised investment exchange regulated by the Financial Conduct Authority of the United Kingdom; and
- the five clearing houses, being Hong Kong Securities Clearing Company Limited ("HKSCC"), HKFE Clearing Corporation Limited ("HKCC"), The SEHK Options Clearing House Limited ("SEOCH"), OTC Clearing Hong Kong Limited ("OTC Clear") and LME Clear. HKSCC, HKCC, SEOCH and OTC Clear are recognised clearing houses under the SFO supervised by the Securities and Futures.



## Governance Structure of LME Clear

22. LME Clear's governance structure comprises the Board and a number of Committees that have been established to assist the Board with the management of the company and the operation of clearing services. In addition, LME Clear leverages the HKEX Board and its various committees, including the HKEX Risk Committees responsible for the control and risk management matters of the HKEX Group and provides an added layer of oversight and supervision over the safety and soundness of LME Clear's own risk management safeguards.
23. The Board retains overall responsibility for the management of LME Clear and has established the following principle committees:
- Executive Committee - composed of individuals appointed by the Chief Executive Officer in consultation with the Board;
  - Board Risk Committee - composed of at least nine individuals of whom three are Independent Directors, three are representatives of Members and three are representatives of Clients of Members;
  - Audit Committee - composed of at least four individuals, of which at least three are appointed from the Independent Directors and at least one individual must have relevant and recent financial experience;
  - Nomination Committee - composed of a maximum of five individuals with a majority being Independent Directors; and
  - Remuneration Committee - composed of four individuals appointed solely from the Non-Executive Directors.
  - Technology and Operational Resilience Committee - composed of four individuals, all of whom are all of whom are Directors within the LME Group.
  - Default Management Committee - composed of seven senior LME Clear Executives.
24. The Board comprises four executive directors (the "**Executive Directors**"); and five non-executive directors (the "**Independent Directors**") (together the "**Directors**").
25. The Executive Directors comprise the Chief Executive Officer (CEO) of LME Clear, the CEO of the LME, the HKEX Group Chief Technology Officer and the HKEX Co-President. In respect of Independent Directors, two of these are appointed by HKEX UK and three are appointed by the Board.

## Product Coverage and Members

26. LME Clear currently accepts the following products for clearing (these are set out and detailed on the LME Clear website – see section V of this Disclosure Document):

Product	Underlying	Cleared Currencies
Futures (all currencies)	<ul style="list-style-type: none"> <li>- Aluminium Alloy</li> <li>- High Grade Primary Aluminium</li> <li>- North American Special Aluminium Alloy Contract (NASAAC)</li> <li>- Copper Grade A</li> <li>- Primary Nickel</li> <li>- Standard Lead</li> <li>- Tin</li> <li>- Special High Grade Zinc</li> <li>- Cobalt (physically settled)</li> </ul>	USD GBP EUR JPY
Futures (currency specific)	<ul style="list-style-type: none"> <li>- Steel Scrap</li> <li>- Steel Rebar</li> <li>- Steel HRC FOB China</li> <li>- Steel HRC N. America</li> <li>- LME Aluminium US Premium</li> <li>- LME Aluminium West-Europe Premium</li> <li>- LME Aluminium East-Asia Premium</li> <li>- LME Aluminium South-East Asia Premium</li> <li>- LME Aluminium Premium Duty Paid US Midwest</li> <li>- LME Aluminium Premium Duty Unpaid European</li> <li>- LME Alumina</li> <li>- Gold</li> <li>- Silver</li> <li>- Cobalt (cash settled)</li> <li>- Molybdenum (cash settled)</li> </ul>	USD
LME Minis	<ul style="list-style-type: none"> <li>- Copper Grade A</li> <li>- High Grade Primary Aluminium</li> <li>- Special High Grade Zinc</li> </ul>	USD
LME Index	<ul style="list-style-type: none"> <li>- LMEX</li> </ul>	USD
Traded Options	<ul style="list-style-type: none"> <li>- Aluminium Alloy</li> <li>- High Grade Primary Aluminium</li> <li>- North American Special Aluminium Alloy Contract (NASAAC)</li> <li>- Copper Grade A</li> <li>- Primary Nickel</li> <li>- Standard Lead</li> <li>- Tin</li> <li>- Special High Grade Zinc</li> </ul>	USD GBP EUR JPY

Traded Average Price Options	<ul style="list-style-type: none"> <li>- Aluminium Alloy</li> <li>- High Grade Primary Aluminium</li> <li>- North American Special Aluminium Alloy Contract (NASAAC)</li> <li>- Copper Grade A</li> <li>- Primary Nickel</li> <li>- Standard Lead</li> <li>- Tin</li> <li>- Special High Grade Zinc</li> </ul>	USD
Monthly Average Futures	<ul style="list-style-type: none"> <li>- Aluminium Alloy</li> <li>- High Grade Primary Aluminium</li> <li>- North American Special Aluminium Alloy Contract (NASAAC)</li> <li>- Copper Grade A</li> <li>- Primary Nickel</li> <li>- Standard Lead</li> <li>- Tin</li> <li>- Special High Grade Zinc</li> </ul>	USD

27. LME Clear permits access to its Clearing System to those persons:

- i. who apply for and qualify for admission as Members under the Rules (LME Clear Rule 3);
- ii. whose applications are approved by LME Clear in accordance with the Membership Procedure; and
- iii. who have complied with the obligations under the Rules for the provision of Collateral and Default Fund Contribution.

### **Risk Management Framework**

28. LME Clear has implemented a comprehensive risk management framework which is designed to ensure the financial performance of all cleared Contracts. This is set out and detailed on the LME Clear website – see section V of this Disclosure Document. LME Clear has a Board Risk Appetite Statement which defines and documents LME Clear’s approach to risk management. The Risk Appetite Statement has identified 20 key Risk Types and details the risks LME Clear is prepared to accept and those which it is not. The 20 key Risk Types are:

- i. Business & Strategic Risk
- ii. Information Technology Risk
- iii. Information Security/Cyber Risk
- iv. Human Capital Risk
- v. Operational Risk
- vi. Change Risk
- vii. Vendor Risk
- viii. Fraud Risk
- ix. Business Continuity Risk
- x. Legal Risk
- xi. Compliance Risk
- xii. Conduct Risk
- xiii. Clearing & Settlement Risk
- xiv. Credit Risk and Payment
- xv. Settlement Risk
- xvi. Custody Risk

- xvii. Treasury/Investment Risk
- xviii. Capital Risk
- xix. Liquidity Risk
- xx. Market Risk

29. Each risk has a clear statement of the relevant governance arrangements, including clear responsibility and accountability and also quantification, measurement and reporting requirements. This helps to create a strong risk management culture of awareness and transparency that is supported by an Enterprise Risk Management (“**ERM**”) framework that utilises the 20 key Risk Types to ensure that the risks to the business are identified, assessed and mitigated wherever necessary. Underpinning this LME Clear operates a ‘3 lines of defence’ model that encourages management responsibility along with challenge from a strong second line and periodic review by Internal Audit. LME Clear’s risk management objectives are to:

- ensure that the Recognition Regulations, EMIR and other applicable statutory legal requirements are met;
- ensure that the risk management statements in the annual reports are adequately supported and other relevant corporate governance requirements are met;
- share risk information across the CCP to ensure LME Clear is making informed decisions;
- promote open discussion and appropriate escalation of significant risks as soon as they become apparent;
- embed risk management into the culture and processes for day to day activities;
- ensure awareness at Board level of the key risks and how they are being addressed;
- ensure there is a rigorous credit review and due diligence process for all actual and potential Members and other counterparts to whom an exposure is expected to arise;
- maintain effective and efficient operational and change management procedures;
- maintain robust processes and controls;
- ensure vigilant maintenance to the uninterrupted availability of systems, data and assistance where applicable;
- have due regard to the reputation of LME Clear and the HKEX Group;
- ensure effective and cautious management and robust control of operations that are outsourced to third parties including LME Clear’s systems and technology providers and investment managers;
- maintain a high level of understanding of the markets and the products which are being cleared; and
- maintain a high level of competence and experience among staff.

30. LME Clear's ERM approach is aligned to the Risk Appetite Statement approved by the Board. This is a structured, consistent and continuous process across the whole organisation for identifying, assessing, responding to and reporting on opportunities and threats that affect the pursuit and achievement of LME Clear's objectives. This approach is consistent with the ERM approach for the LME and HKEX Group and allows consistent reporting across the Group.
31. The Executive Committee, alongside the Executive Risk Committee and Clearing Risk Committee, assist the Chief Executive Officer and Chief Risk Officer respectively in managing the business of the CCP in line with authority from the Board. The Risk Appetite Statement is owned by the Board and will be reviewed at least annually. In addition:
- reviews of each Risk Appetite Statement Risk Type will be undertaken by the Board Risk Committee, Audit Committee or Technology and Operational Resilience Committee as appropriate and reported to the Board; and
  - the reporting of agreed metrics against the Risk Appetite Statement will be provided to the Executive Committee, Audit Committee, Technology and Operational Resilience Committee or Board Risk Committee as appropriate, and the Board.
32. Any breach of the Risk Appetite Statement will be immediately reported to the Executive Committee with subsequent onward reporting to the Audit Committee, Technology and Operational Resilience Committee or Board Risk Committee as appropriate, and the Board.

### Clearing Statistics of LME Clear

33. As of end September 2020, the notional amounts of outstanding Contracts cleared by LME Clear were:

Product	Notional Amount Outstanding (USD Equivalent)
AA	137,485,904
AG	63,384,750
AH	1,246,994,343,861
AU	522,542,240
CA	2,307,418,128,769
CO	14,735,839
HC	63,054,930
HU	17,101,360
NA	131,509,777
NI	702,705,950,541
PB	159,955,502,506
SC	99,464,490
SN	28,071,319,759
SR	16,649,860
UP	1,679,098
ZS	504,445,106,853
<b>Grand Total</b>	<b>4,950,657,960,537</b>

## Operational Reliability

34. LME Clear's primary operational objectives are to ensure that the LME Clear system is available for the provision of clearing services from 07:30 to 20:15 on each clearing day and that system recovery can be achieved within two hours following a disruption to LME Clear's critical functions.
35. LME Clear is designed to ensure a high degree of resilience and availability through multiple layers of redundancy and has designed its systems to have minimum capacity of three times the LME daily price peak matched trade volume. LME Clear's network infrastructure is based in two geographically separate data centres. Each data centre contains redundant hardware for all key LME Clear components. The system is designed to operate across both data centres thus ensuring that data and processes are maintained in near real time across both facilities.

## Legal and Regulatory Framework

36. LME Clear's relationship with its Members is primarily based on English law contracts.
37. Members are contractually required to comply with English law governed Rules and Procedures as well as the Membership Agreement (collectively the "Clearing Documentation"). These are set out and detailed on the LME Clear website – see section V of this Disclosure Document. This English law-based framework provides a high degree of legal certainty for each material aspect of LME Clear's activities. The framework supports and allows LME Clear to conduct material aspects of its activities as a CCP. These include the novation, registration and netting of Contracts, transfer of funds, Default Procedures and application of default resources and settlement finality.
38. LME Clear has the contractual right to make such changes to its Rules in accordance with such Rules as are necessary and desirable for the proper regulation and efficient operation of its clearing activities.
39. In addition to the Clearing Documentation, LME Clear relies on the following statutory and regulatory arrangements:
  - authorisation as a CCP under EMIR<sup>4</sup>;
  - recognition as a recognised CCP under section 290 of the Financial Services and Markets Act 2000 (FSMA);
  - designation as a designated system under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999 (the Settlement Finality Regulations)<sup>5</sup>; and
  - recognition as a recognised CCP for the purposes of Part VII of the Companies Act 1989.
40. Primary regulatory oversight of LME Clear's activities is carried out by the Bank of England (the "**Bank**"). LME Clear is also regulated by a College of European Regulators. The Bank monitors LME Clear's ongoing compliance with the provisions of EMIR and the associated technical standards, FSMA and the Settlement Finality Regulations via a dedicated supervisory team. Key elements of the Bank's approach to the ongoing supervision of LME Clear include:
  - regular oversight meetings with areas of the business;

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<sup>4</sup> Note that as at 1 January 2021, LME Clear will be Recognised as an EMIR Third Country CCP following the end of the Brexit transition period

<sup>5</sup> Note that as at 1 January 2021, LME Clear will also be approved as a third-country system under French law for the purposes of the Settlement Finality Directive

- data collection and ongoing reporting obligations;
  - the approval of individuals occupying critical roles (so-called “significant influence functions”);
  - the review and approval of changes to Rules;
  - review of LME Clear’s annual self-assessment against the PFMI; and
  - performing an annual risk assessment, accompanied by associated thematic reviews of business areas.
41. Members are able to submit for clearing:
- transactions executed between Members; and
  - transactions executed between Members and their clients (providing they are a General Clearing Member).
42. Both types of Transaction will result in the creation of Contracts between LME Clear and the relevant Members and such Contracts will be governed by the Clearing Documentation.
43. Members can provide cash, certain securities, gold and LME warrants as collateral to cover LME Clear’s margin requirements. These are set out and detailed on the LME Clear website – see section V of this Disclosure Document. Cash and Gold collateral are transferred to LME Clear on a title transfer basis pursuant to the Clearing Documentation. Securities collateral is provided under the terms of security arrangements and can be held by LME Clear in England (under English law), New York (under New York law) or Belgium (under Belgian law). There is a separate English law charge and pledge covering LME warrants and the metal they represent.
44. Members are located primarily in the UK. Some Members are incorporated in other jurisdictions such as Germany, France, Norway, the Netherlands, Switzerland, the USA (Delaware and Illinois) and Australia.
45. LME Clear engages independent law firms to provide legal opinions in relation to the validity and enforceability of the Clearing Documentation and security arrangements, both as a matter of English law and under the law governing the Member’s activities (notably its jurisdiction of incorporation) and the security arrangements. This provides a high level of confidence that the Clearing Documentation and security arrangements are enforceable under all relevant laws.

## **System Design**

46. LME Clear has implemented a Real-Time Clearing System (LMEmercury) as a clearing and settlement, risk management and collateral management solution. LME Clear has also implemented an internally developed data warehouse to provide additional reporting and analytical capabilities.
47. LME Clear’s IT systems are designed to ensure maximum resilience and availability through multiple layers of redundancy. LME Clear uses the LME data centre and network infrastructure which is based on two geographically separate data centres. Each data centre contains redundant hardware for all key components and the system is designed to operate across both data centres, ensuring that data and processes are maintained in near real time across both facilities.
48. LME Clear has designed its systems to have minimum capacity of three times the LME daily price peak matched trade volume. Overall capacity management is reviewed regularly by the

LME Clear Chief Technology Officer, who assesses business demand and ensures that corresponding service and system capacity is in place.

## High Level Summary of System Business Function and Contextual Overview

49. The key IT platforms are essentially LMEmercury and a supporting Clearing Data Warehouse (CDW) which support the following key business functions:

### 50. Clearing & Settlement

- i. Matched Transactions: real time FIX feed of matched trades (from LMEsmart), data validated and position risk checked against Member available Collateral, including any intraday credit tolerance allowed to the Member by LME Clear;
- ii. position management: real time management using account structure supporting multiple House Accounts, Omnibus Client Accounts and Individual Segregated Client Accounts, support for position transfer and porting;
- iii. contract expiry: management of contract expiry process;
- iv. option exercise and assignment: management of automated expiry and random assignment process;
- v. settlement and delivery management: interface with physical settlement and delivery system (LMEsword) and management of cleared delivery process; and
- vi. fee collection and reporting: fee module to calculate, collect and report fees for the LME and LME Clear.

### 51. Risk Management

- i. Margin and Default Fund calculation and collection: real time calculation of margin (SPAN<sup>6</sup> and VaR) and margin cover processing;
- ii. stress testing and reverse stress testing of Member and Client portfolios including collateral;
- iii. risk analytics, including calculation of greeks and sensitivity analysis on portfolios and collateral;
- iv. credit risk metrics for credit scoring and regular intra-day updates of credit market data for Members and other counterparties;
- v. default management: ability to manage position transfers and close out defaulting Member's positions;
- vi. risk monitoring and reporting: real time risk monitoring and ability to consolidate risk exposure across market exposure and treasury investment exposure; and
- vii. pricing and market data management: multiple pricing sources throughout the business day for both cleared positions and collateral.

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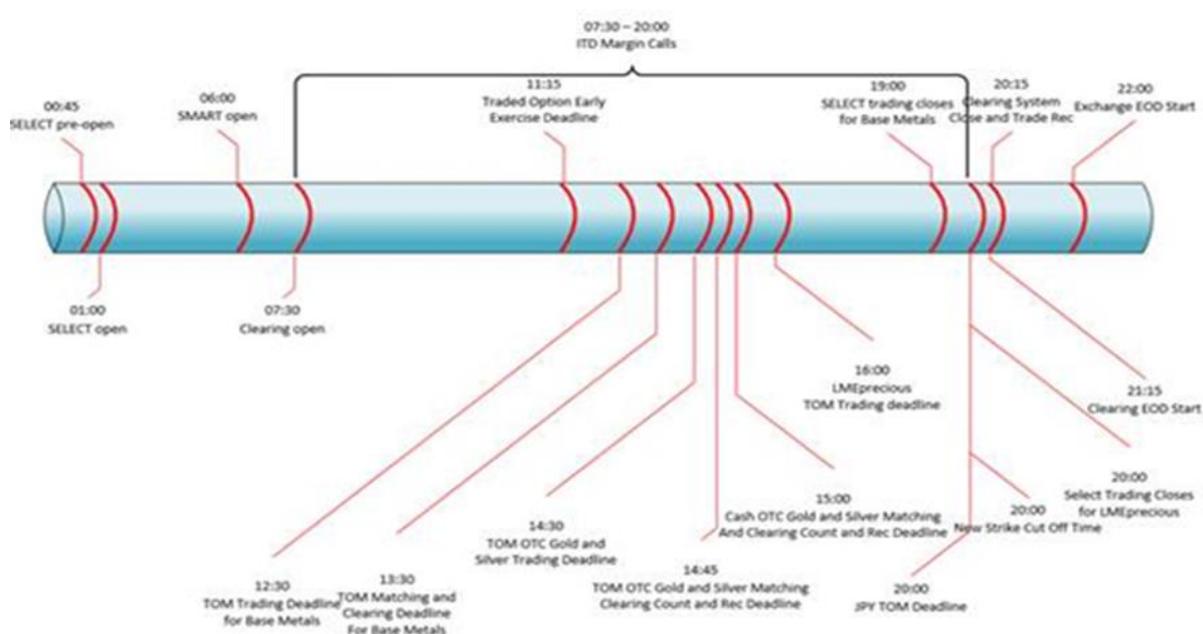
<sup>6</sup> "SPAN" is a registered trademark of Chicago Mercantile Exchange Inc., used herein under license. Chicago Mercantile Exchange Inc. assumes no liability in connection with the use of SPAN by any person or entity.

## 52. Cash & Collateral Management

- i. Payments handling: link to SWIFT network managing payments across Settlement Banks and Concentration Banks; and
- ii. cash and non-cash collateral management: SWIFT processing of cash and securities to manage assets across Custodians and cash investment agent.

## Timeline of Clearing Activities

53. Once LME trades are matched via LMEsmart, they are passed to LME Clear. LME Clear is open for the registration of trades between 07.30 hrs and 20.15 hrs London time.



## Margin Calls

54. As each transaction is submitted to LMEmercury, the risk on the affected Member's portfolio is calculated in real time. A variation margin check is performed, calculating the variation margin for both sides of the transaction. Where the variation margin is above a pre-defined threshold the transaction is temporarily placed on the pending queue. If the variation margin is below the pre-defined threshold the transaction is automatically registered for clearing if the Member and account has sufficient available collateral.
55. Each time a transaction enters the pending queue, a revaluation of the portfolio takes place in real time using the current system prices.
56. The Member's portfolio includes:
- i. the new Transaction;
  - ii. any new Transactions accepted on the same Business Day; and
  - iii. the brought forward Position from the previous day
57. The total margin required is compared to the Member's available collateral including any intraday credit tolerance allowed to the Member by LME Clear. If there is sufficient collateral in place, pending Transactions will be released and registered automatically. If there is insufficient collateral, a request will be made to the Member's Settlement Bank for additional collateral. Once confirmation is received that this collateral is in place and this is confirmed by LME Clear Risk team the pending Transaction will be released and registered automatically.

58. Intraday margin calls will be made in line with LME Clear's Risk Management Policy through the Secure Payment System, and cover must be provided by Members within one hour. End of day margin calls are made in a timely fashion following the closure of the daily clearing process at 20:15 London time, and need to be met by Members through the Secure Payment System by 09:00 the next working day.
59. Margin information is set out and detailed on the LME Clear website – see section V of this Disclosure Document.

## IV. Principle-by-Principle Summary Disclosure

### Principle 1: Legal Basis

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

### 1 Legal Basis

LME Clear's relationship with its Members is primarily based on English law contracts. Members are contractually required to comply with the English law governed Rules and Procedures as well as the Membership Agreement and Security Agreements when the Member provides non-cash collateral (collectively the **Clearing Documentation**). These are set out and detailed on the LME Clear website – see section V of this Disclosure Document. The Clearing Documentation provides a high degree of legal certainty for each material aspect of LME Clear's activities, thus supporting and allowing LME Clear to conduct such activity appropriately and effectively. The Clearing Documentation has been drafted to set out clearly the rights and obligations of LME Clear and its Members allowing Members to understand the full extent of their obligations when using LMEmercury.

The principal material aspects of LME Clear's activities that require the legal certainty afforded by the Clearing Documentation are:

- i. the general rights and obligations of LME Clear and its Members in respect of clearing services and cleared Contracts;
- ii. the Acceptance, settlement and netting of Contracts;
- iii. settlement finality arrangements;
- iv. the transfer of funds (including the rights and interests of LME Clear and its Members to collateral transferred as Margin and Default Fund Contributions);
- v. the segregation of Positions and collateral between Members and their Clients; and
- vi. provisions dealing with the default of Members (including the porting of client positions and collateral and the application of default resources).

The Rules set put the process for the amendment or change to the LME Clear Rules and Procedures. Rule changes may be done as are necessary and desirable for the proper regulation and efficient operation of LME Clear's clearing activities but any Rules changes have to be carried out in accordance with the Rule changes process<sup>7</sup>.

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<sup>7</sup> LME Clear is required under EMIR and the Clearing Documentation to consult with its Members before making most material changes to its Rules (see Rule 2.2.5).

## Contracts and Collateral

Members are able to submit for clearing:

- Transactions agreed between Members; and
- Transactions agreed between Members and their Clients (provided they are a General Clearing Member).

Both types of transaction result in Cleared Contracts and will be governed by the Clearing Documentation.

Members can provide Cash collateral, certain Securities Collateral, Gold Collateral and LME Warrants to cover Margin Requirements. These are set out and detailed on the LME Clear website – see section V of this Disclosure Document. Cash and Gold Collateral are transferred to LME Clear on a title transfer basis pursuant to the Clearing Documentation. Securities Collateral is provided under the terms of security arrangements and can be held by LME Clear in England (under English law), New York (under New York law) or Belgium (under Belgian law). There is a separate English law charge and pledge covering LME Warrants and the metal they represent.

## Statutory and Regulatory Basis

LME Clear is located in England and Wales, where it is:

- i. recognised as a CCP in accordance with section 290 of Financial Services and Markets Act 2000 ("FSMA");
- ii. authorised as a CCP in accordance with Article 17 of the European Regulation on OTC Derivatives, Central Counterparties and Trade Repositories: the European Market Infrastructure Regulation ("EMIR")<sup>8</sup>;
- iii. a "designated system" under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999 ("Settlement Finality Regulations")<sup>9</sup>; and
- iv. a recognised CCP for the purposes of Part VII of the Companies Act 1989.

Primary regulatory oversight of LME Clear's activities is carried out by the Bank of England (the "Bank") pursuant to FSMA. The Bank's role includes having oversight of material changes made to the Rules.

LME Clear has been designated by the Bank as a designated system under the Settlement Finality Regulations. The Settlement Finality Regulations reduce the risk that Contracts and transfers made by a CCP and its participants may be challenged in the event of a participant's insolvency. Rule 11 and the Settlement Finality Procedures define the transactions which are considered "transfers" as well as the point of entry and irrevocability of such transfers.

LME Clear also benefits from provisions in Part VII of the Companies Act 1989 which, amongst other things, provides UK CCPs with certain protections from general insolvency laws which would otherwise apply in the event of a participant's insolvency.

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<sup>8</sup> Note that as of 1<sup>st</sup> January 2021, LME Clear will be Recognised as a Third Country CCP under EMIR following the end of the Brexit transition period.

<sup>9</sup> Note that as at 1 January 2021, LME Clear will also be approved as a third-country system under French law for the purposes of the Settlement Finality Directive

## Transparency

The following documents provide further detail on the legal basis on which LME Clear conducts its clearing activities and are publicly available on the LME Clear website:

- The Rules and Procedures (including the Settlement Finality Procedures); and
- The disclosure statement detailing the different levels of segregation offered by LME Clear and a description of the main legal implications of the respective levels of segregation offered. The disclosure document also identifies the key legal risks relating to the use of the clearing system, including conflicts of law issues. This disclosure document contains the mandatory disclosures under Article 39(7) of EMIR.

Systems and services are also described in detail on the LME Clear website available at <https://www.lme.com/lme-clear/>.

## Member Jurisdictions

LME Clear's Members are located primarily in the UK. Some Members are incorporated in other jurisdictions such as Germany, France, Norway, the Netherlands, Switzerland, the USA and Australia. A Member's country of incorporation is relevant in relation to the validity and enforceability of their participation in the clearing services provided by LME Clear. In respect of Members (and potential Members) incorporated outside the UK, LME Clear has undertaken jurisdictional legal analysis.

LME Clear has undertaken legal analysis to support the enforceability of its Rules and Procedures, agreements and collateral arrangements in each member jurisdiction. LME Clear has also undertaken analysis on the enforceability of its collateral arrangements in the jurisdictions where cash and non-cash collateral can be held. This analysis is renewed at least every three years. LME Clear is not aware of any court of any relevant jurisdiction that has held its activities or arrangements to be unenforceable. In each case, LME Clear has taken account of any recommendations arising from the legal analysis and made changes to the policies and procedures as necessary to ensure enforceability. Where legal risks were identified (for example the effect of insolvency on the ability of LME Clear to manage the collateral relating to the defaulting member) risk management tools have been implemented to limit the negative impact of such insolvency. In addition to understanding the legal framework applicable in foreign jurisdictions, LME Clear also proactively implements mitigation policies and procedures to reduce legal risks.

LME Clear's Ethical Conduct, Legal and Compliance Risk Policy defines how LME Clear intends to minimise the risk of loss (financial and non-financial) arising from a failure to adapt to legislative and regulatory changes or comply with laws and regulations and states that any conflict of laws issues are identified and independent legal opinions are obtained where necessary and that the applicable law is clearly stated in the Rules. As stated, LME Clear has obtained legal opinions from all member and collateral jurisdictions which identify and address any potential conflict of laws issues. LME Clear is therefore aware that conflicts of laws may arise in certain jurisdictions. In jurisdictions where potential conflicts could arise, such conflicts have been identified and discussed at management level. A risk mitigation process has been identified and embedded in procedures to limit the potential negative impact of any conflicts of laws.

## Principle 2: Governance

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

## 2 Governance

- 2.1 LME Clear's governance arrangements are clear, transparent and publicly disclosed and are fully compliant with EMIR requirements which are quite extensive in respect of governance. Roles of the Board and Committees are clearly defined in the Matters Reserved for the Board and relevant Terms of Reference. Articles of Association, and Terms of Reference of Board and Executive level Committees, can be found on the LME Clear website – see section V of this Disclosure Document.
- 2.2 LME Clear is fully compliant with all applicable regulatory standards for clearing houses. Its risk management methodologies and practices comply with the Recommendations for Central Counterparties developed by the Committee on Payment and Market Infrastructure ("CPMI") and the Technical Committee of the International Organisation of Securities Commissions ("IOSCO").
- 2.3 The LME Clear Business Plan sets out LME Clear's objectives. The Board has overall responsibility for the Business Plan and reviews the effectiveness of the actions taken in response to concerns raised under this plan. The Board recognises that in order to comply with LME Clear's regulatory obligations and to support financial stability, the Board must ensure that LME Clear is operated as a distinct legal entity and independent from the rest of the HKEX Group. In complying with its regulatory obligations, the Board considers that it is responsible for promoting the success of the Company for the benefit of its sole shareholder while taking into account benefits of the wider group of stakeholders in line with s. 172 of Companies Act 2006. Subject to its regulatory obligations, the Board, where possible, seeks to promote the success of the HKEX Group as a whole.
- 2.4 LME Clear's approach to risk is defined in the Risk Appetite Statement. This document is owned by the LME Clear Board and acts as the parent to the detailed risk policies and procedures. The Risk Appetite Statement contains clear responsibility and accountability for each of the risks. The Risk Appetite Statement sets out the approach of LME Clear to various risks impacting its activities by identifying the relevant risks, defining the relevant risk appetite for each risk, assessing the quantification methods and defining the reporting lines as well as reporting frequency. The Board is composed of qualified and skilled members and its performance is reviewed on a regular basis. The Independent Directors have been selected on the basis that they are of sufficiently good repute and have adequate expertise in financial services, risk management, and clearing services. They have been selected based on the balance of skills they bring to the Board as a group. All Directors that were requested have completed their Significant Influence Function (SIF) interviews with the Bank of England.

2.5 The Board has the ultimate responsibility for the management, general affairs, direction, performance and long-term success of LME Clear and has the powers, authorities and duties vested in it by and pursuant to its Articles of Association and applicable law. The roles and responsibilities of the Board are clearly specified in the Articles of Association and the Matters Reserved for the Board and Board Terms of Reference including seven principle committees to which specific responsibilities are delegated (these are set out and detailed on the LME Clear website – see section V of this Disclosure Document):

2.6 The Board responsibilities in summary are to:

- i. determine the overall strategy, objectives and risk appetite of LME Clear;
- ii. establish and regularly review LME Clear's internal systems and controls, through the LME Clear Audit Committee;
- iii. monitor the performance of the Executive Committee;
- iv. retain oversight of the risk management, compliance, internal audit and financial management functions, including the approval of certain compliance and risk policies;
- v. approve all material outsourcing arrangements, the annual budget and variations of the clearing fees and any changes to the LME Clear Rules and Procedures;
- vi. establish an appropriate remuneration policy; and
- vii. be accountable to the Company's shareholders, employees, clearing members, clearing members' clients and other stakeholders.

2.7 The Board has delegated responsibility for the day-to-day management of LME Clear to the Executive Committee, which is supported by a functional management team. The Executive Committee is chaired by the Chief Executive and comprises of the Executive team appointed in consultation with the Board. The Executive Committee's key responsibilities include:

- i. implementation of the Board's approved strategies and policies, subjecting the internal control procedures to regular review and testing, ensuring that risks identified are duly addressed and that all decisions are taken in line with the Risk Appetite Statement;
- ii. ensuring and overseeing compliance with all statutory duties imposed on it under all applicable laws and regulatory requirements and overseeing the liaison with all regulatory authorities and organisations on all matters relating to the Company;
- iii. taking into account the objectives and strategy of the HKEX Group; and

- iv. receiving and considering reports and recommendation from the Executive Committee and Board Risk Committee, ensuring implementation of recommendations subject to the appropriate approvals.
- 2.8 The Executive Committee has established a number of other committees to assist in risk management, oversight and stakeholder engagement.
- 2.9 The Board Risk Committee is an advisory committee to the Board, advising on any arrangements that may impact the risk management of the Company, including a significant change in its risk model, the default procedures, the criteria for accepting clearing members, the clearing of new classes of instruments and the outsourcing of functions. The Board Risk Committee also monitors and assesses the adequacy and effectiveness of the Company's market risk management policies, procedures, and market risk management systems and methodologies. It is composed of ten individuals of whom three are Independent Directors, one of which is the Chair, four are Clearing Members' representatives and three are the representatives of the Clients of the Clearing Members. This combination ensures that a balance of views from all key stakeholders is achieved. In summary, the Board Risk Committee:
- i. advises the Board on any arrangements that may impact the risk management of LME Clear, including any significant change in its risk model, the Default Procedures, the criteria for accepting Members, the clearing of new classes of instruments and the outsourcing of functions; and
  - ii. monitors and assesses the adequacy and effectiveness of LME Clear's risk management policies, procedures, and risk management systems and methodologies.
- 2.10 The Nomination Committee is composed of a maximum of five individuals with a majority being Independent Directors. The Nomination Committee's responsibilities, in summary, are as follows:
- i. to regularly review the structure, size and composition (including but not limited to the skills, knowledge and experience) of the Board and to make recommendations to the Board with regard to any changes;
  - ii. to give full consideration to succession planning for Independent Directors nominated and appointed by the Board in accordance with the Articles, taking into account the need for Directors to be of sufficiently good repute and the need for Directors to have adequate expertise in financial services, risk management and clearing services; and
  - iii. to be responsible for identifying and recommending, for approval by the Board, candidates to fill vacancies for the position of Independent Director under the Articles as and when they arise.

2.11 The Audit Committee is composed of at least four individuals, of whom at least three are appointed from the Independent Directors and at least one individual must have relevant and recent financial experience. Five individuals have been appointed from the Independent Directors and the sixth is the HKEX Co-President to ensure that all aspects within the role of the Audit Committee are adequately covered. The Audit Committee's responsibilities include, amongst other things:

- i. to monitor the integrity of the financial statements of LME Clear, including its annual and interim reports and any other formal announcement relating to its financial performance;
- ii. to be responsible for monitoring LME Clear's internal controls (including financial, operational, IT, information security, outsourcing and legal and compliance controls) as well as the adequacy of LME Clear's policies and procedures relating to financial, operational, IT, information security, outsourcing, legal and compliance risks;
- iii. to monitor the risk management system, review the key risks faced by, or relating to, LME Clear in line with the Risk Appetite Statement and the Operational Risk Policy;
- iv. to monitor and review the effectiveness of LME Clear's internal audit function in the context of LME Clear's overall risk management system;
- v. to consider and make recommendations to the Board, in relation to the appointment, re-appointment and removal of the Company's external auditors, oversee in consultation with HKEX the selection process for new auditors and investigate a resignation by the external auditors; and
- vi. to be responsible for identifying and recommending, for approval by the Board, candidates to fill vacancies for the position of Independent Director under the Articles as and when they arise.

2.12 The Remuneration Committee is composed of four individuals, all of them the Independent Directors. The Remuneration Committee's responsibilities include, amongst other things:

- i. to review the Remuneration Policy on at least an annual basis;
- ii. to ensure that the Remuneration Policy is subject to independent audit on an annual basis and to review the Remuneration Policy in line with any recommendations made following the audit;
- iii. to ensure that contractual terms on termination, and any payments made, are fair to the Members and LME Clear, that failure is not rewarded and that the duty to mitigate loss is fully recognised; and
- iv. within the terms of the agreed policy and parameters set by HKEX Group Remuneration Committee, approve the total individual remuneration package for each Executive Director and the Company's Chairman.

- 2.13 The Technology and Operational Resilience Committee is composed of four individuals, all of whom are Directors within the LME Group. The Committee's responsibilities include, amongst other things:
- i. risk management considerations that relate to technology, change management and operational resilience;
  - ii. technology and change management; and
  - iii. operational resilience.
- 2.14 The Board delegates day-to-day management to the Executive Committee, which is supported by the LME Clear management team representing key functional areas of the organisation (including Operations and Technology, Risk, Business Development, Legal and Compliance). The Executive Risk Committee and Clearing Risk Committee - established by the Executive Committee to oversee the day-to-day risk management processes - also provide important ongoing support of the risks faced by the Company. The Board is solely responsible for setting the strategy of LME Clear. In setting the strategy, the Board considers the views of all stakeholders including the HKEX Group, applicable regulations and strikes an appropriate balance between commercial and risk mandates in determining what are appropriate for LME Clear. The Board remains responsible and accountable for the good management and performance of LME Clear and remains confident that it has a competent management team to which the Board has properly and effectively delegated day-to-day management.
- 2.15 The Clearing Risk Committee is responsible for monitoring and reviewing all CCP risk issues, and the Executive Risk Committee is responsible for monitoring and reviewing all non-CCP risk policy changes, including the Risk Appetite Statement. Under the Audit Committee Terms of Reference, the Audit Committee is responsible for monitoring the risk management system and monitoring and reviewing the key risks faced by, or relating to, LME Clear (enterprise risk) in line with the Risk Appetite Statement of the Committee and the Operational Risk Policy. The Audit Committee also monitors the adequacy of the policies and procedures relating to operational risks (including custody risk, payment and settlement risk and concentration risk) and makes recommendations. The Audit Committee has overall responsibility for the Operational Risk Policy, the Investment Policy and the Payment, Settlement and Custody Policy and monitors compliance with such policies and reviews its effectiveness at least on an annual basis.

## **Conflicts of Interest Policy**

- 2.16 LME Clear has put in place a Conflicts of Interest which sets out the arrangements to identify and manage conflicts of interest between the Company and a Member, Client or an applicant for membership. The Policy defines the concept of conflicts of interest, identifies potential conflict of interest situations and sets out the procedures in place to manage and mitigate such conflicts, including the internal organisation of LME Clear and the use of information barriers. To avoid conflicts in relation to committee members, LME Clear includes in the terms of reference for all its committees a provision requiring its members to declare any actual or potential conflicts of interest in relation to any matter under consideration at the earliest possible opportunity and in any case before they participate in discussion of that issue.

The LME Clear Chief Compliance Officer is responsible for maintaining the Policy and ensuring that appropriate action is taken where a conflict is identified. The Chief Compliance Officer maintains a register of all conflicts declared or identified which is reviewed on an annual basis.

## Transparency Policy

- 2.17 The Transparency Policy sets out the basis on which LME Clear discloses certain information to Members and to the public. LME Clear has a website on which information is made available to the public and to Members. Most parts of the LME Clear website are available to the public but there is also a secure section which is only accessible to Members. All information which is required under the EMIR Requirements to be made available to the public is available on the public part of the LME Clear website. As required under EMIR, LME Clear makes available on its LME Clear website the Disclosure Document including details on account structure and related levels of protection as well as details on the insolvency law implications in relevant jurisdictions in connection with segregation. There is no charge for accessing such information. The information is clear and comprehensive. The contact details of the Relationship Management function are included. The Relationship Management function deals with any requests for information.
- 2.18 Information regarding the end-to-end risks associated with the clearing services provided by LME Clear and the price information used by LME Clear to calculate end-of-day exposures are available in the secure area of the LME Clear website. All Member contacts are provided with secure log-on details to the LME Clear website.

### Principle 3: Framework for the Comprehensive Management of Risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

## 3 Framework for the Comprehensive Management of Risks

### Risk Management Framework

- 3.1 LME Clear has established a comprehensive risk management framework to monitor and manage various types of risks that arise in or are borne by LME Clear as highlighted in Section III paragraph 28 (“Risk Management Framework”). The Risk Appetite Statement has identified 20 key ‘risk types’ that are outlined below:

Risk Type	Definition
Credit Risk	The risk of the failure of a counterparty which may give rise to risk to the capital and resources of LME Clear and/or the post-default backing or other obligations provided by member firms.
Liquidity Risk	The risk that LME Clear cannot, in the required timing, effect payment and settlement obligations in all relevant currencies as they fall due.
Market Risk	The risk that a large shift in market prices, mis-valuation, and/or changes in member firm positions exposes LME Clear to potential risks greater than the realisable value of collateral held against those risks.
Capital Risk	The risk of LME Clear being unable to meet its regulatory capital requirements under extreme, but plausible market conditions
Business and Strategy Risk	The risk of financial loss due to changes in the wider business environment which cannot be offset through changes in variable costs and which may mean LME Clear is unable to fulfil all or part of its strategy.
Legal Risk	The risk of loss as a result of inadequate protections for LME Clear, or the inability to enforce contractual terms or the violation of any law, regulation, regulatory requirement, applicable standard or guidance.
Compliance Risk	The risk of loss or sanction as a result of failing to meet regulatory requirements, applicable standards or guidance.
Business Continuity Risk	The risk that any degree of damage or failure affecting LME Clear personnel and systems - including data, hardware and software - will disrupt the smooth running of LME Clear.

Risk Type	Definition
Information Technology Risk	The risk that any business services supported by information technology are liable to negative effect should there arise any computer hardware or software issues including errors in the use or management of technology operations.
Information Security Risk	In relation to Information Security Risk (including cyber risk), the prevention of information modification or destruction, including the ensuring of information nonrepudiation and authenticity.
Human Capital Risk	The risk of not having enough experienced and adequately trained staff to cover the LME Clear operation. Human capital risk is the risk of having insufficient qualified staff to meet the firm's obligations or the inability to retain, engage or identify successors/replacements for key positions.
Operational Risk	The risk of loss resulting from inadequate or through failures in internal processes, people or systems or from external events.
Custody Risk	The risk to LME Clear capital as a result of the disruption or failure of a custodian.
Payment and Settlement Risk	The risk to LME Clear of being unable to fulfil its payment and settlement obligations in a timely manner through the disruption or failure of a payment bank.
Concentration Risk	The risk to LME Clear capital through a significant concentration of business or related positions to one or multiple counterparties.
Conduct Risk	The risk of financial loss, reputational damage or legal and compliance breaches caused by the poor judgement of employees, members and other third parties connected to LME Clear.
Treasury/ Investment Risk	The risk of loss resulting from adverse movements in foreign exchange rates, interest rates or prices impacting LME Clear's investment portfolio (Investment Market Risk) and the risk of being unable to settle obligations as they fall due whether due to insufficient cash flow and/or participants / members default (Liquidity Risk).
Change Risk	The risk of loss of opportunity (profit), business disruption or damage to the reputation of LME Clear as a result of improper change management control, a lack of organisational agility, inability to support change volumes or delivery focus on high-impact initiatives.
Vendor Risk	The risk that business operations or the reputation of LME Clear is adversely impacted by vendor actions or a failure by the vendor in provisioning critical services to LME Clear in line with contractual agreements.
Fraud Risk	The risk of financial loss or reputational damage as a result of internal fraudulent acts including manipulation of financial reporting, misappropriation of assets, theft of LME Clear property and advantages gained by staff, contractors or our vendors through corrupt business practices.

3.2 The risk types above are not intended to be an exclusive list and are supplemented by an Enterprise Risk Management (“ERM”) framework which identifies all other risks to which LME Clear is exposed. The Risk Appetite Statement also includes details of the “3 lines of Defence” model that provides for clear ownership and accountability for all of the risks. Each risk has a clear statement of the relevant governance arrangements, including clear

responsibility and accountability and also quantification, measurement and reporting requirements.

## **Risk Management Policies, Procedures and Systems**

3.3 LME Clear operates a comprehensive Enterprise Risk Management approach that has oversight from the Chief Risk Officer. The approach to capture all risks is twofold;

- a top-down management led assessment of risk for each of the risk types identified in the Risk Appetite Statement; and
- a 'bottom-up' process through the Operational Risk Management Policy that ensures all operational risks are identified and mapped against the key risk types.

This provides a full picture of the risks to which LME Clear is exposed and allows for the measurement, monitoring and management of these risks.

3.4 The management of each of risk type is assigned to a member of the functional management team within LME Clear as the first line. The operational risks are assessed on an ongoing basis and are the subject of dedicated resources to ensure comprehensive coverage and to identify trends and solutions. The ERM is updated on an ongoing basis but subject to formal review by the Executive Committee and the Audit Committee on at least a quarterly basis.

3.5 The Risk Appetite Statement sets out how the Board wishes the company to manage risk. This includes details of responsibility, review cycles, quantification, reporting and the need to review each policy at least annually. In addition, the Board Risk Committee, Audit Committee and the Technology and Operational Resilience Committee receive quarterly reporting on each of the policies and performance. In addition, the Executive Committee receives monthly reporting on operational issues and policy compliance.

3.6 All models used on a day-to-day basis are regularly assessed to confirm that the underlying assumptions and theoretical basis on which they are founded are still appropriate. This will include an assessment of the back testing and stress testing results from the model to ensure that they continue to demonstrate the suitability of the model in both normal operating conditions and extreme but plausible stress conditions. All material changes to the underlying model or methodologies, liquidity risk framework, policies or the validation process will require independent validation, advice from the Board Risk Committee and approval from the Board and the Bank.

3.7 In addition, LME Clear undertakes daily reviews of margin coverage, back testing results, additional margin calculation, Default Fund stress testing and liquidity. A monthly review of the daily tests is provided to the Clearing Risk Committee where they analyse global model performance during the month and challenge any of the processes or results. Ad-hoc reviews by the Clearing Risk Committee would occur in the event of identification of any concerns regarding the results by the Head of Risk.

3.8 A quarterly review of the reverse stress testing and sensitivity analysis is performed to assess the appropriateness of the stress testing program and this is reviewed by the Board Risk Committee.

3.9 An annual review to re-assess the appropriateness of all models with an independent party for review where necessary. The annual review allows the Clearing and Board Risk

Committees to assess the model performance, back testing results, theoretical and empirical properties.

- 3.10 Ad-hoc reviews of any model will be undertaken where back testing results, sensitivity, stress testing or market conditions dictate that the model performance has deteriorated sufficiently to warrant a review. Where such a review is triggered the Clearing Risk Committee may insist on immediate mitigating measures such as seeking additional margin until such time as the findings of the review are completed.
- 3.11 Margin models are also subject to sensitivity and stress testing including for theoretical portfolios that will test the sensitivity of the model to unusual combinations of positions that are not usually seen in member positions and which may cause the model to fail, or which stress the assumptions of the model. These tests are run on a periodic basis and reviewed to ascertain ongoing appropriateness given current or future market conditions. When creating theoretical accounts, LME Clear also considers the actual accounts of Members to identify any particular account structure or correlations to which LME Clear has the greatest sensitivities.

## **Recovery Plan and Wind Down Plan**

3.12 The LME Clear Wind Down Plan covers circumstances where LME Clear ceases to provide clearing services because of a Business Viability Review in line with the Recovery and Resolution Policy. The Wind Down Plan also covers the scenario where LME Clear could have its CCP authorisation withdrawn.

3.13 In summary, the Wind Down Plan is based on the following assumptions:

- i. that LME Clear return to matched book, crystallise losses and pay for losses through the loss allocation procedures set out in the Rules and the Recovery and Resolution Policy;
- ii. ensure it maintains sufficient regulatory capital;
- iii. if applicable, LME Clear will make an additional contribution to the Default Fund representing 25% of LME Clear's regulatory capital in accordance with the Rules and the Recovery and Resolution Policy;
- iv. restructuring the management team and business processes; and
- v. where a successor CCP is identified, transfer LME Clear's clearing portfolio to the successor CCP. Alternatively, give a certain period for Members to close out positions, then cash settle any outstanding ones.

3.14 Since the time necessary for an orderly winding down is strictly dependent on the clearing services provided by LME Clear and on the market environment in which it operates, the number of months required for the winding down of LME Clear is estimated to be twelve months. This is based on the time taken to arrange an orderly transfer of business from LME Clear to a successor CCP. This estimated time span of twelve months is deemed sufficient to ensure, including in stressed market conditions, an orderly winding down or restructuring of LME Clear's activities, reorganising its operations, liquidating its clearing portfolio or transferring its clearing activities to another CCP and meeting its contractual dependencies. This estimate takes into account the liquidity, size, maturity structure and

potential cross-border obstacles of the Positions of LME Clear and the type of products cleared.

- 3.15 The LME Clear Recovery Plan is intended to be used by the management of LME Clear in the event that LME Clear encounters scenarios that could potentially prevent it from being able to provide its clearing and settlement services as a going concern. In summary the Recovery Plan sets out:
- i. the governance to be followed by LME Clear in the event of the implementation of its Recovery Plan;
  - ii. the functions performed by LME Clear that LME Clear considers to be "critical services";
  - iii. the "stress scenarios" in which LME Clear may be prevented from being able to provide its critical services as a going concern and, in respect of each stress scenario and the "triggers" which would lead to the implementation of the Recovery Plan;
  - iv. the "recovery tools" available to LME Clear for each stress scenario and the order of priority in which the recovery tools should be applied; and
  - v. a description of the links that LME Clear has with other market infrastructure providers and LME Clear's arrangements for managing the risks posed by such providers.

## **Principle 4: Credit Risk**

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

## **4 Credit Risk**

### **Management of Credit Exposure to Members**

- 4.1 LME Clear conducts a credit risk assessment of all applicants and assigns an internal credit rating to all Members. The internal credit rating methodology is set out in the Credit Risk Policy and uses a combination of components to attain the credit score of Members, which includes financial resources, liquidity, regulatory capital ratios. In addition, both quantitative and qualitative factors are incorporated into the internal credit rating based on each Member's business plans, conduct and the outcome of due diligence reviews and perceived levels of risk as determined by LME Clear.
- 4.2 The information from the internal credit rating methodology is part of the application process; all applicants need to be approved by the Clearing Risk Committee and will need to achieve a minimum internal credit rating of 6 in order to be considered for Membership.
- 4.3 A review of the internal rating will be triggered by
  - (i) significant change of CDS and share price data;
  - (ii) significant change of financial standing based on the latest quarterly financial reporting;
  - and
  - (iii) significant news or change in qualitative factors.

- 4.4 LME Clear has in place daily Early Warning Indicator (“**EWI**”) reporting and monitoring tools and procedures to ensure that the internal credit rating of all Members is appropriately managed on an on-going basis. This monitoring includes CDS and share price data. In addition, all Members will be subject to, at a minimum, annual reviews of their credit rating and risk profile to LME Clear.
- 4.5 Members whose creditworthiness deteriorates below the minimum internal credit rating will have an increased margin requirement to cover the additional risk they pose to LME Clear but implementation of this is carefully considered to reduce potential procyclicality effects.

## **Managing Credit Exposures through the Clearing Process**

- 4.6 LME Clear manages the risks arising from Member exposure and has adopted in this respect key policies: a Credit Risk Policy, a Margin Policy and a Default Fund Policy. The calculation of Margin Requirements is set out in the Margin Policy. LME Clear carries out a number of margin calculations:
- In order to mitigate any current exposure, LME Clear marks-to-market all Positions and calculates Variation Margin on all Positions for each Account.
  - In order to mitigate any potential losses resulting from potential future exposure, LME Clear also calculates Initial Margin and ensures sufficient collateral from all Members to cover this exposure.
  - In order to mitigate against concentration/liquidity, credit or any other risk not adequately captured in the Initial Margin, LME Clear may require additional Collateral.
  - In order to mitigate against extreme but plausible stress events LME Clear has a Default Fund which is designed to cover the losses caused by the default of the two largest Members plus an additional 10%. The Default Fund minimum size is currently \$400mn and contributions are based upon each Member’s relative average Initial Margin. The minimum contribution for each Member is \$1mn.
  - Ahead of this Default Fund, LME Clear has its own capital, often known as “skin in the game” of 25% of its regulatory capital requirement as required under EMIR. Further, LME Clear has rights of replenishment of the Default Fund (accompanied by further regulatory capital).
  - In the event of replenishment being insufficient, LME Clear has the ability to apply Variation Margin Gains Haircuts (“VMGH”). If the Board determines, following consultation with the Board Risk Committee, that the application of VMGH would be inappropriate or ineffective, then a mandatory Cash Settlement process can be implemented. LME Clear is not able to unilaterally cash settle individual Member Positions in a default and can only apply multilateral Cash Settlement for all outstanding Positions of the defaulter in any Contract that remains open.
  - Further details of LME Clear’s Margin methodology are described under Principle 6 – Margin.

## **Stress Testing – Sufficiency of Financial Resources**

- 4.7 LME Clear's stress testing methodology is designed to consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' Positions/Collateral and possible price changes in liquidation periods. Scenarios 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. The adequacy of the Default Fund is stress-tested daily and resized at least monthly and ad hoc using a combination of historical scenarios and theoretical scenarios.
- 4.8 The effectiveness and appropriateness of stress-testing assumptions and parameters are assessed at least monthly, or more frequently if necessary, by LME Clear's Risk department.

## **Allocation of Losses and Replenishment of Financial Resources**

- 4.9 LME Clear's allocation of losses arising from Member default(s) and replenishment of its financial resources are described in greater detail under Principle 13 – Participant Default Rules and Procedures.

## **Management of Credit Exposure from the Payment, Clearing and Settlement Process**

- 4.10 All counterparties in payment arrangements are subject to the same credit analysis as conducted for Members with annual credit reviews and use of Early Warning Indicators. All counterparties are subject to review and approval by the Clearing Risk Committee.
- 4.11 LME Clear pro-actively manages the balances on a daily basis that arise from the payment and receipt of cash received as margin Collateral as well as its own funds to ensure that un-invested cash balances are kept to minimum both intra-day and end of day.
- 4.12 The payment system operated by LME Clear is a designated system under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999, as amended (the "SFRs"). The Settlement Finality Regulations implement, in the United Kingdom, the requirements of 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 "SF Directive"). The SFRs ensure that settlements are not vulnerable to unwind/clawback by an insolvency office holder (liquidator/administrator) or other party. A more detailed explanation of these arrangements is provided in Principle 8.
- 4.13 In accordance with the SFRs LME Clear has adopted, as part of its Rules and Procedures, Settlement Finality Rule (Rule 11) and related Settlement Finality Procedures (attached to the Rules) which define the system, the point of irrevocability and finality of instructions as well as the participants in the system. These are governed by English Law.

## Management of Credit Exposures from the Investment Process

- 4.14 All counterparties in the investment process are subject to the same credit analysis as conducted for Members and payment and settlement banks with annual credit reviews and use of Early Warning Indicators.
- 4.15 LME Clear's Cash Investment Agent will be expected to meet minimum credit standards, having a minimum internal credit rating of 4 and has been selected in accordance with set criteria. LME Clear will have credit exposure to the cash investment agent when any cash amounts used in the investment process pass through bank accounts held with it. LME Clear will have near real-time information on intra-day balances and will pro-actively manage these exposures to both minimise the exposure to the cash investment agent as well as to minimise any reliance upon intra-day uncommitted extension of credit. In all cases, LME Clear will ensure that the maximum amount of cash is secured during the day. LME Clear would not expect to have any routine unsecured overnight exposures to the cash investment agent. Any such exposures that arise will be strictly limited to situations where all routes available to secure the cash with highly liquid financial instruments, or placing funds on an unsecured basis with other counterparts with available limits under the Investment Policy, have been exhausted. LME Clear will have investment counterparty exposure when any cash used in the investment process has been invested either on a secured or unsecured basis with an investment counterparty. The risk management of these exposures is covered in the Investment Policy with all counterparties having a minimum internal credit rating of 4.
- 4.16 LME Clear also conducts sovereign and supranational credit analysis for all securities and cash that may be received through the investment process. All counterparties and sovereign supranational securities and are subject to approval by the Clearing Risk Committee.
- 4.17 In most instances cash is held highly secured with a network of highly rated counterparties through use of the European and US tri-party repo markets or through the direct purchase of government bonds. All counterparties have limits determined by LME Clear to encourage diversification.
- 4.18 All securities received as collateral are held in accounts with CSDs and are held directly in the name of LME Clear wherever possible; where this is not possible (in the US) they are held in accounts segregated and named as LME Clear distinct from the intermediary. LME Clear has undertaken a full review of the Custodians which it is utilising for the safekeeping of assets. This review has included the creditworthiness and operational capabilities to ensure that access to assets is prompt and legally robust regardless of the legal jurisdiction of the Custodian.
- 4.19 In extremis LME Clear has a non-default loss allocation process as set out under its Rule 10.14 which provides for the first losses caused by a counterparty default to be borne by LME Clear – our 'skin-in-the-game' - and then for any further losses to be allocated to clearing members in proportion to their initial margin requirement.

## Principle 5: Collateral

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

## 5 Collateral

### Eligible Collateral and Valuation

- 5.1 LME Clear has criteria related to each type of collateral asset it accepts. Each type of collateral asset must meet the minimum LME Clear risk requirements with regards to credit risk, liquidity risk and market risk; managing within these categories, currency risk and concentration risk. Wrong way risk is actively managed in a way that seeks to avoid pro-cyclicality. Collateral acceptable to cover margin liabilities must be highly liquid with low credit and market risk. Collateral is tiered to limit exposures based upon credit and liquidity standards and the tiering applied forms part of haircut and limit calculations. Non-cash collateral is subject to minimum credit standards based upon internal framework and ongoing review.
- 5.2 Collateral is regularly assessed in terms of market depth and ability to liquidate within the holding period in stressed market conditions, with any conclusions being validated with market participants. For margin collateral exposures are monitored versus limit on a consolidated basis for LME Base and LME Precious services where common Members exist in both.
- 5.3 Acceptable collateral must be able to be reliably valued on a daily and intra-day basis with sufficient market data to enable the robust management of market risk. Collateral must be denominated in a currency in which LME Clear contracts or which any FX exposure can be risk managed. Acceptable collateral is subject to a robust and transparent limit, haircut and valuation structure and liquidity based limits related to lodgement and withdrawal. Acceptable collateral for Default Fund purposes is currently USD Cash only.
- 5.4 Acceptable collateral for margin cover purposes is currently as follows:
- **Cash** – USD, GBP, EUR, JPY and CNH.
  - **Debt Securities** - issued in acceptable cash currencies by following sovereigns: United States, Germany, UK, France, Netherlands, Finland and Japan.
  - **Precious Metal** - Allocated Gold Bullion.
  - **Base Metals** – LME Warrants (Aluminium, Copper, Lead, Nickel, Tin, Zinc).

These are set out and detailed on the LME Clear website – see section V of this Disclosure Document.

- 5.5 LME Clear has the ability to determine a Member Minimum Cash Requirement Percentage for Members which must be paid in US Dollars or other currency that LME Clear may determine. The cash portfolio is monitored versus this requirement on a daily basis.

- 5.6 For collateral held against reverse repo investment activity, in certain circumstances the list of eligible issuers above may be extended only for the purpose to improve our ability to secure the investment of cash.

## **Haircut methodology and Setting**

- 5.6 All types of collateral are subject to Haircuts, which take into account liquidity, price volatility, potential future exposures, and market conditions/factors which may affect the liquidation value of the collateral. LME Clear uses zero coupon curves (Financial Instruments) and spot prices (FX, LME Warrants and Gold) in the calculation of margin collateral haircuts. In order to ensure stability and capture both recent volatility as well as limit potential pro-cyclicality, the LME Clear Haircut methodology is based on a weighted combination of VaR and stress volatility. The VaR element is based on a 2-year data history and the stress loss element, the worst 2-day stress returns observed over at least the previous 10 years. In the event that LME Clear deems it necessary, hypothetical stress scenarios are also included. CNH haircuts are calculated with reference to worst stress losses against a basket of comparable but unpegged currencies, whilst all LME Warrant haircuts are floored at the scanning range of the same metal for clearing purposes.
- 5.7 All Margin collateral accepted by LME Clear is subject to routine revaluation at the end of the day in both Europe and the US time zones, and at several times intra-day with the appropriate haircut applied. LME Clear monitors yield curves and factors related to collateral price volatility on a near real-time basis in order to assess when ad-hoc intra-day revaluation may be required. Collateral valuations are regularly validated versus alternate price sources and with market participants.
- 5.8 LME Clear's collateral haircut methodology seeks to ensure it is sufficient in 99.5% of cases over the appropriate liquidation period utilising all available historical data.. For securities, haircuts are applied by issuer and where necessary type of issue within defined term to maturity ranges. Further, LME Clear ensures that all assets that are not denominated in USD are subject to an incremental foreign exchange haircut. The methodology includes a measure of wrong way risk and where this is considered material an adjustment will be included in the calculation. Back testing is performed daily on a risk factor, and portfolio basis, with the results measures against a combined BASEL compliant KUPIEC POF traffic light approach. Collateral haircuts are also subject to daily historical and hypothetical stress testing. All results are reported through the governance process on a regular basis.
- 5.9 The collateral haircut methodology is subject to an annual independent validation.

## Concentration Limits

- 5.10 LME Clear's limit structure is designed to ensure that collateral can be liquidated within the assumed holding period and in order to enforce higher quality collateral as the assessed credit status of the pledging Members reduces. Collateral is subject to a tiering structure based upon credit and liquidity factors with limits applied reflecting liquidity and diversification requirements. Depending upon the characteristics, some limits are applied at a Position Account level and others at a participant/group level. LME Warrants are only allowed to cover margin liabilities resulting from the cleared metal position of the same underlying

## Collateral Management

- 5.11 Security deeds are required to be in place in order for Members to pledge certain non-cash collateral. Legal opinions have been obtained to validate their enforceability in terms of immediate access to assets both in terms of the jurisdiction the assets and the domicile of the pledging Member. Cash collateral is transferred outright from Members to LME Clear whereas securities are transferred under a Security Deed via a pledge. Gold is transferred with title transfer to LME Clear with no requirement for a security deed. No Collateral is subject to re-use.
- 5.12 The Collateral Management system allows a real time view of collateral pledged and pending instructions facilitating the real time assessment of cover valuation against participant liabilities and the ability to make margin calls throughout the day as required. LME Clear has in place back up service arrangements supporting Collateral activities, which are regularly tested and could be failed over to quickly in the event of an issue with primary providers.

## Principle 6: Margin

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

## 6 Margin

- 6.1 To cover its current and potential future exposures, Margin levels established by LME Clear are commensurate with the risks and attributes of each product, portfolio and market that it serves. Total Margin requirements take into account the value of any Collateral previously posted and are calculated and collateralised separately in respect of each Position Account. Except for the end-of-day margin call, which must be satisfied by 09:00am on the next clearing day, all other Margin calls must be satisfied within one hour of demand. Margin information is set out and detailed on the LME Clear website – see section V of this Disclosure Document.

### Initial Margin

- 6.2 Initial Margin is required on all open Positions and is calculated to ensure LME Clear's market risk is covered in the instance of a Member default – i.e. that the Clearing House is holding sufficient funds on behalf of each Member to offset any losses incurred between the last payment of margin and the close-out of the Member's Positions should that Member default.
- 6.3 Initial and variation margin is calculated throughout each Business Day. At any point a Member must have sufficient collateral at LME Clear to cover their overall margin requirement. Where margin requirements exceed collateral posted, LME Clear issues a margin call to be met within an hour.
- 6.4 LME Clear uses CME's Standard Portfolio Analysis of Risk (SPAN) to calculate Initial Margin. SPAN considers how the value of an entire portfolio of options and futures will respond to changes in futures (or underlying) prices and volatilities. SPAN simulates potential market moves and calculates the profit or loss on individual contracts. To set the parameters to be used within the SPAN algorithm, LME Clear must assess the correct liquidation period, confidence interval and length of historical data to use in order to generate input parameters. LME Clear assumes a minimum two day liquidation period (often referred to as MPOR) in its margin calculation and a minimum confidence interval of 99%. In order to manage procyclicality LME Clear calculates Scanning Ranges based on 2 and 10 year historical periods, based on a historical VaR calculation. The historical VaR calculation based on the 10 year price history becomes the margin parameter floor. The level of the parameters is actively monitored and subject to at least a monthly review, with the ability to perform ad-hoc changes intra-month. In some instances, LME Clear is setting the scanning range by an agreed exception. The internal governance structure reviews the appropriateness of the exceptions, and formal trigger levels have been set for when exceptions to the methodology would cease being implemented. Additionally, LME Clear has been developing a VaR based IM model, which includes an assessment of developing some of the current limitations of SPAN into the model.

- 6.5 LME Clear will set margin parameters for SPAN which are:
- i. Price parameters, representing the potential price move of the underlying metal;
  - ii. Spread parameters, representing the potential price movements between different maturities in the same underlying metal;
  - iii. Correlation parameters, representing the potential price movements between different underlying metals; and
  - iv. Volatility parameters, representing the potential change in volatility of option contracts.

6.6 To achieve the above parameters, LME Clear utilises a conservative approach in setting margin parameters which will ensure that parameters cover the higher of a 99.0% confidence level risk factor move over a historical reference period. In this context, risk factors include prices, correlations and volatilities. LME Clear applies a conservative approach in measuring and applying correlations where they relate to different Eligible Products.

6.7 Where this is the case, the correlation allowed is no greater than 80% of the level that LME Clear calculates as required by the Bank of England under EMIR portfolio margin offsetting (RTS 27.4). All correlations between Eligible Products must demonstrate resilience during stressed historical or hypothetical scenarios; LME Clear also includes appropriate scenarios that assume a break in correlation shall be included in the stress testing process. The Eligible Products must demonstrate a statistically high level of correlation and also a relationship based on economic fundamentals. LME Clear includes foreign exchange risk, to cover to a 99.0% confidence level for price moves over a two year historical reference period. This is applied wherever offsets are allowed between Open Contracts in different currencies.

## Variation Margin

6.8 Variation margin is calculated for each Member Account at the end of each Business Day against the End of Day Price Sets. An indicative variation margin is calculated intraday on the receipt of new transactions and when LME Clear applies a new price set. Indicative variation margin is always unrealised.

Variation margin is calculated on a product specific basis using the following models:

- i. Contingent Variation Margin is calculated as the difference between the value of open Positions at the End of Day Price Set with their value at the original trade price and is held by LME Clear as either a debit or credit to each clearing member's account. The actual profit or loss is only received or paid upon the final settlement day of the contract.

- ii. As Contingent Variation Margin is a forward cash flow, it is discounted back to the present value, using a discount rate set by LME Clear, to create Discounted Contingent Variation Margin.
- iii. Realised variation margin is calculated as the difference between the value of open Positions at the End of Day Price Set with their value as held in the Clearing System. For carried forward Positions this is the previous End of Day Price Set and for new trades this is the Trade Price.
- iv. Net Liquidating Value is calculated as the value of open option Positions with reference to the End of Day Price Set. Net Liquidating Value is not realised.

## Additional Margin

- 6.9 LME Clear may have cause to call additional margin on occasion where certain characteristics of the portfolio or Member dictate that the initial margin is deemed insufficient to protect LME Clear from the risk posed. Additional margin can be taken in four main forms which are concentration margin, Default Fund additional margin, credit additional margin and discretionary margin.
- Concentration margin is calculated where LME Clear believes that it would not be possible, in the circumstances of a two Member default, to close the Position within the assumed liquidation period. LME Clear publishes details of the assumed tradeable volume in each Contract on a monthly basis and concentration margin is then called to extend the liquidation period as necessary from the Members concerned.
  - Default Fund additional margin is calculated where one Member has hypothetical losses greater than 40% of the total level of the Default Fund. This enables LME Clear to ensure at all times that it has a Default Fund sufficient to cover the default of its two largest Members, and with 20% additional headroom.
  - Credit additional margin is calculated where a Member has an internal rating of 7 or lower and is called after consultation with the Member.(see Principle 4)
  - Discretionary margin is calculated where LME Clear is aware of risks that a Member poses and which are not covered by other means. As an example the interest rate and FX risk that can be inherent in a Member's Position is not always captured by SPAN. This is not automatically applied and any applicable discretionary margin is called following discussions with the Clearing member.

## Price Data

- 6.10 LME Clear utilises a variety of prices from various reputable sources – primarily the London Metal Exchange (LME) itself. LME Clear receives end of day contract prices from the LME and sources interest and FX rates from a data vendor. LME Clear undertakes price validation to ensure the quality and veracity of the prices received. LME Clear uses "End of Day Price Set" for the purpose of its End of Day margin requirement and collateral valuation calculations and processes. This Price Set includes the LME's "Closing Prices". A Price Set is defined as a complete array of market prices and volatility metrics that includes prices for every cleared instrument along with all foreign exchange rates, interest rates and Collateral prices that are used by LME Clear in order to calculate the risks relating to any Member, position, account or instrument.
- 6.11 LME Clear verifies all prices through an internal price validation tool. Rules are set to highlight any prices which fall outside of expected parameters. These appear as suspect prices within the clearing system and require authorisation from the LME Clear Market Risk team. If they are deemed to be correct then they will be approved. If not, then LME Clear will request a new set of prices from the LME or data vendor, as applicable.
- 6.12 LME Clear, on a periodic basis, during each Business Day, determines the Price Sets that it uses for its intra-day variation margin calculation and collateral valuations. While key prices are monitored continuously, full Price Sets are recalculated hourly for cleared products and several times during the day for collateral. Different cleared products have different and specific pricing methodologies which are relevant to their product parameters and are used to determine the current or closing Market price for each instrument. Collateral will be valued based upon market observable prices.

## Back-testing, Sensitivity Analysis and Review

- 6.13 LME Clear evaluates the output produced from its margin models through a back testing framework and procedures which cover all products and Members. The LME Clear back testing methodology ensures coverage at a 99.5% confidence level, across all Member Accounts. The liquidation period used in the back testing methodology covers both a one day liquidation and then every additional day up to the number of days used as the liquidation period in the margin methodology.
- 6.14 Processes and procedures are in place to perform back testing. Such portfolio testing is performed on at least a daily basis. The historical time horizon used for portfolio back testing ensures the use of all available non-overlapping returns. Separate risk factor backtesting is also conducted. The outcome of all portfolio back testing is reported on a daily basis and a clear governance process is in place for the escalation of breaches through to the Clearing Risk Committee and the Board Risk Committee. The back testing results are publically available on the LME Clear website. Transparent back testing trigger levels defined using a statistical test and could lead to a comprehensive review of the margin models. LME Clear performs back testing on all products, for all Members and all Accounts as well as back testing for each of the key parameters. LME Clear also performs sensitivity analysis and stress testing of its margin models as prescribed in the Margin Policy and Default Fund Policy.
- 6.15 LME Clear has engaged an independent consultant to review its risk management framework and repeats this on an annual basis. This includes the validation of the margin methodology and back-testing model. Any material changes to the margin methodology must be reviewed in consultation with the Board Risk Committee before obtaining the Board's final approval.

## Principle 7: Liquidity Risk

**An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI 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 FMI in extreme but plausible market conditions.**

## 7 Liquidity Risk

### Liquidity Risk Management Framework

7.1 LME Clear has developed a liquidity risk management framework for the identification, monitoring and management of liquidity risks in accordance with the requirements of its Risk Appetite Statement (“**Liquidity Risk Management Framework**”). The principles of the Liquidity Risk Management Framework are as follows:

- i. The Board has zero tolerance for the company to fail to meet its payment obligations within pre-committed timescales.
- ii. LME Clear will ensure that it has access to sufficient liquid resources in accordance with its Rules in all relevant currencies in order to meet payment and settlement obligations as they fall due, covering simultaneously both operational and default management activity.
- iii. A significant component of applicable liquid resource is anticipated to be generated from cash Collateral provided as margin cover or Default Fund contributions from Members. Liquidity requirements in relation to the reinvestment of these will take precedence over any yield related objective.
- iv. All cash received from Members as margin cover or Default Fund contributions is considered to be owned by LME Clear and therefore fungible for liquidity purposes across services.
- v. The Liquidity Risk Management Framework is supported through the Rules.

7.2 The framework also includes the following documents:

- Liquidity Policy: Statement of key principles and policies in relation to the management of liquidity, summarising key risks and the approach to their measurement and ongoing management.
- Liquidity Funding Plan: Providing detail of the key sources of liquidity risk to LME Clear, the measurement and monitoring that will take place related to them, the requirement levels and stress tests that will be applied across a range of scenarios and how these will be met; and

- Liquidity Testing Methodology: Detailed description of the methodology underlying the calculation of Minimum Cash Amount and Member Minimum Cash Percentage Requirements, baseline liquidity requirements and stress test requirements.
- 7.3 The objectives of LME Clear's investment strategy include the preservation of capital, ensuring sufficient liquidity is available at all times, management of portfolio credit and market risk, in line with risk tolerances predetermined by the Board.
- 7.4 All sources of liquidity risk are captured through the Framework which reflects key counterparts that LME Clear interfaces with during the course of its activities.
- 7.5 LME Clear manages liquidity for LME Base and LME Precious clearing services on a consolidated basis. The liquidity risk management framework incorporates the specifics of each market structure including different cashflows resulting from contingent variation margin and realised variation margin respectively.

## Liquidity Risks

- 7.6 The Board and LME Clear's management acknowledge and understand the importance of robust management of LME Clear's liquidity risk. Cash flows that LME Clear is required to manage includes those in respect of:
- i. Clearing margins including Initial and variation margins and default contributions;
  - ii. Delivery/settlement activity;
  - iii. Investment activity.
- 7.7 Other liquidity risks arising include:
- i. Operational related liquidity risks also arise from movements of cash collateral to or from members and any need to provide liquidity to support settlement activity.
  - ii. Clearing member default in relation to cashflows during the close out period including liquidation of non-cash collateral and any settlement obligations;
  - iii. Investment counterpart or third party failure resulting in non-receipt of incoming cash flows, access to financing liquidity.

## Key Liquidity Risk Mitigants

- 7.8 The Rules and operational procedures include various components that help to reduce the risk of liquidity issues crystallising. In particular:
- i. The ability to apply Member Minimum Cash Requirement Percentage, this is recalculated and monitored on a daily basis, which must be met in cash in a currency as defined by LME Clear.
  - ii. The requirement to pre-fund Default Fund contributions in cash.

- iii. The application of withdrawal limits and a requirement for a notice period, determined by LME Clear, to be adhered to when utilised cash collateral is going to be removed and/ or replaced with another form of collateral.
  - iv. The ability to request that a member reduces the size of their current positions or provide additional cash for the purposes of liquidity management.
  - v. All Secure Payment System payments to Members will be instructed after all Secure Payment System calls have been received at Settlement Banks.
  - vi. Fungibility of liquidity across LME Base and LME Precious services.
- 7.9 These mitigants are supplemented by further limits and controls as applied through other risk policies, particularly the Investment Policy and the Collateral Policy. LME Clear's response to and planning for stressed conditions are not solely based around generating additional liquidity. Liquidity risk management also incorporates ensuring operational capability to proactively manage cash flow timings, sizing and settlement instructions. Regular testing takes place to ensure sufficient capability in order to rapidly invoke contingency plans that support the avoidance of significant market disruption related to LME Clear's liquidity arrangements. Regular due diligence and testing is undertaken with liquidity providers and diversified service providers, with back up arrangements managing significant, volumes are in place to enhance resilience.

## Liquid Resources

- 7.10 LME Clear's collateral portfolio and liabilities are predominantly USD based. Day to day liquidity needs, Operational and Cover 2 Default requirements are expected to be met from business as usual liquidity management activity including investment maturities and any daylight credit lines that are in existence. Modelled requirements and the management of liquidity are focused upon days with the largest potential liquidity obligations, such as third Wednesday deliveries. As the severity of stress applied increases it is acknowledged that further levels of available liquid financial resource may be accessed. Liquid financial resources are considered to be:
- i. *Approved Investments* - LME Clear is permitted to invest in a narrow range of instruments with an approved list of high quality counterparts or collateral issuers. Securities purchased, either on an outright basis or through reverse repo activity, are of high quality in terms of credit, liquidity and market risk and are subject to tiering based upon criteria in these areas. Maturing investments are subject to diversification limits by counterpart.
  - ii. *Liquidity Facilities* - Key relationship banks provide collateralised daylight liquidity facilities in order to support the day-to-day liquidity management activity.
- 7.11 LME Clear's liquid financial resources are pre-arranged, highly reliable and tested on a regular basis. Access is tested to ensure operational capability, counterpart/provider readiness and to seek to avoid market disruption should they be relied upon in stressed market conditions. Testing takes place as part of LME Clear's wider default fire-drill activity but also on a bespoke basis in conjunction with its cash investment agents. The timing and sizing of available liquidity is regularly re-assessed to reflect market conditions.
- 7.12 Monitoring of cashflows through the settlement process takes place in real time through core systems with controls in place related to credit exposures and usage of liquidity upon key bank accounts. The pattern of cashflows throughout the day and any changes in trend for

these are reviewed regularly with any changes subject to review and escalation to the Clearing Risk Committee.

## Liquidity requirements and Stress testing

- 7.13 LME Clear monitors default liquidity requirements and performs stress testing based upon modelling of requirements following the default of its largest 2 Members from a liquidity perspective. These liquidity requirements also factor in the exposures that exist with entities based upon other non-Clearing Member relationships and these are also considered when arriving at the largest two entities. Default requirements are combined with modelled and actual operational outflows for monitoring and stress testing purposes.
- 7.14 Extreme but plausible stress tests assessing potential future liquidity needs over single and multiple days are run and reported against on a daily basis. The stress tests are defined in the Liquidity Funding Plan and include:
- i. Operational and default stresses and combinations of these;
  - ii. Daily, multi and forward looking stresses;
  - iii. Firm specific scenarios (both LME Clear or counterparty related) and market wide stresses, as well as combinations of these covering both funding liquidity and market liquidity risk;
  - iv. Cleared products and associated large settlement/prompt dates, cash investment activity, all collateral held, as well as stresses caused by any other third party counterparty, including the cash investment agent, which could generate a liquidity risk to LME Clear, factoring in any interdependencies between these where appropriate;
  - iv. All relevant currencies on a stand-alone basis, assuming reduced access to foreign exchange markets, as well as assessment across currencies, reflecting the currency of underlying liabilities. The monitoring is performed at an individual currency level as well as on a multi-currency consolidated basis, emphasising the predominance of USD assets and liabilities within the framework; and
  - v. Rigorous assumptions related to availability, and potential change in value, of liquid financial resources from defined sources, if ever relied upon given volatile market conditions.
- 7.15 Stresses include testing against the interruption of services from, or failure of, key liquidity service providers. All default stress tests are expected to be met at all times after consideration for core management actions. Consideration is given to the need for maintenance of ongoing operational capability. The liquidity model is also independently reviewed annually to ensure its appropriateness of the methodology and its application.
- 7.16 Intra-day cashflows are reviewed and the implications of stresses within the settlement process subject to review and regular reporting to the Clearing Risk Committee.
- 7.17 Early warning indicators generally covering longer periods to include any days during the month expected to exhibit high liquidity outflows. The ability to manage delivery positions forward in order to mitigate short term liquidity requirements is also factored into stress testing on a prudent basis.

## Reverse Stress Testing

- 7.18 In order to identify extreme scenarios and/or market conditions where the available liquid financial resources will not be sufficient, reverse stress testing is performed on a quarterly basis. These tests include hypothetical conditions that go beyond standard extreme but plausible scenarios, identifying the severity that would create liquidity requirements beyond available resources. All stress and reverse stress tests are subject to regular review, challenge and update through the Clearing Risk Committee and Board Risk Committee in order to ensure that they remain sufficiently robust and reflective of current market conditions.

## Replenishment of Liquid Resources

- 7.19 Where liquid financial resources are utilised by LME Clear during a stress event, the manner in which they are utilised and the framework within which liquidity is managed will mean that replenishment will take place in a timely fashion in the normal course of business. The Minimum Cash Amount and Member Minimum Cash Requirement Percentage is recalculated daily and measured against actual available cash held to ensure that sufficient headroom above the requirement is always maintained.
- 7.20 An internal Liquidity Working Group meets at least on a quarterly basis as part of the review of the Liquidity Funding Plan in order to consider key matters in relation to the Liquidity Risk Management Framework, including potential actions were a Liquidity shortfall ever to arise or Liquidity replenishment ever be necessary.
- 7.21 Should liquid financial resources be utilised by LME Clear during a stress event, the manner in which they are utilised and the framework within which liquidity is managed will mean that replenishment will take place in a timely fashion in the normal course of business. LME Clear's default waterfall includes the ability to apply Default Fund replenishment and variation margin gain haircutting which, whilst solvency related tools would also assist, if applied, in the replenishment of liquidity. Additionally, Rules are in place for non-default losses to be covered by a call upon Clearing Members where the losses are over and above a defined amount that it is prescribed must be met from LME Clear's own capital.

**Principle 8: Settlement Finality**

**An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.**

**8. Settlement Finality****Eligible Products and their Settlement**

- 8.1. Different settlement processes apply to different types of Eligible Products that are cleared by LME Clear:
- i. Certain Eligible Products are physically settled, such that they settle upon the delivery of a relevant Underlying Asset in exchange for a cash payment. These include LME Exchange Traded Forwards (the Underlying Asset being LME Warrants); and LMEprecious Gold and Silver Futures (the Underlying Asset being Gold and Silver respectively).
  - ii. Certain Eligible Products are financially settled, such that they settle upon the payment of a financial sum, with no delivery of any Underlying Asset. These include LME Exchange Traded Futures and LME Exchange Traded Average Price Futures.
  - iii. Option Contracts, when exercised, result in the creation of new clearing Contracts between LME Clear and the Member. These are LME Exchange Traded American Options (replacement of option contract with an LME Exchange Traded Forward) and LME Exchange Traded Average Price Options (TAPOs) (replacement of option contract with a pair of LME Exchange Traded Forwards).
- 8.2. LME Clear will issue daily Settlement Instructions to each Member, specifying the Cash Settlements and physical deliveries that are due to be performed by that Member.

**Cash Settlement Arrangements: The Secure Payments System**

- 8.3. Members participate in the Secure Payments System in order to facilitate Cash Settlements between LME Clear and its Members. Further information on the Secure Payments System is set out and detailed on the LME Clear website – see section V of this Disclosure Document.
- 8.4. Where a cash payment is due from a Member to LME Clear, LME Clear will issue an instruction to the Member's Approved Settlement Bank to transfer the appropriate funds from the Member's account to LME Clear's account at that Approved Settlement Bank. The instruction will be made by a SWIFT MT204 message. LME Clear will then issue an instruction for the Approved Settlement Bank to transfer the funds from LME Clear's account at the Approved Settlement Bank to the appropriate account maintained by LME Clear at a Concentration Bank. The Member's obligation to make the cash payment will not be treated as having been discharged until the funds, in the right currency, have been received into LME Clear's Concentration Bank account. This is clearly set out in LME Clear's Rules and Procedures.

- 8.5. Where a cash payment is due from LME Clear to a Member, LME Clear will instruct its relevant Concentration Bank to transfer the relevant funds to LME Clear's account at the Approved Settlement Bank at which the Member also has an account. LME Clear will then instruct the Approved Settlement Bank to transfer the funds from LME Clear's account at the Approved Settlement Bank to the Member's account at that Approved Settlement Bank.

## Physical Delivery

- 8.6. For Eligible Products that are to be physically settled, delivery of the relevant Underlying Asset must be made through the LMEsword system operated by the LME (in respect of LME Warrants) and between unallocated bullion accounts maintained by LME Clear and each Member with bullion Custodians (being Members of London Precious Metal Clearing Ltd).
- 8.7. LME Clear will determine separate delivery positions in respect of LME Warrants that are to be delivered between LME Clear and the Member (the "Warrant Movements") in respect of:
- v. the Member's House Account, such that a single net Warrant Movement is identified for such House Account;
  - ii for the Client Accounts for each Member:
    - a. A single net Warrant Movement in respect of all Client Accounts having a Final Delivery Position indicating that for such Client Account the Member is a "buyer"; and
    - b. A single net Warrant Movement in respect of all Client Accounts having a Final Delivery Position indicating that for such Client Accounts the Member is a "seller".

There will therefore be a maximum of three Warrant Movements between LME Clear and each Member in a single Underlying Asset on any single business day. A similar process will be conducted in Aurum in respect of LMEprecious with a single net transfer of unallocated gold in respect of each Account.

Clearing Procedure Part F of the LME Clear Rules sets out the procedures for physical deliveries. Rules 7.8 and 7.9 contain provisions which deal with the failure by a Member to make physical delivery.

## Settlement Finality Designation

- 8.8. The system operated by LME Clear is a designated system under the Financial Markets and Insolvency (Settlement Finality) Regulations 1999, as amended (the "Settlement Finality Regulations").
- 8.9. As a consequence of its designation LME Clear has adopted, as part of its Rules and Procedures, a legally-enforceable Settlement Finality Rule (Rule 11) and related Settlement Finality Procedures which define the system and the point of irrevocability and finality of instructions. The Settlement Finality Procedures define the "system" as comprising the arrangements that LME Clear maintains, including the Rules, the technical and operational processes maintained by LME Clear and the contractual arrangements between LME Clear and its Members that:

- i. enable LME Clear in operating its Secure Payments System (or otherwise) to give instructions to transfer to Members amounts of money on the accounts of certain Approved Settlement Banks;
  - ii. enable LME Clear in operating the Secure Payments System (or otherwise) to give instructions on behalf of Members and to transfer to LME Clear amounts of money on the accounts of Approved Settlement Banks;
  - iii. enable LME Clear to give instructions to its Concentration Banks to transfer amounts of money on the accounts of such Concentration Banks to Approved Settlement Banks;
  - iv. enable LME Clear to give instructions to Custodians or Securities Systems Operators or Securities Account Operators to transfer, or arrange the transfer of, title to, or interest in, securities and cash;
  - v. enable LME Clear to become the CCP to Members in respect of Transactions;
  - vi. enable LME Clear to centrally clear Client Trades;
  - vii. enable LME Clear and Members to fulfil obligations they incur in respect of Contracts;
  - viii. enable Transfers, assignments and novations of Contracts between Members (and the corresponding transfer of Collateral and Positions between the Accounts of such Members) in accordance with the Rules, including following a Default Event and, without limitation, pursuant to the exercise by one or more Clients of porting rights; and
  - ix. facilitate supplementary and incidental matters relating to the performance or discharge of obligations in respect of Contracts and the collection and payment of amounts due under the Rules.
- 8.10. These arrangements ensure that cash and securities settlements are not vulnerable to unwind/clawback by an insolvency office holder (liquidator/administrator) or other party once they have passed the point of irrevocability. Settlement Finality Designation does not provide legal protections in relation to the settlement of Warrants.
- 8.11. No participant (or any insolvency practitioner in relation to a participant) may revoke or purport to revoke a Transfer Order which is binding on all participants after the time specified in the Settlement Finality Procedure as being the time when such Transfer Order becomes irrevocable. For example, an instruction from LME Clear to an Approved Settlement Bank to make a payment on behalf of a Member or LME Clear shall be the time at which such bank sends to LME Clear a confirmation message (by SWIFT or otherwise).
- 8.12. Section 3 of the Settlement Finality Procedure specifies, in respect of each type of Transfer Order (i) the point at which it is treated as having been "entered into the system" and (ii) the point at which it becomes irrevocable. Section 4 of the Settlement Finality Procedure prohibits any participant (or any insolvency practitioner appointed in relation to a participant) from revoking or purporting to revoke, any Transfer Order after the time at which it has become irrevocable in accordance with Section 3.

- 8.13. The Rules and Procedures clearly define the moment of entry, irrevocability and settlement of cash and security Transfer Orders. No participant (or any insolvency practitioner in relation to a participant) may revoke or purport to revoke a Transfer Order which shall be binding on all such persons after the time specified in the Settlement Finality Procedure as being the time when such Transfer Order becomes irrevocable. For example, an instruction from LME Clear to an Approved Settlement Bank to make a payment on behalf of a Member or LME Clear shall be the time at which such bank sends to LME Clear a confirmation message (by SWIFT or otherwise). The Rules and Procedures are publicly available and therefore all participants are aware by such Rules and Procedures. The Members are bound to the Rules and Procedures by signing the Clearing Membership Agreement and the Approved Settlement Banks and Concentration Banks are bound to the Settlement Finality Procedures by the signing the Settlement Bank Agreement or the Settlement and Concentration Bank Agreement (as the case may be).

## Principle 9: Money Settlements

**An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risks arising from the use of commercial bank money.**

## 9. Money Settlements

- 9.1. LME Clear, where possible, conducts its money settlements in central bank money. For Sterling and Euro LME Clear uses the Bank of England as its Concentration Bank. For the other currencies utilised by LME Clear (currently USD, JPY and RMB), where it is not possible to have direct accounts at the central bank, LME Clear uses a commercial bank as its Concentration Bank. LME Clear has approved various commercial banks as Settlement Banks as no central banks provide Settlement Bank services. LME Clear's money settlements with Members are transacted through LME Clear's Secure Payment System. As described under Principle 8 – Settlement Finality, the Secure Payment System is a designated system which provides for final and irrevocable payments within its structure.
- 9.2. LME Clear minimises and strictly controls the credit and liquidity risk arising from the use of commercial bank money through a number of key mechanisms including:
- i. Use of Secure Payments System, a Designated System under the Settlement Finality Regulations, for money settlements between Members and Settlement Banks and Concentration Banks;
  - ii. Use of Extended Member Liability concept which ensures that Members bear the risk of a commercial bank default until the money is received irrevocably at LME Clear's Concentration Bank;
  - iii. Use of non-member Default Loss allocation rules which ensure that if LME Clear were to incur any material loss on treasury investment including counterparty credit risk to a defaulting Settlement Bank or Concentration Bank, then that loss would be allocated to Members using the non-member Default Loss allocation rules.
  - iv. Limiting any remaining exposure to Settlement Banks through ex ante credit assessments of potential Settlement Banks and then on-going credit monitoring of Settlement Banks.
  - v. Managing liquidity risk through real time monitoring of balances across Settlement Banks and Concentration Banks. LME Clear policy is to reduce intra-day and end of day balances at Settlement Banks to de minimis balances.
- 9.3. To manage the credit and liquidity risk exposure to the funds held or processed by its Settlement Banks, LME Clear has stringent criteria in selecting its Settlement Banks. A Settlement Bank of LME Clear must be a licensed bank with a minimum credit rating of 4 or BBB+ equivalent (A- for new entities) under LME Clear's rating matrix, and proven operational capability and reliability, such as its performance record in acting as a Settlement Bank for other clearing houses. The eligibility criteria for selecting Settlement Banks as well as a list of participating Settlement Banks are set out and detailed on the LME Clear website – see section V of this Disclosure Document.

- 9.4. LME Clear continues to monitor credit worthiness of Settlement Banks under its Credit Risk Policy. This includes monitoring real time early warning indicators (such as share prices, CDS spreads etc.) as well as undertaking formal credit reviews on a periodic basis. Under the Settlement Bank Agreement there is a positive contractual commitment for Settlement Banks to inform LME Clear if there are any reasons why it cannot continue to perform its obligations as a Settlement Bank. In terms of operational reliability LME Clear tracks operational performance of Settlement Banks and uses that data in the regular reviews with the key Settlement Banks. LME Clear also conducts a due diligence review of its Settlement Banks on an on-going basis, at least annually, and which includes an assessment of the bank's regulatory compliance, a review of its creditworthiness and capitalization levels, its access to liquidity and its operational reliability. If the assessment results are unfavourable, LME Clear may take appropriate remedial actions, e.g. appointing additional banks or replacing a Settlement Bank.

**Principle 10: Physical Deliveries**

**An FMI 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 Physical Deliveries

- 10.1 LME Clear accepts LME Warrants that represent base metal commodities traded on the LME, for any physically settled cleared contracts that are presented for delivery. The transfer of LME Warrants must be made through the LMEsword system, operated by the LME. Members must allocate the Warrants that they wish to deliver to LME Clear by 11:00 on Prompt Date. LME Clear can also accept for physical delivery Loco London Gold or Loco London Silver, between unallocated bullion accounts maintained by LME Clear and each Member with bullion Custodians (being Members of London Precious Metal Clearing Ltd.) and deliveries must be made between unallocated bullion accounts maintained by LME Clear and each Member via their bullion Custodians (where the Custodians are Members of London Precious Metal Clearing Ltd.).
- 10.2 LME Warrants are bearer documents that give title to allocated metal in a warehouse. LME Warrants are centralised, but not dematerialised, in a central depository appointed by the LME. Transfer of title to LME Warrants is executed electronically within LMEsword. Members must maintain accounts at LMEsword in order to be eligible to submit trades in LME Exchange Traded Forwards for clearing via LME Clear. LME Clear maintains its own accounts at LMEsword. Deliveries of LME Warrants between LME Clear and its Members will be discharged by the delivery of the LME Warrants between LME Clear's account at LMEsword and the Members' account at LMEsword. Members selling LME Warrants have from 16:15 on the day before Prompt date until 11:00am on prompt date to allocate their Warrants to LME Clear within LMEsword. LME Clear will then run a collection process where it will accept in these allocated LME Warrants and randomly allocate them out to the buyers LMEsword account.
- 10.3 Where LME Clear is the seller of LME Warrants, the cash payment due from the Member must be received by LME Clear prior to LME Clear making delivery of the LME Warrants. LME Clear issues instructions to LMEsword to deliver the allocated LME Warrants from LME Clear's account at LMEsword to the Member's account at LMEsword. Where LME Clear is the buyer of LME Warrants, the Member must have delivered the LME Warrants prior to LME Clear making the cash payment to the Member. The Member will determine what LME Warrants within its account at LMEsword it will use to satisfy its Delivery Obligation to LME Clear and will then issue instructions to LMEsword to deliver the LME Warrants from its account at LMEsword to LME Clear's account at LMEsword.
- 10.4 For contracts that are to be physically settled, LME Clear determines, in respect of each Member Account, a net delivery Position in respect of all Positions in the relevant Instruments that fall to be settled on the Settlement Date. Therefore, the Settlement Instructions issued by LME Clear for the Settlement Date will reflect, for each Instrument, that there will be a maximum of one Warrant Movement between LME Clear and each account of the Member in a single Underlying Asset on any single Business Day – a single net movement on the House Account and a single net movement on the Client Account - indicating that for such Client Account the Member is a "buyer" and/or a "seller".

- 10.5 LME Clear is a participant and has an account in its own name in the LMEsword system. The Rules set out in detail the processes and procedures adopted by LME Clear in physical delivery. LME Clear monitors Delivery Obligations of buyers and sellers of warrants in real time in the days leading up to settlements and ensure that Delivery Obligations are matched. LME Clear will use the SPS system to debit the cash account of the buyer in the morning of settlement and will not release delivery of warrants until cash called for delivery is received. LME Clear will then only release cash proceeds to the seller once the warrants have been received and delivered.
- 10.6 LME Clear matches participants for delivery and receipt of warrants on each delivery date and counterparties' legal obligations are clearly detailed in the Rules. LME Clear executes physical delivery through either:
- the electronic transfer of title in LMEsword of centralised, but not dematerialised, LME Warrants; or
  - the issue of a SWIFT instruction to either receive or deliver unallocated Loco London Gold or Silver.
- 10.7 LME Clear, as a CCP, has a net zero Position in any Underlying Asset in normal settlement conditions outside of any default management situation. This means that LME Clear's storage and delivery costs are limited to electronic transfer order fees outside of any default management situation. Following a Default Event LME Clear has the necessary powers to hedge its exposure to any physical delivery risks and to recover any associated costs.

### Precious Metals

- 10.8 For precious metals the approved delivery facility is the 'AURUM' system, an electronic clearing system run by the London Precious Metal Clearing Limited (LPMCL). As part of its on boarding process LME Clear ensures that all Members have opened accounts in all relevant trained individuals able to support their clearing and delivery obligations. Before Members go live they need to engage in a testing process that will confirm the Member's understanding of their obligations and the procedures they need to perform to effect physical delivery. This test involves the physical movement of Gold and Silver on a low denomination basis confirming they have an account set-up with one of the LBMA clearing banks and evidence they are fully aware of the procedures.
- 10.9 Physical delivery of Gold and Silver is achieved using the movement of unallocated Gold and Silver over books and records. Unallocated settlement within LPMCL is on the basis of credits and debits to an account of the LPMCL settlement bank (akin to cash settlement through bank accounts). Beneficial ownership of specific physical gold only occurs when such unallocated entitlements become allocated. The process of allocation is not carried out as part of the LME Clear settlement process.
- 10.10 LME Clear's physical delivery processes reflect current practices in the OTC market where settlement of precious metals takes place through LPMCL. LME Clear has procedures in place to facilitate the settlement of LMEprecious Contracts on the value date in accordance with Principle 8 of CPMI-IOSCO principles for financial market infrastructures.
- 10.11 Where LME Clear is the seller of LMEprecious contracts, the cash payment due from the Member must be received by LME Clear prior to LME Clear making delivery of the unallocated Gold or Silver. LME Clear issues instructions to 'AURUM' to deliver the Gold or Silver to the Members account held with the LBMA bank. Where LME Clear is the buyer of

LME precious contracts, the Member must have delivered the unallocated Gold or Silver prior to LME Clear making the cash payment to the Member.

- 10.12 A Member has between 3am and 4pm on prompt date to meet their physical delivery obligations. Where a Member fails to make a physical delivery on the value date it will be subject to a fining process set out in the LME Rules. If the Member has still not made the physical delivery by 12 noon on the following Business Day then LME Clear will have the ability to buy-in at the expense of the Member which has failed to deliver. Again, this process is designed to encourage settlement discipline and minimise the impact of any settlement fails.
- 10.13 Where a physical settlement fail has occurred, LME Clear will, under the Rules, have the right to fail to deliver to a buyer in order to ensure that LME Clear is not left with an obligation it cannot fulfil.
- 10.14 LME Clear matches participants for delivery and receipt of unallocated Gold or Silver on each delivery date and counterparties' legal obligations are clearly detailed in the Rules. LME Clear executes physical delivery for precious metals through the issue of a SWIFT instruction to either receive or deliver unallocated Gold or Silver.
- 10.15 LME Clear, as a CCP, has a net zero position in any underlying asset in normal settlement conditions outside of any default management situation. This means that LME Clear's storage and delivery costs are limited to electronic transfer order fees outside of any default management situation. Following a Default Event LME Clear has the necessary powers to hedge its exposure to any physical delivery risks and to recover any associated costs.

**Principle 11: Central Securities Depositories**

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

**11 Central Securities Depositories**

11.1 LME Clear is not a CSD. Principle 11 – Central Securities Depositories is not applicable.

**Principle 12: Exchange-of-value Settlement Systems**

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

**12 Exchange-of-value Settlement Systems**

- 12.1 LME Clear is not an exchange-of-value settlement system. Principle 12 – Exchange-of-value Settlement Systems is not applicable.

**Principle 13: Participant-default rules and procedures**

**An FMI 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 FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.**

**13 Participant-default rules and procedures**

13.1 The Rules and Procedures define the actions that LME Clear can take following the potential or actual default of one or more Members (Rule 10 and the Default Procedures). Rule 10.2 defines the events which constitute a “Default Event” and therefore trigger the application of the default management process and the use by LME Clear of its powers under Rule 10. LME Clear retains discretion to determine if a Default Event has occurred or not. Default Events in relation to a Member include (but are not limited to):

- i. The Member fails to perform any obligation it owes to LME Clear;
- ii. LME Clear determines that the financial condition of the Member is such that the Member could no longer satisfy the Membership Criteria or that the Member is approaching significant financial or operational difficulty or will be unable to perform its obligations to LME Clear;
- iii. LME Clear having reasonable grounds for believing that ending that Member's Membership is necessary to protect LME Clear and other Members, or to ensure the orderly operation of the Clearing System; and
- iv. The Member being unable to pay its debts as they fall due or another specified insolvency event occurring in relation to it.

13.2 LME Clear will consult with the Bank of England before declaring a default by a Member. LME Clear will then determine if a Default Notice should be issued in respect of a Member. If so, it will give notice to the Member and publish the notice on the LME Clear website. LME Clear will also communicate with all relevant stakeholders, which will include the LME, Members, its investment agents and Custodians as well as the Settlement Banks.

13.3 LME Clear has a default governance structure in place along with a Default Management Committee (DMC) that has delegated responsibility from the Board for the management of the default management process (as set out in the Default Procedures Part C). The composition and role of the DMC is set out in the Default Procedures Part C. Default management information is set out and detailed on the LME Clear website – see section V of this Disclosure Document. The key objectives that LME Clear will work towards are:

- to protect LME Clear's capital and the Default Fund;
- to protect the integrity of the markets for which it clears;
- to transfer Client Positions and Collateral in Individual Segregated Accounts (ISA); and
- to transfer Client Positions, and if possible Collateral, in Omnibus Segregated Client Accounts (OSA) and Gross Omnibus Client Accounts (GOSA)..

13.4 The Rules and Procedures are publicly available on the LME Clear website - <http://www.lme.com/lme-clear/>

## Default Management Process and Management Discretion

13.5 The Default Management Process, which is set out in Rule 10 and the Default Procedures, is designed to allow LME Clear to take such action as it may determine necessary to close out or discharge or net the rights, obligations and Positions of the Defaulting Member to minimise losses or potential losses to LME Clear and allow LME Clear to fully complete the Default Management Process. Once a Default Notice is issued, LME Clear may take any one or more of the steps set out in Rule 10.4 which include suspending the Defaulting Member, accepting or declining to accept new Transactions and suspending payments to such Defaulting Member. LME Clear can take certain specified actions which will include porting Positions (and related Collateral in some circumstances) at the request of Clients of the Defaulting Member (provided this is accepted by the Member Transferee), hedging LME Clear's exposure under the contracts to which the Defaulting Member is a party, preventing Positions of a Defaulting Member on any account going to physical delivery, liquidating the relevant Collateral and conducting an auction of the defaulting Member's and non-porting Client's' remaining open Positions. Hedging will be completed using its Default Brokers to actively trade in the market on behalf of LME Clear. Any auction process will be overseen by the DMC.

## Use and Sequencing of Financial Resources

13.6 Where there is a Default Loss remaining following the exercise of the Default Procedures, the Default Loss will be satisfied in the following order of priority:

- i. LME Clear will apply all Collateral provided by the Defaulting Member to the discharge of the Default Loss;
- ii. if the Collateral provided is not sufficient to discharge the Default Loss, LME Clear will apply the Default Fund Contribution of the Defaulting Member towards the discharge of the outstanding Default Loss;
- iii. if after applying the Default Fund Contribution of the Defaulting Member, there is still outstanding Default Loss, LME Clear will apply its Dedicated Own Resources, towards the discharge of the outstanding Default Loss;
- iv. if after applying its Dedicated Own Resources there is still an outstanding Default Loss, LME Clear will apply the Default Fund Contributions of non-defaulting Members in or towards the discharge of the remaining balance of the Default Loss in accordance with the principles set out in Default Procedure Part C:6.6-6.8 (which, assuming all auctions are successful, will favour those Members who were the most competitive in bidding for the relevant Auction Portfolio(s))

## Loss Allocation on a Default

- 13.7 Loss allocation following the use of the pre-funded financial resources is managed in two stages, first by requiring the replenishment of the Default Fund by non-defaulting Members to discharge a Default Loss and, where that is not sufficient, by VM Haircutting and Cash Settlement.

## Default Fund Contribution Replenishment

- 13.8 Once non-defaulting Members' Default Fund Contributions have been applied in accordance with the waterfall, and those resources are not sufficient to discharge the balance of the Default Loss, LME Clear may issue one or more notices (**Default-Specific Replenishment Notices**) to non-defaulting Members to contribute additional resources on a pro rata basis to the discharge of the remaining balance of the Default Loss in the form of Default Fund Contributions. (Rule 10.10.1(e)). The following provisions apply (in summary):

- i. The replenishment amounts must be applied to discharge the balance of the Default Loss.
- ii. The total amount payable by a non-Defaulting Member under one or more Default-Specific Replenishment Notices issued in respect of a single Member Default shall not exceed such Member's the level of the Default Fund Contributions of that non-Defaulting Member immediately prior to the Default Period (a "**Replenishment Default-Specific Cap**"). LME Clear may always issue more Default-Specific Replenishment Notices, but the amounts called for in each notice must not exceed the Default-Specific Cap.
- iii. LME Clear can issue a Default-Specific Replenishment Notice even where the Default Fund Contributions of non-defaulting Members have not been exhausted, or where the total amount called for (taken together with other replenishments) would exceed the Default-Specific Cap.
- iv. In any six month period (following the first Default-Specific Replenishment Notice), the maximum amount that LME Clear may require any Member to contribute pursuant to the Default-Specific Replenishment Notices shall be limited to the amount that would be recoverable under three Default-Specific Replenishment Notices that were each issued for the amount of the Default-Specific Cap applicable to each notice.
- v. At the point that a Default-Specific Replenishment Notice is published, LME will immediately replenish the relevant amount of its Dedicated Own Resources (see Rule 10.10.1(e)(ii)).

## VM Haircutting and Cash Settlement

13.9 If the amounts replenished and applied in accordance with the waterfall are not sufficient to discharge an Excess Loss, LME Clear may apply VM haircutting to apportion the Excess Loss amongst Members (see above). (Rule 10.10.2(a), (b) and (c)). The following provisions apply:

- i. LME Clear determines the total amount of payments due to Members on the next business day.
- ii. LME Clear will apportion the Excess Loss against each Account of each Member that has, in respect of that Account, an entitlement to receive payment balances pursuant to the calculation of that Members Variation Margin Requirement.
- iii. LME Clear's payment obligations to the relevant Member on that Business Day will be reduced accordingly.
- iv. This may continue on each Business Day until the Excess Loss is discharged or the LME Clear Board determines (following consultation with the Board Risk Committee) that the application of VM Haircuts would be inappropriate or ineffective and cash settlement should be effected instead.

13.10 Where the LME Clear Board determines that cash settlement should be effected, on the day that the final VM Haircut is effected, LME Clear may effect a cash settlement of Open Contracts in specified metals between LME Clear and the non-defaulting Members, together with a write down of LME Clear's cash settlement obligations to such non-defaulting Members in accordance with the Rules. (Rule 10.10.2(d)).

## Stabilisation and Recalculation of the Default Fund following a Default

13.11 Separately from the Default Fund replenishment mentioned above, LME Clear may call a stabilisation replenishment (discussed further below).

13.12 Following the end of the Default Period, assuming that LME Clear has not decided that it is necessary to discontinue operations, Members must replenish their Default Fund Contributions, and LME Clear may decide to recalculate the size of the Default Fund.

## Stabilisation Replenishment

13.13 During the Default Period LME may require Members to replenish the Default Fund to ensure that it does not fall below the level required under EMIR (the Relevant DF Minimum Threshold) and to stabilise the Default Fund in case of further Defaults. (Rule 10.10.5). The following provisions apply (in summary):

- i. The replenishment amounts may not be applied to discharge the balance of the Default Loss, and may only be applied in accordance with the waterfall towards the discharge of Default Losses that arise in respect of other Member Defaults that arise during or after the Default Period.
- ii. The total amount payable by a non-Defaulting Member under one or more Stabilisation Replenishment Notices issued in respect of a single Member Default shall be equal to the total value of the Default Fund Contribution of that non-Defaulting Member immediately prior to the Default Period (Per Default Stabilisation Replenishment Cap).
- iii. If there is more than one Member Default during a Default Period, a separate Per Default Stabilisation Replenishment Cap shall be applied in respect of each Member Default.
- iv. Each Stabilisation Replenishment Notice must specify to which Member Default it relates.
- v. In any six month period (following the first Stabilisation Replenishment Notice in connection with the first Default), the maximum amount that LME Clear may require any Member to contribute pursuant to the Stabilisation Replenishment Notice shall be limited to the amount that would be recoverable under three Stabilisation Replenishment Notice that were each issued for the amount of the Per Default Stabilisation Cap applicable to each notice.

## Replenishment and Recalculation of the Default Fund at the end of the Default Period

13.14 At the end of the Default Period, assuming that LME Clear decides that the business is still viable under Rule 10.10.7 there is a requirement that each Member shall immediately replenish in full its Default Fund Contribution (Rule 10.10.8).

13.15 LME Clear will then recalculate the size of the Default Fund (Rule 10.10.9(a)). LME Clear does not have the ability to recalculate the size of the Default Fund during a Default Period to ensure transparency with regards to utilisation of the Default Fund as well as ensuring that Members are able to measure their maximum potential liability exposure to LME Clear (Rule 10.10.3).

## Discontinuation of Operations

- 13.16 If after a business viability review the decision is taken by the Board to discontinue operations, Members will be given a period of time to withdraw Open Contracts for bilateral settlement; and LME Clear will run a final settlement cycle at a time chosen by it and will subsequently terminate all open contracts for Cash Settlement at prices and on a settlement date determined by LME Clear. Members will be liable for settlement balances determined by the final settlement cycle. The discontinuation of operations rules are set out in the Rules and the operational aspects of a discontinuation of operations are set out in the Wind Down Plan.

## Periodic Testing and Review of Default Procedures

- 13.17 The Rules and Procedures together with the Default Management Policy ensure that LME Clear has in place clear operational and risk procedures for the handling of a Default Event. LME Clear has assessed and prepared for the management and handling of the default of a Member but also of multiple Members. LME Clear also rehearses and prepares in the event of the default of a key service provider (Custodian, Settlement Bank, Concentration Bank, investment agent etc.)

## Fire Drills

- 13.18 LME Clear conducts fire drills on a regular basis. Members are required in accordance with the Procedures to participate in some of the fire drills during which LME Clear, Members and other interested parties will conduct simulations of various Default Event scenarios chosen by LME Clear. These are conducted at least annually. Lessons learnt during the fire drills are captured and incorporated in the default management documentation and processes as appropriate.

**Principle 14: Segregation and Portability**

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

## 14 Segregation and Portability

- 14.1 LME Clear has a defined and fully disclosed structure for the segregation and porting of Clients, including indirect Clients, in either ISA or net OSA Accounts. The portability arrangements have a legal basis which provides for both the pre-notification by Clients wishing to be 'automatically' ported or for those Clients to request porting following the event of default. LME Clear's Rules (Rule 10.7) sets out the process for porting Clients wherever possible.
- 14.2 As required under Article 39(7) of EMIR, LME Clear makes available on its LME Clear website (see section V of this Disclosure Document) a disclosure document detailing the different levels of segregation offered by LME Clear and a description of the main legal implications of the respective levels of segregation offered. Interested parties should refer to that disclosure statement for a full summary of LME Clear's segregation and portability arrangements. Further details are also available in LME Clear's Rules and Procedures, also available on the LME Clear website.
- 14.3 The Rules confirm that it is the responsibility of the Member to ensure that the Member has established an account structure with LME Clear that is appropriate to enable the Member to satisfy its obligations under any applicable law (LME Clear Rule 4.5).

### Account Structures and Segregation

- 14.4 LME Clear segregates each Account in its books and records and treats each Account maintained for a Member separately from each other Account maintained for that Member, for the purposes of:
- i. recording the Positions and Collateral referable to each Account;
  - ii. recording and accounting for any excess Collateral referable to that Account;
  - iii. where applicable, the netting of Positions referable to that Account;
  - iv. the exercise of any right by LME Clear under the Rules to combine or consolidate balances on Accounts or any set-off rights;
  - v. the allocation or discharge of losses; and
  - vi. the exercise of porting rights..(LME Clear Rules 4.3.1 and 4.3.2).

- 14.5 An Individual Clearing Member will have only a House Account, as it will not be clearing transactions entered into with or by Clients. In addition to a House Account, a General Clearing Member may also elect, depending on the requests of its Clients, to establish one or more of the following types of Client Account (Rule 4.2.2- 4.2.5):
- a) one or more of the following types of Omnibus Segregated Client Account
    - i. Direct Net Omnibus Segregated Client Account; and/or
    - ii. Direct Gross Omnibus Segregated Client Account: and/or
    - iii. Indirect Net Omnibus Segregated Client Account and/or
  - b) One or more of the following Individual Segregated Client Account (Rule 4.2.2), which can be of the following type:
    - i. Direct Individual Segregated Client Account;
    - ii. Indirect Individual Segregated Client Account; or
    - iii. Indirect Gross Omnibus Segregated Client Account.
- 14.6 A Direct Net Omnibus Segregated Client Account may be used to record positions and collateral arising as a result of transactions effected or cleared by a General Clearing Member on behalf of one or more Clients (Rule 4.2.3(a)). The Positions of the Member in respect of each Client allocated at the Account may be subject to netting or aggregation at the Account-level in accordance with the Clearing Procedures, and Margin Requirements are calculated at the Account level.
- 14.7 A Direct Gross Omnibus Segregated Client Account may be used to record the positions and collateral arising as a result of transactions effected or cleared by a General Clearing Member on behalf of one or more Clients (Rule 4.2.3(b)). The Positions of the Member in respect of each Client allocated to the Account shall be separately identifiable and shall be subject to netting or aggregation at a per-Client level (as defined by Allocation IDs) in accordance with the Clearing Procedures. Separate Margin Requirements shall be calculated in accordance with the Clearing Procedures in respect of i) each of the Allocation IDs and ii) Positions without an Allocation ID. The Margin requirement for the Account shall be the aggregate of the Margin Requirements together with any additional margin imposed by LME Clear.
- 14.8 An Indirect Net Omnibus Segregated Client Account may be used to record the positions and collateral arising as a result of transaction effected or cleared by a General Clearing Member on behalf of one or more Clients with Indirect Clients (Rule 4.2.3(c)). The Positions of the Member in respect of each Indirect Client allocated to the Account may be subject to netting or aggregation at the Account level in accordance with the Clearing Procedures. Margin Requirements shall be calculated at the Account level.
- 14.9 A Direct Individual Segregated Client Account may only be used to record positions and collateral arising as a result of transactions effected or cleared by a General Clearing Member on behalf of a Single Client (Rule 4.2.4)

- 14.10 An Indirect Individual Segregated Client Account may only be used to record positions and collateral arising as a result of transaction effected or cleared by a General Clearing Member on behalf of a single Client which relate to a single Indirect Client (Rule 4.2.5)
- 14.11 An Indirect Gross Omnibus Segregated Client Account may only be used to record positions and collateral arising as a result of transactions effected or cleared by a General Clearing Member on behalf of a single Client which relate to one or more Indirect Clients (Rule 4.2.6). The Positions of the Member in respect of each Indirect Client allocated to the Account shall be separately identifiable and shall be subject to netting or aggregation at a per-Indirect Client level (as defined by Allocation IDs) in accordance with the Clearing Procedures Separate Margin Requirements shall be calculated in respect of each Allocation ID and Positions without an Allocation ID. The Margin Requirement for the Account shall be the aggregate of the Margin Requirements together with any additional margin requirements imposed by LME Clear.

## Portability

- 14.12 Under LME Clear Rules 5 and 10.7, in the event a Member becomes a defaulting Member, the Clients allocated to a particular Client Account can request that assets and Positions recorded to that Client Account be transferred to a new Client Account with a non-defaulting Member. Where the Client Account is:
- i. an Individual Segregated Client Account, this process can be initiated by the single Client allocated to that Account; or
  - ii. an Omnibus Segregated Client Account, this process must be initiated by all Clients allocated to that Account.
- 14.13 In the event that a Member defaults, LME Clear will seek to implement the porting procedures set out in LME Clear Rule 10.7 and Default Procedure D in relation to all Clients allocated to an Account where all the conditions are met.
- 14.14 The porting process can be initiated in one of two ways:
- i. automatically by LME Clear, where the Automatic Porting Process applies to a Client's Account; or
  - ii. for any other Client Account, on receipt by LME Clear of a Porting Request Notice, in the form set out in Annex 6 to the Rules, submitted by all the Clients allocated to that Account.
- 14.15 The Automatic Porting Process will apply where all Clients allocated to the Client Account are Identified Clients:
- the nominated transferee Member identified by all the Clients relating to the Account is willing to accept all of the Positions and Collateral allocated to the Account; a nominated transferee Member will not be compelled to accept the porting and therefore its consent to the porting will be a pre-condition to the transfer; and
  - the nominated transferee Member replies within the deadline that LME Clear has specified at the time to give its consent to the transfer.

14.16 Where the Automatic Porting Process has not been initiated, LME Clear will act on a Porting Request Notice received from a Client if:

- i. the request is received within the Porting Period (as defined in the Rules);
- ii. the designated Transferee Member has consented to the transfer;
- iii. LME Clear has the information to accurately calculate the Contracts, Collateral and any other amounts to be transferred;
- iv. The transfer can be completed without any breach of the Rules or Applicable law;
- v. there is sufficient Collateral in the Account to which the client is porting;
- vi. all Clients in the Account can be identified;
- vii. the transfer relates to the whole of the Account; and
- viii. LME Clear has received adequate representations from the Transferee Member that it has arrangements in place with the Clients. (Rule 10.7.5 and Default Procedure D2.2)

14.17 LME Clear will also facilitate the porting of Indirect Clients between the Accounts held by Member in respect of different Clients. For example, this may be required where the Client, in respect of which the Indirect Clients' Positions have been allocated to an Individually Segregated Client Account, becomes insolvent and the Indirect Clients wish to appoint another Client, clearing through the same Member. Any such "porting" of Indirect Clients would be at the request of the Member (rather than the Indirect Clients) and the process is set out in Rule 10.12. LME Clear would require the Member to provide assurances in a form acceptable to LME Clear that the Indirect Clients and the transferee Client have consented to the movement of the Positions between Accounts within LME Clear's books and records.

14.18 The above summarises the position where porting is requested on a "whole account" basis, comprising all positions within an Account. LME Clear has the ability under its Rules to determine whether it can port individual Client positions (including contingent variation margin but excluding collateral) from an Omnibus Segregated Account to a transferee Member (a Partial Transfer). Under the LME Clear Rules, in the event that LME Clear has received some porting requests but determines that an Automatic Porting Process does not apply to one or more Omnibus Segregated Accounts, and that a Porting Request Notice is unlikely to be received from each and every Client in that account, it may decide to facilitate Partial Transfers out of the relevant account(s) in accordance with the procedure set out in Rule 10.7 and Default Procedure D.

14.19 LME Clear may set and vary the number and duration of any period during which it will accept requests for Partial Transfers (Partial Transfer Windows), and will only effect the transfer of Open Contracts (but not the Collateral) of the Requesting Clients to a transferee Member if:

- i. It would not significantly increase the risk to LME Clear;
- ii. sufficient additional Collateral will be provided by the Member Transferee before or at the same time as the transfer;

- iii. LME Clear has the information required to enable it to calculate the amounts to be transferred (including contingent variation margin credits);
- iv. the requirements in Default Procedure D2.4 are satisfied;
- v. LME Clear is satisfied that the clients requesting the transfer are Identified Clients;
- vi. it's practicable to determine the specific Positions allocable to each Requesting Client; and
- vii. such Partial Transfers are permissible under Applicable Law (including for example, the law applicable to the Member Transferor and the Member Transferee).

14.20 Rule 10.7 also provides that LME Clear shall not be obliged to effect a Partial Transfer which either a) if effected would change the direction and/or size of the Positions of the Open Contracts remaining in the Relevant Account or b) LME Clear considers inappropriate having as its primary objective effective risk management (in particular, with regard to protecting its capital and default fund, and the integrity of the markets which it clears).

**Principle 15: General Business Risk**

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

## 15 General Business Risk

- 15.1 The Risk Appetite Statement adopted by the Board, identifies the major business risks relevant to the operators and services of LME Clear. For each category of risk, it sets out:
- i. Ownership – each of the risks has a clear Executive owner, an identified second line of defence and details of the link into the governance structure;
  - ii. Statement of risk appetite – this is the articulation of the appetite level for the particular risks;
  - iii. Quantification – this sets out the mechanisms that have been put in place to quantify and manage risks; and
  - iv. Reporting – the regular reporting that is in place to monitor risks (including who is responsible for reporting and who receives the reports) and the escalation process in the event of a breach of the risk appetite.
- 15.2 The Executive Committee works with the Audit Committee, the Technology and Operational Resilience Committee, and the Board Risk Committee depending upon the risk concerned to review and update the Risk Appetite Statement. The Audit Committee reviews the risk categories and metrics on a periodic (normally quarterly) basis, and the risk appetite will be confirmed or altered accordingly by the Board on the recommendation of the Audit Committee on an annual basis.
- 15.3 On an ongoing basis the Board, with the support of the Executive Committee, uses the Enterprise Risk Management Framework to conduct risk assessments of its major risk types. The assessment includes the identification of internal and external factors that could impair LME Clear's position (business and financial), an evaluation of their impacts and the likelihood of occurrence. LME Clear establishes and implements key financial and internal controls and plans to mitigate, eliminate, monitor, and manage the risks. Identified risks and management of those risks are recorded and monitored.
- 15.4 LME Clear has adopted a Business Strategy as set out in its Annual Business Plan which is reviewed at least on an annual basis. Any new product or service must be developed in accordance with the New Product Policy which provides for a review by the Board of any new material product or service. The Board retains ultimate authority to approve a project.

## Financial Resources for Business Operations

- 15.5 LME Clear operates as a free-standing entity with its own financial resources. As part of its on-going compliance requirements including compliance with EMIR, and to ensure it can continue operations and services as a going concern, LME Clear maintains at all times net current assets in an amount sufficient to cover its projected total operating expenditure for at least the following twelve months and capital to cover its counter-party credit and market risk exposure for non-covered activities at 8% of the risk weighted exposure amount. To facilitate the Bank's effective supervision of LME Clear's compliance with these financial requirements, LME Clear provides the Bank on a monthly basis with its capital and operating expenditures and cash flow forecasts for the following twelve months. LME Clear's objective is to provide against counterparty and market risks essentially by ensuring the maintenance of Collateral in respect of Margin Requirements and contributions to the Default Fund at a level which reflects a prudent analysis of those risks, with appropriate account being taken of potential market turbulence and stresses in the financial system. The methodology which LME Clear uses to assess these risks and determine the level of funding required mitigating these risks and assuring financial integrity forms part of LME Clear's credit risk management strategy.
- 15.6 LME Clear has used the Basic Indicator Approach (BIA) in order to calculate its capital requirement for operational risks in accordance with Article 103 of Directive (EU) No 2006/48/EC. Using BIA, the capital requirement for operational risk is 15% of the relevant indicator. The relevant indicator is the average over three years of the sum of net interest income and net non-interest income.

## Capital Requirements for Business Risks

- 15.7 LME Clear has estimated capital necessary to cover losses resulting from business risk based on reasonable foreseeable adverse scenarios relevant to its business model. The capital requirement for business risk is subject to a floor equal to 25% of its annual gross operating expenses. The capital requirement is three months of gross expenses.
- 15.8 LME Clear identifies, monitors, and manages its general business risk through its enterprise and operational risk policies and procedures and holds 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 in accordance with its wind down plan. Further, LME Clear ensures liquid net assets at all times are sufficient to ensure a recovery or orderly wind-down of critical operations and services.

**Principle 16: Custody and Investment Risk**

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

## 16 Custody and Investment Risk

- 16.1 LME Clear currently accepts cash, securities, LME Warrants and gold as collateral from its Members. LME Clear invests under a prudent investment policy and appoints multiple creditworthy (I)CSD's or where access to (I)CSD's is not possible, commercial banks to act as its Custodians subject to selection criteria and various ongoing monitoring and concentration limits. The objectives of the LME Clear investment strategy as outlined in the Risk Appetite Statement are:
- i. Preservation of capital;
  - ii. Ensuring sufficient liquidity is available at all times;
  - iii. Management of portfolio credit and market risk, in line with the risk tolerances that are predetermined by the Board and the Board Risk Committee;
  - iv. Generation of income is a secondary objective to the above and will be superseded at all times by the other objectives in the event of any conflict.
- 16.2 Based upon these principles, LME Clear's investment activity is prudent and represents a level of conservatism over and above minimum standards required by the EMIR requirements, utilising a relatively narrow range of vanilla and short dated instruments which include extremely short dated reverse repo versus high quality securities in both Europe and the US, outright purchase of government securities and overnight cash deposits.
- 16.3 LME Clear utilises the services of third party cash investment agents (Citibank NA and Bank of New York Mellon) for the execution of transactions in accordance with its Investment Policy and Liquidity Policy. This is underpinned by contractual and operational arrangements. LME Clear retains full control and has near real time visibility of its investment activity and can therefore manage the associated risks for which it is responsible and which could impact its operational, credit and liquidity risk profile.
- 16.4 LME Clear holds cash collateral with full title and has security arrangements in place in all relevant jurisdictions for holding the non-cash collateral provided by Members (being in the United Kingdom (UK), Belgium and New York. In relation to Securities Collateral held within the European Union (i.e. the UK and Belgium) LME Clear's security arrangements are "Financial Collateral arrangements" and therefore will benefit from the locally incorporated Financial Collateral regulations (pursuant to the EU Directive (2002/47/EC) on Financial Collateral arrangements). In relation to securities collateral held in the US, LME Clear has perfected security. In addition, in relation to all the security arrangements, these constitute a "market charge" under Part 7 of the Companies Act 1989 to the extent it secures "market contracts". In all cases, LME Clear exerts exclusive and practical control over all collateral.

- 16.5 In order to diversify its risks pursuant to strong credit risk principles and to ensure robustness in stressed market conditions, whilst still retaining sufficient consolidation to allow the efficient functioning of day to day activities, LME Clear has divided its key collateral, investment and custody services between multiple suppliers with robust back up arrangements in place and tested through regular fire drill activities.
- 16.6 LME Clear uses (I)CSDs to hold securities in Europe which are regulated and designated systems under the Settlement Finality Directive. LME Clear is using Euroclear UK & Ireland Limited in the UK and Euroclear Bank in Belgium. LME Clear uses Custodians in the US for the holding of US securities from margin Collateral and assets resulting from its cash investments. Citibank NA and Bank of New York Mellon have both been chosen as LME Clear service providers. Diversification is achieved through using more than one provider. BNYM have the additional advantage of not being a Member of LME Clear.

## Risk Management – Limits and Monitoring

- 16.7 LME Clear's investment risks and exposures are managed through the setting of limits. The current exposure against these limits is monitored in near real time and reported daily. Limits are set in accordance with the Investment Limit Framework based upon internal credit score and, where applicable, the quality of underlying collateral to the transaction. Limits are assessed on a monthly basis and reviewed formally at least annually. Limits are also subject to ad hoc review and amendment by the Clearing Risk Committee in the light of prevailing market conditions and changes to the internal credit rating of either the issuer or counterparty. Investment exposures are amalgamated with exposures arising from other activities undertaken with the same issuers, counterparties or Custodians to provide a full overview of LME Clear's complete exposure.
- 16.8 Credit and concentration limits are set at the level of: Sovereign; Issuer; Counterparty; Instrument/Issue; and Maturity. In the case of all credit and concentration limits, a higher applicable internal credit rating will be expected to result in larger limits.
- 16.9 *Sovereign Limits* - are set to establish LME Clear's overall risk appetite to a sovereign country through the purchase of securities. Limits will also be set at a counterpart level for the reverse repo of sovereign securities. The limits relate directly to the internal credit and collateral tiering score of that sovereign and ensure diversification within the investment portfolio. Monitoring takes place for exposures to individual sovereigns across purchases and reverse repo activity, as well as where appropriate for non-cash margin collateral, with corrective action taken as appropriate when exposures are beyond approved thresholds.
- 16.10 *Issuer Limit* - Where the issuer of security is not a sovereign government, LME Clear only invests in those securities where the issuer is explicitly and irrevocably guaranteed by one or more sovereign governments and meets all other acceptance criteria.

- 16.11 *Counterparty Limit* - Each counterparty is assigned a limit for overall exposures, which can be divided into sub-limits by type of exposure and is related to their internal credit score. The limits also reflect the need for diversification within the investment portfolio. For the purposes of reverse repo transactions, LME Clear has created a separate collateral set that distinguish between higher rated collateral and broader collateral sets as well as sets that encourage the receipt of particular collateral types. LME Clear protects itself with higher quality collateral and/or less exposure for lower rated investment counterparties.
- 16.12 *Instrument Limits* - LME Clear sets limits per instrument type including where there is material differentiation in terms of quality for separate instruments exposed to the same issuer. Additionally, on a monthly average basis, unsecured deposits are not allowed to represent more than 5% of the total investment portfolio, excluding any securities purchased.
- 16.13 *Maturity Limits* - EMIR permits an average time to maturity of a clearing house's portfolio of highly liquid financial instruments of two years. Consistent with LME Clear's conservative approach to risk management, LME Clear only purchases securities with a residual maturity of less than two years. LME Clear only transacts repo or reverse repo transactions for a period of approximately one month or less and typically these are no longer than one week in duration with a significant majority rolling on an overnight basis. Lower maturity limits are applied where the internal credit score of the counterpart and/or quality of the collateral set is lower or where a different collateral set is used due to volatile market conditions. Where able to be embedded within tri- party service provider's/investment agent structures, no securities will be eligible for reverse repo transactions that have a residual maturity of greater than 30 years and where controls are not embedded these are monitored with alternate solutions sought wherever possible. Unsecured deposits are limited to overnight term only. Forward start trades outside of market convention are not permitted. For liquidity purposes, concentration limits apply to daily maturities per counterpart and, where possible and not contrary to other requirements within the Investment Policy, against the custodian bank where assets are held.
- 16.14 *Market Risk* - LME Clear monitors the interest rate risk on its investments on a near real time basis and this is subject to an overall PV01 limit. Interest rate sensitivity is also subject to stress testing based upon consistent scenarios with the other market risk stress testing undertaken by LME Clear. LME Clear is exposed to foreign exchange risk through cross-currency reverse repo and this is managed via an additional foreign exchange haircut on affected positions as appropriate. The results of all stress testing is reviewed daily and reported at least monthly to the Clearing Risk Committee.
- 16.15 On a daily basis, reporting on LME Clear's investment activity include views of:
- i. Transactions entered into by the Cash Investment Agent; and
  - ii. Interest rate sensitivity.
- 16.16 Specifically, the reporting LME Clear captures includes the following:
- i. Details and a summary of outstanding Positions, a maturity ladder and limit utilisation;
  - ii. Full details of all Collateral held against reverse repo activity or encumbered through repo activity; and
  - iii. Interest rate sensitivity, PV01 and stress test results.

16.17 Summary reporting is sent, at a minimum, to the following audiences:

- i. Daily: to the Risk Team Executive;
- ii. Monthly: to the Clearing Risk Committee; and
- iii. Quarterly: to the Board Risk Committee and Board.

## Principle 17: Operational Risk

**An FMI 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 FMI's obligations, including in the event of a wide-scale or major disruption.**

## 17 Operational Risk Management Framework

- 17.1 Ultimate responsibility for the governance of operational risk rests with the Board. The Board is responsible for the Risk Appetite Statement and approves the Enterprise Risk Management (“ERM”) Framework, policies and roles and responsibilities. The Board receives regular updates on effectiveness and concerns raised under the Operational Risk Policy from the Audit Committee and the Technology and Operational Resilience Committee; they receive regular reports on operational risks and, operational incidents, including trend analysis, resolution and extended monitoring. The Audit Committee has overall responsibility for the Operational Risk Policy
- 17.2 The Chief Risk Officer has day-to-day oversight of the Operational Risk Policy, and in conjunction with the ERM and Operational Risk team is responsible for ensuring that all managers and other staff are aware of their responsibilities to identify and manage operational risks. The management team identify and manage operational risk on a day-to-day basis and are responsible for ensuring that the Operational Risk register, which is maintained in the Xactium Governance, Risk and Compliance (“GRC”) tool, is kept up to date and reflective of the risks to which LME Clear is exposed. This is supplemented by a cross-department monthly challenge session chaired by Operational Risk whereby operational risks that have arisen through the month and those which could arise are discussed.
- 17.3 All Operational Risks and Incidents, both current and historic, are recorded in Xactium. These findings are visible to all management. The ERM and Operational Risk team produces a monthly summary of operational incidents that is circulated to Executive Committee members through the Executive Risk Committee. A quarterly report is also produced for the Executive Committee and circulated to the LME Clear Board that summarises activity during the quarter and also highlights trends, resolution and actions.
- 17.4 The Audit Committee regularly monitors the adequacy of policies and procedures relating to operational risks (including custody risk, payment and settlement risk and concentration risk) and makes recommendations. The Audit Committee has overall responsibility for the Operational Risk Policy, the Investment Policy and the Payment, Settlement and Custody Policy and monitors compliance with such policies and reviews its effectiveness at least on an annual basis.
- 17.5 Compliance is responsible for the monitoring of business controls’ owners periodical self-certification to ensure that all controls are adequate and in line with relevant policies and procedures. ERM and Operational Risk will assist with monitoring by keeping operational

controls registers and the controls will be tested as part of the LME Clear Compliance Monitoring. Any failed controls will be tested more frequently as appropriate

- 17.6 LME Clear gave careful consideration to its operating model in order to ensure that it has the appropriate resources and expertise for conducting its activities within a robust control environment. To make sure that this goal is achieved all third party agreements are legally binding and define key responsibilities in relation to LME Clear. Furthermore, each partner has an assigned service/relationship manager, who is responsible for the oversight, management and delivery of the service. Compliance with the agreed level of service is monitored through a defined set of KPIs, which are discussed at a regular meeting with the partners and if insufficient escalated to the executive level.

## Review, Audit and Testing

- 17.7 LME Clear is subject to frequent internal audit reviews according to the Internal Audit Plan approved by the Audit Committee. The audit plan sets out the schedule, objectives and scope of the review and covers the following areas:

- i. *Clearing Settlement and Risk Management*: to ensure that LME Clear clears and settles the LME contracts with the clearing participants (“CPs”) on a timely, accurate and complete manner; and that LME Clear’s exposure to the CPs is effectively monitored and covered particularly at times of extreme market movements.
- ii. *Business Continuity Management System*: to ensure that business continuity management works as prescribed under EMIR article 34 and appropriate technical standards are followed. The BC Management Systems is also externally audited for certification to the international standard ISO22301 every year.
- iii. *Application Controls and System Security Controls*: to ensure that security controls of LMEmercury are adequate and effective with reference to the Information Technology Systems requirements as prescribed under EMIR.

- 17.8 LME Clear is subject to an independent external party audit that includes an assessment of operational risk controls using an internationally recognised standard on a regular basis and no less frequently than every 3 years. The report is shared with the Audit Committee, Board and LME Clear’s regulators. The Audit Committee will approve the choice of an independent external party who will be selected to perform the audit on the basis of their independence and professional expertise in this area.

## Operational Reliability Objectives and Capacity Scalability

- 17.9 LME Clear outlines its operational reliability objectives, both qualitative and quantitative, in the Risk Appetite Statement. The high level objectives are then translated into detailed guidelines documented in LME Clear policies and procedures. Examples of high level operational reliability objectives from the Risk Appetite Statement include:
- i. ensuring there is a rigorous screening process for all actual and potential Members and other counterparts to whom an exposure is expected to arise;
  - ii. maintaining effective and efficient operational and change management procedures;
  - iii. maintaining robust processes and controls;

- iv. effective and cautious management and robust control of operations that are outsourced to third parties including LME Clear's systems and technology providers and investment managers; and
  - v. vigilant maintenance to the uninterrupted availability of systems, data and assistance where applicable.
- 17.10 At the lower level LME Clear policies and procedures define specific goals, processes and controls to meet the objectives outlined in the Risk Appetite Statement.
- 17.11 LME Clear's clearing platform has scalability and load balancing features that allows it to support higher volumes by upgrading and expanding hardware without significant architectural changes. The system capacity is scaled based on the projected clearing volumes and a capacity buffer has been put in place to handle potential stress volumes.
- 17.12 Ongoing monitoring of LME Clear's technology estate is performed using automated monitoring tools. These tools provide continued checks on the key components of the service to ensure system resources and utilisation remain within pre-defined limits. Periodic checks and reviews of system performance, business growth and forecasts are reviewed at the LME Clear Monthly Capacity Reviews and where these vary from the original predictions an assessment is carried out to ensure they will not impact the LME Clear services.
- 17.13 LME Clear aims to identify and mitigate capacity related issues before they become a production incident. This is achieved by actively monitoring and projecting long term usage and growth of the systems. Where LME Clear identifies a capacity deficiency it will initiate a Request for Change to address the issue. This type of change may be minor e.g. housekeeping activity, or involve substantial upgrade activity.
- 17.14 Where an unidentified capacity constraint occurs this will be treated as an incident. LME Clear will employ technical teams to identify the issue and provide an immediate work around. Once service is restored LME Clear will work to fully mitigate the issue and ensure sufficient capacity and monitoring is in place to prevent a repeat of the incident and ensure proactive management is employed in the future.
- 17.15 By employing these two methods of capacity management LME Clear ensures it can proactively manage its estate and react to unforeseen events that would impact its service.

## Physical and Information Security Policies

- 17.16 LME Clear has information security policies in place in order to protect the confidentiality and integrity of the information it stores and processes. These policies are in line with EMIR requirements as well as the structure of the international standard ISO 27001, NIST: National Institute of Standards and Technology and industry good practice. Compliance with all LME Clear security policies is mandatory for all LME Clear staff. Staff compliance regarding LME Clear's security policies is managed by an internal governance structure which takes a robust approach to breaches of policies. The Information Security Policy sets out the overarching principles and policy statements for the protection of information and physical assets including a comprehensive set of preventative, detective, and corrective controls.

**Principle 18: Access and Participation Requirements**

**An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.**

## 18 Access and Participation Requirements

### Membership Requirements and On-going Monitoring

18.1 LME Clear provides services to persons who are admitted to Membership under the terms of the Rules and Procedures. The Rules will be binding on Members by virtue of the Membership Agreement, which must be executed by each Applicant. LME Clear's Membership Criteria have been designed to operate on a transparent, non-discriminatory and objective basis to all Applicants, the details of which are set out and detailed on the LME Clear website – see section V of this Disclosure Document.

18.2 There are two categories of Membership:

- "Individual Clearing Members" (or "ICMs") who are permitted to clear transactions on their own behalf only;
- "General Clearing Members" (or "GCMs") who may clear transactions on their own behalf and also in respect of transactions effected (i) by the GCM with its Clients or (ii) by its Clients with other non-members.

18.3 A person may qualify to become a Member in LME Clear if it meets the Membership Criteria which are set out in the LME Clear Rules, Membership Procedures Part B. These criteria include that the Applicant:

- i. meets the conditions (if any) in the Membership Agreement and application documentation;
- ii. satisfies the relevant criteria for the type of business the applicant wishes to clear. This includes On-Exchange (LME Base services and/or LMEprecious service and OTC);
- iii. Satisfies the minimum net capital for a Member, or such greater capital requirements as set by LME Clear;
- iv. maintains appropriate banking arrangements satisfying any specific requirements published by LME Clear from time to time or specifically notified to the Applicant;
- v. maintains appropriate arrangements with the Approved Delivery Facilities specified in the Clearing Procedures for those Eligible Products that the Applicant wishes to clear;
- vi. has executed all relevant documentation required by the Approved Transaction Platforms for the Eligible Products that the Applicant wishes to clear and maintains such arrangements at all times; and

- vii. complies with all applicable law and regulation (including maintaining all required regulatory authorisations in all jurisdictions in which it is required to maintain such authorisations).
- viii. Maintains administrative support functions that is appropriately separate from the Applicant trading desks, has robust systems and records and includes staff, adequate in number and experience who understand the business of LME Clear and the Member;
- ix. Meets the technical equipment requirements as specified from time to time by LME Clear;
- x. Has the adequate personnel, facilities, systems and procedures to enable the Applicant to satisfactorily handle transactions and communications with LME Clear, fulfil anticipated commitments to, and met the operational requirements of, LME Clear with necessary promptness and accuracy;
- xi. Has successfully completed a default management 'fire-drill' in accordance with such requirements as LME Clear may have notified to the Applicant;
- xii. Completing any other testing and training requirements as specified by ME Clear from time to time.

18.4 In addition, General Clearing Members shall be:

- a) an authorised person or exempt person under Part III of FSMA that is permitted under Applicable Law to arrange, or otherwise clear transactions with or for third parties; or
- b) a credit institution, as defined in Article 4.1.1 of Regulation (EU) No 575/2013 of the European parliament and of the Council; or
- c) an investment firm as defined in Article 4.1 of Directive 2014/65/EU of the European Parliament and of the Council other than a person to whom Article 2 applies; or
- d) Any undertaking whose head office is outside the European Community and whose functions correspond to those of a credit institution or investment firm as defined in (a) and (b) above; and All Applicants will have to be approved by the Executive Risk Committee before becoming a Member.

18.6 A Member needs to ensure their on-going compliance with the membership requirements which are summarised below:

**Regulatory status** – A Member needs to satisfy the relevant requirements for specific types of business (on-exchange business or OTC business) and, where applicable, the relevant regulatory status as a General Clearing Member. There is no regulatory requirement in relation to Individual Clearing Members.

**Credit Standards** – A Member shall comply with any credit standards applied by LME Clear, from time to time, to the Member or to Members generally.

**Minimum Net Capital Requirement** – a Member must have Minimum Net Capital of \$10million.

**Operational requirements** – a Member must be capable of handling the clearing operations processes, including having established connection to LMEmercury and have the ability to send and receive funds via an Approved Settlement Bank.

**Risk management requirements** – Members need to have adequate internal risk management systems and procedures and must provide details of their internal risk modelling and risk management frameworks. All Members are subject to a minimum of \$1m Default Fund requirement and to demonstrate their ability to participate in a Default Fire Drill.

**Reporting and Notification Requirements** – A Member shall provide all information as required under Membership Procedure B6 and promptly notify LME Clear if one of the events set out in Membership Procedure B7 occurs.

- 18.7 Information gathered by LME Clear is used to assess the compliance of each Member with the Membership Criteria. This is done on an ongoing basis. Any reported or suspected breaches of the Rules or Membership Criteria will also be investigated by the compliance function. Further, on an annual basis, Members are required to confirm that they remain in compliance with the Membership Criteria. Monitoring is in place to ensure that Members are compliant with the Rules and Procedures and the Rules set out the procedures to facilitate suspension and orderly exit of Members who are in breach of their obligations.

## Suspension and Termination of Membership

- 18.8 LME Clear has the right to suspend access to the Clearing System or terminate a Member's Membership where a Member is in breach of the Rules, including the obligation to meet the Membership Criteria. Such rights may be exercised as a result of the ongoing monitoring and regular Membership checks.
- 18.9 With reference to Rule 3, Membership may be:
- i. Terminated by the Member in accordance with Rule 3.6 (withdrawal of Membership);
  - ii. Suspended by LME Clear in accordance with Rule 3.9 (suspension of a Member by LME Clear);
  - iii. Terminated by LME Clear pursuant to a Default Event in accordance with Rule 3.10 (Termination by LME Clear of a Member's Membership); or
  - iv. Terminated by LME Clear pursuant to a Service Withdrawal applicable to a category of members to which the Member belongs in accordance with Rule 3.11 (Withdrawal of Services by LME Clear)
- 18.10 LME Clear may suspend the Membership of a Member or terminate such Membership if an Event of Default has occurred or as a result of disciplinary proceedings imposing penalties on the Member.
- 18.11 The Disciplinary Committee and Appeal Committee are ad hoc committees which will be formed following the commencement of a disciplinary proceeding against a Member or the lodgement of an appeal against a first instance decision. The Disciplinary Committee shall consist of three directors of LME Clear in accordance with the Rules.

- 18.12 Prior to Membership termination, the Member has to continue to meet its obligations to LME Clear. Following Membership termination, Collateral and contributions to the Default Fund will be returned to the Member in accordance with the Rules.

**Principle 19: Tiered Participation Arrangements**

**An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.**

## 19. Tiered Participation Arrangements

- 19.1. LME Clear has a direct contractual relationship with its Members who act as principals to each and every cleared trade. LME Clear's legal obligations, as defined in its Rules and Procedures, are owed to its Members. Third parties, including Clients, cannot have any recourse against LME Clear. Members are permitted to operate a number of Accounts; each of which is operated on a principal-to-principal basis but which enable Members to meet their segregation requirements under their relevant regulatory requirements.
- 19.2. LME Clear offers Members two main types of 'client' account; Individual Segregated Accounts (ISAs) and Omnibus Segregated Accounts (OSAs). A General Clearing Member may elect, depending on the requests of its Clients, to establish one or more of the following types of Client Account (Rule 4.2.2):
- a) One or more of the following types of Omnibus Segregated Client Account (OSA):
    - i. Direct Net Omnibus Segregated Client Account; and/or
    - ii. Direct Gross Omnibus Segregated Client Account; and/or
    - iii. Indirect Net Omnibus Segregated Client Account; and/or
  - b) One or more of the following Individual Segregated Client Account (ISA);
    - iv. Direct Individual Segregated Client Account;
    - v. Indirect Individual Segregated Client Account; or
    - vi. Indirect Gross Omnibus Segregated Client Account
- 19.3. These Client Accounts are described in more detail in the section titled "Principle 14, Segregation and Portability" (see above).
- 19.4. An ISA is intended to provide segregation for an individual Client whereby the positions and collateral held as margin can be easily identified and ported in the event of a Member default. In the case of an ISA that is established by the member for indirect clearing purposes, the ISA may also reflect the assets and positions of a single Indirect Client in that individual Client (in the case of an Indirect Individual Segregated Client Account), or the assets and positions of multiple Indirect Clients of that individual Client (in the case of an Indirect Gross Omnibus Segregated Client Account).
- 19.5. An OSA account contains the positions of a number of clients along with the Collateral held as margin calculated on i) a net basis across all Client positions in the case of a Direct Net Omnibus Segregated Client Account or ii) a net basis per Client assigned to the account (with the aggregate of all Client margin requirements forming the overall margin requirement for that Account) in the case of a Direct Gross Omnibus Segregated Client Account.

In the case of an ISA, LME Clear knows the identity of the Client and has processes to ensure that only Transactions that a Member identifies as belonging to that Client are allowed to be booked to that ISA.

- 19.6. LME Clear provides documentation (Automatic Porting Documents) to Members for their Clients to complete which provides for Clients to identify themselves and provide contact details and a back-up clearing member in the event of their current Member defaulting.

LME Clear's collection of information on indirect participants is supported by its Rules. In accordance with Rule 5.3.1(f) Members are required to promptly provide such information as LME Clear may reasonable request in respect of a Client Account and the Clients to which it relates (including the Transactions in respect of which Contracts are recorded and Collateral provided). In addition, Rule 5.3.1(g) requires Members to use their best endeavours to ensure that each Client provides to LME Clear such information about itself and its Transactions as LME Clear may reasonably request. When LME Clear becomes aware of a "material risk" to it as an FMI, LME Clear would rely on its Rules to obtain information from the LME and/or Members as and when required. It is also worth noting that Rules 5.2 and 5.3 contain a number of requirements on Members designed to ensure that Members have appropriate contractual arrangements with their Clients and that their management of Client Accounts is consistent with law and regulation.

- 19.7. LME Clear does not have a systematic method of identifying the underlying Clients within Client Accounts but does encourage Members to provide this information and can request information from the LME on a case-by case basis.
- 19.8. LME Clear has documented the key risks to which it is exposed as a result of tiered participation arrangements in a paper to the Board Risk Committee; these include the credit risks that direct and indirect clients pose to clearing members. LME Clear has identified a number of mitigants, many of which are in place including credit understanding of key clients; understanding of key clients' positions across the cleared markets; and early warning indicators of client credit downgrades.
- 19.9. As a result of the above information LME Clear's credit Early Warning Indicators (CDS and Share prices) include information on the top Clients LME Clear is aware of in the metals markets in order to understand their credit profile and any potential deterioration that may impact the credit risk of our Members. The top list is updated on a monthly basis.
- 19.10. Generally, LME Clear views the risks which arise from indirect participants as being equivalent to the risks which arise directly from Members and LME Clear therefore manages those risks through its normal clearing processes (collection of margin, maintenance of the default fund etc.) In addition to the specific steps set out above, LME Clear's credit analysis due diligence on Members includes annual (or more frequent) credit visits on key Members which assist in the identification of the large Client positions held by each Member and the associated credit policies applied by Members. Whilst the positions of Clients clearly change over time LME Clear is able to understand in broad terms the key Clients and the associated margin and credit policies of their Members and the potential risks to the market. LME Clear does not set objective thresholds above which direct participation would normally be encouraged.

## **Principle 20: FMI Links**

**An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.**

## **20 FMI Links**

20.1 LME Clear does not currently have any links established with any other FMIs.

## Principle 21: Efficiency and Effectiveness

**An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.**

## 21 Efficiency and Effectiveness

- 21.1 LME Clear has been designed to meet the needs of the LME market. From the outset, Member and market consultations were pursued to ensure that the clearing service was fit for purpose. A variety of Member facing enhancements were included in the EMIR compliant design, including more efficient option expiry processes and a full suite of real time interactive reports. All legal, operational and risk management structures were developed to be fully compliant with the detailed EMIR requirements and such structures were authorised accordingly. LME Clear engaged a variety of professional firms to validate its design, including independent law firms and consulting firms to advise on the legal structure and the risk management framework and methodology.
- 21.2 In establishing LME Clear, views and feedback from the LME community were obtained on the design of LME Clear's operations and risk management framework, the scope of clearable products and the system infrastructure. In addition, the Rules and Procedures went through multiple rounds of consultation with potential Members prior to the launch of the clearing services and their comments and suggestions were taken into account as appropriate.
- 21.3 To ensure that LME Clear is responsive to market needs on an on-going basis, from a strict governance perspective, there are Member and Client representatives on the Board Risk Committee. Further a Member Risk Advisory Group made up of a broad set of risk specialists from Member firms meets regularly to provide a two way forum to discuss the service and topics relevant either to specific LME Clear initiatives, potential changes to the risk methodology and more general risks. Additionally a variety of ad-hoc business development working groups are held focussing on specific market change, its impact on Members and the proposals from LME Clear on how to add value in the current environment. The Collateral Working Group acts in an advisory capacity to the Executive Risk Committee, meeting quarterly to discuss various aspects of the Collateral offering and the risk management framework supporting this. A particular focus is the market liquidity in relation to the various types of collateral that LME Clear accepts. Group Members are market participants from Member firms, Default Brokers and Investment Agent(s). The Board Risk Committee and the Operations Working Group provide the formal process forums for LME Clear to evaluate its efficiency and effectiveness and for Members to provide feedback to LME Clear on its performance. The Board Risk Committee will meet four times a year or more frequently as may be required. The Operations Working Group meets at least twice a year and more frequently when appropriate and shall make recommendations on any area within its remit where action or improvement is needed. The output from the Operations Working group will complement the product development process in place at LME Clear.

21.4 LME Clear has a focussed and dedicated Relationship Management team and as part of their day to day regular contact with Members, provide an avenue for Members to provide feedback and comment to LME Clear on a more immediate, flexible and ongoing basis. The Relationship Management function is responsible for managing the various Members' forums, actively strengthening customer relationships at all levels, managing Members' expectations, and supervising the on-boarding of prospective Members. LME Clear makes use of a range of channels, including seminars, workshops, one-on-one meetings, to solicit and gather market feedback.

21.5 The Board is responsible for LME Clear's accountability to LME Clear's shareholders, employees, Members and Member's Clients.

**Principle 22: Communication Procedures and Standards**

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

**22 Communication Procedures and Standards**

22.1 LME Clear uses internationally accepted communications procedures and protocols for exchanging messages across systems. LME Clear communicates with its Members via a number of internationally accepted standards and interfaces (details of which are set out and detailed on the LME Clear website – see section V of this Disclosure Document):

- i. LME Clear provides a FIX 4.4 feed to Members of real time clearing event data which Members can take into their back office systems.
- ii. The LME Clear GUI is a web based interface that enables Members to view in real time their Positions and Collateral usage and management. It also allows Members to interface with LME Clear through downloading data, and perform clearing operations such as manual option exercise.
- iii. LME Clear provides a Secure File Transfer Protocol (SFTP) file interface for Members to receive data and reports for clearing and risk information, inclusive of closing prices and SPAN risk parameters. This interface supports the following file formats:
  - Comma-Separated Variable (CSV);
  - Portable Document Format (PDF).
  - Extensible Markup Language (XML).

22.2 LME Clear uses SWIFT to instruct cash and security transactions to:

- i. settlement and Concentration Banks (primarily daily margin cash calls/returns);
- ii. Custodians, where Members choose to use non-cash Collateral; and
- iii. the LME Clear cash investment agent for both instructions and reconciliations.

22.3 There is no intention to amend, change or diverge from common agreed international communication standards.

**Principle 23: Disclosure of Rules, Key Procedures, and Market Data**

**An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.**

**23 Disclosure of Rules, Key Procedures, and Market Data****Rules and Procedures**

- 23.1 LME Clear has clear and comprehensive Rules and Procedures that are disclosed to Members and the public via the LME Clear website - see section 5 of this Disclosure Document.
- 23.2 The Rules have been developed in accordance with the following principles:
- to reflect the operational design of LME Clear;
  - to reflect the legal framework which applies to LME Clear, including primarily the requirements of EMIR that apply to central counterparties;
  - to balance the need to ensure a stable and secure Clearing System, with the need to be fair to Members; and
  - to be clear, comprehensive and user friendly.
- 23.3 The Rules provide that LME Clear may amend or cancel any Rule or make additional Rules or Procedures subject to certain restrictions. LME Clear Members will be notified of any proposed amendments and, save for minor technical changes and those required by Applicable Law, will provide Members a reasonable period (no shorter than 15 Business Days) within which to comment. To facilitate dialogue, LME Clear also hosts a Legal Working Group where proposed changes to the Rules and Procedures are presented and discussed with representatives from our Members. The working group is open to all Members. LME Clear maintains an internal policy governing the process for initiating and approving Rule Changes. All Rule Changes are governed by the Ethical Conduct, Legal and Compliance Risk Policy and all changes to the Rules must be approved by the LME Group General Counsel and/or LME Clear Head of Legal and reviewed by the Rulebook Committee which oversees all Rulebook changes before being signed off by the Executive Committee. In addition, any changes which impact the risk profile of LME Clear or which involve fee increases of more than 10% must be approved by the Board. Changes which impact on the risk management of LME Clear will also be reviewed by the Board Risk Committee.

## Disclosure

- 23.4 All rights and obligations binding on the Members are fully described in the Membership Agreement and the Rules and Procedures. The LME Clear website has been designed in line with the disclosure requirements as detailed in EMIR – the LME Clear website hosts the Rules and Procedures and all relevant information to enable a Member to use the Clearing System. LME Clear takes a very transparent approach and makes all relevant information and data available to the public, and only in certain limited cases, to Members only. LME Clear is fully compliant with the disclosure requirements under EMIR and has published three specific documents which contain the mandatory disclosures required under EMIR 38 and 39 but also sets out a general outline of the risks relating to the use of the LME Clear system (the documents entitled “LME Clear Transparency – EMIR Article 38(2)”, “LME Clear Disclosure – Under EMIR Article 39(7)” and “LME Clear CPSS IOSCO Disclosure 2016 all published on the LME Clear website). These three Disclosure Documents also summarise the key concepts of the Rules as well as the key risks associated with the use of the Clearing System. Any discretion LME Clear may have is fully described in the Rules and published on the LME Clear website.
- 23.5 The Rules and Procedures set out a full description of the clearing services provided by LME Clear. A Detailed Service Specification is also available to assist Members in their understanding of the services. The Detailed Service Specification provides details on the Service Scope, Transaction and Position Management, Market Data Management, Risk Management (including Initial Margin, Variation Margin Calculation, Back testing, Stress testing and Default Fund Calculation) and Treasury Management.
- 23.6 The LME Clear website also contains all relevant information to enable Members to obtain reports from LME Clear as well as the process to connect to the Clearing System. The full list of available reports is available and the full FIX specification, as well as LME Clear Connectivity Guide, is also available on the LME Clear website. Further, LME Clear provides training as part of the onboarding process and refresher training to any new staff joining Members. The training relates to the use of the system (via the GUI), reports information and risk management. Training is also available at any time a Member may request it. Webinars are available or traditional training. The Relationship Management team is in regular contact with the Members and can ascertain any areas where further training may be required.
- 23.7 This latest version of the disclosure document was completed in July 2018 and is published on the LME Clear website. The document will be updated following material changes to LME Clear and its services, systems or environment, and on a regular basis.
- 23.8 Please refer to Section V (List of Publicly Available Resources) for a list of information, materials and statistics on cleared transaction volumes and values published on the LME Clear website as well as the LME Clear Tariff.

### **Principle 24: Disclosure of Market Data by Trade Repositories**

**A Trade Repository should provide timely and accurate data to relevant authorities and the public in line with their respective needs.**

## **24 Disclosure of Market Data by Trade Repositories**

24.1 LME Clear is not a Trade Repository. This Principle is not applicable.

## V. List of Publicly Available Resources on the LME Clear website

### Operations and Risk Management Frameworks

1. Introduction to LME Clear  
<http://www.lme.com/en-gb/lme-clear/>
2. List of Cleared Products  
<https://www.lme.com/LME-Clear/How-LME-Clear-works/Products-cleared#tabIndex=0>
3. Risk Management Framework  
<http://www.lme.com/lme-clear/risk-management/>
4. Collateral Management  
<https://www.lme.com/en-GB/LME-Clear/Collateral-management>
5. Fees Schedule  
<http://www.lme.com/lme-clear/fees/>
6. Operation Calendars and Operating Hours  
<http://www.lme.com/lme-clear/how-lme-clear-works/>
7. Clearing Statistics  
<http://www.lme.com/lme-clear/reports/>

### Legal and Regulatory Information

8. Clearing Rules and Clearing Procedures of LME Clear  
<http://www.lme.com/lme-clear/rules-and-regulations/>
9. EMIR Disclosure Documents  
<https://www.lme.com/LME-Clear/Rules-and-regulations/Disclosure-and-transparency>
10. Client Information  
<http://www.lme.com/lme-clear/rules-and-regulations/client-information/>
11. Member Notices  
<https://www.lme.com/LME-Clear/News-and-events>
12. CCP Quantitative Disclosure  
<https://www.lme.com/en-GB/LME-Clear/Technology/Reports/CPMI-IOSCO-Disclosure>

## Governance Arrangements

13. Organisational Structure of LME Clear  
<https://www.lme.com/LME-Clear/Governance#tabIndex=0>
14. Directors of LME Clear  
<http://www.lme.com/lme-clear/governance/organisational-structure/>
15. Terms of Reference of LME Clear Board and Committees  
<https://www.lme.com/LME-Clear/Governance/Board-Risk-Committee#tabIndex=0>

## Membership

16. List of Members  
<http://www.lme.com/lme-clear/membership/clearing-membership/>
17. Membership Criteria  
<http://www.lme.com/lme-clear/membership/become-a-clearing-member/>
18. Membership Application Information  
<http://www.lme.com/lme-clear/membership/become-a-clearing-member/application-pack/>

## Clearing Platform - System Information and User Guides

19. Detailed Service Specification  
<http://www.lme.com/lme-clear/how-lme-clear-works/service-description/>
20. User Guide  
<https://www.lme.com/LME-Clear/How-LME-Clear-works>
21. Connectivity Guide  
<http://www.lme.com/lme-clear/technology/>