



# Action Plan to Strengthen the LME Group's Markets

March 2023



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# 1 Executive Summary

This Action Plan provides an update on the implementation of measures in response to the events of the nickel market in March 2022, and following the Oliver Wyman [Independent Review](#) recommendations published in January 2023. The LME and LME Clear (together, "LME Group") are committed to taking the action necessary to strengthen its markets so they may continue to thrive long-term. This Action Plan lays out the details and sequencing of a range of measures designed to support the LME Group in fulfilling this commitment.

## Steps announced today

In addition to the measures previously announced (including the introduction of daily price limits, weekly OTC reporting requirements and the resumption of Asian hours nickel trading), the LME Group is today announcing the following actions:

- **Introduction of a "fast-track" listing approach for new Class I nickel brands.** While not compromising the LME's requirements regarding either metallurgical or responsible sourcing standards, this approach allows new Class I nickel production to come to the LME market after three months of regular sample assaying. The LME is also announcing a fee waiver for the listing of new brands. Given the significant increase in Asian Class I nickel production, the LME believes that the additional stock which can be brought to the market will add liquidity, and offset concerns around any structural divergence of the Class I and Class II nickel markets.
- **Publication of a working paper in respect of the LME's daily price limits.** This includes confirmation that daily price limits will be a permanent feature of the LME's market structure going forward<sup>1</sup>. At its January 2023 meeting, the LME's User Committee identified a more granular, per-metal calibration of daily price limits as a key next step for the market and the LME has therefore expedited this analysis, which is presented in the appended paper. By way of illustration (and subject to further development), as at the date of the appended paper this methodology would reduce price limits to 12% for aluminium and copper, while retaining the current limits for other metals. The route to implementation of these revised limits is also set out in the paper.
- **Updates to a number of LME policies.** These have been enhanced to fully reflect the operation of the now-permanent daily price limits.
- **Assessment of scope for margin methodology changes.** The LME further acknowledges market concerns as to the levels of margin charged against the LME nickel contracts. This is driven primarily by the high historical volatility – but, as liquidity grows following of the resumption of Asian hours trading and other initiatives, the margin levels would be expected to fall. In parallel, LME Clear is working with key stakeholders to assess the scope for methodology changes (which will also allow an optimal balance between the allocation of risk across the default fund, initial margin and concentration margin), recognising that this step will require regulatory and other approvals.

## Further physical nickel market steps

The LME has been working closely with the nickel community, and in particular with its recently-enlarged Nickel Committee, to consider whether taking further steps would be appropriate. In addition to the "fast-track" listing approach addressed above, consideration of the following items are well-progressed, and will be discussed at the Nickel Committee meeting on 4 April 2023:

- **Inclusion of coarse nickel powder as a deliverable Class I form.** The LME has received a number of representations that its nickel contract could be broadened by making nickel powder deliverable. While the LME recognises the broad range of views on this matter, it sees the value in exploring the possibility of making nickel powder deliverable, and will work quickly with users of the contract to finalise a position on this matter (including consideration of acceptability to consumers, handling and security).



- **Launch of a Class II spot offering.** Based on its extensive market engagement, the LME recognises that there are many industry views on the value and structure of a Class II offering. However, there is a general consensus arising from market feedback that, if such an offering could be delivered, this could be helpful in offering alternative price management solutions to the Class II nickel market.

Based on feedback, the LME is now clear that the most viable approach would be a spot-trading platform offering nickel sulphate and/or nickel matte, focused on the Asian market (given the concentration of these trade flows in Asia, and particularly in China).

Accordingly, the LME will work with its group affiliate, Qianhai Mercantile Exchange (“QME”), to develop a China-based spot market for nickel sulphate and nickel matte. The LME will engage closely with the market to launch such an offering, and then assess whether it provides value to the market.

### Forthcoming consultation in May 2023

The LME intends to consult on a number of initiatives and therefore intends to issue the first such consultation in May 2023, incorporating (among other things) the following key items:

- **Low-stock environment** - In order to address the current low levels of stocks, the LME introduced temporary measures (including a backwardation limit and deferred delivery mechanism), which have operated effectively in preventing price distortion at the front end of the curve. The LME will now consult on proposals to make these a permanent element of its Rulebook, with a view to providing confidence to all market participants that current structural low-stock environments can be appropriately navigated.
- **Off-warrant stock reporting** - The LME now proposes, subject to discussion with the Warehousing Committee, to initially introduce monthly reporting of “eligible” stock, i.e. non-LME warranted metal sitting in LME-licensed warehouse sheds, while considering longer-term moves to daily reporting. This data will be provided in parallel with the current off-warrant stock report, which tracks metal where there is a contractual right to warrant or to be stored in an LME-licensed shed. Based on market feedback, the LME will then consider whether to increase the frequency of off-warrant and eligible stock reporting.

### Market structure development steps

Although the Oliver Wyman Independent Review report does not prescribe specific market structure changes, a key recommendation in the Independent Review (item 7.4) is to “*over time, provide a clear vision of the future of market structure at the LME and LME Clear, including its venues, fee structure, clearing model and market access*” and to “*where possible – without significant loss of functionality to existing participants – commit to measures that would standardise the market structure with global peers to enable participation and consequent growth in liquidity*”.

To meet this recommendation, the LME Group has returned to its 2021 Discussion Paper on Market Structure (“2021 Discussion Paper”), which prompted significant market engagement and a set of outcomes which the LME believes it is appropriate to implement. The LME will now work closely with the User Committee, and market participants more broadly, to further progress these proposals. Key items include:

- **Closing Prices methodology.** In 2021, and after significant market engagement, the LME implemented a hybrid pricing model, whereby Official Prices are derived from Ring trading, and Closing Prices are derived from trading on LMEselect. At the same time, the LME convened the Closing Prices Working Group (“CPWG”), comprising a broad range of market participants, to consider further evolution to the electronic Closing Prices methodology. This resulted in evolution of the LME’s Pricing Blueprint, which the LME now intends to discuss again with the User Committee at its April 2023 meeting, and then publish to the market together with next steps.
- **Liquidity enhancement.** As set out in the 2021 Discussion Paper, the LME believes that, overall, the market will benefit from the further encouragement of liquidity onto the electronic central pricing venue, as opposed to the telephone-based or OTC markets.
- **Deployment of the LME’s new trading platform, LMEselect 10.** The LME is pleased to note that the development of this system is progressing well, with member test due to begin in July 2023, and full switch-over confirmed for the second quarter of 2024. The availability of a modern and flexible trading



platform will permit a number of important initiatives, including a full electronic options market in the future, which has already been endorsed by the LME's Traded Options Committee.

- **Value-at-risk ("VaR") margining.** LME Clear remains committed to this solution, and has been working on the implementation of VaR, including producing a full VaR model, which has previously been approved by the Bank of England and which is used both for internal risk modelling and to provide risk overviews to members. LME Clear will now proceed to convert its full operations to a VaR model, and will work with the market to identify the optimal timeline for this implementation.
- **Realised variation margin ("RVM").** Following the 2021 Discussion Paper, the LME Group committed to assessing a "hybrid" model allowing the use of the current contingent variation margin ("CVM") model and the industry-standard RVM model. However, following detailed analysis, this is not viewed as feasible – and, accordingly, the LME Group will now assess whether it would be appropriate to migrate to a full RVM model.

While cash settled products are already margined using RVM, a move to RVM for the physically delivered contracts would require a significant amount of work for LME Clear and the market. An assessment needs to take into account the fact that LME Clear will be re-platforming its clearing system<sup>2</sup>, provisionally scheduled for 2028. Consideration needs to be given to the optimal migration approach, should the decision to move to RVM be made, in order to minimise the impact on members and LME Clear, while reducing the risks associated with any transition. Any decision to change the contract specifications to RVM would be made by the LME from a product design perspective. Consultation with LME Clear would be undertaken to ensure it is comfortable from a risk management perspective. LME Clear would then be responsible for the detailed design of the methodology and practical operation of margining.

As such, both the LME and LME Clear will work with the market to understand whether an RVM transition would be feasible – and, in particular, whether clients currently relying on credit from CVM would be able to replace this with the market-standard approach of bank credit lines.

### Other items

The Action Plan includes a broad range of other items, including identification of market distortion risks, further initiatives around OTC position and trade reporting and management, changes to the commitments of traders reports, LME Clear membership requirements, horizon scanning, liquidity monitoring, reverse stress testing, and gross omnibus segregated accounts. Again, the LME Group intends to engage with the market on these topics. Additionally, many of these topics (particularly in respect of the OTC market) will require detailed regulatory engagement, to which the LME is fully committed.

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<sup>2</sup> For clarity, the delivery of a new clearing platform is not linked to the events in the nickel market and is part of a wider technology refresh.



## 2 Background and Objectives

### 2.1 Background

Since the unprecedented events in the nickel market in March 2022, the LME Group has committed to reviewing these events and taking appropriate actions to both restore confidence in the nickel market and to support the long-term health, efficiency and resilience of the market as a whole.

To help achieve this aim, the Independent Review conducted by Oliver Wyman was commissioned by the LME Group, and the resultant report was published on 10 January 2023. This Independent Review identified factors that contributed to conditions in the nickel market in the period leading up to and including 8 March 2022 and provided recommendations for how the LME Group could reduce the likelihood of similar events occurring again.

At the point of the Independent Review's publication, the LME Group committed to preparing an implementation plan setting out how it proposes to deliver against the recommendations in the Independent Review.

The Action Plan provides a comprehensive overview of changes that will impact the LME and its markets, and LME Clear. It fulfills the LME Group's commitment by covering how it proposes to deliver against all recommendations in the Independent Review. Further, it includes other initiatives of direct relevance to the market and CCP functioning from a user perspective, deriving from other reviews – including internal consideration on how best to strengthen its markets.

Beyond user-facing initiatives, the LME Group continues to apply its usual focus to identifying and implementing enhancements to its internal processes and ways of working. In addition, the LME and LME Clear reconfirm their commitment – as laid out in the Notices of 3 March 2023 – to address all actions arising from the regulatory reviews; this remains a key priority. While not discussed in the Action Plan, the outcomes of these enhancements will be communicated with the market where appropriate and in due course.

### 2.2 Objectives

The LME Group is fully committed to taking the action necessary to strengthen the LME's markets in order for them to thrive long-term. This Action Plan is designed to deliver on this commitment in four key ways:

1. **Embed** the findings of independent, internal, and regulatory-led reviews to manage risk through enhanced controls
  - To include identifying and mitigating key risks that can lead to market distortions on the LME, supporting the LME in continuing to operate fair, orderly and efficient markets
2. **Enable** the market to provide deep and resilient liquidity for LME participants and members
  - Prioritising the re-building of liquidity in LME nickel and ensuring the physical nickel market has the appropriate tools to manage risk
  - Enabling the LME market to maximise liquidity for the benefit of the market as a whole
3. **Build** confidence in the reliable and transparent operation and governance of the LME Group's markets
  - Increasing transparency in the operation of the LME, building greater understanding across the market
  - Ensuring confidence in the resilience of LME Clear and its members
4. **Evolve** market structure, demonstrating the Group's ability to deliver modernisation and change
  - Continuing to pursue the vision of the LME Group future market structure laid out in the 2021 Discussion Paper – adhering to the LME Group's strategic principles
  - Increasing transparency in data and pricing



As part of the programme of work, the LME and LME Clear will continue to review and enhance their respective governance frameworks including decision-making policies and procedures, with the objective of tracking best practice in the financial services industry. As an example, two additional Independent Non-Executive Directors with commodities and technology expertise (Martin Fraenkel and Pierre Vareille) have recently been appointed to the LME Board to further bolster the breadth of technical expertise of the Board.

The rest of this document describes proposals relating to the LME and/or LME Clear as applicable:

- Section A focuses on planned actions by the LME
  - Section B focuses on planned actions by LME Clear
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## Section A: Planned actions to strengthen the LME

This section sets out the LME's plans in three key areas:

- Mitigating the risks of market distortions
- Serving the nickel market
- Planned enhancements to modernise the LME

### 3 Mitigating the risks of market distortions

#### 3.1 Introduction

Since March 2022, the LME has made a number of enhancements in this regard, including introducing daily price limits, periodic OTC position reporting, and enhancing the accountability level framework to include OTC positions. The LME also updated a number of policies to support the implementation of these measures. These, and further initiatives, are underpinned by the LME's enhanced market distortion risk taxonomy, which provides the LME with a centralised view of the key types of market distortion that may affect the LME's markets, and which provides an enhanced approach for the LME to categorise risks and assess the robustness of the controls that the LME has in place to help mitigate the impact of such risks. While the LME's assessment of potential enhancements to its controls is ongoing, the taxonomy has already informed the LME's thinking around several planned enhancements in a number of areas.

In particular, this section will cover enhancements aimed at:

- Identification of market distortion risks
- Managing risks associated with large positions
- Volatility control mechanisms
- Low stock environments

#### 3.2 Identification of market distortion risks

##### 3.2.1 Context

Historically, the LME's engagements with market participants has suggested that they preferred the LME to take a 'non-interventionist' approach to price discovery. The events of March 2022 have heightened focus on the potential impacts of market distortions, including large price moves, and the risk of these leading to disorderly market conditions.

##### 3.2.2 LME's perspective and work conducted to-date

The LME has developed an enhanced market distortion risk taxonomy, and has completed a full preliminary assessment of the effectiveness and coverage of its controls against risks identified to inform their configuration and calibration, and to ensure this Action Plan addresses any areas where enhancements to existing controls may be beneficial.

The market distortion risk framework – i.e. the combination of the taxonomy and the controls assessment – brings together existing risks that the LME tracks and monitors, but applies a holistic lens to map out relevant controls and enable their continued design and operation to avoid or mitigate the potential negative impacts associated with market distortions, to the fullest extent possible<sup>3</sup>. Work completed to date has fed into the overall direction of the initiatives outlined in this Action Plan and is also a key input into specific enhancements, including real-time monitoring, early warning signs and extreme event playbooks. In this context, the LME has

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<sup>3</sup> The market distortion risk framework does not include any decision making around situations where market distortions might arise; it is focused on assessing what risks exist and what controls are in place to mitigate these risks





ensured that senior management responsibility is appropriately allocated to identifying and mitigating market distortion risks, and will continue to evolve this as appropriate as initiatives in this Action Plan are further detailed.

The market distortion risk framework builds on risks previously identified by the LME. It has been developed in consideration of industry practice approaches at peer exchanges to risk taxonomies, and has been developed by reference to the extensive factbase on historical market distortions in various markets and their causes. The market distortion risk framework will be built into the LME's existing overarching Enterprise Risk Management approach. This approach 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 achievement of LME Group's objectives.

The taxonomy broadly categorises risks<sup>4</sup> arising from:

1. Large and overly concentrated positions: risks associated with LME members or their clients holding large and concentrated positions ETD or OTC
2. Physical availability concerns: risks associated with physical stock and supply volumes, quality and reliability
3. Member and client financial or reputational distress: risks associated with LME's members, clients or OTC counterparties demonstrating or being rumoured to have signs of financial or reputational distress
4. Market liquidity withdrawal: risks associated with low levels of liquidity in the order book or the knock-on impact to LME venues from low levels of liquidity in the OTC market
5. Irregular or unintended trading patterns: risks associated with issues with trading algorithms, manual trading errors or behaviour of market participants that lead to irregular or unintended trading patterns
6. Market abuse: risks associated with intentional physical or financial market abuse, including dissemination of false information
7. Inaccurate information: risks associated with unintentional disruptions or inaccuracies in information flow
8. Impact of other related markets: risks associated with impacts of other related markets including price differences and outage issues
9. Technology disruptions: risks associated with disruption in LME or client trading systems

In each area, the LME has identified a number of risks, and has used the taxonomy to assess its monitoring and controls in relation to them. The LME will monitor a range of qualitative and quantitative factors against this detailed internal taxonomy, and the full internal list of risks and controls will be evaluated periodically by the LME<sup>5</sup>. In certain areas, such as member and client financial and reputational distress, the LME has taken input from LME Clear to better understand risks and their indicators.

### 3.2.3 Summary: areas of focus

- Improving the control environment and its effectiveness through a range of measures such as volatility controls and accountability levels
- Further enhancing real-time monitoring and tying these to early warning signs
- Further streamlining communication and cooperation between LME and LME Clear and between various teams internally
- Reinforcing internal expertise in regards to market distortion risks

The LME and LME Clear are also considering further enhancements to how they respond to certain extreme events, in order to make the LME Group as ready as possible for any future such events. These will be informed

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<sup>4</sup> This represents a non-exhaustive list of risks that broadly covers the major market distortion risks that the LME has identified and will be subject to regular review

<sup>5</sup> The full list of risks in the framework is not public-facing; this paper outlines the broad categories of risks identified only.



by the market distortion risk framework and will involve consideration of the range of extreme events that could impact the LME's markets. In due course, the LME and LME Clear will engage with market participants on this topic where appropriate.

### **3.3 Managing risks associated with large positions**

#### **3.3.1 Context**

The Independent Review identified the LME's lack of visibility into the size of certain positions in the OTC market – namely those which could have an impact on the LME market – as a contributing factor to the events in March 2022. The combination of the LME's accountability levels framework (which focused on ETD positions, in line with the LME's clear regulatory responsibilities), the regulatory position limits, and wider framework for oversight of the OTC market, did not inhibit, and/or alert the LME to, the build-up of large OTC positions. The LME now understands that these large OTC positions contributed to the disorder on the LME nickel market on 8 March 2022.

#### **3.3.2 LME's perspective and work conducted to-date**

In order to mitigate some of the risk around large positions in the OTC market, the LME has introduced OTC position reporting across all base metals<sup>6</sup>, notwithstanding the challenges of doing so. As set out in Notice 23/046, the LME continues to optimise this process by automating delivery, receipt, validation and feedback on member's OTC position report submissions. Specifically, an additional field, "Settlement Type", has been added to the Reporting Template to further enhance the LME's visibility over related OTC markets. The LME has also expanded the accountability levels to include OTC and ETD positions to give the LME a better view of aggregate positions, including those in the OTC market that could have an impact on the LME in certain scenarios, as demonstrated by the events in March 2022.

These enhancements provide additional mitigation against the impact of large positions. However, there are ongoing challenges in regards to ensuring the completeness of the OTC position data received, which create risks to the potential efficacy of the controls the LME can put in place using this OTC data. In particular, some clients and members, in certain jurisdictions, have highlighted local confidentiality and bank secrecy regimes that affect their ability to provide complete data on all client positions (including, in particular, underlying client information). The LME is committed to taking appropriate steps to ensure that the data it receives is as comprehensive as possible, and is continuing to assess potential alternative approaches, such as consideration of changes to the LME rules and/or market data licenses which support the provision of data for anyone accessing the LME market or using LME prices.

The LME also continues to work on operational enhancements to the way members currently submit OTC data and the tools and systems it uses internally to aggregate and manage this data.

#### **3.3.3 LME's view on the OTC metals market**

The regulatory direction of travel over the last 15 years has been to encourage activity executed in OTC markets onto transparent, centrally cleared venues. This drive has been much stronger for other asset classes than it has been for commodity derivatives. In areas such as interest rate derivatives, mandatory clearing has helped to increase transparency and reduce elements of systemic risk. However, the LME notes that, to date, global regulation has not sought to mandate either trading or clearing for commodity derivatives.

On the LME market, there are many clients that require non-standard quantities, bespoke averaging trades or which prefer unique settlement or margin terms. The evolution of the LME has been shaped by the close links to the OTC market and the way members operate on both markets. The LME understands that the ETD and OTC markets in metals are much more closely linked than in other asset classes, likely driven by elements of the LME's unique market structure. The LME fully supports in principle the symbiotic coexistence of the ETD and OTC market in order for clients to be provided with services that would not be possible solely within the ETD market. However, in light of the linkage between the two markets, the LME is of the view that in some areas, such as transparency and risk management, it is important that there is effective oversight and consistent rules across both markets in order to effectively manage "spillover" risks emanating from the OTC

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<sup>6</sup> See further details on the Consultation on OTC Position Reporting for all Physically Deliverable Metals & Accountability Levels and Decision Notice for Reportable OTC Positions in LME Notices 22/145 and 22/161



market. In addition, where possible, the rules across both markets should avoid unintentionally incentivising participants to trade OTC in order to avoid transparency, oversight, competition of pricing, and having to fairly contribute to the cost of operating the wider market infrastructure. In this context, the LME recognises that some market participants may not be supportive of proposed changes in this area as their individual business models may benefit from these factors, but the LME is of the view that these enhancements will be beneficial to the market as a whole.

The latest IOSCO Principles for the Regulation and Supervision of Commodity Derivatives Markets<sup>7</sup> (published in January 2023), support this approach. Specifically, they are clear on the need for Relevant Market Authorities<sup>8</sup> to “*determine whether a particular futures contract should be aggregated with a similar OTC derivatives contract for purposes of applying position management including position limits to such a common derivatives position*”, and furthermore, “*when a large position is detected, a Relevant Market Authority should have the ability to collect information that permits it to identify positions under common ownership and control and to identify aggregate exposures.*”

The LME's near-term focus is to continue to enhance its accountability levels framework in order to better manage the risks associated with large positions across OTC and ETD. This includes strengthening the LME's procedural and operational approach to situations where accountability levels are exceeded. For the LME to have sufficient information to understand the risks that a large position could generate, it may be necessary to have ready access to more detailed information regarding the reasons why a position holder may be building up a large position (whether ETD or OTC), and/or their financial situation and risk management approach. The more holistic and detailed approach to the LME's application and enforcement of accountability levels will also be factored into any longer term considerations regarding position limits and exemptions.

While the Independent Review recommended the introduction of LME position limits on ETD positions only, the LME is minded to only introduce additional position limits in a holistic framework that considers the application across OTC and ETD positions. If position limits were introduced for ETD only, participants could be further incentivised to trade OTC in order to avoid the position management procedures involved in holding ETD positions. This could potentially lead to a consequential degradation in transparency, market quality, and the effectiveness of the controls in managing the risks associated with large positions themselves. By contrast, an holistic position limits framework would ensure that positions are not built up in the OTC market in order to avoid hitting ETD position limits and the associated negative consequences. Such an holistic regime could also help liquidity providers operate most effectively in an environment with position limits, by recognising any hedged positions between the OTC and ETD markets. However, there are a number of considerations that need to be explored with the market and the regulators in order to achieve this desired future state.

The application of controls in the OTC market – both accountability levels and, eventually, LME position limits – will require the LME to have a clear view of the total positions under common ownership such that it can aggregate across ETD and OTC.

### 3.3.4 Regulatory Considerations

Across a number of areas the regulatory framework relating to OTC positions must also be considered, both from the perspective of the events in the nickel market in March 2022, and for the future developments around OTC positions. The commodity position limits regulatory regime established under MiFID II in the UK did not prevent the build-up of large positions in nickel in the run-up to March 2022. In general, the effectiveness of commodity position limits may be reduced by a combination of: position limits being calibrated widely; the scope of available exemptions (including for non-financial entities); and the fact that the definition of economically-equivalent OTC contracts did not capture most relevant OTC positions. The LME believes that large positions should be considered holistically across OTC and ETD in order to more fully mitigate the associated potential risks. The LME has experienced challenges in seeking to introduce rules aimed at managing spill over risk more holistically across OTC and ETD. These include jurisdictional issues, such as with confidentiality and bank secrecy regimes, which limit the effectiveness of aggregating global OTC position data as not all client data can be provided.

In order for the LME to meet these challenges it will require the support of global regulators including suitable mandates where appropriate. This could include, for example, express obligations on trading venue

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<sup>7</sup> <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD358.pdf>

<sup>8</sup> Defined in the IOSCO Principles as “A governmental regulator, a self-regulatory organization or a regulated market”



participants to report OTC trade and position data to relevant trading venues. The LME first needs accurate and complete information to understand the risks that OTC positions might generate, and must then ensure that it has appropriate powers to enforce position reductions where it deems risks are present. The LME will engage global regulators on these topics including to seek legislation to mandate disclosure of client data. The LME is aware that the draft Financial Services and Markets Bill 2022-23 includes the UK government's proposal to transfer responsibility for the setting of commodity position controls from the FCA to trading venues and that this is currently only intended to capture ETD positions. Given the challenges described above around ETD-only position limits, the LME is of the view that OTC positions should also be considered within this proposal.

### 3.3.5 Summary: areas of focus

- Strengthening operational processes around OTC and ETD data gathering and processing
- Advocating for solutions that enable OTC client data to include the client information required to aggregate all end positions
- Enhancing the accountability level framework and associated procedures further
- Consideration of position limits that the LME considers ought to apply to ETD and OTC positions

## 3.4 Volatility control mechanisms

### 3.4.1 Context

Since the events in March 2022, the LME has moved to a different model of volatility control mechanism, whereby it implemented daily price limits for all physically-deliverable base metal contracts<sup>9</sup>, which (as currently calibrated) limit trading when prices move more than 15% in a trading session. The Independent Review subsequently noted that the price bands in place at the LME in March 2022 “*did not ultimately stop the run-up in prices*”. The review also noted that many peer commodity markets either have some form of daily price limit or have intraday volatility controls such as circuit-breakers (though not all venues apply trading halts when the intraday control is triggered).

### 3.4.2 LME's perspective and work conducted to-date

The LME has considered the recommendations in the Independent Review and has assessed its full suite of volatility controls from first principles against those recommendation, and against the relevant regulations. The LME is of the view that daily price limits are an effective and appropriate control in relation to the LME's physically deliverable base metal contracts, helping to protect against the potential impacts of market distortions that could lead to disorderly markets. Daily price limits have operated effectively and will therefore remain a permanent feature of the LME market<sup>10</sup>.

It is fundamental to the role of an exchange for it to both facilitate efficient price discovery and maintain fair and orderly markets in line with its regulatory obligations. In configuring and calibrating controls that prevent significant price moves that could be indicative of market distortion, there is inherently a balance between being too restrictive and potentially impacting price discovery and conversely having less restrictive controls which could allow potential market distortions to lead to disorderly market conditions. In both such scenarios there exist risks to liquidity and ultimately to the orderly functioning of the market. This makes effective calibration imperative. This is especially pertinent for the LME, where its daily reference prices are used as base metal reference prices globally, so it is crucial that they best reflect fair value and that price discovery is uninhibited wherever possible.

As such, while the LME believes that volatility control mechanisms – including daily price limits – can provide additional protection against the potential impacts of market distortions, this benefit must be weighed against the potential impact of such additional protections on price discovery. The LME considers that nuanced consideration of calibration will be required to ensure that such mechanisms continue to serve their purpose.

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<sup>9</sup> In addition the daily price limit applies to cash settled cobalt

<sup>10</sup> Subject to any future evolution that the LME may consider necessary or desirable in the future.



The LME is therefore undertaking an exercise to assess the calibration of the daily price limits on a per metal basis.

The LME has published a working paper on daily price limits which looks in detail at the proposed new methodology for their calibration.

### 3.4.3 Summary: areas of focus

- Finalise enhancements to the calibration methodology for daily price limits
- Consideration of a framework for determining the actions that the LME will take where a contract triggers daily price limits on multiple days in the same direction
- Enhanced transparency around the full suite of volatility controls (website and other mediums)

For further information, please see the working paper on daily price limits which the LME has released alongside this Action Plan.

## 3.5 Low stock environments

### 3.5.1 Context

The low-stock environment in the LME nickel contract ahead of March 2022 was not identified by the Independent Review, or by the LME, as a significant driver of the events. However, low-stock environments have, in general terms, been identified as a factor by the LME as a potential market distortion risk, and as such, are captured within the market distortion framework. Such environments can exacerbate the general risks of physical delivery squeezes, but can also increase risks outside of that context.

### 3.5.2 LME's perspective and work conducted to-date

In the LME's view, its existing controls – predominantly in the form of the Lending Rules<sup>11</sup> - remain effective in mitigating key risks associated with physical delivery squeezes. Further, the temporary measures introduced in March 2022 are effective and important controls in low-stock environments, ensuring that distortions are not caused by short-term delivery challenges. As such, the LME is of the view that these controls – consisting of the tom-next backwardation cap and delivery deferral mechanism – should be made permanent. The LME intends to consult the market on its proposed approach to this topic in May 2023 and will set out more detail, including outlining the risks and benefits of any proposed changes.

The LME will continue to consider potential changes to further enhance the Lending Rules. In particular, it will focus on two areas. First, changes to ensure that in low-stock environments the level lending threshold does not cause challenges and unintended consequences such as situations where participants are discouraged from putting material on warrant. Second, it will consider whether the Lending Rules can, and should, be expanded to cover additional dates, while noting that implementation would likely be very complex.

### 3.5.3 Summary: areas of focus

- Subject to consultation, making the tom-next backwardation cap and delivery deferral mechanism permanent, along with any appropriate changes to potential rules and processes, including consideration around appropriate calibration and re-calibration methodology
- Potential changes to Lending Rules when stock levels become very low (e.g. using a minimum threshold for stock levels in calculations)
- Consideration of longer-term expansion to the scope of Lending Rules (e.g. into further dates)

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<sup>11</sup> The LME has rules in place to ensure that holders of dominant warrant or trading positions do not attempt to 'squeeze' or 'corner' the market. These rules set out the practical procedures to be followed by those with dominant positions.



## 4 Serving the nickel market

### 4.1 Introduction

The nickel market has undergone many years of evolution, and the LME has always engaged with nickel market participants on the design of its contracts as these changes have occurred. For example, the impact of the growth of Class 2<sup>12</sup> nickel (and potential implications for the LME contract) has been discussed in some detail over the past decade, in particular in the Nickel Committee, with the consensus being that the current Class 1 contract remained appropriate and that the LME should not make substantial changes.

Events in March 2022 brought heightened attention onto the supply and demand trends and pricing approaches for Class 1 (refined LME eligible metal) and Class 2 nickel. In particular, the Independent Review pointed to basis risks from the use of the LME's refined nickel contract by Class 2 producers as a possible contributing factor to the market conditions which led to the events in March 2022.

The LME has held a large number of discussions throughout 2022 via the LME Nickel Committee, industry associations and bilateral meetings to determine the industry's views on the LME Nickel contract and its specifications. This involved extensive engagement with the nickel community across the value chain, including with new players that have rapidly grown output in recent years. Discussions have sought to gather inputs on nickel market liquidity, potential changes to the LME nickel contract, future market evolution, expectations around price divergences, the potential market need for specific Class 2 price benchmarks, and the potential for listing additional traded contracts.

### 4.2 LME's perspective and work conducted to-date

*Relevance of Class 1 LME nickel contract* – The LME's view, and industry consensus, remains that Class 1 nickel is the most suitable grade for a deliverable exchange-traded contract and that the LME's contract specifications are broadly appropriate. The LME nickel contract continues to represent a significant share of readily tradeable nickel units in the physical market. The Class 1 market has a diversity of participants both in number of suppliers and sources of demand, which supports continued growth of a liquid trading market. Notwithstanding recent trends in relative Class 2 pricing, trusted Class 1 pricing continues to be viewed by many market participants as the optimal reference for pricing and managing risk across segments as diverse as stainless steel and battery manufacturing. As is common in many commodity markets, Class 1 pricing has historically acted as the price and risk management reference for the full nickel value chain with market participants managing the basis risks across different grades of material. The LME continues to view use of its Class 1 contract as the optimal approach as it avoids fragmenting price discovery and trading liquidity across multiple competing solutions, which would be to users' detriment.

*Liquidity in LME nickel* – The LME's primary objective in serving the nickel market is restoring liquidity and trading volume in the LME nickel contract. Since the events of March 2022, the contract has not been available to trade during Asian market hours until recently. This has been a significant contributing factor towards the decline in volumes observed both on the LME and peer markets. Having restored trading during Asian hours from 27 March 2023, the LME expects LME Nickel to gradually recover lost liquidity, driven by Asian arbitrage trading and hedging business.

More generally, the LME is aware that initial margin levels, when factoring in member add-ons, have reached more capital intensive levels and have therefore become a factor that has dissuaded some trading. Concentration margin add-ons are similarly a concern for key market participants, as are the restrictions that some members have placed on their clients' nickel trading activity. The LME is working closely with its members to understand their plans for gradually relaxing constraints as liquidity recovers. The LME is also working with the full spectrum of stakeholders around optimally balancing margining considerations against default fund sizing and its risk modelling approach.

*LME Nickel specifications and brands* – nickel contract specifications and brands have always been an area of focus for the LME Nickel Committee. Key areas that have or are continuing to be considered include:

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<sup>12</sup> For simplicity, the LME refers to all non-Class 1 grades throughout this document as Class 2 although some materials such as nickel sulphate technically do not commonly fall under this classification.



- *New deliverable shapes:* While existing LME brands already comprise more than 90% of global Class 1 output, there may be opportunities to extend this further. Eligible shapes could be extended to incorporate coarse nickel powder, which could increase the amount of Class 1 material eligible for delivery. Nickel powder is favoured in the production of batteries, given that it can be readily converted into nickel sulphate. While it is generally less acceptable for the production of steel, including coarse nickel powder could reinforce LME Nickel's relevance to a rapidly growing segment of the market. It would also facilitate the financing of this raw material that is key for the battery industry. The LME acknowledges potential concerns around the handling and storage of coarse nickel powder in warehouses but is committed to working with the industry to examine such challenges. Additionally, and in light of recent irregularities discovered in respect of bagged nickel, the LME would wish to be certain that the inclusion of nickel powder did not create greater scope for operational risk – although the LME's understanding is that the drums used to hold nickel powder are considerably more resilient to tampering than bags. The LME plans to further discuss this matter with the Nickel Committee in April 2023.
- *New brands:* Given the expected growth in Class 1 production from new sources (e.g. refining conversion of intermediates to Class 1), the LME will seek to accelerate listing of qualifying brands as LME-deliverable to increase the scope of eligible material. The LME is proactively working with the relevant companies, mostly located in China and Indonesia, to ensure its brand listing requirements are well understood and to build a deeper understanding around the expected growth in output of such material. To support the rapid assessment and onboarding of new applicants, the LME will waive all listing fees for nickel brands until the end of 2024 and expedite the listing process (following advice received from the LME Nickel Committee and subject to the LME Physical Operations Team being satisfied with the respective brand), with the effect that the LME anticipates established producers being able to bring new Class 1 nickel brands to market after three months of regular sample assaying. Market participants are encouraged to highlight any Class 1 brands the LME should be encouraging to apply for inclusion on its brand list.
- *Expanding eligible grades:* Some participants have advocated for LME nickel contract specifications to allow for various forms of Class 2 material to be delivered alongside Class 1 metal. The LME believes this is not feasible and that there exists no precedent for a successful deliverable commodities futures contract that gives users such uncertainty over the highly diverse types and qualities of material position holders can expect to receive. Such a move would likely be damaging to confidence and trading activity in LME Nickel.

*Class 1 vs Class 2 price divergence* – Whilst the relative pricing between Class 1 and Class 2 products has shifted recently, many market participants and analysts consulted by the LME hold the view that the current divergence in pricing of various Class 2 materials away from their historical relationship to Class 1 metal is a temporary phenomenon. The change in relative pricing has been driven by explosive growth in Class 2 production over the last few years and by simultaneous tightness in Class 1 metal, which has seen inventories decline to multi-decade lows. The resultant price differential has created an incentive for production processes to be developed which can convert Class 2 grades such as NPI, matte and MHP into refined nickel. As has been widely reported, such refining capacity is being developed in Asia and is expected to ramp up quickly in the coming months. The LME expects to onboard eligible new brands as described above. Much improved convertibility between Class 2 and 1 material should over time re-assert historical pricing relationships and reaffirm the relevance of LME Nickel to players across the full value chain.

*Market appetite for Class 2 pricing* – Although Class 1 nickel supply has remained stable, its relative share as a proportion of global nickel production has declined in recent years. Of the nickel grades reviewed by the LME, matte, nickel sulphate, and ferronickel are the forms where there is the greatest potential for alternative pricing mechanisms to develop alongside LME Nickel. The LME has engaged, and will continue to engage, with industry participants, price reporting agencies and platform providers to offer enhanced pricing mechanisms for the Class 2 nickel market where desired. The LME recognises that, while there is no clear alignment of views, a number of industry players believe that spot-trading solutions for nickel matte and nickel sulphate could assist with market transparency and enhance price discovery. As a consequence, the QME, an onshore Chinese spot commodities trading platform majority-owned by HKEX, plans to offer spot trading in nickel matte and nickel sulphate later this year. QME has close ties with industry players in China and will look to leverage its existing network and platform capabilities, on the basis of the clear market feedback that any successful Class 2 pricing will need to reflect the core role of China in these markets. Transactions on the QME platform could be used as part of a mechanism for establishing standalone Class 2 spot prices given sufficient industry support.



*Developing a Class 2 LME contract* – Market feedback received so far has indicated that LME Nickel represents the Class 1 market well and that significant immediate demand for a Class 2 contract is not apparent. However, with large investments in new Class 2 supply (partially in response to an expected global increase in battery demand), this should be closely monitored. Should a Class 2 contract be required in future, a key consideration is whether it should be physically deliverable or cash-settled. While the LME favours the inherent benefits of a physically deliverable contract, it does not believe Class 2 nickel material types are currently suitable for physical delivery, with issues around long-term storage, variance in purity levels, geographic and user concentration, and limited market size. However, this may change in the coming years as, for example, the size of the nickel matte market is expected to triple over the next three years. The LME will continue to monitor developments closely and to periodically assess the viability of introducing additional physically deliverable contracts.

Alternatively, any cash-settled contract would require a robust and trusted price index that can be used in physical supply agreements and for risk management. Market feedback suggests that established price indices (as published by Western and Chinese price reporting agencies) have yet to reach this level of underlying industry adoption. The LME is supportive of developing transaction-based price references and working with established price reporting agencies where there is sufficient industry appetite. A successful Class 2 spot product on QME would at a minimum support price discovery and the robustness of price indices, and if it achieves significant levels of liquidity could produce a reliable price benchmark itself.

*Class 1 alternatives* – The LME is aware of efforts to develop alternative pricing mechanisms for the Class 1 market. Market feedback that the LME has received is firmly of the view that a physically deliverable futures contract, as represented by LME Nickel, is the optimal structure for robust and transparent price discovery in the Class 1 nickel market. The LME nickel contract continues to have significant breadth of participation that informs price discovery, even with the currently lower volume levels.

### **4.3 Summary: areas of focus**

The LME is working hard to support the nickel industry and will continue to consider making changes to its existing contract where this supports the market and does not introduce unintended consequences that could harm liquidity. The LME will continue to engage the market via the LME Nickel Committee, key industry associations and events, as well as broader market outreach. The LME will:

- Restore LME Nickel liquidity by working with members and carefully considering the all-in costs to trade
- Work with the industry to determine whether to introduce coarse nickel powder as an eligible Class 1 deliverable shape
- Accelerate the on-boarding of any new Class 1 brands that meet the LME's criteria
- Work with QME to develop a credible mechanism for transacting Class 2 business (possibly supporting spot transaction-based pricing in future)
- Maintain a close brief on the rapid shifts in production of Class 2 materials, responding with appropriate pricing and product solutions that best serve the nickel market





## 5 Planned enhancements to modernise the LME

### 5.1 Introduction

The Independent Review specifically recommended that the LME Group provide a “clear vision of the future of market structure”, and to “prioritise measures that will increase the depth and breadth of liquidity, diversity of interest, and transparency.” It added that “where possible... [the LME Group should] commit to measures that would standardise the market structure with global peers to enable participation and consequent growth in liquidity.”

Given these recommendations, the LME Group has returned to its 2021 Discussion Paper on Market Structure, which involved significant market engagement and a set of outcomes which the LME Group believes represent the appropriate route forward for its market. The LME believes that these items address the market structure recommendation from the Independent Review. The LME's plans to evolve its market structure focus on enhancing the LME's electronic offering, growing liquidity, increasing transparency, and facilitating growth. These enhancements are all underpinned by the strategic principles of serving the physical market, ensuring fairness, increasing user choice and maximising trading efficiency.

Since the outcomes of the 2021 Discussion Paper were published, the LME has made progress in key areas such as moving the Closing Price discovery process to electronic determination on a permanent basis.

The immediate focus in this regard is on continuing to evolve the Closing Price process into a more deterministic and industry standard methodology. Following on from this, the LME's focus will be on outlining a broader set of measures laid out in the 2021 Discussion Paper designed to enhance liquidity, including their optimal sequencing and prioritisation.

The LME will continue to engage with the User Committee in regards to its plans to evolve the Closing Price process and to outline a broader set of measures to enhance liquidity. The LME will communicate with the market in further detail in this regard, including with respect to relevant consultations where necessary.

Further planned enhancements to electronic trading will be supported and complemented by the delivery of the new trading platform – LMEselect v10 – coming in Q2 2024, which will provide a low latency, deterministic trading platform with a host of benefits that will encourage electronic liquidity, including allowing Good-Til-Cancelled (“GTC”) orders on all prompts and carries and merged order-book functionality.

The market structure enhancements that the LME is considering in the medium term are included in this section of the paper and include:

- Continuing evolution of the Closing Price methodology
- Measures to enhance liquidity
- Consideration of OTC trade reporting
- Exploring the feasibility of introducing a supplementary CFTC-style Commitment of Traders Report (“COTR”), including impact on members
- Off Warrant Stock reporting (“OWSR”)
- Realised Variation Margin

### 5.2 Continuing evolution of the Closing Price methodology

#### 5.2.1 LME's perspective and work conducted-to-date

The outcomes of the 2021 Discussion Paper noted the LME's view that with the Closing Price determined in the electronic venue it may be preferable to further evolve the calculation methodology in order to make it more deterministic. This will ensure Closing Prices most accurately reflect prevailing prices at the end of the trading day, and ensure that the Closing Price methodology encourages trading practices that will improve liquidity for participants.



The LME established the Closing Prices Working Group ("CPWG") in 2021 to consider a potential evolution to the Closing Price methodology. The LME would like to thank those who participated in the CPWG, which was comprised of a broad group of Category 1 and 2 members, financial participants and physical participants.

It should be noted that there was not a unanimous view from the CPWG as to whether the LME should evolve the Closing Price process to a more deterministic methodology, expanding the use of volume-weighted-average-prices ("VWAPs"). Some CPWG participants were strongly opposed to an expanded use of VWAPs, while other CPWG participants were strongly in favour of such a methodology.

The LME is minded to proceed with further evolving the Closing Price methodology (which will be subject to consultation), taking into consideration the feedback received to date. An updated Pricing Blueprint will again be discussed with the User Committee and then published alongside the consultation to give the broader market the opportunity to provide additional feedback into the proposed methodology.

### 5.2.2 Summary: areas of focus

- Further discuss updated Closing Price methodology with the User Committee
- Publish consultation on the proposed Closing Price methodology changes and an updated Pricing Blueprint, following User Committee engagement
- Share data on how the proposed pricing methodology would value the Closing Prices compared with the existing methodology
- Consider the optimal roll out of Trade at Settlement ("TAS") on the other three-month base metal contracts (as outlined in the outcomes of the Discussion Paper in 2021)

## 5.3 Measures to enhance liquidity

### 5.3.1 LME's perspective and work conducted to-date

As outlined in the 2021 Discussion Paper on Market Structure and response documents, the LME remains of the view that the transparency and pricing competition exhibited by the central electronic venue is of huge benefit to the market as a whole, and in particular to end-users.

As stated above, the LME's new trading platform will deliver additional functionality such as GTC orders that will support electronic liquidity in outright and carries. Furthermore, the continued evolution of the Closing Price process to include further VWAPs at the front of the curve is expected to have an additional positive impact in encouraging participation on LMEselect throughout the pricing windows and ensuring all relevant carry trades contribute to price discovery deterministically based on their volume. The move to determining Closing Prices electronically has already seen an increase in electronic volumes for carries.

In order to further build electronic liquidity, the LME has identified a number of additional measures that it intends to implement. This broadly consists of the following non-exhaustive list of potential measures:

- 1) Liquidity provider programme – to further incentivise liquidity in certain relatively liquid instruments at the front of the curve (most likely carries from 3-month to 3rd Wednesday prompts to support implied pricing in 3rd-Wednesday prompts)
- 2) Block rules and thresholds – to ensure that small trades are executed on the central limit order book with maximum price competition and transparency
- 3) Fee changes – to incentivise participation in the central limit order book vs interoffice trading and OTC trading (which remains important for larger and more complex trades)
- 4) Pre-arranged trading rule changes – to support and encourage trades to go through the central limit order book and maximise price competition where appropriate



- 5) Electronic matching rules – clarifying rules in light of the package of measures to incentivise electronic liquidity, to avoid any negative consequences
- 6) Expanded short dated carry definition – to incentivise liquidity on all venues in the daily prompt dates
- 7) Inter-office trade reporting – look to evolve the booking and publication mechanism for inter-office trades to ensure that price forming trades in the inter-office market are published more quickly on core market data feeds

The exact specification and delivery timelines will be discussed with the User Committee and confirmed in H2 2023, and the LME will then confirm a detailed delivery roadmap that takes into account the initial feasibility and system impact assessments that are in flight and will inform the optimal pathway of measures for the market. The implementation of this set of measures will begin in H1 2024.

### 5.3.2 Summary: areas of focus

- Evaluate the feasibility of a wide range of measures to enhance liquidity, including potential block rules, and incentives to encourage trading on the central limit order book, including User Committee discussion
- Create and publish a roadmap specifically on liquidity-enhancing measures, focusing on implementation specifics and timelines

## 5.4 Consideration of OTC trade reporting

### 5.4.1 LME's perspective and work conducted to-date

As set out in Section 3.3, the LME's immediate focus in respect of OTC reporting is around positions. However, as set out in the 2021 Discussion Paper on Market Structure, a number of market participants have also advocated for increased transparency around OTC trades.

There are two potential benefits to increased transparency around OTC trades. First, it could assist the LME in identifying incipient potential market distortion risks, and second, if the data is published, it could democratise access to information in the OTC market, thereby improving overall market quality.

This is of particular importance in the metals market due to the particular closeness between the ETD and OTC markets, as previously discussed in Section 3.3.

The LME will continue to engage with the regulator to ensure alignment in approaches and, if required, will explore the feasibility of limited OTC trade reporting (for example via LMEsmart). In any exploration of OTC trade reporting, the LME will need to ensure that any new reporting requirements are written in such a way as to prevent minor changes to OTC contracts for the specific purpose of taking them outside the LME's scope. The LME will also consider the possibility of using the LME's existing systems in order to allow participants to register these OTC trades, thereby ensuring that the increased operational burden is as low as possible.

### 5.4.2 Summary: area of focus

- Investigate potential approaches and the feasibility of OTC trade reporting, including for members

## 5.5 Explore feasibility of COTR updates

### 5.5.1 LME's perspective and work conducted to-date

The LME publishes COTR in line with UK MiFID II requirements. While this topic was not covered within the 2021 Discussion Paper on Market Structure, the LME has received feedback from the market that participants would find it valuable to have more information on the state of the market than is provided by the existing MiFID II COTR. The LME understands that participants prefer the CFTC style COTR published which covers a significant number of commodity futures markets, and that it would be of benefit for the market for the LME to publish a COTR aligned to the CFTC version. The LME acknowledges that this will likely require members to



submit additional data on a daily basis, and as such the LME must work with members to understand the benefit of such a report alongside the increased operational burden.

### 5.5.2 Summary: areas of focus

- Consider benefit and feasibility of publishing a supplementary COTR which uses CFTC-aligned classifications for market participants
- Consider approaches to COTR updates that minimise impacts on members

## 5.6 Off-Warrant Stock Reporting updates

### 5.6.1 LME's perspective and work conducted to-date

The LME has long received requests for increased transparency around global metal stored in warehouses, which (it is contended by certain market participants) would enable the market to trade on the basis of a broader view of metal availability, even when on-warrant stocks are low.

The LME considered this in detail during 2019, and considered two broad approaches:

- “Eligible stock reporting”, whereby warehouses must report all unwarranted metal stored in LME-registered sheds. However, concern was expressed that such an approach could be open to abuse, primarily by metal owners storing metal in adjacent non-LME-registered sheds (or in proximate outdoor storage), which could then be loaded-in quickly prior to warranting.
- “Contractual stock reporting”, whereby warehouses must report metal where there exists a contractual link to the LME, in the form of (i) an agreement requiring the use of LME-registered sheds, and/or (ii) an agreement where the owner has a right to warrant metal on the LME in the future, and/or (iii) where the metal owner voluntarily wishes to report the metal. While such a report does not capture all warrantable material, it does represent metal with a reasonable likelihood of being warranted over a short-term time horizon and therefore likely to impact stock figures and, potentially, market conditions.

Based on market discussions, it was clear that there existed differing views in the market. A number of LME stakeholders were not favour of any off-warrant reporting requirements, arguing that metal owners have a right to maintain some confidentiality over metal stored off-warrant (particularly metal which the metal owner never intends to warrant). Others argued that this rationale is less driven by a need for confidentiality, but rather that knowledge in relation to stocks and physical movements of metal may confer an advantage to the holder of such information.

Following this engagement, the LME decided to proceed with the contractual stock reporting approach, and in July 2020 published its first set of summary statistics on off-warrant stocks. This off-warrant stock data is published on a per-warehouse location (aggregated across warehouse companies) and per-metal basis on the tenth day of every month (on a one-month-delayed basis).

Since that date, there have been additional calls for the LME to further enhance this reporting, including by providing eligible stock reporting as well as contractual stock reporting. The LME continues to believe that the market benefits from increased transparency around off-warrant stocks outweigh potential drawbacks.

Accordingly, subject to consultation and further discussion with the Warehousing Committee, the LME proposes to enhance its off-warrant stock reporting framework by expanding reporting to eligible stock reporting, in addition to contractual stock reporting. The LME proposes that, in the first instance, this would be achieved by the addition of the data onto monthly warehouse off-warrant stock reports, which would have the effect of reducing administrative burden for warehouses.

Following this step, and based on further market feedback, the LME will also assess the feasibility and value of increasing the frequency with which the off-warrant stock report is published. The LME will also consider the longer term goal of achieving closer to “real time” reporting of both its on-warrant and off-warrant stocks stored in LME warehouse locations subject to appetite from its stakeholders. LME warehouse companies already utilise the LME's digital credentials register LMEpassport to record Certificates of Analysis data related



to corresponding warrants, and the LME believes that this platform could similarly be used to facilitate enhanced off-warrant stock reporting.

The LME will engage with the Warehouse Committee on this topic, and (subject to such discussions) include its initial eligible stock reporting proposals in the May 2023 consultation.

### 5.6.2 Summary: areas of focus

- Initiate consultation on proposed changes to off-warrant stock reporting requirements, adding data on eligible stock reporting
- Work with warehouse companies to explore the use of LMEpassport for more streamlined and closer to real time stock reporting

## 5.7 Realised variation margin

### 5.7.1 LME perspective and work done to-date

The LME Group stated in 2021 that it would explore whether it would be possible to develop an approach that recreates, or enables the recreation of, the cash flows of a CVM model for RVM contracts. The LME Group's investigations found a number of significant operational, risk management, legal, regulatory and other challenges that mean this approach is not a feasible solution. Therefore, the LME Group will now focus its attention on the feasibility of a transition to RVM in the medium term.

The Independent Review was clear that Discounted CVM ("DCVM") was not a direct cause of the events of March 2022, and RVM would not necessarily have materially changed the course of the events. However, it did also note that the provision of credit lines supported by DCVM netting was a factor in some participants' perception that LME Clear was less robust.

The feedback from the 2021 Discussion Paper on Market Structure highlighted significant benefits in terms of standardisation, efficiency and reduced systemic risk in the ecosystem. However, the LME Group remains cognisant of the fact that the current DCVM model does play a role in credit provision, particularly for a number of clients, and a number of clients have expressed concerns that a move to RVM could impact their credit lines and ability to access the LME Group's markets.

Whilst the design and ongoing operation of the margin methodology used to manage risks is of course a matter for the clearing house, any decision which may be made to change the contract specifications to RVM would be made by the LME from a product design perspective (in consultation with LME Clear). However, this will involve significant engagement and consideration of the large impact and significant work required by LME Clear (explored further in 7.4). The broader long-term strategic direction of LME Clear and future potential developments to the clearing platform need to be considered in this regard and are explored further in the LME Clear section of this paper.

### 5.7.2 Summary: area of focus

- Conduct a full feasibility assessment for a transition to RVM (including review of client impact, key dependencies on other clearing structures and, systems requirements)



## Section B: Planned LME Clear actions

This section sets out LME Clear's plans in two key areas:

- Supporting LME Clear resilience
- Planned enhancements to LME Clear

## 6 Supporting LME Clear resilience

### 6.1 Introduction

LME Clear has been a regulated CCP since 2014. LME Clear was designed and built in consultation with the market to meet regulatory requirements. LME Clear strives to meet international standards for the operation of a CCP, including the IOSCO Principles for Financial Market Infrastructure. LME Clear provides accessible quantitative and qualitative information to evidence this approach and regularly discusses its risk management approach with clearing members, both individually and in its advisory forums.

The extreme events in March 2022 fully tested the risk management approach LME Clear had employed. The Independent Review highlighted that some market participants perceived that members may not have been robust enough to withstand the events. It added that unique aspects of the LME Clear model – such as the use of CVM<sup>13</sup> – and the composition of the membership contributed to this perception.

As such, LME Clear has explored, and will continue to explore, ways to further reassure members and the market of the resilience of LME Clear and membership – including identifying further improvements relating to credit risk management processes, margining and default fund calculation. LME Clear will also closely consider the impact on the clearing house of any changes set out by the LME within this Action Plan. For example, the CCP will carefully analyse the risk management implications of amending position limits and volatility controls to ensure there is no detrimental impact on its ability to manage risk in a prudent manner.

Across all of these elements, LME Clear will also continue to ensure high levels of engagement and communication with the market to ensure clarity and alignment on the risk processes and frameworks owned and operated by the CCP.

As mentioned in Section A, the LME and LME Clear are also considering further enhancements to how they respond to certain extreme events in order to make the LME Group as ready as possible for future such events. LME Clear engages with members on at least an annual basis with regards to default management fire-drills, and performs at least four default fire-drills each year. LME Clear, working with the LME, will introduce a process to regularly test its decision-making processes during extreme events. This will extend, in a similar way to default management, into working with market participants to assist in building operational readiness across the market for managing such events. In due course, the LME and LME Clear will engage with members on this topic.

This section will cover LME Clear's planned enhancements aimed at:

- Reviewing and strengthening membership requirements
- Enhancing how external intelligence is considered when making risk judgments
- Capturing data and assessing the appropriateness of member liquidity arrangements
- Ensuring that the proportion of mutualised and un-mutualised resources provided to LME Clear aligns to clear risk management targets
- Further testing of LME Clear's financial resources against extreme scenarios

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<sup>13</sup> The use of the CVM model is determined by the LME's contract specifications, but is administered by LME Clear.



- Ensuring that initial margin levels appropriately balance risk mitigation versus maintaining market liquidity

## 6.2 Membership requirements and member monitoring

### 6.2.1 LME Clear perspective and work done to-date

As described in the Independent Review, LME Clear's member base comprises more smaller General Clearing Members ("GCMs") than is typical for other commodity CCPs. LME Clear is bound by law to provide open and fair access to the CCP, and works with its members to ensure that exposures are appropriately sized for the capitalisation and liquidity of the member concerned, and that members have operational and risk management capabilities suitable for the business models they operate.

Since the overall strength of all members of the clearing service contributes to confidence in the CCP, it is LME Clear's view that it is appropriate to review membership requirements to evaluate whether there are any changes that could support a stronger perception of broader venue robustness and resilience.

As such, plans are in place to review membership criteria and the risk mitigation framework that LME Clear applies to members which is dependent on their business model and available resources, in the second half of 2023. LME Clear is also considering ways to increase member visibility over its use of risk mitigation controls while maintaining confidentiality, to proactively demonstrate the robustness of LME Clear's risk management approach.

A finding from the Independent Review noted that there was some uncertainty amongst members on whether all market participants were sufficiently prepared to manage liquidation of client positions in the event of a client default. LME Clear believes this is an important part of credit risk management. Therefore, the CCP is keen to engage with clearing members to understand their arrangements for management of client defaults, including undertaking a peer comparison to establish member guidelines for members to manage client defaults in relation to trades cleared by LME Clear. However, LME Clear at this stage is not looking to introduce defined guidelines and organised rehearsals of client defaults between LME/LME Clear and Clearing Members.

Further, LME Clear is committed to extending the scope and quality of its monitoring of significant ETD and OTC clients, where possible. This may also include processes for members to notify both LME and LME Clear when a client defaults on its obligations to the member under OTC contracts or where the member has material concerns.

### 6.2.2 Summary: areas of focus:

- Review credit-related membership requirements, including minimum capital requirements
- Consider more focused monitoring for material clients
- Review effective use and transparency of risk mitigation controls used by LME Clear in specific credit-related circumstances
- Formalise guidelines for members to document and share default management processes and procedures for client defaults with the LME and LME Clear
- Extend client monitoring to include significant OTC clients and consider introduction of a process where members notify the LME and LME Clear of when a client defaults on its obligations to the member under OTC contracts

## 6.3 Use of external intelligence in 'Horizon Scanning'

### 6.3.1 LME Clear perspective and work done to-date

LME Clear has continued to expand the scope of its horizon scanning activity to incorporate a wider range of intelligence into its risk management approach and to identify and mitigate potential developing risks. As an



example, LME Clear used LME stock information and physical demand trends to create a number of new hypothetical stress scenarios which were added to the suite of scenarios used by LME Clear on a daily basis.

LME Clear will continue broadening the news and data used in identifying potential risks and increase the opportunity for discussion in governance on key items and how these might affect LME Clear. This work will include extended threats and weaknesses analysis of clearing members over the medium and long term within the LME Clear credit reviews, and tracking of conditions where these may materialise. LME Clear will continue with existing processes to undertake extensive “what-if” analysis performed on clearing members through credit stress testing, as was undertaken during the pandemic.

### **6.3.2 Summary: areas of focus:**

- Explore the possibility of including external market signals and intelligence into LME Clear’s member credit risk assessment framework and other appropriate areas of our risk management approach
- Ensure that standing agenda items at LME Clear Board and Clearing Risk Committees are supported by additional external market analysis on an ongoing basis

## **6.4 Liquidity monitoring**

### **6.4.1 LME Clear perspective and work done to-date**

LME Clear notes that the business models of many of its members result in the need for significant liquidity resources during periods of volatility or prolonged directional price moves. Consequently, LME Clear has historically monitored member creditworthiness and liquidity management on an ongoing basis, and has also performed regular credit risk assessments and enhanced information-gathering from members perceived as higher-risk.

To ensure continued and heightened visibility on member liquidity profiles and identification of risks quickly and accurately, LME Clear has already enhanced aspects of its liquidity monitoring, additional to existing monitoring. Actions taken to-date include creating an enhanced liquidity disclosure approach for members to report on their liquidity management and stress testing, and the identification of member liquidity management best practices to monitor against current member processes, and where necessary seek to realign members to best practice.

LME Clear is already receiving liquidity data from members and is in the process of consolidating and analysing this to better support its monitoring of risks.

### **6.4.2 Summary: near-term actions:**

- Agree final format for Clearing Member liquidity data provision
- Refine best practice and build out assessment of liquidity management and how to reflect it within member / client credit ratings
- Build liquidity data into existing monitoring and analysis tools

## **6.5 Initial margin review**

### **6.5.1 LME Clear perspective and work done to-date**

Initial margin is the core risk management tool used by LME Clear to protect against the two day price moves from the point of default until the assumed liquidation or transfer of the defaulting member’s portfolio. It is designed to cover, to a fixed confidence interval, events deemed more likely than ‘extreme but plausible’. members use the LME Clear initial margin calculation for the purpose of client margining, although they are able to adjust the initial margin should they consider the risks they face to be heightened. The level of the confidence interval used by LME Clear to generate its margin parameters is defined in the LME Clear risk appetite statement and meets regulatory standards. In almost all cases, the back-tested results of any portfolio cleared by LME Clear comfortably exceed the risk appetite and regulatory standards.





LME Clear calculates initial margin using a SPAN<sup>14</sup> methodology. To ensure the robustness of the parameters LME Clear also uses a regulatory-approved VaR model as an additional benchmark and considers potential future risks when setting SPAN margin parameters. This typically results in parameters being set that exceed the SPAN and VaR models but are not designed to be greater than every two day price move.

In the near-term, it remains critical for LME Clear that initial margin levels at all times reflect, and are commensurate with, levels of risk in the clearing system, and that the balance between initial margin and other elements of the overall resources held by LME Clear is appropriate for all contracts. Since March 2022, LME Clear has managed initial margin parameters for the nickel contract to reflect the heightened risks. LME Clear acknowledges that this has resulted in very high parameters compared to historical norms. This challenges the ability of some participants to access the market, and clearing members to hold client positions, which in turn has an impact on contract liquidity. LME Clear is working to agree broader methodology changes specifically for the nickel market to allow for an improvement in nickel liquidity, recognising this will need approval from relevant stakeholders and that the overall resources held by LME Clear should still be sufficient to manage the underlying risks. Furthermore, in the longer term, LME Clear is assessing the optimal balance between initial margin, the default fund (see section 6.7) and concentration margin. This review will include a consideration of the confidence interval LME Clear should utilise for initial margin calculations and whether this should be set at a higher rate across all products.

LME Clear will also consider what steps could be taken to further integrate VaR into its core margining process until such time as a full VaR implementation is possible and undertake a full analysis of model performance in light of commodity volatility since 2020 (see section 7.2).

#### 6.5.2 Summary: areas of focus:

- Develop methodology changes that allow flexibility in initial margin rates as liquidity improves and discuss them with LME Clear's regulators
- Assess whether the current risk appetite on level of initial margin versus the default fund should be adjusted to increase the level of initial margin to manage the cyclicity in the default fund
- Conduct a fundamental review of initial margin target levels (i.e. confidence interval)
- Engage further with market participants around initial margin vs default fund balance
- Review concentration add-on margining (including house/client allocation and links to initial margin)
- Undertake VaR methodology review with consideration for steps to integrate VaR into core margining while considering IT infrastructure plans

## 6.6 Reverse stress testing

### 6.6.1 LME Clear perspective and work done to-date

LME Clear has a range of existing reverse stress tests which are designed to identify the extreme scenarios in which the financial resources of LME Clear may prove insufficient. While these reverse stress scenarios may be considered beyond 'extreme but plausible' they may be used to identify potential areas of concern that require greater investigation. Where market conditions change and the scenario is considered plausible they could be promoted as a scenario to the default fund.

LME Clear intends to review its suite of reverse stress testing in 2023. This will likely include the introduction of the impact of contemporaneous scenarios, an increase in the number of Clearing Members included within the stress loss calculation, and a focus on specific types of Clearing Member.

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<sup>14</sup> "SPAN" (Standard Portfolio Analysis of Risk) is a registered trademark of Chicago Mercantile Exchange Inc., used here under licence. Chicago Mercantile Exchange Inc. assumes no liability in connection with the use of SPAN by any person or entity.



### 6.6.2 Summary: area of focus:

- Develop an enhanced and expanded set of reverse stress-testing scenarios

## 6.7 Default fund calculation review

### 6.7.1 LME Clear perspective and work done to-date

The default fund is an important part of the overall default waterfall, designed to protect participants from stress events considered 'extreme but plausible' and events greater than those covered by the initial or additional margin. LME Clear's objective is to ensure that the proportion of risk that is mutualised within the default fund is fairly and stably correlated with unmuted risk which is calculated by LME Clear as initial margin or additional margin.

LME Clear's default fund is calculated based on a 'Cover-2' methodology, sizing the default fund to withstand the default of its largest 2 member groups. LME Clear uses an extensive library of historical and hypothetical stress scenarios using price data from at least the last 30 years and potential scenarios developed both quantitatively and qualitatively.

Since the events in March 2022, LME Clear has included a range of new stress scenarios in the default fund sizing calculation. It has increased the existing minimum default fund size and has designed a new methodology for calculating a more dynamic minimum default fund size.

### 6.7.2 Summary: areas of focus:

- Conduct default fund calculation review, evaluating the existing parameters
- Review default fund and margin resources to ensure optimal balance of LME Clear resources
- Explore revisions to default fund additional margin to better capture 'defaulter-pays' principle



## 7 Planned enhancements to LME Clear

### 7.1 Introduction

As mentioned, the Independent Review report recommends that the LME Group should provide a “*clear vision of the future of market structure*”, and to “*where possible...commit to measures that would standardise the market structure with global peers to enable participation and consequent growth in liquidity.*” LME Clear will need to develop certain aspects of its clearing model to remain aligned to risk management developments and which it believes will serve the needs of its stakeholders.

In addition, as described in the Independent Review, the perception of weakness in the LME Clear ecosystem – partially driven by attitudes towards non-standard aspects of the clearing model – affected market confidence, and may also have exacerbated the withdrawal of liquidity. The Independent Review report also notes, however, that the review and the majority of market participants did not believe that these non-standard aspects of LME Clear caused the events in nickel.

This section will cover LME Clear's planned enhancements aimed at:

- Enhancing the calculation of initial margin requirements by transitioning to VaR
- A review of other potential clearing account structures
- Assessing the feasibility of a move to RVM by the LME for the future of variation margin approach at LME Clear

### 7.2 Transition towards a VaR initial margin methodology

#### 7.2.1 LME Clear perspective and work done to-date

LME Clear's goal is to establish an enhanced approach for calculation of initial margin requirements, including a more responsive margin model that is closer to observed practices at peer CCPs. LME Clear has already developed a VaR margin model approach, which is approved by the Bank of England. When previously discussed with market participants this approach generally received positive feedback and it was considered to provide a more accurate and responsive measurement of the risk of a portfolio. However, the model has yet to be fully implemented by LME Clear. At present, LME Clear uses the VaR-derived initial margin figure as a benchmark when setting margin parameters under the SPAN methodology, and as previously described, this provides LME Clear with a number of models from which to assess risk depending on market conditions. In the previous section it was identified that work will be carried out to re-assess the model in detail after the commodity volatility since 2020 and identify steps towards a greater use of VaR.

Further work in 2024 will aim to identify an approach to fully delivering VaR including any further regulatory approval, the timing of changes in the LME Clear technology estate required and stakeholder engagement.

#### 7.2.2 Summary: area of focus

- Define the approach for the full delivery of VaR (and replacement of SPAN)

### 7.3 Account structure

#### 7.3.1 LME Clear perspective and work done to-date

LME Clear currently offers multiple types of clearing accounts for members. Members predominantly use the well-established Net Omnibus Segregated Account (“NOSA”) structure, and Individual Client Segregated Accounts (“ISAs”) have seen increasing uptake. At the same time, while a form of Gross Omnibus Segregated Accounts (“GOSAs”) are available, they have had no uptake by LME Clear members to date. LME Clear believes that the financial netting advantages of holding positions in a NOSA dissuade clients from using alternative services of ISA and GOSAs provided by members. However, ISAs and GOSAs both have important risk management advantages in allowing easier porting from such accounts in the event of a member default,



as LME Clear only receives the net amount of margin from a NOSA in respect of all client positions in that account. Therefore, LME Clear's goal is to understand what account structures, beyond those currently offered, members would wish to have the ability to use.

### 7.3.2 Summary: areas of focus

- Analyse the benefits and costs associated with potential account structures and assess how they could deliver risk reduction and efficiencies into the LME Clear ecosystem
- Explore feasibility of augmenting the current GOSA offering and/or augmenting offering with additional account types

## 7.4 Realised variation margin

### 7.4.1 LME Clear perspective and work done to-date

LME Clear margins contracts in accordance with the contract specification of the LME. The LME currently has contracts with specifications of both DCVM and RVM. As discussed in Section 5.7 above, following the 2021 Discussion Paper on Market Structure, the LME Group explored the possibility of developing an approach that recreates, or enables the recreation of the cash flows of a CVM model for RVM contracts. LME Clear decided that such a model was unfeasible due to significant operational, risk management, legal, regulatory and other challenges. Therefore, the LME Group is of the view that ultimately, it would benefit the market as a whole to transition to RVM at some point in the future. The feedback from the Discussion Paper in 2021 highlighted significant benefits in terms standardisation, efficiency and reduced systemic risk in the ecosystem.

Should the LME Group consider this potential move of all DCVM margined contracts to an RVM methodology, LME Clear would need to consider a number of changes to its broader risk management approach. This would include adjusting its approach to settlement of contracts on a daily basis, position management, default management, liquidity management and changes to option pricing models.

A change of this significance would result in considerable impact to the systems and business models of members, ISVs, clients and LME Clear itself. Therefore, if the LME were to move to RVM it would be a multiyear project.

As such, an assessment needs to take into account the fact LME Clear will be re-platforming its clearing system<sup>15</sup>, provisionally scheduled for 2028. In anticipation of this material upgrade to its clearing systems, the LME Group will need to make a decision within the next two years on whether it should move to RVM to provide sufficient time for consultation, planning and delivery of changes for LME Clear and the whole LME community.

The LME and LME Clear will discuss its progress in this area with the User Committee in due course.

### 7.4.2 Summary: area of focus

- Feasibility assessment on possibility of introduction of RVM contracts in platform upgrade

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<sup>15</sup> For clarity, the delivery of a new clearing platform is not linked to the events in the nickel market and is part of a wider technology refresh



## 8 Conclusion and next steps

The LME Group has set out a range of planned enhancements in this Action Plan designed to support the LME Group in strengthening its markets so that they may continue to thrive in the long-term. The plan considers and details a range of measures designed to deliver on the key recommendations put forward in the Independent Review report. It also includes other initiatives of direct relevance to market and CCP functioning from a user perspective deriving from other reviews – including internal consideration on how best to strengthen the LME markets.

In the course of progressing the enhancements outlined in the Action Plan, the LME Group will engage with market participants, including through working groups and formal consultation processes, as appropriate. The LME intends to issue the first such consultation in May 2023 and to deliver all initiatives set out in this Action Plan, including the feasibility of longer-term initiatives, by the end of 2024. More details of any opportunities for the market to provide input topics will be provided in due course.

Should market participants wish to discuss any aspect of this plan in more detail, they can contact either their Relationship Manager, their Sales contact, or [marketengagement@lme.com](mailto:marketengagement@lme.com).

The LME Group remains committed to ensuring confidence in the metals market, and will continue to work with global regulators and market participants to support the long-term health, efficiency and resilience of the market as a whole.



## 9 Appendix: Working Paper – Daily Price Limits

### 9.1 The LME daily price limits

#### 9.1.1 Background

The LME introduced daily price limits for its physically-deliverable base metals contracts on 16 March 2022. Further detail can be found in LME Notices 22/064 and 22/067. The drivers to adopt these daily price limits included the volatility in base metals, and market participant concerns, in light of the geopolitical backdrop at that time, regarding the risk of sudden, extreme price moves.

The LME believes that the introduction of daily price limits has provided additional protection against significant price moves that may be indicative of market distortions, particularly in extreme conditions. Daily price limits will therefore remain a permanent feature of the LME market<sup>16</sup>.

#### 9.1.2 Changes to the daily price limit levels

Any change to the daily price limit levels, or the contracts to which the daily price limits apply, will continue to be announced to the market by Notice under the LME's current arrangements.

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#### 9.1.4 Disruption events

As part of the implementation of daily price limits, the LME considered the potential implications of a price discovery event being impacted as a result of prices being restricted by the daily price limits. The LME therefore introduced the Disruption Events framework, detailed in Notice 22/092.

Broadly, this framework establishes the scenarios in which price discovery is “disrupted” for the Official Prices or Closing Prices. The procedures supporting this framework include informing the market via Notice and updating the relevant section of the LME website so it is clear a Disruption Event has taken place. The Disruption Event framework applies more broadly than just to the impacts of daily price limits and also covers scenarios in which the market is suspended in a way that may impact discovery of reference prices.

In terms of Disruption Events driven by daily price limits, in summary, the framework defines the relevant scenarios as those where the daily price limits impact the ability of market participants to appropriately hedge during the relevant price discovery window.

For the Official Prices, which are widely used in physical metals supply chains and in averaging contracts on and off exchange, it is important to consider the potential impact of Disruption Events on how participants trade and manage risk, in order to minimise any negative risks to liquidity that may arise from the Disruption Event. In this regard, for the Monthly Average Settlement Price (“MASP”) and Notional Average Price (“NAP”), which are used for settlement of and margining for the LME Monthly Average Futures (“MAFs”) and Traded Average Price Options (“TAPOs”), the LME defined a process by which, if there was a Disruption Event for the Official Prices, the averaging prices would use the next available non-disrupted Official Price so that those targeting the monthly average are still able to hedge.<sup>17</sup>

In configuring and calibrating volatility controls there is inherently a balance between applying restrictive controls that impact price discovery and, conversely, having less restrictive controls which could allow market distortions to significantly impact prices.

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<sup>16</sup> Subject to any future evolution that the LME may consider necessary or desirable in the future.

<sup>17</sup> See Notice 22/092 for detail on where a Disruption Event occurs on the last business day of the month.



### 9.1.5 The continuing need for daily price limits

The LME is of the view that the daily price limits remain an effective control in relation to the LME's physically-deliverable base metal contracts, to protect against the potential impacts of market distortions that could lead to disorderly markets. Following their implementation in 2022 the daily price limits have operated effectively and will remain a permanent feature of the LME market (subject to future desirable evolution).

As outlined in the Action Plan the LME will look to further enhance transparency around the operation of the full suite of volatility controls (with this working paper being a key first step in that process).

### 9.1.6 Other volatility control mechanisms

In addition to daily price limits, there are other intraday volatility controls that exchanges can utilise. One common control is a dynamic circuit-breaker, which establishes a channel in which the market can trade, updating this over time (such as with an hourly look-back) so that the market cannot move beyond a certain distance within a certain time-frame. Under a typical circuit-breaker arrangement, any trade outside of the channel causes the market to move into a "halt" state (where no trades are matched) for a short period.

There are positives and negatives in operating a circuit-breaker type control. Halting the market via a circuit breaker may give participants time to consider their orders and react to information. However, it also means that trades cannot be executed for the duration of the trading halt, which necessarily impacts risk management and can leave participants exposed to risks arising from, or related to, their current positions, by restricting their ability to execute further trades. This issue is noted by the IOSCO Report on Trading Halts and Market Closures<sup>18</sup>, which states: *"Moreover, there are potential costs to trading halts. For example, they may delay the price development process (if fundamental information arrives during the interruption), and/or increase volatility"*. While some people argue that circuit breakers can give participants time to think about their activity, which can avoid overreactions and panic, others argue that circuit breakers lead to orders being pulled and liquidity being reduced, which can ultimately lead to price distortions and increased volatility.

The LME understands that many peer commodities futures markets operate either a daily price limit or a type of dynamic circuit breaker. Some comparable commodity markets operate intraday circuit breaker type controls which can reset multiple times in a day; this allows potentially large daily price moves to occur.

Accordingly, the LME is comfortable with the current configuration of operating a daily price limit. This could be considered to be more conservative than many peers in terms of the total daily price moves that can occur.

The LME will, as a matter of course, keep under consideration whether it would be appropriate to supplement its daily price limit with additional intraday volatility controls and if so, what the specification of such any such controls should be. This includes whether any such intraday control should include a trading halt (circuit-breaker) or simply limit trading in line with an intraday price collar that periodically updates a reference price during the day.

The introduction of an additional intraday control may give the LME more configuration options for the exact combination of controls, and could support the widening of the daily price limits on certain contracts. However, based on the geopolitical environment and the specific factors impacting the LME's physically-delivered base metals at present, the LME would not look to remove the daily price limits, even if such additional controls were in operation, because the daily price limits remain an effective control which positively contribute to the LME markets.

In considering the potential introduction of any additional intraday control in the future, the LME may choose to reassess the calibration of its other existing controls.

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<sup>18</sup> <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD138.pdf>



## 9.2 Calibration of the daily price limits

This section details the key factors to be considered when calibrating the daily price limits and outlines the proposed calibration methodology the LME intends to move to.

### 9.2.1 Background

The initial calibration of the daily price limits in March 2022, was focused on analysis of the historical volatility of each of the contracts for which the limits were applied. This analysis focused on assessing what limit levels could reasonably be applied to prevent excessive price moves that may be indicative of potential market distortions, without overly restricting the price discovery process and while still allowing for orderly trading in one direction where new information or supply and demand dynamics lead to a sustained change in fair value.

The LME has continued to develop its thinking, following the implementation of daily price limits and informed by ongoing monitoring of their performance, and intends to move to a new methodology incorporating a number of additional factors when assessing the appropriate limit levels. This paper explores some of those key factors and proposes an enhanced methodology which supports more granularity in the calibration across different metals.

At the date of this paper, the LME believes that the current calibration of the daily price limits is effective. However, the LME intends to move to the new enhanced methodology in Q2 2023. This will provide a more granular calibration across different metals. The LME will continue to periodically review the limit levels, with any changes communicated via market Notice.

### 9.2.2 Key factors in calibrating the daily price limits

There are a number of regulatory requirements that trading venues need to consider when calibrating volatility control mechanisms. The LME has taken into consideration all relevant regulatory requirements applicable to it, as well as relevant global standards, in determining the intended methodology. The purpose of this paper is not to provide an analysis of how the LME meets such regulatory requirements and global standards, and this paper does not do so. The focus of this paper is rather to give market participants an overview of the key factors that the LME considers should be included in the calibration methodology.

#### 9.2.2.1 Volatility

It is important to note that it is not the purpose of daily price limits to constrain or reduce the inherent volatility of contract prices, but rather to protect against significant price moves that may be indicative of market distortions. Therefore, daily price limits for contracts that display generally higher price volatility will normally require wider (i.e. less constraining) price limit levels to avoid unwanted interference with price discovery.

#### 9.2.2.2 Liquidity

The liquidity of the instrument is another important factor in determining the optimal levels for the daily price limits. In general, tighter price limits are more appropriate for more liquid instruments, whereas less liquid instruments generally necessitate wider parameters to enable orders to be entered and so as not to impact price discovery. The relevant guidance from the European Securities and Markets Authority makes this clear: *“Trading venues should in particular have tighter parameters for instruments considered to be liquid. The calibration should accommodate subscription rights and instruments with low quotation levels by allowing broader parameters”*<sup>19</sup>.

#### 9.2.2.3 The potential magnet effect

Another factor that requires consideration is the fact that daily price limits themselves can lead to more volatility if they are too narrowly calibrated. The so-called “magnet effect” describes situations where traders may rush to execute trades as prices approach the limits, which can lead to an increase in volatility as prices move further or faster because of the existence of price limits. It is therefore important to be aware of this potential unintended impact when calibrating controls and to allow some buffer or tolerance to avoid such impacts. It is noted that there are mixed views in the market and within academic literature on the role of the magnet effect,

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<sup>19</sup> <https://www.esma.europa.eu/document/guidelines-calibration-circuit-breakers-and-publication-trading-halts-under-mifid-ii-0>





but it is generally acknowledged as a relevant consideration in the design and operation of volatility control mechanisms.

#### **9.2.2.4 Consistency and simplicity vs granularity**

There is an inherent balance between having a more granular (and therefore more complicated) calibration of daily price limits, and having a less granular approach which has the benefits of simplicity and ease of understanding for participants active on the LME market. On many exchanges, across a number of asset classes, simplicity and standardisation is preferred, with one level applied to volatility controls across a number of instruments rather than a complex set of individual calibrations per instrument. An exchange could adopt a very granular approach, where limits are re-calibrated for each metal on a monthly basis, and where limit values may be calibrated to a number of decimal places. Alternatively, in line with the current LME calibration and many peer exchanges, a more standardised level could be applied across multiple instruments. The LME intends to calibrate a separate limit for each applicable contract, taking into account relevant contract characteristics such as historical volatility and other relevant factors. As part of the calibration process, the LME will also factor in operational and other relevant considerations from an exchange and market participant perspective.

#### **9.2.2.5 Interaction between overlapping volatility controls**

The combined effectiveness of all volatility control mechanisms in place for a given instrument is also a factor in calibrating each individual control. For example, if an instrument has a very stringent intraday price collar, this may limit the risk of certain types of potential price move and therefore support a wider daily price limit calibration.

#### **9.2.2.6 Controls in place for similar contracts on other trading venues**

Another consideration is what controls and what parameters are in place on other relevant trading venues that might impact activity on the LME market for a given instrument. This will not be a principal driver of the LME levels but, because there are potential negative impacts where different venues have different parameters, it will be considered when assessing any changes to the daily price limit levels.

### **9.2.3 Proposed calibration methodology for the daily price limits**

This section provides an overview of the proposed daily price limit calibration methodology the LME intends to move to by the end of Q2 2023, taking into consideration the key factors outlined in section 2.2. Please note that parameters shown in this paper are purely illustrative; the exact specification of the proposed methodology is subject to change and, in line with peers, the LME does not intend to publish externally the full set of parameters and inputs used in its calculation.

The LME also reserves the right to modify or further enhance the calibration methodology and the processes surrounding it, in line with its regulatory obligations. Any changes to the daily price limits levels will be communicated to the market via Notice.

#### **9.2.4 Objective of the calibration**

The daily price limits aim to protect against significant price moves that may be indicative of market distortions, while minimising the impact on fundamental price discovery. The purpose of the daily price limits is not to reduce volatility in the underlying metal, however having a fixed daily price limit does restrict the potential future volatility of an asset. The proposed methodology therefore uses historical intraday price data to support the appropriate calibration while reducing the risk of the limits impacting the inherent volatility of each metal.

#### **9.2.5 Review process**

The LME Trading Operations team will review the daily price limits at a fixed frequency<sup>20</sup> as well as on an ad-hoc basis where specific circumstances warrant additional review (including, for example but not limited to, the daily price limits frequently being hit (which may indicate that they are calibrated too narrowly) alongside other scenarios such as a fundamental change in volatility or liquidity that warrant a review).

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<sup>20</sup> The periodic review frequency is defined internally.



### 9.2.6 Quantitative analysis

The LME will initially consider each metal individually in assessing the optimal calibration, and will then look at the levels across all metals.

The LME will use a number of key historical datasets in the assessment to support the optimal calibration of the daily price limit levels. This includes (but is not limited to) intraday high, low, close data for each metal over a range of lookback periods.

The LME's analysis to date shows that for most base metal contracts the maximum price deviations from the previous night's closing price are not "normally distributed" (in quantitative analytical terms), and demonstrate a high prevalence of extreme events (high kurtosis). However, there is generally not a large amount of skew in the distribution, and therefore the LME deems it appropriate to consider absolute deviations from the previous Closing Price in some of its analysis.

The LME intends to use a combination of data on the magnitude of high percentile moves (eg, 95<sup>th</sup>, 99<sup>th</sup>, 99.9<sup>th</sup> percentile) when calibrating the daily price limits. In its analysis, the LME has compared the historical intraday price moves to volatility levels in certain longer time horizons. In this analysis, the intraday data appears to exhibit some mean-reverting excess volatility vs longer time horizons, supporting the view that daily price limits would not inadvertently suppress fundamental volatility as long as a sufficiently high percentile absolute price move is selected.

When using historical data for time periods during which daily price limits were in place, the LME is aware that the dataset is impacted by the existence of the limits which could create a misleading impression that the market is fundamentally less volatile. For this reason the LME will consider other metrics that it deems valuable, such as changes in lower percentiles and historical daily volatility. This approach will be taken forward, due to the now permanent<sup>21</sup> existence of the daily price limits in LME markets.

The LME will also consider the overall liquidity in each metal when assessing the application of statistical analysis. For example, for some very low liquidity contracts there is very little intraday activity and any calibration needs to accommodate moves that can occur when new interest comes to the market after a long period of no activity.

### 9.2.7 Qualitative overlay

The fundamental purpose of the daily price limit is to protect against significant price moves that may be indicative of market distortions. This does not mean that the daily price limit calibration should attempt to deterministically predict the exact maximum reasonable daily price move per metal. The LME is also aware of the potential for daily price limits themselves to increase volatility when calibrated too stringently: the so-called "magnet effect" described in section 2.2.3. Therefore, given the market benefit of a simpler set of limits, the LME will round the limit levels for each metal as deemed appropriate (e.g. upwards to the nearest 2%, 3%, 5% or otherwise).

The LME is also conscious of the benefits of simplicity for market participants in the application of such limit levels. Many peer markets apply one standard limit level across multiple products. The LME will therefore consider the limit levels of other metals when assessing the potential recalibration of any limit level for a specific metal. Practically, the LME will apply some tolerance when balancing the benefits of simplicity versus granularity.

As stated at paragraph 2.2.6, the LME is aware of the potential impact of other markets. While it is not a primary driver in calibrating the limit levels, the LME will consider the effect where other relevant markets calibrate their volatility control mechanisms in different ways.

### 9.2.8 Expert judgment

The LME reserves the right to set the daily price limits at levels that are different from the levels which the statistical analysis would suggest should the LME deem it to be in the best interests of the market. For example the LME takes into account historical data analysis, but where this would result in a calibration that is too

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<sup>21</sup> Subject to any future evolution that the LME may consider necessary or desirable in the future.



restrictive for current market conditions, taking into account current macroeconomic factors and other relevant information, the LME may set a different limit.

### 9.2.9 Illustrative output of the proposed calibration methodology

The following table provides an illustrative view of the outcomes of the calibration methodology discussed in this paper, if the methodology were to be applied in its current form as at the date of this paper. This takes into account the quantitative analysis and qualitative overlay. **This information is purely illustrative and has been set out in this paper to provide readers with a gauge as to indicative daily price limit levels based on the application of the enhanced calibration approach described in this paper. The methodology remains subject to further development by the LME.** Once any changes to the methodology have been adopted, the LME will formally communicate any revisions to existing limit up / limit down settings to the market by Notice.

Metal / Contract	Limit up	Limit down
Aluminium outright	12%	12%
Copper outright	12%	12%
Zinc outright	15%	15%
Nickel outright	15%	15%
Lead outright	15%	15%
Tin outright	15%	15%
Aluminium Alloy outright	15%	15%
NASAAC outright	15%	15%
Cobalt outright <sup>22</sup>	15%	15%

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<sup>22</sup> Physically delivered cobalt and cash settled cobalt, as per LME Notice 22/099 the daily price limit applies to both to ensure consistency across the two cobalt contracts



### 9.3 Next steps

The LME will continue to regularly review the calibration methodology of all of its volatility control mechanisms and to consider relevant enhancements to the calibration methodology and procedures, where deemed beneficial (including ad-hoc reviews in certain circumstances). As outlined in section 2.2 above, the LME intends to move to a new calibration methodology for daily price limits that includes the additional factors outlined and other factors should it deem them relevant. The LME intends to move to this methodology by the end of Q2 2023, and will inform the market via Notice in due course.

The LME will also continue to assess the full suite of volatility control mechanisms and to consider whether additional controls may provide additional protection without leading to negative unintended consequences in terms of liquidity and price discovery. The LME will consider the most effective delivery vehicle for any additional controls in the context of the delivery of the new trading platform in 2024. In this regard, the LME will also consider whether introducing additional controls requires a recalibration of existing controls to minimise potential unintended consequences.

As outlined in the Action Plan the LME will look to further enhance transparency around the operation of the full suite of volatility controls (with this working paper being a key first step in that process).



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