



To: All Members

Ref: 20/115

Classification: Trading

Date: 24/04/2020

Subject: **CONSOLIDATED TRADED OPTIONS PRICING PROCEDURES – UPDATE AND RESTATEMENT**

Summary

1. This Notice (the “**Notice**”) sets out the consolidated pricing procedures for LME Traded Options. This Notice amends and restates LME Notice 19/177 (Consolidated Trading Options Pricing Procedures – Update and Restatement) (the “**Original Notice**”).
2. This Notice incorporates a number of changes to the process used for the determination of the Option daily Settlement Prices which are designed to further enhance the relevant procedures. In summary, the changes include:
 - updates to the input requirements for Traded Options; and
 - the introduction of the cubic spline interpolation methodology for the Option daily Settlement Prices of Metals Options and Traded Average Price Options.

This Notice also makes reference to Notice: 19/414: LME: Indicative Penalties (the “**Indicative Penalties Notice**”).



3. The LME may update and issue a revised version of this Notice as and when procedures change or it is considered useful to include other information relevant to the LME Traded Options market.

Defined Terms

4. Terms not otherwise defined in this Notice shall have the meaning ascribed to them in the LME's Rules and Regulations (the "**Rules**").
5. In the case of any inconsistency between the Original Notice and this Notice, the terms of this Notice shall prevail.

Tradable Strike Prices for Clearing Currencies

6. The tradable Strike Price gradations for Traded Options have traditionally been set to reflect the underlying price of the metal in its clearing currency. Current Strike Price gradations for each clearing currency are set out as follows:

(a) USD/EUR

All Option Contracts

- USD/EUR 25 gradations for Strike Prices between USD/EUR 25 up to USD/EUR 9,975
- USD/EUR 50 gradations for Strike Prices between USD/EUR 10,000 up to USD/EUR 19,950
- USD/EUR 100 gradations for all Strike Prices over USD/EUR 20,000

(b) Sterling (GBP)

Aluminium, Aluminium Alloy, Copper and NASAAC

- GBP 25 gradations for all Strike Prices

Nickel and Tin

- GBP 50 gradations for all Strike Prices

Lead and Zinc

- GBP 20 gradations for all Strike Prices

(c) Yen (JPY)

Aluminium, Aluminium Alloy, Copper, NASAAC and Zinc



- YEN 10000 gradations for Strike Prices between YEN 10,000 up to YEN 390,000
- YEN 20000 gradations for Strike Prices over YEN 400,000
Nickel and Tin
- YEN 20,000 gradations for all Strike Prices over YEN 20,000
Lead
- YEN 5,000 gradations for all Strike Prices between YEN 5,000 up to YEN 245,000
- YEN 10,000 gradations for all Strike Prices over YEN 250,000

7. LME Traded Average Price Options (“**TAPOs**”) are only clearable in USD and have Strike Price gradations of USD 1.00.

Premiums

8. The minimum permitted spread between buyers' and sellers' premiums bid or offered in respect of Metal Options, and the minimum fluctuation in such premiums, is USD 0.01 per tonne, EUR 0.01 per tonne, GBP 0.01 per tonne and YEN 1 per tonne. For TAPOs, this is USD 0.01 per tonne (noting that TAPOs are only clearable in USD). However, the LME may from time to time change the prescribed levels according to the currency in which the Metal Option and TAPO is denominated.
9. The amount of the premium payable on opening every Metal Option or TAPO shall be determined between Granter and Taker.
10. Payment of the premium by the Taker of a Metal Option or TAPO to the Granter shall be effected through the payment system administered by the Clearing House, in accordance with the Clearing House Rules, prior to 12.00 pm on the next Business Day following the day on which the Metal Option or TAPO is opened.

Declaration Process

11. The declaration process for Metal Options and TAPOs is set out in Part 5 of the Rules.
12. The Clearing House will partially auto-exercise overnight the deep in-the-money Metal Options up to two Strike Prices above and below the at-the-money Strike Prices, based on publicly available LME Closing Prices (for the third Wednesday Prompts Dates) established at the end of the day before the Last Declaration Day.



The partial auto-exercise by the Clearing House is designed to assist the expiry process and to provide maximum flexibility for managing pin risks from market movements on floating third Wednesday Prompt Date prices that are prevailing on Declaration Day.

13. Metal Options are therefore only partially automatically exercised based on Closing Prices established the day before Declaration Day. Clearing Members have until 11.15 am the following morning (on the first Wednesday of the expiry month) to decide how to deal with those Metal Options around the prevailing at-the-money Strike Prices. The Clearing House's clearing system (LMEmercury) allows Clearing Members to exercise Metal Options that had been automatically set to be abandoned and/or to abandon Metal Options that had previously been set to auto-exercise. The decision whether to exercise or abandon a Metal Option close to the prevailing at-the-money Strike Price is a trading decision that should normally be taken by trading staff or should be based on instructions taken from Clients. This must be done in good time to ensure that the declarations are executed correctly and on time by the 11.15 am deadline. Each Clearing Member needs to have in place appropriate staff that understand the operational functionalities of the system and have procedures that will ensure that they can handle Metal Option declarations efficiently.
14. The Clearing Member is solely responsible and liable for submitting correct exercise instructions to the Clearing House: neither the LME nor the Clearing House shall have any liability for errors in exercise instructions or failure to exercise. Nevertheless, the Clearing House's staff will generally try to help Members spot any manifest errors before the declaration deadline of 11.15 am. The Metal Options assignment report is run at precisely 11.15 am in order that the assignments can be reported as soon as possible after 11.15 am and no later than 11.30 am. Once the assignment report is published, it is final and the only way to correct an error is for the participant to seek and negotiate bilaterally with counterparties in the market on the other side to trade out of the positions.

Reporting of Matched Trades and Open Interest

15. The current reporting thresholds for the deferred publication of Metal Options are set out (by metal and by number of lots) on the LME website at: <https://www.lme.com/Trading/Contract-types/Options/Large-In-Scale-Options>. Trades that benefit from a transparency waiver under MiFID II will be included in open interest data on a similarly deferred basis (i.e. included in open interest data on the following Business Day).
16. The LME will review these threshold levels from time to time with market participants and the Traded Options Committee, and in the light of MiFID II requirements (including in relation to waivers) as these continue to embed,



consulting members and other interested parties on any proposed changes in the future where it deems appropriate.

17. The reporting of Traded Options occurs on a near-real time basis via the market data feed, LMEselectMD.
18. Client Futures matched trades are included in reported data in line with the arrangements set out in paragraphs 15 to 17 above, in order to ensure consistency in data dissemination across both Futures and Options.

Procedures and Methodology

Traded Options

19. The LME in September 2008 published Notice 08/387: A374 which defined the at-the-money delta and require options volatilities contributions to include Strike Prices away from the money (wings) in addition to the at-the-money Strike Prices. The LME believes publishing the wing volatilities data provides better price transparency to reflect the volatility skews that may be present in each of these series.
20. The “at-the-money” is defined as 50 delta rather than the “at-the-money” Strike Price, as the LME has determined (with historic market feedback) that using 50 delta as the mid-point provides better spacing for longer-dated option contracts and provides a more useful surface for interpolation. The additional four deltas - /+ 10 and -/+25 proposed were approved as they are the most commonly quoted on the LME, with active options trading members already quoting and marking to a volatility surface. Members are therefore required to submit the following five delta points for each Metal Option series: -10, -25, +50, +25 and +10.
21. Members are required to complete the ‘Volatility’ field in LMEsmart (Tag 5678 in the LMEsmart Fix Specification) for “Cleared Option Contracts”¹ when matching or registering Cleared Option Contracts transacted in US dollars, in order to support the LME’s methodology for determining the Closing Prices for Traded Options.
22. The futures hedge (F) executed with the associated option leg should be input to the ‘Underlying Price’ field. If a live option is traded then the closest futures price to when the Traded Option was executed should be inputted to ‘Underlying Price’ field.

¹ “Cleared Option Contracts” were known as “Exchange Option Contracts” prior to the version of the Rules that took effect on 22 May 2017 (LME Notice 17 / 116 dated 4 April 2017).



23. The volatility (V) should be input to the 'Volatility' field. The traded volatility should be input as a four digit percentage with a decimal point after the first two digits. For example, a Cleared Option Contract that has traded with a volatility of 18.50% should be input and registered as 18.50 (VV.VV);
24. The data field used for the traded volatility and the futures hedge is not a mandatory matching field for Cleared Option Contracts and each Member will only be able to see the information relevant to its own company. The input of this data is mandatory for the purpose of supplying traded information to the LME Trading Operations department and will be used to assist in the valuation procedure. The LME Matching Operations and Market Surveillance teams will also have access to the information in this data field.
25. The LME believes that the use of traded data for Cleared Option Contracts enhances the quality of the volatility surface used by Trading Operations when analysing Member submissions. This also provides the LME with additional price transparency and clarity for Member-to-Member transactions that have been traded throughout the day.
26. Voluntary Client contributions

As set out in Regulation 5.8.5 of Part 3 of the Rules, Clients who are active in the Traded Options market will be invited by the Exchange to provide volatilities on a daily basis. The Exchange will use its sole discretion to determine whether a Client is active in the Traded Options market before inviting them to provide option volatilities. These submissions could be for any of the five delta points that the Exchange collects (i.e. -10, -25, +50, +25, +10) in any Metal Option series for which the Client is active. Where one or more Clients so agree to provide volatility data, the Exchange may consider granting a waiver to the relevant Member (whose Client or Clients are providing volatility data) in respect of the Metal Option for which the Client has contributed volatilities. This will be at the absolute discretion of the Exchange. For the avoidance of doubt, a Member will still be required to provide volatilities where no Client has been invited to provide volatilities.

27. Submission window for volatility submissions and objection window for volatility submissions

The submission window will be open from 9.00 am to 4.30 pm for submissions to LMEprism, with effect from 08 July 2019. This revised submission window replaces a submission window of 9.00 am to 5.15 pm. The provisional report will be published at 4.45 pm. The objection window will start at 4.45 pm and end at 5.15 pm. All times set out here are prevailing UK times.



28. Mandatory requirement for Members to provide certain volatility quotes across designated delta points for a prescribed number of months for certain Options series

Currently, Members who are obliged to provide volatilities for Copper, Primary Aluminium, Zinc, Nickel or Lead Metal Options must submit volatility quotes for each of the five designated delta points (described in paragraph 20) for the front six months. These Members are required to submit by virtue of having reached the 2% threshold detailed more fully in the next paragraph.

The LME has determined that Members who trade significant volumes of option contracts should be obliged to submit volatilities. The measurement of significant volume for each relevant metal is defined as 2% or more of total volume traded during the relevant period. The LME conducts quarterly retrospective assessments against the 2% threshold. Notwithstanding the 2% threshold, the LME reserves the right to waive the submission of volatilities or require Members to submit volatilities where it is at, just under or just over the 2% threshold at its discretion. If a Member breaches the 2% threshold for the retrospective quarter for a particular metal, then the Member shall be required to provide the prescribed volatility data for Options Contracts in that metal subject to LME discretion.

Members are reminded that failure to comply with this obligation may result in that Member being subject to LME disciplinary procedures. Any Client who is invited to submit, but whose submissions are not used by the LME because they are deemed to be unreflective of prevailing volatilities in the market, will not result in any disciplinary procedures being taken against the Client or the relevant Member acting on their behalf.

29. Sources of data used to reference market activity

The LME has formalised the existing process to use quotes and trades from all LME Execution Venues as the source used to reference current market activity. If the LME feels that quotes and trades from other venues are more accurate than the submissions it has received, effective 2 September 2019, the LME reserves the right to use its expert judgement to reference current market activity with the aim to aligning valuations more closely to the prevailing market.

30. Current procedures used for determination of Closing Prices for Traded Options

The current procedures used for the determination of the Closing Prices for Traded Options are as follows:



- (a) In accordance with the LME Rulebook, if a Member is active in a particular Metal Option at any time as determined by the LME, it shall be obliged to provide closing volatilities to the LME for the purpose of the Clearing House valuations, if requested;
- (b) The LME reviews trading activity on a quarterly basis and if a Member trades 2% or more of total volume for a particular metal in the preceding quarter, the LME will formally request the Member to participate in the valuation process;
- (c) Volatility submissions from Members will be collected by LMEprism between 9.00 am and 4.30 pm. These contributions are collected in delta space across five points, i.e. -10, -25, +50, +25, +10, for each Metal Option series;
- (d) A Member is not required to provide volatility quotes for all tradeable months for the relevant Metal Option if it feels it is unable to supply a full and/or accurate set of data;
- (e) Voluntary submissions can be accepted from Members, at the discretion of the LME, if the LME feels that this would lead to an improved set of data;
- (f) Members who are obliged to provide submissions under the 2% rule but feel they are not qualified because of the nature of their business may ask the LME for a waiver;
- (g) When all Member submissions have been collected in LMEprism, the system will calculate an average volatility value for each delta point for each Metal Option series;
- (h) The LME will remove any data errors, outliers or stale data using its absolute discretion to ensure the submissions are representative of current market levels;
- (i) The LME will also validate volatility submissions against the mandatory input of traded data in the 'Volatility' field for Cleared Metal Option Contracts in LMEsmart and also against any other available data sources;
- (j) The calculated report for the provisional Closing Prices is published to contributing Members in LMEprism at approximately 4.45 pm;



- (k) When Members have viewed the published provisional report, they have until 5.15 pm to object by selecting the Metal Option series and individual month and inserting a comment that provides the grounds for an objection. The Exchange will circulate any objections to Members for feedback and the objection is then accepted or rejected by the Exchange; and
- (l) The Exchange will transmit the final Closing Prices to the Clearing House at around 5.50 pm so they can be used for daily margining calculations.
- (m) The calculation of the volatility surface for Option daily Settlement Prices for metal options has been enhanced to incorporate cubic spline interpolation across the delta 5 to 95 delta space. The LME publishes Option daily Settlement Prices in premiums per tradeable strike price in a large data array for all tradeable strike prices from 5 to 95 delta per expiry.

LME Traded Average Price Options (TAPOs)

- 31. LME TAPOs are monthly options based on daily averaged futures, with a volatility surface based on the Traded Options volatility surface. Traded Options expire on the first Wednesday of each month, whilst TAPOs expire on the last Business Day of the month. Due to these differences the LME bases the TAPO closing volatilities on the Traded Options volatility surface subject to a “date weighted adjustment” applied to Traded Options volatilities for use within the LME TAPO model.
- 32. LME also calculates and publishes TAPO wing volatilities (-10, -25, 50, +25 +10 deltas), and their raw ungraded Strike Prices and premiums in line with Traded Options through the LME’s pricing system.
- 33. To calculate the Traded Average Price Option, a Weighted Average Volatility (“WAV”) and a Reduced Volatility (“RV”) will be used. This change will apply the RV component to the TAPO Volatilities produced by the LME and will be published via the current CVS XML report from LMEselectMD (received by market data vendors only).
- 34. Once calculated, the LME pass the resulting set of TAPO Strike Prices for each of the TAPO series to the Clearing House for its daily margin calculations.

Financial Penalties

- 35. On 20 December 2019 the LME published the Indicative Penalties Notice.
- 36. Paragraph 22(iv) of the Indicative Penalties Notice sets out the following indicative fines for errors in the reporting of options volatilities: 5 days of errors or



more in a calendar month: £1,000 for first offence, £2,000 for a second offence, and £5,000 for each offence thereafter within a 24 month rolling period. An offence may include a failure to report as well as errors in what has been reported.

37. Significant or persistent breaches of the reporting requirements will be considered to be a disciplinary offence and Members who are found to be in violation of the requirements may be subject to the LME's disciplinary process.
38. This might include (without limitation) providing volatilities that are significantly away from the market or which are otherwise, in the LME's opinion, erroneous.

James Macdonald
Head of Trading Operations

cc: Board directors
Traded Options Committee