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## FINAL NOTICE

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To: **Citigroup Global Markets Limited**

Reference Number: 124384

Address: Citigroup Centre  
33 Canada Square  
London  
E14 5LB  
UNITED KINGDOM

Date: 17 May 2024

### 1. ACTION

- 1.1. For the reasons given in this Final Notice, the Authority imposes on Citigroup Global Markets Limited (CGML/the Firm) a financial penalty of £27,766,200 pursuant to section 206 of the Act for breaches of Principles 2 (skill, care and diligence) and 3 (management and control) of the Authority's Principles for Businesses, and for breaches of Rule 7A.3.2 of the Market Conduct part of the Authority's handbook known as MAR.
- 1.2. CGML agreed to resolve this matter and qualified for a 30% (stage 1) discount under the Authority's executive settlement procedures. Were it not for this discount, the Authority would have imposed a financial penalty of £39,666,000 on CGML.

## **2. SUMMARY OF REASONS**

### **The Authority's expectations**

- 2.1. The Authority's strategic objective is to ensure that financial services markets function well and the operational objective is to protect and enhance the integrity of the UK financial system. This integrity objective is advanced by ensuring – amongst other things – that the business of those firms acting in relevant markets is carried out in a way that is consistent with the orderly operation of the financial markets. Market integrity fosters confidence, trust and the level of participation in those markets.
- 2.2. Firms operating in wholesale markets use algorithms for a number of purposes across their trading activity. Automated technology brings significant benefits to investors, including increased execution speed and reduced costs. However, it can also amplify certain risks. It is essential that systems, including internal order management systems that have the capability to send instructions to create orders in algorithmic trading systems, have suitable and robust pre trade controls, to reduce potential trading risks before orders are created in algorithmic trading systems. In the absence of appropriate systems and controls, the increased speed and complexity of financial markets can turn otherwise manageable errors into significant events with potentially wide-spread implications.

### **The Firm**

- 2.3. CGML is headquartered in London and is a wholly-owned indirect subsidiary of Citigroup Inc. (Citigroup). As Citigroup's international broker-dealer, CGML professionally arranges and executes transactions serving its institutional and corporate clients. The Delta 1 business within CGML provides access, financing, and investment solutions to a broad spectrum of clients (institutional, corporates and hedge funds) via synthetic products such as derivatives, swaps and exchange-traded funds. The Delta 1 business consisted of a number of desks. One of these desks (the Delta 1 Desk) was involved in a trading incident on 2 May 2022 (the trading incident).

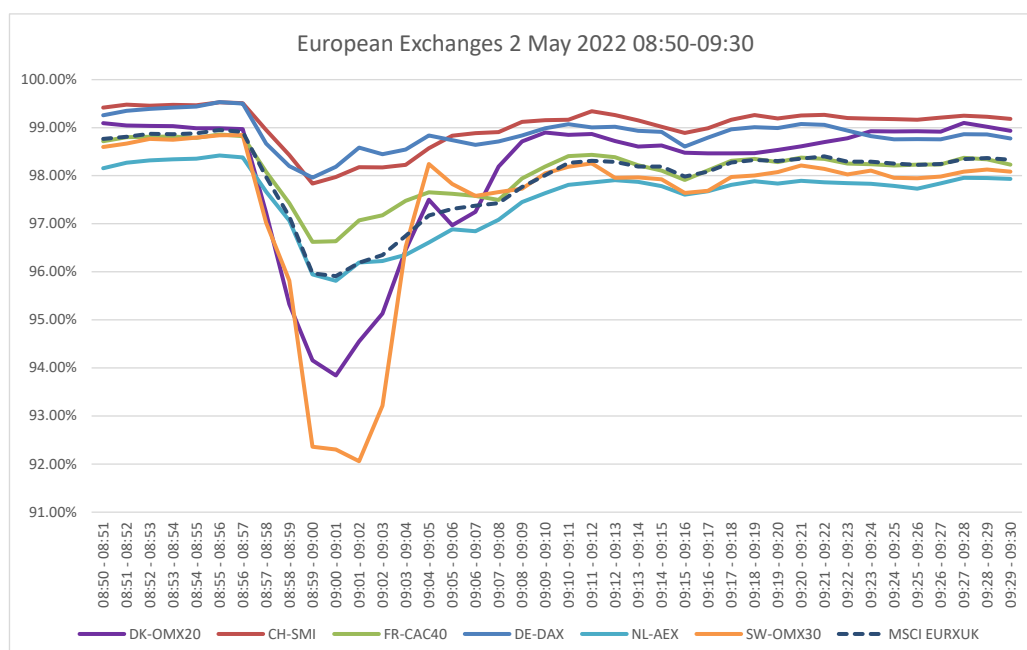
### **2 May 2022 Trading Incident**

- 2.4. On the morning of 2 May 2022 (a UK Bank Holiday), a trader on the Delta 1 Desk made an inputting error whilst loading a basket of equities into an Order Management System (OMS) used by the Delta 1 Desk, called PTE. The trader had

intended to sell a basket of equities to the value US\$58m. However, the trader erroneously loaded a basket with a notional size of US\$444bn comprising 349 stocks, across multiple European markets. While parts of CGML's trading control framework operated as CGML expected, some primary controls were absent or deficient. As a result of the primary control failings, erroneous orders with a notional size of US\$196bn were generated in CGML's electronic trading system, CitiSmart, for execution and were not subsequently cancelled in their entirety, such that in total, US\$1.4bn of sell orders were executed across various European exchanges.

- 2.5. The trader had entered the value of the basket of equities in the wrong field, the unit quantity field rather than the notional value field, whilst entering the instructions which created the erroneous basket. At 08:56 a 'Trade Limit Warning' pop-up alert appeared within PTE. This presented the trader with 711 warning messages, consisting of hard block and soft block messages, listed in a single alert where only the first 18 lines of alerts were immediately visible unless the person who received the alert scrolled down. The trader did not appreciate their inputting error and overrode all of the soft warnings in the pop-up.
- 2.6. Two hard blocks generated by the PTE system, which could not be overridden, collectively stopped US\$248bn of the basket of equities progressing for execution. The trader was then presented with a further pop-up alert entitled "Final Trade Confirmation". It contained a wave notional value of all the individual equities in the basket as a total (which was approximately US\$196bn). The trader clicked the "OK" option which routed the remaining basket of equities with a notional value of \$196bn into CitiSmart for execution using a VWAP trading algorithm, where individual parent and child orders were generated. Controls within CitiSmart immediately blocked seven orders before the remaining US\$189bn of the orders in the basket were sent to be executed using a VWAP algorithm for trading over the rest of the day. The VWAP algorithm created a schedule for slicing the notional of each order into smaller parts, such that it did not immediately send the entire notional of an order to the market for execution. During the period the orders were executing, four separate controls within CitiSmart operated as designed and led to the suspension of 242 individual orders with a total value of US\$163bn. A total of US\$1.4bn sell orders were executed across various European exchanges, coinciding with a material short term drop in several European indices, before the remaining orders were cancelled in full at 09:10 by the trader.

- 2.7. At 08:48 on 2 May 2022 as a result of scheduled staff leave, the Algorithmic Service Desk, a team responsible for real-time monitoring of internal executions, passed its responsibilities to the Electronic Execution desk (EE Desk). The EE Desk is primarily responsible for real time monitoring of algorithmic order flow originated from external clients. The EE Desk did not escalate either the 284 information alerts generated from the erroneous basket trade, or the suspension alerts. Furthermore, additional post-trade monitoring performed by the E-Trading Risk and Controls Team (ETRC) failed to escalate the incident appropriately because their monitoring system filtered out all but eight of the information alerts relating to the erroneous basket trade. The ETRC team escalated the incident to the EE Desk covering the Algorithmic Service Desk, via email, at 09:31, 20 minutes after the trader had cancelled the order. Having received no response to their email, the ETRC team followed up with them four hours later.
- 2.8. The erroneous orders executed across exchanges in the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland. The incident coincided with a material short term drop in several European indices for a few minutes and the MSCI Europe ex UK Index fell just over 4%, compared to its previous close, within five minutes of the erroneous basket starting to trade. Below is a chart of the main European indices (excluding the UK) on the morning of 2 May 2022. The trading incident resulted in a US\$48m loss for CGML.



Source of underlying data, Bloomberg.

## **CGML's breaches**

2.9. Principle 2 requires a firm to conduct its business with due skill, care, and diligence. CGML breached Principle 2 because it:

- a) Failed to review and monitor whether a key control that suspended live orders within CitiSmart was set at an effective level since it had been increased in response to higher volatility at the start of the COVID pandemic.
- b) Failed to review and consider revising its pop-up system whereby traders were able to override multiple soft limit pop-up alerts without scrolling down or reading all the alerts.
- c) Failed to exercise due skill, care and diligence in the real-time monitoring of internal executions on 2 May 2022.

2.10. Principle 3 requires a firm to take reasonable care to organise and control its affairs responsibly and effectively, with adequate risk management systems. CGML breached Principle 3 because it:

- a) Failed to implement effective and appropriate hard blocks to limit or prevent erroneous orders placed in PTE progressing to execution for DSA flow. There were two key hard blocks that were absent in PTE. The main absence was a notional basket-level limit in the form of a hard block which would have been the primary preventive control to prevent erroneously sized basket trades being sent to the market. There had been one in place on the New York Delta 1 Desk since May 2013 but there was no control of this nature for the Delta 1 Desk. One hard block that was in place was not set at an effective level to appropriately mitigate the risk of an erroneous orders being sent to the market. The limit in place of US\$2bn for each individual order item was set too high to be effective.
- b) Failed to set a key control in CitiSmart at an effective level to mitigate the risk of erroneous orders being executed in the market.
- c) Failed to maintain and operate adequate preventative controls in the form of hard and soft limit alert notifications in PTE. The pop-up alert was poorly designed and did not operate effectively as a risk management tool.
- d) Failed to have adequate real-time monitoring of the erroneous trade during the execution process. The Firm failed to ensure that the additional monitoring by the EE Desk and ETRC team was effective.

- 2.11. CGML also breached MAR 7A.3.2 which requires a firm to have in place effective systems and controls, suitable to the business it operates, to ensure that its trading systems prevent the sending of erroneous orders, or the systems otherwise function in a way that may create or contribute to a disorderly market.

### **Sanction**

- 2.12. The Authority hereby imposes on CGML a financial penalty in the amount of £27,766,200 pursuant to section 206 of the Act, for breaches of Principle 2, Principle 3 and MAR 7A.3.2. CGML agreed to resolve this matter and qualified for a 30% (stage 1) discount under the Authority's executive settlement procedures. Were it not for this discount, the Authority would have imposed a financial penalty of £39,666,000 on CGML.
- 2.13. Ineffective systems and controls have the potential of eroding confidence in the markets and undermining the integrity of the UK financial system, engaging the Authority's statutory and operational objectives.
- 2.14. This action supports the Authority's statutory objective of protecting and enhancing the integrity of the UK financial system.

## **3. DEFINITIONS**

- 3.1. The definitions below are used in this Notice:

"ADV" means Average Daily Volume which is the number of shares of a particular stock which, on average, change hands during a single trading day;

"Algorithmic Service Desk" means the team primarily responsible for monitoring E-Trading Suspensions and alerts. They are part of the Technology division headcount and have the authority to re-release suspended orders to the market;

"Algorithmic trading" means Trading in financial instruments which meets the following conditions: (a) where a computer algorithm automatically determines individual parameters of orders such as whether to initiate the order, the timing, price or quantity of the order or how to manage the order after its submission (b) there is limited or no human intervention (see article 4(1)39 of MIFID II);

"Basket of Equities" means a collection of multiple securities that may be linked to a particular index;

"CitiSmart" means CGML's electronic algorithmic trading system. Orders which are created in PTE are sent to CitiSmart where execution strategies, such as volume-weighted average price (VWAP), are applied. Baskets consisting of parent orders for each security are sliced into 'child orders' which are then passed to the smart order router 'XSOR' for transmission to external venues, such as exchanges;

"ETF" means Exchange Traded Funds;

"DEPP" means the Decision and Procedure Practice manual;

"DSA flow" means Direct Strategy Access Flow; Orders that enter the algorithms within CitiSmart are referred to as DSA flow.

"DMA flow" means Direct Market Access flow. This means routing of an order directly to the Smart Order Router (XSOR) strategies, which then route to various venues or external brokers. These orders do not go through CitiSmart algorithms;

"DNA Viewer" or "Genie" is the tool used to monitor and interrogate orders being handled by CitiSmart. The Algorithmic Service Desk use this tool to monitor flow from internal desks. EE Desk use it to monitor client flow

"EE Desk" means Electronic Execution desk, a team responsible for the execution quality for external clients;

"E-Trading" means Electronic Trading as trading in financial instruments, where the pre-coded electronic trading systems manage electronic pricing, market making and algorithmic execution with limited or no human intervention;

"E-Trading Policy" means a broader framework of documentation that describes the standards for risk management by the business controls over E-Trading;

"EQRMS" means Equity Risk Management System, a first line market risk exposure measurement system designed to report on market risks;

"ETRC" means e-Trading Risk & Controls; ETRC was set up in 2018 in response to the regulatory requirement for independent real-time monitoring for signs of

disorderly markets. The team covers all asset classes and uses a system called HALO which feeds in a selection of alerts from the relevant trading systems;

"HALO" means a system which takes relevant feeds in a selection of alerts from the relevant trading systems and is used to provide independent real-time monitoring;

"Hard blocks" means operational trading limits that cannot be overridden by individual traders;

"Index" means a group or "basket" of securities, derivatives, or other financial instruments that represents and measures the performance of a specific market, asset class, market sector or investment strategy whereby as the combined value of the securities in the index moves up or down, the numerical value, or the index level, changes to reflect that movement;

"Index Ticker" means the code assigned by an exchange or market data provider to a particular index;

"OMS" means Order Management System. The Delta 1 desk used an OMS called PTE for entering order information and observing the progress of the entered order in the market;

"OTC" means Over the Counter – OTC trades are conducted without the underlying securities being listed on an exchange, such as some types of derivatives. Securities that are traded over-the-counter may be facilitated by a dealer or broker specializing in OTC markets;

"MAR" means the Market Conduct part of the Authority's handbook;

"PRA" means the Prudential Regulation Authority;

"PTE" means Programme Trading Execution – the order management system used by the Delta 1 Desk;

"SOLA" means a third-party add-in to MS Excel that provides data for basket calculation and construction;

“ValAtBM” means Value at Benchmark; The (ValAtBM) within PTE is a calculation of the total value of a trade. The calculation is the number of units of the selected index multiplied by the price of selected the benchmark;

“VWAP” means volume-weighted average price.

“the Act” means the Financial Services and Markets Act 2000 (as amended);

“the Authority” means the Financial Conduct Authority;

“the Tribunal” means the Upper Tribunal (Tax and Chancery Chamber);

#### **4. FACTS AND MATTERS**

##### **CGML**

- 4.1. CGML is incorporated in England and Wales and is authorised by the Prudential Regulation Authority (PRA) and regulated by both the Financial Conduct Authority (FCA) and PRA as its primary regulators.
- 4.2. CGML operates globally; generating the majority of its business from the Europe, Middle East and Africa (EMEA) region with the remainder coming from Asia and the Americas. The Firm operates as a market maker in equity, fixed income and commodity products across cash, OTC derivatives and exchange-traded markets. The Firm also provides investment banking, capital markets and advisory services.
- 4.3. The Firm is involved in trading a range of products across a number of markets. Its principal business areas are: Banking; Capital Markets and Advisory; Commodities; Equities; Global Spread Products; and Rates. Equities is comprised of the following business lines: Equity Markets; Multi Asset Group; Prime Finance; Delta 1; and Futures and OTC Clearing.
- 4.4. CGML’s EMEA Delta 1 business provides access, financing, and investment solutions to a broad spectrum of clients (institutional, corporates and hedge funds) via synthetic products such as swaps, ETFs and access products. The EMEA Delta 1 business contained a number of different trading desks with a range of activities, such as; ETF trading, equity finance and elements of prime broker solutions and specific Index trading. One of these desks was the Delta 1 Desk.

## **Overview of the trading incident on 2 May 2022**

- 4.5. On the morning of 2 May 2022 (a UK Bank Holiday), a trader on the Delta 1 Desk made an inputting error whilst loading a basket of equities into an Order Management System (OMS) used by the Delta 1 Desk, called PTE. The trader had intended to sell a basket of equities to the value US\$58m. However, the trader erroneously loaded a basket with a notional size of US\$444bn comprising 349 stocks, across multiple European markets. While parts of CGML's trading control framework operated as CGML expected, some primary controls were absent or deficient. As a result of the primary control failings the resulting erroneous orders were not cancelled in their entirety.
- 4.6. The trader entered the value of the basket of equities in the wrong field, the unit quantity field rather than the notional value field, whilst entering the order which created the erroneous basket. Various controls prevented US\$255bn of the US\$444bn basket of equities progressing, before orders in respect of the remaining US\$189bn in the basket were sent to be executed using a VWAP algorithm over the rest of the day. A total US\$1.4bn sell orders were executed across various European exchanges, coinciding with a material short term drop in several European indices, before the order was cancelled in full at 09:10 by the trader. The order had been originally placed at 08:56.
- 4.7. The erroneous orders executed across exchanges in the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland. The incident coincided with a material short term drop in several European indices for a few minutes and the MSCI Europe ex UK Index fell just over 4%, compared to its previous close within five minutes of the erroneous basket starting to trade. At paragraph 2.8 above is a chart of the main European indices on the morning of 2 May 2022. During the period the erroneous trade was executing, the Firm made internal enquiries and consulted newswires to ascertain what had caused the price movement. The trading incident resulted in a US\$48m loss for CGML.

## **Background to the trade**

### *The Delta 1 Desk*

- 4.8. The Delta 1 Desk provides derivative products, such as synthetic equity futures and swaps, to clients. A Delta 1 product gives the investor the same exposure as if the investor were to own the underlying asset. An equity derivative can provide an

investor with exposure to many stocks, such as an index, without the operational burden and expense of having to transact each stock themselves. The price of these products closely tracks that of the underlying stocks and therefore, Delta 1 traders can hedge their exposure to clients by taking opposing positions in the underlying stocks. The hedging of exposures would reduce CGML's risk position.

- 4.9. The Delta 1 Desk would create basket trades. A basket trade is where a number of securities are traded at the same time. The notional value of a basket trade is the total overall value of all the individual orders within the basket.
- 4.10. The Delta 1 Desk used an OMS called PTE for entering orders and observing the progress of the entered orders in the market. It also used a third party "Add-in" application within MS Excel called SOLA, as an alternative source for data to compile index basket trades. When placing an order in PTE, the trader would enter the index ticker. There was then an option to enter the notional value of the basket of equities, or else the 'Quantity' of units of the relevant index, to be bought or sold. Either of these fields could be populated to determine the total size of any basket of equities.
- 4.11. When the Delta 1 desk traders sent an order for execution from PTE, they would have the option to send it to the electronic trading system CitiSmart for onward processing. The orders created by the Delta 1 desk may therefore ultimately be executed pursuant to logic contained within algorithms within CitiSmart. The trader would have the option to select in PTE which CitiSmart execution strategy they wished to be used (for example a Volume-Weighted Average Price "VWAP" strategy could be selected). Following this selection, the basket of equities would then be routed from PTE to the CitiSmart algorithm. When an order entered the algorithms within CitiSmart, it was referred to as Direct Strategy Access (DSA) flow. In contrast, trading that went directly to venues or external brokers and not through the CitiSmart algorithms was referred to as Directed Market Access (DMA) flow. Order flow initiated by the Delta 1 desk is not always DSA flow.
- 4.12. In addition, traders within CGML used EQ RMS which was a first line real-time market risk exposure measurement system to understand their positions, and associated risk, on their trading books.

*Key relevant trading controls*

- 4.13. There were three key categories of trading controls relevant to the trading incident on 2 May 2022:

- a) Preventative pre-trade controls within PTE;
- b) Preventative controls within CitiSmart; and
- c) Detective real-time monitoring.

Pre-trade controls within PTE

- 4.14. Pre-trade controls within the PTE system were set as either a hard or soft block. If a hard block was triggered when a control threshold was hit, a pop-up appeared. The hard block could not be overridden. The order would be cancelled and not sent to downstream systems or the market for execution. If a soft block was triggered when a control threshold was hit, a pop-up appeared. However, the soft blocks by their design could be overridden.
- 4.15. The pop-up that contained warnings that hard or soft block control thresholds had been exceeded was the 'Trade Limit Warning' box pop-up which in turn appeared within the PTE screen. The Trade Limit Warning box displayed a list of warning messages in a table. This table included warnings for each hard or soft block that had exceeded limits. Within the list each warning stated the reason why the order had exceeded the control threshold. The pop-up box was configured such that only the first 18 lines of the list of warning messages were visible without scrolling down. The system did not require a trader to scroll down through the list of warning messages before the trader proceeded. The trader was able to override all of the soft block notifications in the pop-up.
- 4.16. The hard blocks thresholds that existed on 2 May 2022 within PTE included:
- a) An Order Notional block: set at US\$2bn (for each individual item in an order).
  - b) An Order Quantity block: set at 200m shares (for each individual item in an order).
- 4.17. The soft blocks thresholds that existed on 2 May 2022 within PTE included:
- a) A Wave Notional block: set at US\$100m (on the total value of all the individual orders within a basket).
  - b) An Order Notional block: set at US\$50m (for each individual item in an order).
  - c) An Order ADV block: the average number of shares of a particular stock which, on average, change hands during a single trading day was set at a maximum ADV limit of 30% (for each individual item in an order).
- 4.18. Critically, on 2 May 2022 the following hard block thresholds were absent in PTE:

- a) A Wave Notional hard block that would cancel basket trades that exceeded a total value limit and prevent the entire order progressing for execution. This was in contrast to the Firm's New York Delta 1 Trading Desk that did have a wave notional hard block of this type, which was first implemented in May 2013. The wave notional hard block was not rolled out to the EMEA instance of PTE. As at 2 May 2022 the level of the wave notional hard block in place for the New York Delta 1 desk was set at US\$4bn. A basket-level monetary value hard-limit of this nature would have been the primary preventive control for erroneous trade-size entry. A wave notional hard block also has the purpose of mitigating some of the risk posed by the order system being deliberately abused for the purpose of committing financial crime. For the avoidance of doubt the trading incident related to an erroneous order, not one placed deliberately.
- b) An Order ADV hard block limit set within PTE for the Delta 1 desk DSA flow. However, a maximum ADV limit of 95% was set as a hard block for DMA flow.

#### Controls within CitiSmart

- 4.19. CitiSmart contained controls designed to manage risks under the framework described within the CGML's E-Trading Policy. This included risks identified in response to real-time market data. For example, orders were suspended if the rate of orders exceeded set levels. In addition, CitiSmart had a price move on arrival control whereby trades were suspended if the price moved by more than a designated level. It worked by suspending any executions of a particular stock when the price of that stock had moved a defined percentage from the price at which the order was initially placed.
- 4.20. The price on arrival control percentage was calibrated at 15%. This meant that when the price of a particular stock within a trader's basket had moved (in either direction) by 15% from the price at which the order had initially been placed, all further executions were suspended in that particular stock until resumed by the EE Desk. The control had been recalibrated from 5% to 15% in March 2020 by the EE Desk in response to increased market volatility caused by the outbreak of COVID. Following the increase of the limit to 15% in March 2020, there were no subsequent reviews or monitoring of the threshold until after the 2 May 2022 trading incident.

#### Real-time monitoring

- 4.21. Monitoring within CitiSmart enabled the timely escalation of potential issues with orders. As such, monitoring was a critical mechanism for CGML to fulfil its obligations to minimise and mitigate the risks of disorderly trading and the accompanying risk of contributing to or creating a disorderly market.
- 4.22. Any suspensions to individual orders in CitiSmart were presented in real-time in a dedicated monitoring application, DNA Viewer. In addition to suspensions of orders, the application also provided information alerts designed to allow further monitoring of specific data, such as large orders as they entered CitiSmart. The Algorithmic Service Desk had responsibility for monitoring the executions of the CGML internal desks using CitiSmart and for monitoring suspensions. They had the authority to re-release suspended orders to the market.
- 4.23. There was a general understanding that when the Equities Algorithmic Service Desk was not staffed, the responsibility for that desk would pass to the EE Desk. The EE Desk's primary responsibility was usually to monitor the flow and execution quality for external clients. It did not ordinarily monitor suspensions of orders in the systems of internal desks.
- 4.24. Additionally, the Firm had the ETRC team who were another first line of defence team covering all asset classes. Its responsibility also included real-time monitoring for disorderly markets. They undertook that real-time monitoring on their platform called HALO, which took relevant feeds from the trading systems.

### **Events of 2 May 2022 trading incident**

#### *The Trade*

- 4.25. On the morning of 2 May 2022 (a UK Bank Holiday), CGML received a request to sell 24,800 lots of the MSCI World Index futures, primarily priced on an agency basis. Between 08:47 and 08:54, a trader on the Delta 1 desk set about booking a basket of equities to hedge a proportion of CGML's European exposure to the MSCI World Index. This required a decomposition of the Index; detailing the constituents of the Index and their relative weighting within it. Having done this, the value for each component stock of the basket could be calculated. There were at least two methods available to the trader to do this, either using PTE directly or using a decomposition tool called SOLA. However, at this moment the SOLA tool was unavailable, meaning the trader was unable to use this tool to construct the constituents of the Index. Therefore, at 08:54 the trader entered the European

element of the trade directly into PTE, selecting a pre-loaded index. The trader's intention was to initially hedge US\$58m.

- 4.26. Rather than entering 58 million into the 'Notional' field, which would have created a basket of equities with a notional of US\$58m, the trader entered 58 million into the 'Quantity' field. This had the effect of creating a basket equivalent to 58 million units of the Index, which equated to 349 stock orders, across 13 European countries, with a total notional size of US\$444bn. At this point, the erroneous basket was not visible to the market.
- 4.27. Ordinarily, the Value at Benchmark field (ValAtBM) on the PTE screen displays the value of the relevant basket at a specified benchmark and is used where traders need to track the value against a reference price. In this case, PTE defaulted to the option "Strike". The default "Strike" option was programmed to determine the price of the Index at the prior day's close, by reference to an external data feed. However, as data from that external feed was unavailable, the price of the value of the Index instead defaulted to -1 rather than the benchmark price which was US\$7684.40. The quantity of units was therefore multiplied by -1. There were number of other fields on the PTE screen in which the total notional value of the basket was correctly displayed. However, the trader only checked the the ValAtBM on PTE to confirm the size of the basket. When the trader checked the value of the inputted basket, they were presented with a figure of negative 58 million for the value of the basket (58 million multiplied by -1). The trader saw a ValAtBM of -58,000,000, which was the number they expected to see, and thus they clicked Execute to continue to the next check. The quantity box, next to the ValAtBM also presented 58,000,000. Had the data feed been available, ValAtBM would have shown a basket of approximately US\$444bn i.e., the true notional value of the basket.

#### *Operation of Pre-Trade Controls on 2 May 2022*

- 4.28. At 08:56 a 'Trade Limit Warning' pop-up appeared within PTE. This presented 711 warning messages, listed in a single alert. Only the first 18 lines of the list of warning messages were visible in the pop-up without scrolling. The trader needed to scroll down the list to view the remaining 693 warning messages, in batches of 18 at a time. The warnings in the table contained both hard and soft warnings.
- 4.29. There were two types of hard block warnings referred to in the list of 711 warning messages. There were messages warning that individual orders had exceeded the

hard block notional threshold of US\$2bn. In addition, there were warning messages that stated individual orders had exceeded the hard block quantity threshold of 200 million shares. These hard blocks prevented 58 orders totalling US\$248bn of the original US\$444bn notional value of the basket progressing for execution.

- 4.30. The soft block warnings making up the majority of the 711 warning messages in the single pop-up primarily referred to individual orders within the basket exceeding the soft block order notional threshold of US\$50m and the Order ADV block threshold of 30%. The orders in the basket triggered a US\$100m wave notional soft block. However, on the day of the trading incident due to the lack of market data with which to calculate the index value, the wave notional soft block did not display the notional value of the order. It stated, *"Due to lack of market data, Wave notional cannot be found"*.
- 4.31. The trader was presented with two options within the 'Trade Limit Warning' pop-up. The options were "Override soft warnings" or "Cancel all". If the trader had clicked on "Cancel all" the entire basket would have been cancelled. However, the trader clicked on the "Override soft warnings" without scrolling down and reviewing all the 711 warning messages described above. As a result, only the orders with hard blocks associated with them were cancelled.
- 4.32. The trader was then presented with a "Final Trade Confirmation" pop-up box. It contained a table with the total quantity of individual orders within the basket (291) and the wave notional value of all the individual orders in the basket as a total (which was approximately US\$196bn). The trader clicked the "OK" option which routed the orders into CitiSmart for execution using a VWAP trading algorithm.
- 4.33. Critically, had a basket level wave notional hard block limit been in place within PTE the trading incident would not have occurred as it would have cancelled all the orders within the basket and none of the orders would have been sent to CitiSmart for execution. A control of this nature had been present in the US for some nine years. A basket-level monetary value hard-limit of this nature would have been the primary preventive control for erroneous trade-size entry.
- 4.34. Furthermore, there was no maximum order ADV hard block set within PTE for DSA flows. If the same ADV hard block limit of 95% which applied to DMA flows had been applied to DSA flows, the hard block would have cancelled all the orders within the basket and none of the orders would have been sent to CitiSmart for execution.

#### *Operation of Trade controls on 2 May 2022*

- 4.35. Out of the 291 orders sent from PTE to CitiSmart, a further seven orders were blocked and did not continue into the CitiSmart Algorithm due to missing data and closed markets owing to the Bank Holiday. Between 08:56:40 and 09:10:30, the VWAP algorithm in CitiSmart performed as CGML expected and created and submitted the remaining 284 orders (for US\$189bn notional) to the CitiSmart Algorithm to be executed.
- 4.36. Between 08:56:40 and 08:56:46, 284 information alerts were generated that stated 284 individual orders were incoming to CitiSmart which were in excess of the maximum notional value of US\$25m. These information alerts did not block or suspend the orders from going into the CitiSmart Algorithm for execution. Instead, these alerts appeared on the DNA Viewer to be checked by the Algorithmic Service Desk.
- 4.37. During the period the orders were executing, four separate controls within CitiSmart operated as designed and led to the suspension of 242 individual orders with a total notional value of US\$163bn. One of the controls, the 'price move on arrival', suspended 8 orders to a value of US\$2.4bn. As set out at paragraph 4.20, the level of the control was set at 15%. This control was ineffective due to its calibration. Had this control been calibrated at 5% on 2 May 2022 additional orders would have been suspended and the total value of the executed orders would have been reduced.
- 4.38. The remaining 42 orders with a notional value of US\$24.6bn were available to be executed with no suspension triggers until 09:10:30, when the trader cancelled the entire order. By this time, US\$1.4bn of orders had been executed in multiple stocks across multiple exchanges.
- 4.39. Below is a summary of how the original basket that the trader intended to sell to the value of US\$58m travelled through the Firm's systems and executed in the market:

| Event                                               | Number of stock orders | Notional US\$        |
|-----------------------------------------------------|------------------------|----------------------|
| <b>Original erroneous basket of equities in PTE</b> | 349                    | \$444bn <sup>1</sup> |

<sup>1</sup> At this point, the erroneous basket remained an internal set of instructions to sell the constituent equities within the basket, and as such the notional size of US\$444bn was not visible to the market.

|                                                                     |            |                             |
|---------------------------------------------------------------------|------------|-----------------------------|
| <b>Orders suspended by PTE hard blocks</b>                          | (58)       | (\$248bn)                   |
| <b>Total proceeding to CitiSmart</b>                                | <b>291</b> | <b>\$196bn</b>              |
| <b>Orders not accepted by CitiSmart</b>                             | (7)        | (\$7bn)                     |
| <b>Total received in CitiSmart</b>                                  | <b>284</b> | <b>\$189bn</b>              |
| <b>Orders that began to execute and were suspended in CitiSmart</b> | (242)      | (\$163bn)                   |
| <b>Orders available for execution which were not suspended</b>      | <b>42</b>  | <b>\$24.6bn<sup>2</sup></b> |

- 4.40. At 09:07, the trader reviewed EQRMS. The trader was expecting to see a long US\$1.075bn notional delta, reflecting the risk exposure from the trade with the client. However, the trader saw a short delta of US\$800m, which was rapidly increasing, concentrated in European stocks. Recognising something was wrong, the trader returned to PTE and discovered the error. After several attempts, the trader cancelled the erroneous Index order at 09:10:30. At the point of cancellation, 283 of the remaining 284 orders in the basket had been partially executed, with US\$1.4bn of orders being filled on European exchanges.

*Operation of Real-time monitoring on 2 May 2022*

- 4.41. At 08:48 on 2 May 2022, as a result of scheduled staff leave, the Algorithmic Service Desk passed its responsibilities to the EE Desk.
- 4.42. The EE Desk did not escalate either the 284 information alerts in DNA Viewer or the suspension alerts. During the period the market dropped, the EE Desk called trading desks within the Firm and consulted newswires to try and ascertain what had caused the market to fall. At the time of the erroneous trade, the EE Desk was handling client queries on the market dip that was occurring but did not initially associate the issue with a CGML order. Nor did it raise the fact that a large volume of suspensions had occurred within CitiSmart.
- 4.43. The EE Desk only became aware of the Firm's involvement when informed of such by a senior manager, subsequent to cancellation of the trade by the trader who was the first to recognise the error.

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<sup>2</sup> Although these orders were available for execution, as a result of the VWAP algorithm, the notional size of US\$24bn was not visible to the market.

- 4.44. In addition to the Algorithmic Service Desk, covered by the EE Desk that morning, additional monitoring was provided by the ETRC team. Their monitoring system, HALO, filtered out all but eight of the information alerts relating to the erroneous basket. Consequently, their escalation missed 226 message rate suspensions and the vast majority of notional value. The ETRC team escalated the incident to the EE Desk covering the Algorithmic Service Desk, via email, at 09:31, 20 minutes after the trader had cancelled the order. Having received no response to their email, the ETRC team followed up with them four hours later.

### **Changes to Trading controls by the Firm**

- 4.45. CGML revisited a number of controls after 2 May 2022 trading incident had occurred and took immediate steps in the days following the incident to make adjustments to its controls sufficient to prevent a similar incident occurring.
- 4.46. A Wave Notional hard block was added to PTE that would cancel the entirety of basket trades that exceeded a total value of US\$4bn on 13 May 2022. The order notional hard block on PTE that had been was set at a value of US\$2bn at the time of the trading incident was reduced to US\$250m on 5 May 2022. A hard block ADV limit with a 95% threshold was added to PTE for DSA flows on 13 May 2022.
- 4.47. The price on arrival control calibration for single stocks within CitiSmart was reduced from 15% to 5% on 6 May 2022 thus returning to the figure it was set at prior to its increase in March 2020.
- 4.48. The Firm undertook a significant remediation and validation exercise pursuant to a s166 Skilled Person requirement imposed by the PRA on 14 July 2022.

## **5. FAILINGS**

- 5.1. The regulatory provisions relevant to this Notice are referred to in Annex A.

### **The Authority's expectations**

- 5.2. The Authority's role is to ensure that the relevant markets function well which includes protecting and enhancing the integrity of the UK financial system. This integrity objective is advanced by ensuring – amongst other things – that the business of those firms acting in relevant markets is carried out in a way that is consistent with the orderly operation of the financial markets. Market integrity fosters confidence, trust and the level of participation in those markets.

- 5.3. The Authority expects firms to take reasonable care to establish and maintain such systems and controls as are appropriate to its business commensurate with the nature, scale and complexity of the firm's business, including the degree of risk in its operations. The implementation of suitable and robust pre- and post-trade controls to monitor, identify and reduce potential trading risks including in systems that have the capability to send instructions to create orders in algorithmic trading systems, is an essential element of risk management for those firms engaged in trading activities. The FCA expects firms engaged in trading activities, including those using algorithmic trading, to have effective systems and controls, suitable to the business it operates to prevent the sending of erroneous orders which may create or contribute to a disorderly market. In the absence of appropriate systems and controls, the increased speed and complexity of financial markets can turn otherwise manageable errors into significant events with potentially wide-spread implications.
- 5.4. Disorderly markets created or contributed to by ineffective systems and controls, have the potential of eroding confidence in the markets and undermining the integrity of the UK financial system.

### **Principle Breaches**

#### *Principle 2 breaches*

- 5.5. Principle 2 requires a firm to conduct its business with due skill, care, and diligence. CGML breached Principle 2 because it:
- a) Failed to review and monitor whether the price on arrival control that suspended live orders within CitiSmart was set at an effective level. The level was originally set at 5% but increased to 15% in March 2020 (due to higher volatility at the start of the COVID pandemic). The suitability of the 15% level was not reviewed until after the trading incident. Had this control been calibrated at 5% on 2 May 2022, additional orders would have been suspended within CitiSmart and the value of executed orders would have been reduced.
  - b) Failed to review and consider revising its pop-up system whereby traders were able to override multiple soft limit alerts in a single pop-up without necessarily scrolling down or reading the pop-ups.
  - c) Failed to exercise due skill, care, and diligence in the real-time monitoring of internal desk flow on 2 May 2022. CGML should have escalated and actioned

the suspensions and alerts generated as a result of the erroneous basket trade placed that day. Instead, there were missed opportunities to cancel the order. Specifically:

- i. The EE Desk that was responsible for monitoring internal desk flow on 2 May 2022 failed to escalate and respond to 284 alerts detailing orders incoming to CitiSmart that exceeded the notional value of US\$25m.
- ii. The ETRC team only reacted to and escalated the incident 20 minutes after the trader had already cancelled the order. Having received no response, the ETRC team followed up four hours later. These inadequate responses demonstrate serious failings in the Firm's implementation and operation of its monitoring control framework. The ETRC monitoring system filtered out all but eight of the information alerts related to the erroneous basket.

#### *Principle 3 breaches*

5.6. Principle 3 requires a firm to take reasonable care to organise and control its affairs responsibly and effectively, with adequate risk management systems. CGML breached Principle 3 because it:

- a) Failed to implement effective and appropriate hard blocks to limit or prevent erroneous orders placed in PTE progressing to execution:
  - i. There was no Wave Notional hard block limit set within PTE for DSA flow on 2 May 2022. A notional basket-level limit in the form of a hard block would have been the primary preventive control to prevent erroneously sized basket trades being sent to the market. In addition, a hard block of this nature has the purpose of mitigating some of the risk posed by the order system being deliberately abused for the purpose of committing financial crime. For the avoidance of doubt, the trading incident related to an erroneous order, not one placed deliberately. The control had been in place within the US business for the New York Delta 1 Desk since May 2013 but there was no control of this nature for the Delta 1 Desk.
  - ii. There was no ADV hard block within PTE that applied to DSA flow. As a result, there was no ADV hard block for basket trade orders created by the Delta 1 desk. If the ADV limit of 95% (which was set as a hard

block for DMA flow) had been calibrated for DSA flow, it would have blocked all the orders within the erroneous trade.

- iii. The threshold of the Order Notional block for each individual order in PTE, was not set at an effective level to appropriately mitigate the risk of an erroneous orders being sent to the market. The limit in place of US\$2bn was set too high to be effective. Had that hard block been calibrated at a lower level, it could have prevented additional orders within the erroneous basket trade being sent for execution.
- b) Failed to set the price on arrival control in CitiSmart at an effective level. As at 2 May 2022 the level was set to suspend orders if they had moved 15% from the price on arrival, a level determined in response to increased volatility at the start of the COVID pandemic. This control was ineffective due to its inappropriate calibration. Had this control been calibrated at 5% (at pre-COVID levels) on the 2 May 2022, additional orders would have been suspended and the total value of the executed orders would have been reduced.
- c) Failed to maintain and operate adequate preventative controls in the form of hard and soft block limit alert notifications in PTE. The pop-up alert was poorly designed and did not operate effectively as a risk management tool:
  - i. Alerts for any limit breaches within PTE were presented as a single pop-up. Control threshold breaches, hard and soft (ADV, Order Notional, Quantity, and Price) were amalgamated within a single pop-up. Further, the pop-up only presented 18 lines as a maximum. For the trading incident in question, the pop-up would have included 711 lines, but only 18 were immediately visible; and
  - ii. The soft blocks warnings within a single alert pop-up, covering all control thresholds, could be overridden without further investigation by the trader. Scrolling through the lines, 18 lines at a time, was required to read all the lines in the pop-up, but the system did not require traders to do so before being able to override all the soft blocks warnings.

Well designed and appropriate pop-ups enable traders to pause, reflect and appropriately review their trading order before placement, therefore reducing the risk of placing an erroneous order.

- d) Failed to have adequate real-time monitoring of the erroneous trade during the execution process.

- i. The Firm failed to ensure that monitoring of executions of CGML's internal desks using CitiSmart, was effective. The desk was understaffed and an open role had remained unfilled for a year, despite the Firm's efforts to fill the vacancy. This meant that there were insufficient levels of staffing within EMEA with the requisite skills and experience that was performing that monitoring. On 2 May 2022, as a result of scheduled staff leave, the responsibility for monitoring the executions of CGML's internal desks was handed over to the EE Desk.. At the time of the erroneous trade, the EE Desk was handling client queries on the market falls that were occurring but did not initially associate the issue with a CGML order. The EE Desk failed to escalate the 284 information alerts detailing orders incoming to CitiSmart that exceeded the notional value of US\$25m. Had those suspensions been escalated it may have led to orders being cancelled earlier and the value of the executed orders being reduced.
- ii. The Firm failed to ensure that the additional monitoring by the ETRC team was effective. The ETRC monitoring system filtered out all but eight of the primary message rate suspension alerts from CitiSmart and caused 226 message rate suspensions and the vast majority of notional value to be missed. The ETRC team only escalated the incident to the EE Desk 20 minutes after the trader had cancelled the order. Had the systems not filtered out the majority of the alerts linked to the erroneous trade, it may have led to orders being cancelled earlier and the value of the executed orders being reduced.

### **Breaches of Requirements for Algorithmic Trading**

#### *MAR 7A.3.2 breaches*

- 5.7. MAR 7A.3.2 requires firms that engage in algorithmic trading to have in place effective systems and controls, suitable to the business it operates. This includes ensuring that systems, such as internal order management systems that have the capability to send instructions to create orders to algorithmic trading systems, have suitable and robust pre- and post-trade controls to monitor, identify, and reduce potential trading risks. CGML breached MAR 7A.3.2 because:
  - a) Contrary to MAR 7A.3.2(2), CGML failed to have in place effective systems and controls which had appropriate trading thresholds and limits in place which were suitable to the business it operated; and

- b) Contrary to MAR 7A.3.2(3), CGML failed to have in place effective systems and controls which would prevent the sending of erroneous orders, or the systems otherwise functioning in a way that may create or contribute to a disorderly market, which were suitable to the business it operated.

## **6. SANCTION**

### **Financial penalty**

- 6.1. The Authority's policy for imposing a financial penalty is set out in Chapter 6 of DEPP. In respect of conduct occurring on or after 6 March 2010, the Authority applies a five-step framework to determine the appropriate level of financial penalty. DEPP 6.5A sets out the details of the five-step framework that applies in respect of financial penalties imposed on firms.

#### **Step 1: disgorgement**

- 6.2. Pursuant to DEPP 6.5A.1G, at Step 1 the Authority seeks to deprive a firm of the financial benefit derived directly from the breach where it is practicable to quantify this.
- 6.3. The Authority does not consider it practicable to quantify any financial benefit that CGML derived directly from its breach.
- 6.4. Step 1 is therefore £0.

#### **Step 2: the seriousness of the breach**

- 6.5. Pursuant to DEPP 6.5A.2G, at Step 2 the Authority determines a figure that reflects the seriousness of the breach. Where the amount of revenue generated by a firm from a particular product line or business area is indicative of the harm or potential harm that its breach may cause, that figure will be based on a percentage of the firm's revenue from the relevant products or business area.
- 6.6. The Authority considers that the gross revenue generated by desks within CGML's Delta 1 which used PTE is indicative of the harm or potential harm caused by its breaches and is therefore the appropriate basis for the Step 2 figure. This is because the gravamen of CGML's breaches relates to the lack of the primary preventative control for erroneous size basket entry, a wave notional hard block, which had been in place for the New York Delta One Desk since May 2013. A wave notional hard block also has the purpose of mitigating some of the risk posed by

the order system being deliberately abused for the purpose of committing financial crime. For the avoidance of doubt the trading incident related to an erroneous order, not one placed deliberately. The Authority considers that the relevant revenue generated by desks within CGML's Delta 1 which used PTE from May 2013 is **£480,800,000**.

- 6.7. In deciding on the percentage of the relevant revenue that forms the basis of the step 2 figure, the Authority considers the seriousness of the breach and chooses a percentage between 0% and 20%. This range is divided into five fixed levels which represent, on a sliding scale, the seriousness of the breach; the more serious the breach, the higher the level. For penalties imposed on firms there are the following five levels:

Level 1 – 0%

Level 2 – 5%

Level 3 – 10%

Level 4 – 15%

Level 5 – 20%

- 6.8. In assessing the seriousness level, the Authority takes into account various factors which reflect the impact and nature of the breach, and whether it was committed deliberately or recklessly. DEPP 6.5A.2G(11) lists factors likely to be considered 'level 4 or 5 factors'. Of these, the Authority considers the following factors to be relevant:

- a) The trading incident coincided with a material short term drop for a few minutes in some European indices.
- b) CGML failed to have in place effective systems and controls, suitable to the business it operated, to ensure that its trading systems prevented the sending of erroneous orders, or the systems otherwise functioned in a way that may create or contribute to a disorderly market. The Firm's breaches created a risk which could have crystallised at any point given the absence of key, preventative controls.
- c) The breaches revealed serious deficiencies in CGML's trading systems and internal controls in PTE, CitiSmart, and in its real-time monitoring.
- d) During the period that there was no wave notional hard block in PTE there was an increased risk that a large erroneous trade could be sent to the market or

that the order management system could be deliberately abused for the purpose of committing financial crime. For the avoidance of doubt, the trading incident related to an erroneous order, not one placed deliberately.

6.9. DEPP 6.5A.2G(12) lists factors likely to be considered 'level 1, 2 or 3 factors'. Of these, the Authority considers the following factors to be relevant:

- a) The trading incident resulted in a US\$48m loss for CGML.
- b) the breaches were committed negligently or inadvertently

6.10. Taking all of these factors into account, the Authority considers the seriousness of the breach to be level 4 and so the Step 2 figure is 15% of £480,800,000.

6.11. Step 2 is therefore **£72,120,000**.

### **Step 3: mitigating and aggravating factors**

6.12. Pursuant to DEPP 6.5A.3G, at Step 3 the Authority may increase or decrease the amount of the financial penalty arrived at after Step 2, but not including any amount to be disgorged as set out in Step 1, to take into account factors which aggravate or mitigate the breach.

6.13. The Authority considers that the following factors aggravate the breach:

*DEPP 6.5A.3G(2)(i) the previous disciplinary record and general compliance history of the firm*

6.14. In June 2005, CGML was fined £10m for breaches of Principle 2 and 3 relating to its trading activity.

6.15. In November 2019, the PRA imposed a financial penalty on several Citi entities, including the Firm, of £43,890,000 for a breach of FR6 (a firm must organise and control its affairs responsibly and effectively). This was the result of systems and controls failings which had persisted over a relevant period of 19 June 2014 to 31 December 2018.

6.16. In August 2022, the Firm was fined in excess of £12.5m by the Authority for breaches of Principle 2 and Article 16(2) of the Market Abuse Regulation (MAR), Regulation (EU) No. 596/2014 during the period between 2 November 2015 and 18 January 2018. By failing to properly implement the MAR trade surveillance requirements, the Firm could not effectively monitor certain of its trading activities,

and the Firm failed to identify significant gaps in its arrangements, systems and procedures in respect of its compliance with Article 16(2) MAR. These failings correspond with those identified by the Authority in this Notice.

*DEPP 6.5A.3G(2)(i) whether the FCA publicly called for an improvement in standards in relation to the behaviour constituting the breach or similar behaviour before or during the occurrence of the breach.*

6.17. In February 2018, the Authority published a report entitled “Algorithmic Trading Compliance in Wholesale Markets” which summarised key areas of focus for algorithmic trading compliance in wholesale markets, and highlighted good and poor practices. That report called for improvement from firms in a number of areas, including doing more to identify and reduce potential conduct risks created by their algorithmic trading strategies, and the potential impact their trading activity may have on the fair and effective operation of financial markets.

6.18. The Authority considers that the following factors mitigate the breach:

*DEPP 6.5A.3G(2)(d) any remedial steps taken since the breach was identified, including whether these were taken on the firm’s own initiative or that of the FCA or another regulatory authority [...]; and taking steps to ensure that similar problems cannot arise in the future;*

6.19. The Firm has also undertaken significant remediation in respect of its trading controls since the 2 May 2022 incident (see paragraphs 4.45 and 4.48).

*DEPP 6.5A.3G(2)(j) action taken against the firm by other domestic or international regulatory authorities that is relevant to the breach in question;*

6.20. The PRA is intending to take action and impose a penalty on CGML in relation to systems and controls issues, which include the 2 May 2022 trading incident.

6.21. Having taken into account these aggravating and mitigating factors, as well as the Firm’s cooperation during the course of the investigation, the Authority considers that the Step 2 figure should be decreased by 45%.

6.22. Step 3 is therefore **£39,666,000**.

#### **Step 4: adjustment for deterrence**

- 6.23. Pursuant to DEPP 6.5A.4G, if the Authority considers the figure arrived at after Step 3 is insufficient to deter the firm who committed the breach, or others, from committing further or similar breaches, then the Authority may increase the penalty.
- 6.24. The Authority considers that the Step 3 figure of £39,666,000 represents a sufficient deterrent to CGML and others, and so has not increased the penalty at Step 4.
- 6.25. Step 4 is therefore **£39,666,000**.

#### **Step 5: settlement discount**

- 6.26. Pursuant to DEPP 6.5A.5G, if the Authority and the firm on whom a penalty is to be imposed agree the amount of the financial penalty and other terms, DEPP 6.7 provides that the amount of the financial penalty which might otherwise have been payable will be reduced to reflect the stage at which the Authority and the firm reached agreement. The settlement discount does not apply to any disgorgement of any benefit calculated at Step 1 which is nil here.
- 6.27. The Authority and CGML reached agreement at Stage 1 and so a 30% discount applies to the Step 4 figure.
- 6.28. Step 5 is therefore £27,766,200.

#### **Proposed penalty**

- 6.29. The Authority therefore imposes a total financial penalty of £27,766,200 on CGML for breaching Principle 2, 3 and MAR 7A.3.2.

### **7. PROCEDURAL MATTERS**

- 7.1. This Notice is given to CGML under section 390 of the Act.
- 7.2. The following statutory rights are important.

#### **Decision maker**

- 7.3. The decision which gave rise to the obligation to give this Notice was made by the Settlement Decision Makers.

### **Manner and time for payment**

- 7.4. The financial penalty must be paid in full by CGML to the Authority no later than 31 May 2024.

### **If the financial penalty is not paid**

- 7.5. If all or any of the financial penalty is outstanding on 31 May 2024, the Authority may recover the outstanding amount as a debt owed by CGML and due to the Authority.

### **Publicity**

- 7.6. Sections 391(4), 391(6) and 391(7) of the Act apply to the publication of information about the matter to which this notice relates. Under those provisions, the Authority must publish such information about the matter to which this notice relates as the Authority considers appropriate. The information may be published in such manner as the Authority considers appropriate. However, the Authority may not publish information if such publication would, in the opinion of the Authority, be unfair or prejudicial to the interests of consumers or detrimental to the stability of the UK financial system.
- 7.7. The Authority intends to publish such information about the matter to which this Final Notice relates as it considers appropriate.

### **Authority contacts**

- 7.8. For more information concerning this matter generally, contact Hayley England-Secker at the Authority (direct line: 020 70660832 /email: Hayley.England-Secker@fca.org.uk).

Allegra Bell

Interim Head of Department

Enforcement and Market Oversight Division

## **ANNEX A**

### **RELEVANT STATUTORY AND REGULATORY PROVISIONS**

#### **1. RELEVANT STATUTORY PROVISIONS**

1.1 The Authority has the power to impose an appropriate penalty on an authorised person if the Authority considers that an authorised person has contravened a relevant requirement (section 206 of the Act).

1.2 Section 206(1) of the Act provides:

*"If the Authority considers that an authorised person has contravened a requirement imposed on him by or under this Act... it may impose on him a penalty, in respect of the contravention, of such amount as it considers appropriate."*

1.3 In discharging its general functions, the Authority must, so far as reasonably possible, act in a way which is compatible with its strategic objective and advances one or more of its operational objectives (section 1B (1) of the Act). The Authority's strategic objective is ensuring that the relevant markets function well (section 1B (2) of the Act). The Authority has three operational objectives (section 1B (3) of the Act).

1.4 Principally of the Authority's operational objectives, the integrity objective (section 1D of the Act), is relevant to this matter.

#### *1D The integrity objective*

1.5 The integrity objective is: protecting and enhancing the integrity of the UK financial system.

1.6 The "integrity" of the UK financial system includes –

- (a) its soundness, stability and resilience,
- (b) its not being used for a purpose connected with financial crime,
- (c) its not being affected by contraventions by persons of Article 14 (prohibition of insider dealing and of unlawful disclosure of inside information) or Article 15 (prohibition of market manipulation) of the market abuse regulation,
- (d) the orderly operation of the financial markets, and

- (e) the transparency of the price formation process in those markets.

## **2. RELEVANT REGULATORY PROVISIONS**

### *Principles for Businesses*

- 1.7 The Principles are a general statement of the fundamental obligations of firms under the regulatory system and are set out in the Authority's Handbook. They derive their authority from the Authority's rule-making powers set out in the Act. The relevant Principles are as follows:

- 1.8 Principle 2 provides

*"A firm must conduct its business with due skill, care and diligence."*

- 1.9 Principle 3 provides

*"A firm must take reasonable care to organise and control its affairs responsibly and effectively, with adequate risk management systems".*

### *MiFID II*

- 1.10 MIFID II requirements include:

- Ensuring effective systems and controls, in particular to ensure its trading systems are resilient, to maintain trading thresholds and limits, to prevent incorrect orders contributing to a disorderly market, and, to prevent breaches of the Market Abuse Regulation<sup>4</sup> or the rules of a trading venue
- The firm must have effective business continuity arrangements to deal with any trading systems' failure and ensure its systems are fully tested and properly monitored. In particular:
  - there must be a clear and formalised governance framework
  - compliance 1 must have at least a general understanding of algorithmic trading and contact with individuals who have access to functionality to cancel all unexecuted orders
  - where there is IT outsourcing, the firm remains fully responsible for its regulatory obligations;

- the firm must have sufficient appropriately trained technical, legal, monitoring, risk and compliance staff
- the firm must employ an automated surveillance system to detect market manipulation
- the firm must have pre-trade controls in respect of price, value, trade volumes, message volumes, trader permissions, and, market and credit risk limits
- there must be real-time monitoring of all activity under its trading code for signs of disorderly trading, and, effective post-trade controls
- Systems must be fully tested (including conformance testing with the venue) before deployment and deployed or substantially updated only on the authority of a senior management designate and only where there are predefined trading limits
- The firm must maintain defined pre-trade controls on order entry, monitor all trading activity under its trading code on a real-time basis, and continuously operate post trade controls, including of its market and credit risk
- The firm must have emergency 'kill functionality', allowing it to cancel all unexecuted orders with immediate effect
- If the firm is a member or participant of an EU trading venue on which it engages in algorithmic trading, it must notify the venue's competent authority and the FCA
- The firm must carry out an annual self-assessment and issue a validation report covering:
  - its algorithmic systems and strategies
  - the governance and control framework
  - its business continuity arrangements
  - stress testing
  - its overall compliance with the other MiFID II requirements

*MAR 7A.3.2 Requirements for algorithmic trading – systems and controls*

1.11 MAR 7A.3.2 requires that:

*"A firm must have in place effective systems and controls, suitable to the business it operates, to ensure that its trading systems:*

*(2) are subject to appropriate trading thresholds and limits;*

*(3) prevent the sending of erroneous orders, or the systems otherwise functioning in a way that may create or contribute to a disorderly market; and*

#### *Other Relevant Regulatory Provisions*

- 1.12 In exercising its powers to impose a financial penalty, the Authority has had regard to the relevant regulatory provisions published in the Authority's Handbook. The Handbook provisions relevant in this matter are the Principles, the Decision, Procedures and Penalties Manual (DEPP) and the Enforcement Guide (EG).
- 1.13 The Principles are a general statement of the fundamental obligations of firms under the regulatory system. They derive their authority from the Authority's rulemaking powers set out in the Act. The relevant Principles in this matter are Principles 2 and 3. The relevant rule is MAR 7A.3.2.
- 1.14 DEPP sets out the Authority's policy for imposing a financial penalty. For conduct occurring on or after 6 March 2010, the Authority applies a five-step framework to determine the appropriate level of financial penalty. DEPP 6.5A sets out the details of the five-step framework that applies to financial penalties imposed on firms. The conduct that is the subject matter of this action took place after 6 March 2010.
- 1.15 EG sets out the Authority's approach to taking disciplinary action. The Authority's approach to financial penalties is set out in Chapter 7 of the Enforcement Guide.