

STATEMENT OF DISCIPLINARY ACTION

The Disciplinary Action

1. The Securities and Futures Commission (**SFC**) has reprimanded and fined HSBC Securities Brokers (Asia) Limited (**HCCB**)¹ \$6,300,000 pursuant to section 194 of the Securities and Futures Ordinance (**SFO**).
2. The disciplinary action is taken in respect of HCCB's internal control failures and regulatory breaches concerning:
 - (a) multiple errors in the assignment of the Broker-to-Client Assigned Number (**BCAN**) to HSBC Group's clients² (**BCAN-CID Assignment**) who traded A-shares eligible for trading under the northbound (**NB**) trading link of Stock Connect, also known as China Connect Securities (**CCS**)³, in the mapping of Client Identification Data (**CID**) to BCAN and in the tagging of BCAN to its clients' orders between September 2018 and September 2021⁴;
 - (b) overselling incidents involving 100 CCS which took place between February and June 2019; and
 - (c) an incident of erroneous self-matching of 370 warrant orders on 22 May 2020.

Summary of Facts

- A. *BCAN-CID related errors*
3. HCCB is registered with The Stock Exchange of Hong Kong Limited (**SEHK**) as an Exchange Participant (**EP**) and a China Connect Exchange Participant (**CCEP**). Rule 1425A of the Rules of the Exchange of the SEHK (**Rules of the Exchange**) provides that a CCEP must:
 - (a) ensure that each of its client who buys or sells CCS is assigned a BCAN⁵;

¹ HCCB is licensed to carry on Type 1 (dealing in securities) and Type 7 (providing automated trading services) regulated activities under the SFO. HCCB is a wholly owned subsidiary of The Hongkong and Shanghai Banking Corporation Limited (**HBAP**) and part of the HSBC group entities (**HSBC / HSBC Group**).

² The CCS clients are HSBC Group's Global Market clients. As of 31 December 2020, 313 HSBC Group's Global Market clients were eligible to trade CCS.

³ The Mainland-Hong Kong Stock Connect (Stock Connect) is a mutual stock market access programme between Hong Kong and the Mainland which allows investors in each market to participate in the other's markets via local intermediaries.

⁴ The investor identification regime for northbound trading under Stock Connect was launched by the SEHK in September 2018 (**NB Investor ID Regime**) – see paragraph 3.

⁵ BCAN means (a) the code, number or identifier that is assigned by a CCEP or an EP trading through a CCEP to uniquely and consistently identify each of its clients as required under Rule 1425A(1); or (b) a standardized text, number or other code that is prescribed by the SEHK from time to time for a particular

- (b) assign a single BCAN to identify a client who holds multiple accounts with a CCEP, unless the other account(s) of the CCEP are held by the client jointly with any other person in which case a separate BCAN in respect of the China Connect orders for such joint account must be assigned;
 - (c) ensure that the BCAN assigned to a client will not be changed or re-used for another client unless with the SEHK's prior written approval;
 - (d) provide the BCAN and CID⁶ of a client who trades CCS in the form of a BCAN-CID Mapping File⁷ to the SEHK;
 - (e) ensure that the CID in the BCAN-CID Mapping File is accurate and up to date; and
 - (f) include the corresponding BCAN when inputting a China Connect order in the China Stock Connect system.
4. Between January 2020 and October 2021, HCCB reported to the SFC multiple errors involving incorrect BCAN-CID Assignment and BCAN-CID information mapping for at least 25 clients, including instances where the BCAN was mapped to incorrect client entities, the BCAN assigned to a client was changed without the prior written approval of the SEHK and two BCANs were assigned to the sub-accounts of the same client (**Mapping Errors**).
 5. Out of these 25 clients, 20 clients traded CCS and incorrect BCAN-CID mapping data in respect of them was submitted to the SEHK through the BCAN-CID Mapping File for different durations over a period of nearly 3 years since the inception of the NB Investor ID Regime, between 26 September 2018 and 3 September 2021.
 6. The Mapping Errors were caused by the deficiencies in HCCB's CCS client onboarding and BCAN-CID Assignment processes, including:
 - (a) the use of multi-layered data structures that involved multiple systems in the maintenance of BCAN information;
 - (b) the manual nature of the account creation procedures and the use of manual processes in updating client data between the systems; and
 - (c) multiple trading entities within the same organisation of HSBC's institutional clients may have authority to act as instructing parties to execute trades on behalf of sub-accounts set up with HSBC.

type of client, account, order or trading arrangement of a CCEP or an EP trading through a CCEP (Rule 101, Rules of the Exchange).

⁶ CID means the name, identity document type, identity document issuing country or jurisdiction and the identity document number in relation to a client to whom a BCAN is assigned (Rule 101, Rules of the Exchange).

⁷ The BCAN-CID Mapping File is a file compiled by a CCEP or an EP trading through a CCEP which contains all the assigned BCANs and their corresponding CID, in such format as the SEHK may require from time to time (Rule 101, Rules of the Exchange). The SEHK will then send the information to the Shanghai and Shenzhen stock exchanges for monitoring the NB trading activities.

7. In May 2020, HCCB also reported to the SFC instances where 760,320 orders and 1,070,957 trades of 67 clients were tagged with incorrect BCAN from 26 September 2018 to 6 May 2020 (**Tagging Errors**).
8. Fidessa⁸ had a function to combine a set of single stock orders from the same client into one aggregate composite order for trading (**Trading Composite Function**)⁹ for sending to Talon¹⁰. Due to a system bug (**System Bug**) which led to the failure of the client code to populate on the order message of the orders submitted using the Trading Composite Function (**Trading Composite Orders**), all such orders carried the BCAN of HBAP, instead of the actual clients' BCANs. As such, all Trading Composite Orders processed by Talon carried both the client code and BCAN of HBAP when they were sent to the market.
9. The Tagging Errors were not discovered earlier because when HCCB's algorithmic trading platform was migrated from its predecessor to Talon in the last quarter of 2018, the specific cases around Trading Composite Orders were not tested and because BCAN is not a piece of information that would be carried to post-trade, there was no post-trade monitoring or surveillance on the accuracy of BCAN-CID Assignment. The System Bug was eventually fixed on 1 June 2020.
10. As a result of the Mapping Errors and Tagging Errors, HCCB provided incorrect BCAN and CID information in relation to 92 clients to the SEHK between September 2018 and September 2021, involving 3,379,065 orders and 4,202,534 trades, in breach of Rule 1425A of the Rules of the Exchange. HCCB has breached General Principle (**GP**) 7 and paragraph 12.1¹¹ of the Code of Conduct for Persons Licensed by or Registered with the SFC (**Code of Conduct**) by its failure to comply with Rule 1425A of the Rules of the Exchange.
11. HCCB has also failed to comply with GP 2¹² and paragraph 4.3¹³ of the Code of Conduct by failing to ensure that its internal systems and controls were adequate and effective to ensure that:
 - (a) a BCAN was correctly assigned to each of its clients who traded CCS;
 - (b) the BCAN-CID Mapping Files were accurate and up to date before they were submitted to the SEHK; and
 - (c) the BCAN was correctly tagged to each CCS order.

⁸ Fidessa is HCCB's cash equities order management system.

⁹ The Trading Composite Function allowed multiple orders of the same stock and side from the same client to be combined into one aggregate order and sent to Talon for processing based on algorithmic strategic for execution.

¹⁰ Talon is HCCB's in-house algorithmic trading platform.

¹¹ GP7 and paragraph 12.1 of the Code of Conduct require a licensed person to comply with all regulatory requirements, and implement measures appropriate to ensuring compliance with rules, regulations and codes administered or issued by the SFC and the rules of any exchange or clearing house of which it is a member or participant.

¹² GP2 of the Code of Conduct requires a licensed person to act with due skill, care and diligence, in the best interests of its clients and integrity of the market in conducting business activities.

¹³ Paragraph 4.3 of the Code of Conduct requires a licensed person to have internal control procedures which can be reasonably expected to protect its operations and clients from financial loss arising from professional misconduct or omissions.

12. HCCB has taken remedial actions to strengthen its internal controls and systems following the discovery of the BCAN related issues, including engaging independent reviewers in the first quarter of 2021 to review its internal controls and processes in relation to compliance with the BCAN requirements.

B. Overselling incidents

13. On 18 June 2019, HCCB reported to the SFC that it had oversold 40 CCS and failed to settle 22 of the sell trades on 14 June 2019. HCCB subsequently reported to the SFC that it had identified similar overselling incidents and oversold 39 CCS on 27 February 2019.
14. During SFC's investigation, HCCB identified 7 more incidents in which it had oversold 21 CCS on 5 March 2019, 16 April 2019 (2 incidents), 6 May 2019, 9 May 2019, 17 May 2019 and 28 May 2019.
15. The nine overselling incidents resulted in settlement failures in 30 CCS, which necessitated mandatory buy-in by the Hong Kong Securities Clearing Company Limited. The total value of the stocks oversold amounted to around HK\$20 million¹⁴.
16. The SFC's investigation found that, with the exception of 2 incidents (on 5 March 2019 and one of the incidents on 16 April 2019) which were caused by human error, the remaining overselling incidents were caused by various system deficiencies in Fidessa or Talon.

Design flaw in Fidessa

17. When a sell order is sent to Fidessa, the order routing process and the position checking process run concurrently to ensure that there is sufficient position in the stock and that the order is sent to the market for execution.
18. On 27 February, 6 May, 28 May and 14 June 2019, the order routing process in Fidessa experienced slow performance (**Slow Performance**), which triggered Fidessa to erroneously issue messages to traders who had routed clients' CCS orders for execution on the market that their orders were rejected. As a result of the rejection messages, the traders believed that their orders were rejected and re-sent the orders to the market, which resulted in duplicate orders being sent to the market and overselling of the stocks.
19. After the overselling incident on 27 February 2019, HCCB implemented two software changes with a view to fix the issues, however, as the software changes were rolled back after each release due to technical issues encountered, the Slow Performance still led to further overselling incidents on 6 May, 28 May and 14 June 2019. The Slow Performance was not resolved until 24 June 2019, when HCCB released a third software change.

System logic error in Talon

20. On 16 April 2019, a client specifically instructed that orders be put on hold when the stock moved to limit up or down (**LULD**) of the trading price. While Talon had a system logic to identify when the stock was at a LULD price and, at that

¹⁴ The difference between the costs of the mandatory buy-in and the value of the oversold shares was around HK\$1 million and was borne by HCCB.

point, hold the execution of the stock, an error in that system logic on that day led to Talon's failure to recognise that the stock was at a LULD price. Talon therefore proceeded with execution of the relevant order, when it should not have done so pursuant to the client's instructions (**Talon Logic Error**), leading to one of the overselling incidents on 16 April 2019. The Talon Logic Error was fixed on 16 April 2019 after market hours.

Software bug in Fidessa

21. The overselling incident on 9 May 2019 was caused by a software bug in Fidessa (**Fidessa Bug**) which concerned the basket trading component known as BEAM.
22. BEAM would automatically mark the status of a basket as "completed" if there were zero orders in the basket. The Fidessa Bug caused an incorrect calculation and led the BEAM process to erroneously mark the basket as being completed which, in turn, caused the orders to be rejected.
23. The rejected orders were sent back to the client but not to the trader. As the trader was unaware of the rejections, the entire basket was routed to the market while the client simultaneously resubmitted the rejected orders which were added to the basket and also routed to the market. The Fidessa Bug affected 33 of the 91 orders contained in a basket sent by the client on 9 May 2019. As a result, a total of 124 orders for the client were executed where 33 were duplicates, of which 13 involved CCS.
24. The Fidessa Bug was fixed on 21 May 2019, by amending the logic in the BEAM process.

Insufficient memory in Fidessa

25. The overselling incident on 17 May 2019 was caused by a system performance issue in Fidessa, namely the running out of free memory due to an increased order flow (**Insufficient Memory**). The Insufficient Memory caused the impacted orders from the client to remain pending in Fidessa, so the client decided to force cancel the pending orders. However, before HCCB could cancel the pending orders, the system resumed to normal and the pending orders were accepted by the system and sent to the market, which resulted in the overselling trades.
26. On 18 May 2019, HCCB fixed the Insufficient Memory by performing hardware uplift by upgrading the production servers with additional RAM.
27. HCCB has breached Rule 901A(iv) of the General Rules of CCASS¹⁵, as well as GP 2, GP 7, paragraphs 4.3, 12.1, 18.4, 18.5, 18.10, 18.11 of and paragraphs 1.1.4, 1.2 and 3.3.1 of Schedule 7 to the Code of Conduct¹⁶, by its failure to:

¹⁵ Rule 901A(iv) of the General Rules of CCASS provides that for CCS trades effected on each trading day, securities settlement must take place on the same day.

¹⁶ Paragraph 18 and Schedule 7 of the Code of Conduct set out specific requirements for licensed corporations that conduct electronic trading of securities and futures contracts. They require licensed persons to, among other things:

- (a) act with due skill, care and diligence and in the best interests of its clients and the integrity of the market;
- (b) put in place adequate and effective systems and controls to prevent the overselling orders and ensure compliance with the applicable rules and regulations;
- (c) effectively manage and adequately supervise the deployment and operation of Fidessa, by identifying and/or rectifying the Slow Performance and the Fidessa Bug in a timely and proper manner; and
- (d) ensure the integrity of Fidessa and Talon, which was insufficiently reliable given the existence of various system deficiencies (i.e. Slow Performance, Talon Logic Error, Fidessa Bug and Insufficient Memory).

C. Self-matching of warrant orders

- 28. On 22 May 2020, HBAP reported to the SFC an incident of self-matching of 370 warrants orders by HCCB, in carrying out its warrant market making activities, on that day.
- 29. The incident was triggered by a restart of the market making engine (**MME**) in Falcon, an in-house trading system for market making of derivatives, during the lunch trading break of SEHK.
- 30. Prior to restarting the MME, HCCB disconnected its Orion Central Gateway (**OCG**), as the gateway connection from the SEHK on the following assumptions:
 - (a) on the SEHK side, the cancel-on-disconnect functionality (**COD**)¹⁷ in OCG would be triggered. When there was a disconnection between the MME and OCG, all live market orders would be cancelled by the SEHK.

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- (i) effectively manage and adequately supervise the design, development, deployment and operation of the electronic trading system it uses (paragraph 18.4 and paragraph 1.1 of Schedule 7);
 - (ii) ensure the integrity of the electronic trading system it uses, including the system's reliability, security and capacity, and have appropriate contingency measures in place (paragraph 18.5 and paragraph 1.2 of Schedule 7);
 - (iii) ensure that the algorithmic trading system it uses is adequately tested to ensure that it operates as designed (paragraph 18.10);
 - (iv) have controls that are reasonably designed to ensure the integrity of its algorithmic trading system (paragraph 18.11 and paragraph 3.3 of Schedule 7);
 - (v) assign adequately qualified staff, expertise, technology and financial resources to the design, development, deployment and operation of the electronic trading system (paragraph 1.1.4 of Schedule 7); and
 - (vi) have controls that are reasonably designed to monitor and prevent the generation of or passing to the market for execution order instructions from its algorithmic trading system which may be erroneous or interfere with the operation of a fair and orderly market; and protect the licensed person and its clients from being exposed to excessive financial risk (paragraph 3.3.1 of Schedule 7).

¹⁷ "Cancel-on-disconnect" is an OCG optional feature offered by the SEHK. If enabled, OCG would automatically cancel outstanding orders upon specific disconnection scenarios (such as network disconnection).

- (b) on HCCB side, a built in logic in the MME would automatically send a mass order cancellation command (**Mass Cancellation**) to the SEHK to cancel all live market orders during a restart.
31. On the assumption that all live market orders had been cancelled by the COD and/or Mass Cancellation upon the disconnection of OCG, the MME was restarted at 12:24 and reconnected to OCG¹⁸. However, the relevant orders were in fact still live in the market because the COD and Mass Cancellation did not work between 12:00 and 12:30.
32. When trading resumed at 13:00, some un-cancelled market orders immediately matched with orders of other market participants. At 13:00:53, when the traders enabled the warrant automated quoting, new orders placed into the market self-matched with the orders which had been placed in the market before the MME was restarted and remained live contrary to HCCB's assumptions. Between 13:00:53 and 13:04:05, the WMM Desk self-matched 370 warrant orders under HCCB's broker code.
33. After realizing self-matched trades, the WMM Desk manually submitted a cancellation request in the MME to cancel all remaining live orders in the market. HCCB requested SEHK to cancel all self-matched warrant orders on the same day. On 25 May 2020, the SEHK confirmed that all self-matched orders were cancelled.
34. Self-matched trades which artificially increase the turnover of structured products may present a misleading picture to investors when making their investment decisions. HCCB's failure to appreciate that the COD and Mass Cancellation did not work between 12:00 and 12:30 suggests that HCCB did not fully understand their limitations.
35. HCCB has breached GP 2 of the Code of Conduct, by its failure to act with due skill, care and diligence and in the best interests of the integrity of the market.

Conclusion

36. In reaching the decision to take the disciplinary action set out in paragraph 1 above, the SFC has taken into account all relevant circumstances, including:
- (a) HCCB self-reported the regulatory breaches and failings to the SFC and took remedial actions to strengthen its internal controls and systems following the self-reports;
- (b) HCCB took the initiative to bring this matter to an early conclusion and cooperated with the SFC in resolving the regulatory concerns; and
- (c) the SEHK's disciplinary action against HCCB over the BCAN related errors¹⁹.

¹⁸ HCCB received an acknowledgement of the Mass Cancellation request from the SEHK, but the Mass Cancellation was not executed for the reason stated in paragraph 31.

¹⁹ Please see the announcement of the SEHK dated 3 March 2022.