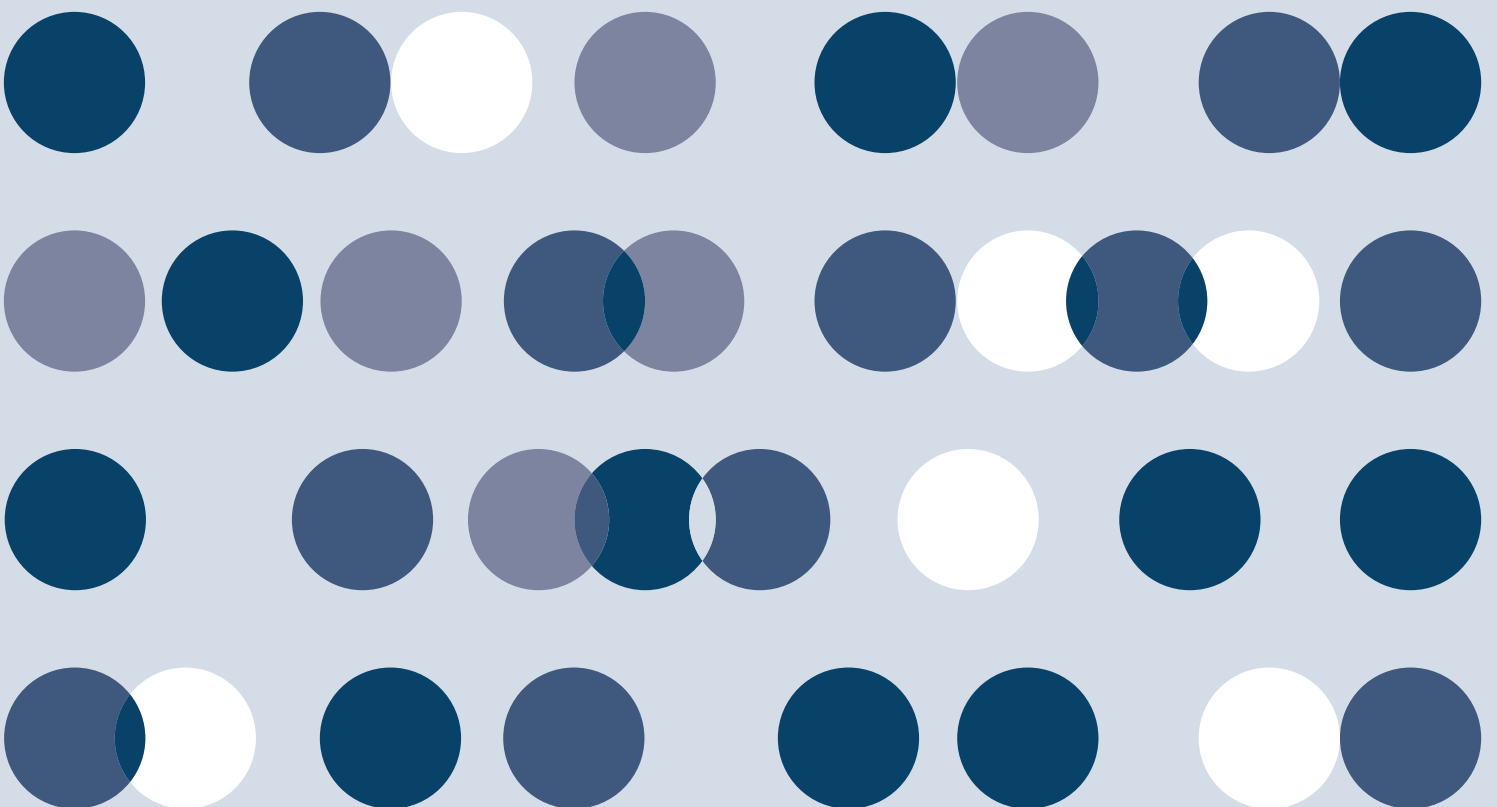


January 2017

THE SEHK OPTIONS CLEARING HOUSE LIMITED

PRINCIPLES FOR FINANCIAL MARKET
INFRASTRUCTURES DISCLOSURE



Responding Institution:

The SEHK Options Clearing House Limited

Jurisdiction(s) in which the FMI Operates:

Hong Kong Special Administrative Region of the People's Republic of China

Authority Regulating, Supervising or Overseeing the FMI:

Securities and Futures Commission of Hong Kong

The date of this disclosure is January 2017. This disclosure can be found at <http://www.hkex.com.hk/eng/market/clr/SpecialTopics/PFMI.htm>. For further information, please contact our hotline at 2979-7222 or email clearingpsd@hkex.com.hk.

GLOSSARY

Capitalised terms defined in the Options Clearing Rules of SEOCH (**SEOCH Rules**) and Operational Clearing Procedures for Options Trading Exchange Participants of SEOCH (**SEOCH Procedures**) have the same meaning when used in this disclosure document. Terms defined in the Principles for Financial Market Infrastructures (**PFMI**) published by the Committee on Payment and Settlement Systems (**CPSS**)¹ and the International Organization of Securities Commissions (**IOSCO**) in April 2012 have the same meaning when used in this disclosure document.

The terms in the following table, which are not defined in the SEOCH Rules and SEOCH Procedures, have the meanings given below.

Term	Definition
AC	Audit Committee
API	Application Programme Interface
CBPL	Capital Based Position Limit
CCP(s)	Central Counterparty(ies)
CMU	Central Moneymarkets Unit
CPMI	Committee on Payments and Market Infrastructures
CPSS	Committee on Payment and Settlement Systems
CSD	Central Securities Depository
EFBN	Hong Kong Exchange Fund Bills and Notes
EMIR	European Market Infrastructure Regulations
EOT(s)	Exercised Options Trade(s)
ERM	Enterprise Risk Management
ESMA	European Securities and Markets Authority
FMI	Financial Market Infrastructures
FRR	Securities and Futures (Financial Resources) Rules (Cap. 571N of the Laws of Hong Kong)
HKICL	Hong Kong Interbank Clearing Limited
HKMA	Hong Kong Monetary Authority
HSI	Hang Seng Index
IAC	Investment Advisory Committee
ICAC	The Corruption Prevention Department of the Independent Commission

¹ CPSS changed its name to the Committee on Payments and Market Infrastructures (CPMI) on 1 September 2014. Please note that references to reports published before that date use the Committee's old name.

Term	Definition
	Against Corruption
IOSCO	International Organization of Securities Commissions
ITD	Information Technology Department
MCP	Market Contingency Plan
PBO	Prevention of Bribery Ordinance (Cap. 201 of the Laws of Hong Kong)
PFMI	Principles for Financial Market Infrastructures, issued by CPSS-IOSCO
RC	Remuneration Committee
RCH(s)	Recognised Clearing House(s)
RF	Reserve Fund
RMC	HKEX Statutory Risk Management Committee
RTGS	Real Time Gross Settlement
SEHK	The Stock Exchange of Hong Kong Limited
SFC	Securities and Futures Commission of Hong Kong
SFO	Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)
SWIFT	Society for Worldwide Interbank Financial Telecommunication

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CHAPTER 1: EXECUTIVE SUMMARY

- 1 The SEHK Options Clearing House Limited (**SEOCH**)² is a Hong Kong incorporated wholly-owned subsidiary of Hong Kong Exchanges and Clearing Limited (**HKEX**). SEOCH is recognised by the Securities and Futures Commission (**SFC**), Hong Kong's statutory regulator for the securities and futures markets, under Section 37(1) of the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) (**SFO**) as a recognised clearing house (**RCH**). Section 59(1) of the SFO provides that subject to very limited exceptions, no person shall become a "controller" of an RCH unless the person is a "recognised exchange controller"³. Currently, HKEX is the only exchange controller recognised by the SFC. HKEX owns the entire issued share capital of SEOCH and is a listed public company in Hong Kong.
- 2 As an RCH, SEOCH is required at all times to comply with various statutory duties under the SFO, which are further described in this disclosure document. In August 2013, the SFC published guidelines requiring RCHs to observe on an ongoing basis the PFMI, to the extent that these apply to a central counterparty (**CCP**).
- 3 SEOCH provides clearing and settlement services for the stock options market operated by The Stock Exchange of Hong Kong Limited (**SEHK**). SEOCH has implemented a comprehensive risk management framework which is designed to ensure the timely settlement of relevant stock option contracts, by adequately controlling credit, market and liquidity risks. SEOCH has appropriate policies, procedures and controls in place to manage the additional risks that its services are exposed to, including legal risk, settlement risk, general business risk, custody and investment risks, and operational risk.
- 4 SEOCH's approach to observing each applicable principle⁴ in the PFMI is summarised in this disclosure document. This document is written pursuant to and in accordance with the guidelines set forth in the Disclosure framework and Assessment methodology issued by CPSS-IOSCO in December 2012.

² SEOCH was first recognised as an RCH in 1995 under the repealed Securities and Futures (Clearing Houses) Ordinance. Its recognition under the SFO (which came into force in April 2003) was deemed to be effective pursuant to the transitional provisions in Schedule 10 of the SFO. The recognition remains in force as at the date of this document.

³ "Controller" is defined to mean a "shareholder controller" (i.e. a person controlling 35% voting rights of a corporation) or an "indirect controller" (i.e. a person controlling 5% or more voting rights of a corporation).

⁴ Three of the 24 PFMI principles are not applicable to SEOCH as a CCP. They are Principle 10: Physical Deliveries, Principle 11: Central Securities Depositories and Principle 24: Disclosure of Market Data by Trade Repositories.

CHAPTER 2: SUMMARY OF MAJOR CHANGES SINCE THE LAST UPDATE OF THE DISCLOSURE

- 5 HKEX's risk governance structure has been enhanced by the appointment of a Group Risk Officer to oversee all risk functions of HKEX and its subsidiaries (**HKEX Group**) in January 2015; and the establishment of a new Risk Committee (**Risk Committee**) in March 2015 to oversee the overall risk management framework and advise the board of directors of HKEX (**HKEX Board**) on HKEX Group's risk related matters.
- 6 The Board of Supervisors of European Securities and Markets Authority (**ESMA**) adopted a decision to recognise SEOCH as a third country CCP under Chapter 4 of Title III of the European Market Infrastructure Regulations (**EMIR**) on 27 April 2015.
- 7 SEOCH has enhanced its risk management regime by (a) tightening the thresholds for triggering an ad hoc demand of reserve fund (**RF**) contribution from its participants (**SEOCH Participants**); and raising the buffer in determining the required size of the RF in monthly and ad hoc reviews with effect from July 2015, and (b) tightening the concentration risk policy in September 2015 to require higher margin collateral from SEOCH Participants with concentrated risk exposures.
- 8 SEOCH started to publish quantitative disclosure documents from December 2015 in accordance with the guidelines set forth in the "Public quantitative disclosure standards for central counterparties" published by CPMI-IOSCO in February 2015.
- 9 Following the completion of an internal reorganisation of HKEX subsidiaries on 22 January 2016, SEOCH, which was previously held by SEHK, became a direct wholly-owned subsidiary of HKEX.

CHAPTER 3: GENERAL BACKGROUND ON SEOCH

GENERAL DESCRIPTION OF SEOCH AND THE MARKETS IT SERVES

- 10 SEOCH was incorporated in 1995. It operates the automated derivatives clearing and settlement system (**DCASS**) and the common collateral management system (**CCMS**) as a CCP providing clearing and settlement services for stock option contracts traded on the stock options market operated by SEHK and managing collateral received from its participants.
- 11 As an RCH operating within the statutory framework under Division 3 of Part III of the SFO, SEOCH acts in the interest of the public in discharging its statutory duties, as described in further detail below. It also aims to maintain financial stability and promote transparency of the stock options market in Hong Kong by offering expeditious clearing and robust risk management services to market participants.

ORGANISATIONAL STRUCTURE OF SEOCH

- 12 As mentioned, SEOCH is a wholly-owned subsidiary of HKEX, which is a recognised exchange controller under Division 4 of Part III of the SFO with its own statutory duties, including the duty to ensure that any RCH controlled by it performs its duties properly. HKEX is thus legally obliged to take on an active role in overseeing and ensuring the proper functioning of SEOCH.
- 13 HKEX is a listed company on the Main Board of SEHK. It is the holding company of the following three exchanges and five clearing houses in Hong Kong and the United Kingdom:
 - (a) SEHK;
 - (b) Hong Kong Futures Exchange Limited (**HKFE**);
 - (c) The London Metal Exchange;
 - (d) Hong Kong Securities Clearing Company Limited (**HKSCC**);
 - (e) SEOCH;
 - (f) HKFE Clearing Corporation Limited (**HKCC**);
 - (g) OTC Clearing Hong Kong Limited; and
 - (h) LME Clear Limited.

GOVERNANCE STRUCTURE OF SEOCH

- 14 SEOCH's governance structure comprises the board of directors of SEOCH (**SEOCH Board**). The SEOCH Board currently consists of four members who are senior executives of HKEX, including the Chief Executive of HKEX who is Chairman of SEOCH. It oversees SEOCH's activities and the execution of its business strategies.
- 15 In addition, SEOCH leverages the HKEX Board to provide leadership and guidance for all the HKEX Group's activities and oversee the execution of HKEX's business strategies and its various committees, including:
 - (a) the HKEX statutory Risk Management Committee (**RMC**) which may formulate and advise on risk management matters of HKEX Group for consideration by HKEX, and provides an added layer of oversight and supervision over the safety and soundness of SEOCH's own risk management safeguards; and
 - (b) the Risk Committee, which oversees the overall risk management framework and advises the HKEX Board on HKEX Group's risk related matters; and
 - (c) the HKEX Audit, Nomination, Remuneration and Investment Advisory Committees, to carry out the important functions of independent financial and operational audit, the nomination of directors and oversight in the determination of directors and staff remuneration and advising on investment policies, respectively.
- 16 HKEX also appointed the Clearing Consultative Panel, with members selected from representatives of market participants and industry experts in the clearing business, to act as an advisory body to the HKEX Board and its management to provide market expertise and advice relating to HKEX's clearing businesses, including HKSCC, HKCC and SEOCH.
- 17 SEOCH's day-to-day business is managed by two dedicated departments: the Cash & Derivatives Clearing Department and Cash & Derivatives Clearing Risk Management Department. The Head of Cash & Derivatives Clearing Risk Management Department has a dual reporting line – one to the Head of Clearing and other to the Group Risk Officer. The senior management of SEOCH is responsible to and takes directions from the SEOCH Board.

PRODUCT COVERAGE

- 18 SEOCH clears all the stock option contracts traded on the stock options market operated by SEHK.

- 19 All stock option classes traded on SEHK are American style, based on a single underlying stock counter traded on SEHK⁵. The underlying stocks include blue chips⁶, red chips⁷, H-shares⁸ and a number of Exchange Traded Funds, which must meet certain requirements as to market capitalisation and trading volumes. A stock option position, which is exercised and assigned on or before the expiry day, requires the parties to deliver or receive the underlying stock within the required stock settlement period (i.e. the second business day after exercise).

PARTICIPANTS OF SEOCH (SEOCH PARTICIPANTS)

- 20 SEOCH Participants must be (a) Options Trading Exchange Participants of SEHK; and (b) clearing participants of HKSCC, or have clearing agreements with clearing participants of HKSCC if they intend to settle their delivery obligations under exercised stock option contracts through clearing participants of HKSCC. SEOCH Participants are licensed financial institutions. SEOCH maintains two types of participation, namely:
- (a) Direct Clearing Participant (**DCP**) that clears and settles its own and its clients' stock option contracts traded on SEHK; and
 - (b) General Clearing Participant (**GCP**) that clears and settles its own and its clients' stock option contracts traded on SEHK, and/or provides third party clearing services to other Options Trading Exchange Participants which decide to outsource their clearing and settlement functions.
- 21 At the end of September 2016, there were 74 SEOCH Participants, including 65 DCPs and 9 GCPs.

RISK MANAGEMENT FRAMEWORK

- 22 HKEX Group complies with the enterprise risk management (**ERM**) framework approved by the HKEX Board to identify, assess and manage risks using a holistic and integrated framework. Individual business or functional units are responsible for monitoring and controlling material risks inherent in their processes on an ongoing basis.

⁵ The current full list of stock option classes is publicly available on the HKEX website http://www.hkex.com.hk/eng/prod/drprod/so/classlist_so.htm.

⁶ Blue chips stocks generally refer to the Hang Seng Index constituents in Hong Kong.

⁷ Red chips stocks refer to stocks of enterprises incorporated outside the People's Republic of China which are controlled by the central, provincial or municipal governments of the People's Republic of China and listed on SEHK in Hong Kong.

⁸ H-shares refer to shares in those companies incorporated in the People's Republic of China and whose shares are approved by the China Securities Regulatory Commission to be traded on SEHK in Hong Kong.

- 23 SEOCH has a comprehensive risk management framework to identify, monitor and manage all its key risks, which includes the following key components:
- (a) SEOCH Participant admission requirements and regular risk scoring analysis for identifying and monitoring risks posed by SEOCH Participants. Please refer to the description under Principle 4: Credit Risk and Principle 18: Access and Participant Requirements;
 - (b) processes for mark-to-market, margining and collection of collateral to cover current and potential future exposures. Please refer to the description under Principle 6: Margin;
 - (c) Capital Based Position Limit (**CBPL**) imposed to ensure that risk exposures are commensurate with financial strength of SEOCH Participants. Please refer to the description under Principle 4: Credit Risk;
 - (d) RF and other financial resources for the purpose of supporting its role as a CCP in the event of a SEOCH Participant default. Please refer to the description under Principle 4: Credit Risk;
 - (e) collateral policy to limit acceptable collateral to assets with low credit, market and liquidity risks. Please refer to the description under Principle 5: Collateral;
 - (f) clear and enforceable SEOCH Participant default rules and procedures. Please refer to the description under Principle 13: Participant-default Rules and Procedures;
 - (g) strict appointment criteria for its settlement banks with ongoing monitoring of their performance. Please refer to the description under Principle 9: Money Settlements;
 - (h) specific arrangements for tiered participation. Please refer to the description under Principle 19: Tiered Participation Arrangements;
 - (i) liquidity arrangements to measure, monitor, and manage liquidity risk. Please refer to the description under Principle 7: Liquidity Risk;
 - (j) comprehensive internal control, contingency and recovery procedures. Please refer to the description under Principle 17: Operational Risk; and
 - (k) investment strategy with risk controls that satisfy liquidity requirements and safeguard financial assets. Please refer to the description under Principle 16: Custody and Investment Risks.
- 24 The risk management framework is subject to ongoing review in response to developments in local and international financial markets, and the business needs of both SEOCH and SEOCH Participants. Any change to the framework is subject to the prevailing approval processes.

OPERATIONAL RELIABILITY

- 25 SEOCH, as a CCP, has primary operational objectives to provide via DCASS and CCMS, its clearing, settlement and collateral management services on each business day as scheduled and to ensure that system recovery can be achieved within two hours following a disruption to SEOCH's critical functions, under specific contingency scenarios.
- 26 The system capacity of DCASS/CCMS is scaled based on the projected transaction volumes and a capacity buffer has been put in place to handle potential stress volumes.

LEGAL AND REGULATORY FRAMEWORK

- 27 Under Section 40 of the SFO, SEOCH has the power to make rules as are necessary and desirable for the proper regulation and efficient operation of its clearing or settlement facilities, and for the proper regulation of SEOCH Participants. However, no rule or amendment of any rule will have effect unless the SFC has given its approval in writing under Section 41 of the SFO.
- 28 SEOCH Participants are required to comply with the SEOCH Rules, SEOCH Procedures, the participantship agreements and letters of approval of their SEOCH participantship and other requirements of SEOCH, such as those found in circulars issued from time to time by SEOCH. The Hong Kong legal framework provides a high degree of legal certainty for each material aspect of SEOCH's activities that supports and allows SEOCH to conduct all material aspects of its activities.
- 29 In addition to the rules and contractual arrangements referred to above, the legal basis/framework supporting the material aspects of SEOCH's activities also includes the following:
- (a) the Bankruptcy Ordinance (Cap. 155 of the Laws of Hong Kong);
 - (b) the Companies Ordinance⁹;
 - (c) the SFO; and
 - (d) general Hong Kong common law in relation to contracts, tort and property.
- 30 SEOCH conducts its business in Hong Kong. All relevant documents issued by SEOCH in respect of its business and services are governed by Hong Kong law. SEOCH has engaged an independent law firm to issue a Hong Kong law opinion which provides a high level of confidence that the SEOCH Rules (including the default procedures) are enforceable under Hong Kong law.

⁹ Companies Ordinance refers to both the Companies Ordinance (Cap. 622 of the Laws of Hong Kong) and the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong).

31 SEOCH is regulated by the SFC under Division 3 of Part III of the SFO. Under Section 38 of the SFO, SEOCH has the duty to ensure, so far as is reasonably practicable, that there are orderly, fair and expeditious clearing and settlement arrangements for transactions cleared or settled through its facilities and that risks associated with its business and operations are managed prudently. SEOCH must operate its facilities in accordance with the rules approved by the SFC under Section 41 of the SFO as mentioned earlier, and formulate and implement appropriate procedures for ensuring that SEOCH Participants comply with the rules. Additionally, SEOCH must at all times provide and maintain:

- (a) adequate and properly equipped premises;
- (b) competent personnel; and
- (c) automated systems with adequate capacity, facilities to meet contingencies or emergencies, security arrangements and technical support,

for the conduct of its business.

32 In discharging its statutory duties, SEOCH is under an obligation to act in the interest of the public, having particular regard to the interest of the investing public. It is required to ensure that the interest of the public prevails where it conflicts with the interest of SEOCH. The SFC has the power to require SEOCH to comply with its directions, orders and requirements. In addition to the statutory duties under the SFO, SEOCH is required by the SFC to comply with the PFMI to the extent that they apply to a CCP.

33 Division 3 of Part III of the SFO sets out the regulatory framework for RCHs including provisions for recognition of an RCH and the duties of an RCH as well as the statutory protections for an RCH. It confers finality on the following, which applies to SEOCH:

- (a) “market contracts”¹⁰ with an RCH and the provision of property pursuant to “market contracts”;
- (b) the provision of “market collateral”¹¹ to an RCH; contracts effected by an RCH for the purpose of realising property provided as “market collateral”; disposals of property pursuant to such contracts; or disposals of property in accordance with the rules of an RCH as to the application of property provided as “market collateral”;
- (c) a “market charge”¹² taken by an RCH; a disposal of property as a result of which the property becomes subject to a “market charge”; any transaction pursuant to which that disposal was made; or a disposal of property made in enforcing a “market charge”; and

¹⁰ In brief, “market contract” means a contract subject to the rules of an RCH entered into by the RCH with its clearing participant whether or not pursuant to a novation.

¹¹ “Market collateral” means any property which is held by or deposited with an RCH for the purpose of securing liabilities arising directly in connection with the RCH’s ensuring the settlement of a market contract.

¹² “Market charge” means a charge (whether fixed or floating) in favour of an RCH over any property which is held by or deposited with the RCH and for the purpose of securing liabilities arising directly in connection with the RCH’s ensuring the settlement of a market contract.

(d) “default proceedings”¹³ of an RCH.

- 34 The finality conferred as mentioned above means that actions taken by an RCH upon a default of its DCP and GCP in respect of market contracts and the dispositions of market collateral or assets subject to a market charge are not vulnerable to insolvency avoidance and clawback laws otherwise applicable upon the insolvency of a DCP and GCP in Hong Kong.

SYSTEM DESIGN AND OPERATIONS

- 35 SEOCH uses DCASS and CCMS to support its roles as a CCP. DCASS is fully integrated with the common trading platform for HKEX’s derivatives markets, including stock options market, HKATS. DCASS is also integrated with CCMS, which is used by three of the HKEX clearing houses (i.e. HKSCC, HKCC and SEOCH) to manage the collateral received from their participants.
- 36 SEOCH offers an account structure to SEOCH Participants that effectively segregates the trades, positions and collateral of SEOCH Participants and their clients. SEOCH provides different types of position accounts in DCASS (**Clearing Accounts**), including:
- (a) house account (**House Account**) to record SEOCH Participants’ own trades and positions;
 - (b) two types of client accounts (**Client Accounts**): omnibus client account (**Omnibus Client Account**) and individual client account (**Individual Client Account**), for SEOCH Participants to record their clients’ trades and positions; and
 - (c) market maker account (**Market Maker Account**) to record the trades and positions arising from market making activities conducted by SEOCH Participants or their clients.
- 37 SEOCH also offers two types of collateral accounts in CCMS (**CCMS Collateral Accounts**), including house collateral account (**House Collateral Account**) and client collateral account (**Client Collateral Account**) to facilitate SEOCH Participants to separately identify their clients’ collateral deposited with SEOCH from their own. SEOCH posts all obligations arising from (a) positions of House Accounts and Market Maker Accounts to House Collateral Accounts; and (b) positions of Client Accounts and Market Maker Accounts of clients to the applicable Client Collateral Accounts. The following paragraphs provide a brief description of SEOCH’s core services and operations.

¹³ “Default proceedings” means any proceedings or other action taken by an RCH under its default rules.

Clearing and Settlement of Stock Option Contracts

Trade Capture and Registration

- 38 SEHK transmits details of the matched and validated stock option trades directly from HKATS to DCASS in real-time. Upon receiving trades from HKATS, SEOCH registers the trades¹⁴ in DCASS.

Novation

- 39 After registration, the registered contract is replaced by two contracts through novation, one between the selling SEOCH Participant and SEOCH as the buyer and the other one between the buying SEOCH Participant and SEOCH as the seller. Upon novation, SEOCH acts as the CCP, and assumes counterparty risks associated with the novated contracts, which are also known as market contracts and defined as such in the SFO (**Market Contracts**).

Creation of Positions

- 40 SEOCH records the respective rights and obligations of each Market Contract as a position in the relevant Clearing Account of the SEOCH Participant to which the contract has been designated in accordance with the details transmitted from HKATS. The positions of an account (either on a net or gross basis) therefore reflect the consolidated rights and obligations arising from all Market Contracts that have been allocated to that account.

Post-trade Management

- 41 SEOCH offers post-trade management functions to facilitate SEOCH Participants to manage their trades and positions in DCASS. A SEOCH Participant can give up a trade to another SEOCH Participant that has to agree to take up the trade before the give up/take up can be effected. A SEOCH Participant can transfer a trade/position between accounts of its own. A SEOCH Participant can also transfer a position to another SEOCH Participant by completing a stipulated form that is signed by both SEOCH Participants and submitted to SEOCH in accordance with the SEOCH Rules and SEOCH Procedures.

Money Settlement

- 42 SEOCH does not have a banking licence in Hong Kong so it does not have direct access to the Real Time Gross Settlement (RTGS)¹⁵ systems. SEOCH appoints eight licensed banks as its settlement banks (**Settlement Banks**) to process money transactions in

¹⁴ SEOCH has general rights to accept or refuse the registration of stock option contracts traded through HKATS. In the event that SEOCH refuses a trade, it will notify SEHK and the SEOCH Participants who were parties to the trade.

¹⁵ The RTGS systems are operated by the Hong Kong Interbank Clearing Limited (HKICL), which is jointly owned by the Hong Kong Monetary Authority (HKMA) and the Hong Kong Association of Banks.

multiple currencies, including Hong Kong dollar (**HKD**), Renminbi (**RMB**), United States dollar (**USD**), Euro (**EUR**) and Japanese yen (**JPY**) on its behalf via intra-bank transfers. SEOCH also approves one licensed bank as a designated bank (**Designated Bank**) for SEOCH Participants to settle with SEOCH, on their behalf, through SEOCH's Settlement Banks via RTGS payments.

- 43 SEOCH Participants are required to maintain accounts in respective currencies at any of the Settlement Banks or Designated Bank for money settlement purposes and must authorise the Settlement Banks or Designated Bank to accept instructions from SEOCH to directly transfer funds from their accounts to SEOCH's accounts with the Settlement Banks.
- 44 SEOCH uses SWIFT¹⁶ to send payment instructions to the Settlement Banks and Designated Bank to effect payments to and from SEOCH Participants' bank accounts via intra-bank transfers and RTGS payments respectively, with the scheduled and ad hoc money settlement processes. The deadlines to settle the relevant payments of each money settlement process are summarised in the table below:

Money Settlement Process	Payment Deadline
Scheduled processes:	
– Daily settlement of day-end premium, margin (Margin) and fees	By 9:15 am the next business day
Ad hoc processes:	
– Ad hoc settlement of intra-day Margin (IDM) call	Within 1 hour after notification
– Ad hoc settlement of additional contributions to the RF	By 12:00 noon on the third business day after the distribution of the notification report

- 45 A SEOCH Participant's obligation to make payment will not be treated as having been discharged until SEOCH has received a payment confirmation from the Settlement Bank via SWIFT that the funds in the required currency have been received and credited into SEOCH's bank account maintained with the Settlement Bank.

Settlement of Exercised Options Trades (**EOTs**)

- 46 SEOCH Participants holding long open positions can submit exercise requests up to the expiry day via DCASS. SEOCH conducts a random assignment process at the end of each business day to allocate the exercised contracts against short open positions of SEOCH Participants.

¹⁶ **SWIFT** means the Society for Worldwide Interbank Financial Telecommunication.

- 47 SEOCH settles stock transactions resulting from these EOTs with SEOCH Participants via HKSCC. HKSCC is a recognised clearing house for the securities traded on SEHK, being regulated and supervised by the SFC. Once EOTs are accepted to be settled under the continuous net settlement (**CNS**) system of HKSCC, HKSCC becomes the CCP of those EOTs through novation in accordance with the rules of HKSCC. EOTs are then deemed 'settled' by SEOCH which discharges its CCP obligation at the same time.

Collateral Management

- 48 SEOCH uses CCMS to manage SEOCH Participants' collateral holdings and obligations. Collateral deposited is marked-to-market and valued on a regular basis with relevant haircut rates applied. This collateral can be used to meet SEOCH Participants' Margin requirement. Also, SEOCH Participants can manage their collateral through CCMS, and make collateral deposit and withdrawal requests via CCMS. Please refer to the description under Principle 5: Collateral.

CHAPTER 4: PRINCIPLE-BY-PRINCIPLE SUMMARY DISCLOSURE

Principle 1: Legal Basis

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

MATERIAL ASPECTS OF ACTIVITIES

- 1.1 The material aspects of SEOCH's activities that require legal certainty are:
- (a) participants in SEOCH;
 - (b) the rights and obligations of SEOCH and SEOCH Participants in respect of SEOCH's services, including clearing, settlement and collateral management;
 - (c) the formation by novation, enforceability of netting arrangements and settlement finality of Market Contracts;
 - (d) the rights and interests of SEOCH and SEOCH Participants to financial provisions constituting Margin, collateral and RF;
 - (e) the settlement finality of Market Contracts with SEOCH Participants;
 - (f) the SEOCH Rules and SEOCH Procedures concerning SEOCH Participant default;
 - (g) the procedures for the recovery and wind-down of SEOCH; and
 - (h) the implications of the insolvency of SEOCH Participants or SEOCH.

LEGAL SOUNDNESS

- 1.2 SEOCH conducts all of its business in Hong Kong. The Hong Kong legal framework supports and allows SEOCH to conduct all material aspects of its activities as a CCP. The legal basis/framework supporting the material aspects of SEOCH's activities includes the Bankruptcy Ordinance; Companies Ordinance; SFO; the general Hong Kong common law in relation to contracts, tort and property; and the rules and agreements binding SEOCH and SEOCH Participants.
- 1.3 SEOCH is an RCH regulated by the SFC, Hong Kong's statutory regulator for the securities and futures markets, under Section 37(1) of the SFO. The SFO is Hong Kong's principal securities and futures legislation, which sets out the regulatory framework for SEOCH in its capacity as an RCH.

- 1.4 All SEOCH Participants are incorporated in Hong Kong and are subject to the relevant laws of Hong Kong. The SEOCH Rules, SEOCH Procedures and the participants agreement with each SEOCH Participant are governed by Hong Kong law. Amendments to the SEOCH Rules and SEOCH Procedures are drafted and/or reviewed by the internal lawyers of HKEX Group and where considered appropriate/necessary external legal opinions are sought. No rules or amendment of any rule will have effect unless the SFC has given its approval in writing. SEOCH outlines and (as needed) evidences the legal basis for its activities to the SFC upon request. Where appropriate, SEOCH shares the existence of relevant legal opinions with appropriate recipients, such as members of the Clearing Consultative Panel, etc. in an effort to promote confidence and transparency among SEOCH Participants.
- 1.5 There is a high degree of certainty that actions taken under the SEOCH Rules and SEOCH Procedures will not be voided, reversed or subject to stays. This is especially so in the light of SFO provisions that expressly override various insolvency laws in relation to SEOCH. SEOCH is not aware of any court of any relevant jurisdiction that has held its activities or arrangements to be unenforceable.
- 1.6 SEOCH has engaged an independent law firm to issue a Hong Kong law opinion which provides a high level of confidence that the SEOCH Rules (including the default procedures) are enforceable under Hong Kong law and a high degree of certainty on the finality of actions taken under the SEOCH Rules under Hong Kong law.

OVERSEAS RECOGNITION

- 1.7 The Board of Supervisors of ESMA adopted a decision to recognise SEOCH as a third country CCP under Chapter 4 of Title III of EMIR on 27 April 2015.

Principle 2: Governance

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

REGULATORY REQUIREMENTS

- 2.1 As mentioned above, SEOCH has various statutory duties, including to ensure, so far as reasonably practicable, that there are orderly, fair and expeditious clearing and settlement arrangements for transactions cleared or settled through its facilities and that risks associated with its business and operations are managed prudently. It must, at all times, provide and maintain adequate and properly equipped premises, competent personnel, and automated systems with adequate capacity facilities to meet contingencies or emergencies, security arrangements and technical support, for the conduct of its business. In discharging its statutory duties, SEOCH is under an obligation to act in the interest of the public, having particular regard to the interest of the investing public. Where there is a conflict between the public interest and SEOCH's own interest, SEOCH is required to ensure that the interest of the public prevails.
- 2.2 As an RCH, SEOCH's Articles of Association, the SEOCH Rules and SEOCH Procedures, fees and fee structure, and all amendments must be approved by the SFC before they become effective.

GOVERNANCE OF HKEX

- 2.3 HKEX, a publicly listed company in Hong Kong is SEOCH's holding company. HKEX is currently the only exchange controller recognised by the SFC under Division 4 of Part III of the SFO. As a recognised exchange controller, HKEX has a statutory duty to ensure, among other things, that any RCH controlled by it (including SEOCH) performs its duties competently. Accordingly, HKEX actively oversees and ensures the proper functioning of SEOCH. HKEX exercises appropriate control and oversight over the performance of SEOCH's functions and overall operation, financial arrangements, risk management, business and strategic direction.
- 2.4 HKEX adopts a group governance structure over its Hong Kong regulated exchanges and clearing houses, including SEOCH. As a recognised exchange controller, HKEX's board structure and the appointment of HKEX's chairman, chief executive and chief operating officer must comply with the SFO's requirements. The appointment of the chairman of HKEX requires the approval of the Chief Executive of Hong Kong, and the appointments of its chief executive and chief operating officer require the approval of the SFC. Further, the Financial Secretary of Hong Kong has the power to appoint up to 8 members to the HKEX Board where the Financial Secretary of Hong Kong is satisfied

that it is appropriate to do so in the interest of the investing public or in the public's interest.

- 2.5 The HKEX Board consists of six directors¹⁷ appointed by the Financial Secretary of Hong Kong (including the chairman), six shareholder-elected directors and one ex officio executive director, namely the chief executive of HKEX. As a listed company, HKEX is regulated by the Rules Governing the Listing of Securities on the SEHK (**Listing Rules**) and supervised by the SFC in terms of its compliance with the Listing Rules. The composition of the HKEX Board meets the requirement of the Listing Rules by having at least three independent non-executive directors who represent at least one-third of the board. HKEX's Articles of Association contain provisions reflecting these requirements.
- 2.6 The HKEX Board plays a central supporting and supervisory role in the HKEX corporate governance structure, provides leadership and guidance for all the HKEX Group's activities, including SEOCH's activities, and oversees the execution of HKEX's business strategies. The HKEX Board has overall responsibility for ensuring that appropriate systems of risk management and internal control are in place. HKEX Group's risk governance structure is based on the "3 lines of defence" model with oversight and direction from the HKEX Board and various committees of HKEX and its subsidiaries including SEOCH.
- 2.7 SEOCH is subject to the oversight and scrutiny of the HKEX Board committees on specific matters, including the RMC, Risk Committee, Audit Committee (**AC**), Remuneration Committee (**RC**) and Investment Advisory Committee (**IAC**). Unless there is a sound reason for them to diverge SEOCH's policies in these areas are intentionally consistent with the HKEX Group policies. For good group governance reasons, the following arrangements (among others) apply:
- (a) the RMC may formulate and advise on risk management matters relating to HKEX's activities and the activities of its regulated subsidiaries including SEOCH for consideration by HKEX. The size and composition of the RMC must follow the provisions laid down in the SFO. The Financial Secretary of Hong Kong has the power to appoint at least three members to the RMC;
 - (b) the Risk Committee oversees the overall risk management framework and advises the HKEX Board on HKEX Group's risk related matters;
 - (c) the AC reviews the accounting principles and practices adopted by HKEX Group, including SEOCH, and assists the HKEX Board in auditing, internal control systems and financial reporting matters;

¹⁷ Directors are appointed by the Financial Secretary of Hong Kong pursuant to Section 77 of the SFO. In all respects other than the manner of their appointment, such directors are the same as the shareholder-elected directors of HKEX.

- (d) the RC is responsible for the formulation of remuneration policy and the guidelines for the recruitment and remuneration of directors and senior management for the HKEX Board's approval. The RC reviews the remuneration of the HKEX Board directors annually with reference to companies of comparable business or scale. Any change to the remuneration is subject to HKEX shareholders' approval; and
 - (e) the IAC's duties, powers and functions include providing market expertise and advice to the HKEX Board on investments of HKEX, including advice on investment policies, asset allocation and selection of fund managers and custodians.
- 2.8 HKEX has three consultative panels, namely (a) Cash Market Consultative Panel; (b) Derivatives Market Consultative Panel; and (c) Clearing Consultative Panel, each chaired by a member of the HKEX Board and comprised of a cross-section of appropriate market participants and acting as the advisory bodies to provide market expertise and advice relating to the cash market, derivatives market and clearing business respectively.
- 2.9 As mentioned, HKEX is subject to the Listing Rules including the Corporate Governance Code. Similar to other listed companies, HKEX is expected to (a) keep the market and shareholders informed of price sensitive information in a timely manner; (b) disclose and, where appropriate, obtain shareholders' approval in respect of important acquisitions and disposals; (c) publish financial information on an annual and semi-annual basis (HKEX elects to do so on a quarterly basis); and (d) overall observe a high standard of corporate governance.

GOVERNANCE OF SEOCH

- 2.10 The HKEX Board and management supervise and control all HKEX operations, including SEOCH. The SEOCH Board currently consists of four directors, who are senior executives of HKEX. The SEOCH Board directs and manages the activities of SEOCH in accordance with the SEOCH Rules, the applicable law and the regulatory regime governing SEOCH.
- 2.11 The SEOCH Board has multiple roles and responsibilities as set out in its terms of reference, including but not limited to:
- (a) managing SEOCH's business in accordance with its Articles of Association;
 - (b) ensuring SEOCH's compliance with the laws, rules and regulations governing it;
 - (c) promoting SEOCH's vision, mission, principles, policies and values;
 - (d) overseeing and enhancing SEOCH's development, and monitoring its strategic and annual operating plan as well as the financial budget;

- (e) making rules for the proper regulation and efficient operations of the clearing and settlement facilities which SEOCH operates;
- (f) making rules which provide for the taking of proceedings or other action if a SEOCH Participant appears to be unable, or likely to become unable, to meet its obligations in respect of all unsettled or open Market Contracts to which it is a party;
- (g) overseeing all matters and formulating policies in relation to SEOCH's internal control, businesses and corporate accommodation, risk management, and supervising the implementation of such policies;
- (h) reviewing SEOCH's performance against targets and objectives, in particular its performance in matters of finance, business, corporate governance and corporate social responsibility; and
- (i) ensuring accountability towards and sufficient communication with SEOCH's stakeholders, in particular its shareholders and SEOCH Participants.

2.12 The organisational structure of the HKEX Group, the terms of reference and composition of the HKEX Board and its committees, and the SEOCH Board are published on the HKEX website for access by the public. Please refer to *Chapter 5 - List of Publicly Available Resources on the HKEX Website*, for a list of publicly available resources about SEOCH.

SEOCH MANAGEMENT

2.13 SEOCH's management consists of the employees, executives and staff within the HKEX Group who have the function of designing, implementing and administering the SEOCH Rules and SEOCH Procedures and managing SEOCH and its clearing, settlement and collateral management services. SEOCH's senior management team is responsible, among others, for making recommendations to, and implementing decisions of the SEOCH Board, managing the operation of the company's business, ensuring SEOCH's activities are consistent with its objectives and risk tolerance, and that internal control and risk management procedures are properly designed and executed.

LEGAL RESPONSIBILITIES

2.14 SEOCH is a "public body" for the purposes of the Prevention of Bribery Ordinance (**PBO**). Under the PBO, SEOCH's employees are public servants for the purposes of the PBO and subject to the stringent controls in relation to public bodies. It is an offence under the PBO for a public servant to solicit or accept any advantage relating to his work in the public body concerned unless he has written permission of the public body. Furthermore, there are provisions in the PBO specifically focusing on persons having dealings with public bodies. It is an offence for anyone to offer an advantage to a public servant as an inducement for performing or abstaining from performing any act in his capacity as a public servant or for procuring of any contract with a public body for the

performance of any work. The Corruption Prevention Department of the Independent Commission Against Corruption (**ICAC**) gives special attention to public bodies and meets with them regularly for necessary corruption prevention work.

- 2.15 HKEX has a Group Anti-Bribery and Anti-Corruption Policy which applies to all employees of HKEX Group, directors of HKEX and its subsidiaries including SEOCH, and members of committees of HKEX Group. HKEX Group is committed to ensuring that no bribes, kickbacks or similar gifts, payments or advantages are solicited from or given or offered to any person, whether in the public or private sector, for any purpose.

CONFLICTS OF INTEREST POLICY

- 2.16 HKEX has implemented procedures to deal with conflicts of interest. Directors and committee members of HKEX and its subsidiaries including SEOCH must avoid conflicts of interest and fully disclose any interest in transactions, arrangements, contracts or potential contracts with any company within HKEX Group and shall abstain from discussion and voting if there is an actual or potential conflict of interest in accordance with the guideline on conduct contained in the Director's Handbook issued to them. The Director's Handbook is publicly available on the HKEX website. Additionally, all employees and directors who are HKEX employees must comply with HKEX's Conflict of Interest Policy which is set out in the Code of Conduct, contained in HKEX's Human Resources Manual. HKEX employees must avoid conflict of interests, whether direct or indirect, or whether actual or potential, which may compromise their integrity and put the HKEX's interests and reputation at stake.

Principle 3: Framework for the Comprehensive Management of Risks

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

RISK MANAGEMENT FRAMEWORK

3.1 HKEX has put in place an ERM framework to identify, assess, monitor and manage the entire range of risks inherent in its business and operations arising from both internal and external sources on an ongoing basis. HKEX and SEOCH review the risk management framework regularly, covering the following risks:

- (a) **Legal risk** – the Hong Kong legal framework supports and allows SEOCH to conduct all material aspects of its activities as a CCP. Please refer to the description under Principle 1: Legal Basis;
- (b) **Liquidity risk** – SEOCH assesses its liquidity needs daily, including using stress testing and maintains sufficient liquid resources to ensure that it is able to meet its payment and delivery obligations in a timely manner including under default scenarios in extreme but plausible market conditions. Please refer to the description under Principle 7: Liquidity Risk;
- (c) **Credit risk** – to minimise the risk that SEOCH Participants would be unable to meet their payment and delivery obligations under Market Contracts, and the requirements for Margin, RF contribution (**RF Contribution**) and collateral, in a timely manner, SEOCH applies risk-related participation requirements. These include the imposition of minimum liquid capital requirements and daily credit risk monitoring of SEOCH Participants through a set of risk metrics to determine and set the Margin and collateral required. SEOCH maintains financial resources sufficient to cover a wide range of potential stress scenarios including default scenarios in extreme but plausible market conditions. Please refer to the description under Principle 4: Credit Risk;
- (d) **Market risk** – SEOCH imposes Margin requirements to cover current and potential future market fluctuations. All outstanding positions resulting from Market Contracts are marked to market and subject to Margin calculation on daily basis. Furthermore, SEOCH collects holiday margin (**Holiday Margin**) to mitigate the potential market risk on the reopening of Hong Kong markets after a holiday break. Please refer to the description under Principle 4: Credit Risk and Principle 6: Margin;
- (e) **Settlement risk** – payments between SEOCH and SEOCH Participants are made via intra-bank transfers or RTGS payments to and from SEOCH's bank accounts with the Settlement Banks. SEOCH minimises settlement risk by imposing stringent appointment criteria for its Settlement Banks, ongoing monitoring on

concentration of exposures and regular assessment of their performance. Please refer to the description under Principle 9: Money Settlements;

- (f) **General business risk** – SEOCH follows HKEX Group’s ERM framework to identify, monitor and manage all risks including general business risk. External and internal factors including but not limited to regulatory developments, market conditions, business strategy and control procedures on spending are evaluated and reviewed regularly. Please refer to the description under Principle 15: General Business Risk;
- (g) **Custody and investment risks** – SEOCH adopts stringent selection criteria when appointing settlement and custodian banks to safe keep its own investments and SEOCH Participants’ assets. SEOCH’s investment strategy follows the primary principles of HKEX Investment Policy, Restrictions and Guidelines (**Investment Policy**), which is set by the IAC and approved by the HKEX Board, with an aim to preserve capital, remain sufficiently liquid and minimise risk while optimising return on investments. Please refer to the description under Principle 16: Custody and Investment Risks; and
- (h) **Operational risk** – SEOCH follows HKEX Group’s ERM framework to identify, monitor and manage all risks including operational risks. To address operational risks that may affect its critical operations and services, SEOCH has established a Market Contingency Plan (**MCP**) setting out the contingency and recovery procedures to address operational risks that may affect its critical operations and services under specific scenarios. In addition, SEOCH follows HKEX Group’s physical and information security policies to manage potential physical and system vulnerabilities and threats. Please refer to the description under Principle 17: Operational Risk.

RISK MANAGEMENT POLICIES, PROCEDURES AND SYSTEMS

- 3.2 SEOCH employs a holistic information and risk-control system to provide it with timely information to manage its risks. SEOCH receives real-time price data from SEHK, via HKATS, for the accurate and timely measurement and aggregation of risk exposures. SEOCH uses various price data inputs, to determine the settlement price for each contract, which is used in the margining and mark-to-market processes. SEOCH monitors its current exposure and potential future exposure to each SEOCH Participant’s Market Contracts during each business day. SEOCH uses DCASS, together with CCMS, to aggregate and centrally manage its exposures and calculate the amount of Margin or other collateral to be collected from each SEOCH Participant. Please refer to the description under Principle 6: Margin.
- 3.3 SEOCH monitors various metrics on a daily basis as part of its risk monitoring framework, including but not limited to:

- (a) the adequacy of coverage of Margin against SEOCH's exposures, at current market prices; and
- (b) stress test data relative to historic exposures compared across SEOCH Participants and under extreme but plausible market conditions.

RECOVERY AND WIND DOWN PLAN

- 3.4 SEOCH conducts regular business impact analyses of its critical business processes and systems. SEOCH identifies scenarios that could impair its operations and maintains appropriate contingency arrangements to minimise possible damage to SEOCH, its markets, participants and investors. HKEX, together with SEOCH, maintains an up-to-date MCP and participates in the regular Market Contingency Rehearsal Exercise (**Market Wide Rehearsal**) led by the government of Hong Kong (**HKSAR Government**). HKEX's Information Security & Business Continuity Department provides coordinating support for the Market Wide Rehearsal with financial regulators and has a responsibility to develop, implement and support HKEX's market contingency planning, policies, procedures and activities across the organization. HKEX runs system recovery and business continuity drills regularly with relevant stakeholders where applicable.
- 3.5 In the extreme situation that SEOCH has decided it does not have the necessary resources to continue business as normal, it will maintain its operations until it has wound down its activities in an orderly manner with the remaining financial resources, as described further under Principle 15: General Business Risk.
- 3.6 SEOCH maintains a recovery plan that is intended to be used by the management of SEOCH in the event that SEOCH experiences a threat to its viability and financial stability that may prevent the continued provision of critical services. The recovery plan is prepared with consideration to the SEOCH rulebook and any applicable policies, plans and procedures of SEOCH and HKEX (where applicable). These include, but are not necessarily limited to, HKEX's Investment Policy; the Counterparty Risk Management Policies (of HKSCC, HKCC and SEOCH); the Liquidity Management Plan (of HKSCC, HKCC and SEOCH); the HKEX Escalation and Incident Report Policy and the HKEX MCP.

REVIEW OF THE EFFECTIVENESS OF RISK MANAGEMENT POLICIES, PROCEDURES AND SYSTEMS

- 3.7 The Cash & Derivatives Clearing Risk Management Department meets on a quarterly basis with the RMC to provide an update on SEOCH's risk exposures and on the effectiveness of its risk management framework. The RMC will be consulted in relation to any proposed material changes to the risk management framework before they are submitted to the HKEX Board for approval.

3.8 There is also a Risk Committee which meets at least four times a year. Its main function is to oversee the overall risk management framework and advise the HKEX Board on HKEX Group's risk-related matters.

Principle 4: Credit Risk

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

KEY COMPONENTS OF SEOCH RISK MANAGEMENT FRAMEWORK

Credit Exposure to SEOCH Participants

- 4.1 As a CCP, SEOCH has a risk management framework that incorporates the following key components to manage its credit exposure to SEOCH Participants:
- (a) SEOCH Participant admission requirements and regular risk scoring analysis for identifying and monitoring risks posed by SEOCH Participants;
 - (b) processes for mark-to-market, margining, collection of concentration risk margin (**Concentration Risk Margin**) and Holiday Margin;
 - (c) CBPL imposed to ensure that risk exposure is commensurate with the financial strength of SEOCH Participants;
 - (d) RF and other financial resources to cover default losses exceeding the collateral collected from the defaulting SEOCH Participants;
 - (e) clear and enforceable SEOCH Participant default rules and procedures. Please refer to the description under Principle 13: Participant-default Rules and Procedures; and
 - (f) policies to limit the acceptable collateral to those asset types with low credit, market and liquidity risks. Please refer to the description under Principle 5: Collateral.

- 4.2 The risk management framework is subject to various ongoing reviews. Ad hoc reviews will be conducted in response to changing regulatory requirements, business needs or developments in the financial markets. Any change to the framework will be subject to the established internal and external approval processes. SEOCH Participants will be informed of any changes where appropriate via circulars which are publicly available on the HKEX website.

Credit Exposure to Settlement Banks

- 4.3 SEOCH has a robust framework to manage its credit exposure to its Settlement Banks. The framework covers financial and operational criteria for the appointment and ongoing monitoring of Settlement Banks. Please refer to the description under Principle 9: Money Settlements.

CREDIT EXPOSURE TO SEOCH PARTICIPANTS

- 4.4 The following are the key measures adopted by SEOCH to manage its credit exposure to SEOCH Participants.

SEOCH Participant Admission Requirements and Regular Risk Scoring Analysis

- 4.5 Currently, only licensed corporations¹⁸ under the SFO can be admitted as SEOCH Participants. They are regulated by the SFC, subject to the Securities and Futures (Financial Resources) Rules (Chapter 571N of the Laws of Hong Kong) (**FRR**) and must submit financial returns to the SFC on a monthly basis. The SFC acts as the front-line regulator to monitor and supervise SEOCH Participants who are licensed corporations while SEOCH is responsible for monitoring SEOCH Participants' settlement activities and their compliance with SEOCH Rules. In addition, SEOCH requires DCPs and GCPs to have minimum liquid capital of HK\$5 million and HK\$20 million respectively, higher than the minimum liquid capital required under the FRR.
- 4.6 During the SEOCH Participant admission review process, SEOCH considers the key operational and internal control aspects of the applicant including the experience of its key personnel and reviews its compliance and risk management policies and systems. All admitted SEOCH Participants must comply with the continuing obligations set out in the SEOCH Rules.
- 4.7 SEOCH routinely measures and monitors its current and potential future credit exposures to SEOCH Participants that are licensed corporations with reference to their monthly financial returns obtained through the SFC. Monthly risk scoring analysis is also conducted based on the Counterparty Risk Ranking Methodology in which each SEOCH Participant is assessed and assigned a risk score based on three key risk

¹⁸ More specifically, licensed corporations that are licensed to carry on Type 1 Regulated Activity (Dealing in Securities) under the SFO.

factors including financial, non-financial and settlement capability of the SEOCH Participant. The methodology does not only allow SEOCH to monitor SEOCH Participants more effectively but also facilitates SEOCH's risk assessment process which may result in an imposition of additional risk management measures on the concerned SEOCH Participant.

Mark-to-Market and Margining

- 4.8 To cover its current credit exposure, SEOCH marks all open stock option positions to market every day based on their respective settlement prices to calculate the mark-to-market margin for short stock option positions and margin credits¹⁹ for fully paid long stock option positions for each Clearing Account.
- 4.9 To cover its future credit exposure, SEOCH calculates the risk margin of SEOCH Participants on a daily basis using HKEX's Portfolio Risk Management System (**PRiME**)²⁰ based on its assessment of the maximum potential losses of an option contract or a portfolio of option contracts over a one-day period under 16 simulated market scenarios and a defined confidence level. The clearing house margin (**CH Margin**) requirement of an option contract or a portfolio of option contracts is equivalent to the sum of mark-to-market margin (or margin credits) and risk margin. Ad hoc IDM will also be triggered when there is a CH Margin erosion of 50% in any stock option class during the trading sessions.
- 4.10 SEOCH also imposes Concentration Risk Margin on a SEOCH Participant if the projected aggregate loss (less any CH Margin) based on the RF stress assumptions arising from any open options contracts (**Net Projected Loss**) of that SEOCH Participant is greater than 30% of the total Net Projected Loss of all SEOCH Participants and the total Net Projected Loss is in excess of HK\$500 million. Prior to a holiday period, SEOCH collects Holiday Margin based on the adjusted CH Margin levels from SEOCH Participants..
- 4.11 SEOCH performs daily back-testing and monthly sensitivity analyses to assess its Margin model performance and Margin coverage. The back-testing results show that the model performance and Margin coverage are satisfactory. For further details regarding the Margin methodology, please refer to the description under Principle 6: Margin.

¹⁹ The mark-to-market margin represents the cost of liquidating an option position. For a long options position with premium paid upfront, the mark-to-market margin is a credit.

²⁰ PRiME is a SPAN (Standard Portfolio Analysis of Risk) compatible margining algorithm. SPAN is a registered trademark of the Chicago Mercantile Exchange. PRiME is documented in the "PRiME Margining Guide" which is publicly available on the HKEX website:
http://www.hkex.com.hk/eng/market/rm/rm_dcrm/rm_dcrm_clearing/Documents/PRiME_Margining_Guide.pdf

CBPL

- 4.12 SEOCH imposes CBPL on each SEOCH Participant based on its latest liquid capital to ensure the risk exposure of each SEOCH Participant is commensurate with its financial strength. A SEOCH Participant in breach of its CBPL must take remedial action to observe compliance within the timeline set by SEOCH and an additional margin (**Additional Margin**) equivalent to 25% of its exposure in excess of its position limits will be imposed on the SEOCH Participant until the breach is rectified.

RF and other Financial Resources

- 4.13 SEOCH maintains a RF to meet its obligations and liabilities as a CCP if losses arising from one or more SEOCH Participant defaults cannot be fully covered by the Margin collected from the defaulting SEOCH Participant(s). The RF can also be used as a source of liquid funds to meet any immediate payment obligations of SEOCH in relation to a SEOCH Participant default. The RF comprises SEOCH Participants' contributions and interest income of the RF.
- 4.14 A SEOCH Participant's RF Contribution is comprised of a fixed component (**Fixed Contribution**) and a variable component (**Variable Contribution**). A review of the size of RF and corresponding determination of SEOCH Participants' contribution is conducted on a monthly basis and more frequently if appropriate. SEOCH informs SEOCH Participants of any change in the size of the RF after a review via circular.
- 4.15 The Fixed Contribution for each DCP is HK\$1.5 million. As for each GCP, the Fixed Contribution is HK\$5 million plus an additional HK\$1.5 million for each subsequent clearing arrangement with a non-clearing participant (**NCP**)²¹ when the GCP already has three valid clearing agreements in place. The total Variable Contribution to be collected from all SEOCH Participants is determined with reference to stress testing results, and each SEOCH Participant is required to contribute according to its allocated share.
- 4.16 HKEX currently sets aside HK\$4 billion of shareholders' funds as HKEX Risk Management Capital (**RM Capital**) for the purpose of strengthening the risk management regime of the clearing houses and supporting their roles as CCPs.

CREDIT EXPOSURE TO SETTLEMENT BANKS

- 4.17 SEOCH is also exposed to credit risk of its Settlement Banks and has in place a Settlement Bank policy approved by the HKEX Board to manage such exposures. Please refer to the description under Principle 9: Money Settlements for details.

²¹ An NCP is an Options Trading Exchange Participant who is not a participant of SEOCH and has outsourced its clearing functions to a GCP.

STRESS TESTING – SUFFICIENCY OF FINANCIAL RESOURCES

- 4.18 The sufficiency of the RF and other financial resources is ascertained through stress testing. SEOCH conducts daily stress testing against SEOCH Participants' open positions, taking into consideration the projected risk exposure of the RF and prevailing market conditions. The risk exposure of the RF is assessed with reference to two key assumptions:
- (a) price movements ($\pm 22\%$ for all stock option classes); and
 - (b) default of the single largest SEOCH Participant and the fifth largest SEOCH Participant.
- 4.19 The $\pm 22\%$ price movement reflects the most volatile historical movements of the Hang Seng Index (HSI)²². Stress testing results are reported to HKEX's senior management on a daily basis, to the SFC on a weekly basis to the Risk Committee and the RMC on a quarterly basis.
- 4.20 Based on the daily stress testing results, SEOCH will demand additional Variable Contributions from SEOCH Participants if the risk exposure of the RF exceeds 80% of the sum of the existing RF size for two consecutive business days. SEOCH also re-calculates the required RF size on the first business day of every month based on the maximum daily stress testing results in the most recent 20 business days. In both ad hoc and monthly reviews, a buffer equivalent to 25% of the maximum risk exposure calculated in the most recent 20 business days is incorporated in determining the required RF size. The share of Variable Contribution of each SEOCH Participant is determined with reference to SEOCH Participants' share of average total Margin requirement and net premium paid in the most recent 20 business days. SEOCH provides reports to SEOCH Participants of their required RF Contributions following each monthly and ad hoc review. SEOCH informs them of the total SEOCH Participants' required Variable Contributions resulting from stress testing via circulars after each review. The required Variable Contributions are collected on the third business day from the date of the notification.
- 4.21 SEOCH reviews its stress testing model monthly to assess the appropriateness of the adopted assumptions, parameters and scenarios, taking into consideration the latest market dynamics such as local and international market conditions, participant default events and new stock option classes and/or trading arrangements. This review will be conducted more frequently when the market is unusually volatile, less liquid or when the concentration of positions held by SEOCH Participants increases significantly. SEOCH performs an annual independent validation of the model.

²² The movement during the market crash in 1987 which was exacerbated by the four-day closure of the Hong Kong markets has been excluded. It is believed that such market closure will not recur in the future.

- 4.22 SEOCH also conducts monthly reverse stress testing to identify the extreme scenarios and market conditions in which the RF and other financial resources would not provide sufficient coverage of tail risk. SEOCH conducts the testing by applying a combination of different extreme price movements and counterparty default scenarios against both hypothetical and actual portfolios of SEOCH Participants.

Use of RF and other Financial Resources – the Waterfall

- 4.23 In the event of a SEOCH Participant default, SEOCH will first use the available non-pooled resources, such as CH Margin, Holiday Margin and Concentration Risk Margin collected from the defaulting SEOCH Participant to cover any default loss. Thereafter, SEOCH will apply other financial resources in accordance with SEOCH Rule 413. Please refer to the description under Principle 13: Participant-default Rules and Procedures.

Allocation of Default Losses and Replenishment Arrangement

- 4.24 In the event of a SEOCH Participant default where non-defaulting SEOCH Participants' contributions to the RF are used to cover a default loss under the SEOCH Rules, the contributions will be applied to share the default loss on a pro-rata basis by reference to SEOCH Participants' respective contributions to the RF immediately prior to the default.
- 4.25 After the RF is applied to cover a default loss, SEOCH will require SEOCH Participants to replenish the deficiency of their RF Contributions as a result of the application. SEOCH will issue a notice of replenishment (**Notice of Replenishment**) to require from the non-defaulting SEOCH Participants to replenish the deficiency. SEOCH Participants must replenish the deficiency no later than three business days after the date of the Notice of Replenishment, or within such other time period as may be specified by SEOCH.
- 4.26 A SEOCH Participant can limit its liability to certain further RF replenishments by submitting a resignation notice (**Resignation Notice**) to terminate its participation in SEOCH. SEOCH Participants that do not submit a Resignation Notice remain liable for any further replenishments. There is no cap on a SEOCH Participant's liability in the absence of it serving a Resignation Notice.
- 4.27 If a SEOCH Participant's Resignation Notice is received within three business days after receipt of the Notice of Replenishment, the aggregate liability of the SEOCH Participant to replenish a deficiency of its RF Contributions is limited to (a) the amount of the SEOCH Participant's RF Contribution requirements on the day SEOCH receives the Resignation Notice; and (b) two times the amount in (a) above.

Recovery of Default Losses

- 4.28 SEOCH has the right to pursue recovery of any default loss incurred through legal proceedings against the defaulting SEOCH Participant. Any recovered amount, net of recovery costs and expenses, may be credited to the RF.
- 4.29 The above arrangements are documented in Chapter 4 of the SEOCH Rules.

Principle 5: Collateral

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

ACCEPTABLE COLLATERAL

- 5.1 SEOCH limits the acceptable collateral to those asset types with low credit, liquidity and market risks only. SEOCH has defined standards approved by the HKEX Board and the SFC to determine which assets could be accepted as collateral, including:
- (a) sufficient liquidity in Hong Kong or international markets (if applicable);
 - (b) high quality with low credit risk;
 - (c) low wrong way risk (if applicable); and
 - (d) sufficient business/market demand.
- 5.2 Currently, SEOCH accepts the following types of collateral from SEOCH Participants to meet their Margin requirement:
- (a) cash (HKD, USD, RMB, EUR and JPY);
 - (b) Hong Kong Exchange Fund Bills and Notes (**EFBN**); and
 - (c) designated stocks including all HSI constituent stocks and Tracker Fund of Hong Kong as general stock collateral.
- 5.3 If a SEOCH Participant has a short call option position, the SEOCH Participant can deliver to SEOCH the underlying stock as Specific Stock Collateral. As the risk of the relevant short call option is covered by the Specific Stock Collateral, the short call option position will not be subject to margin calculation.
- 5.4 RF Contributions can be made in cash (HKD) (subject to a minimum) or EFBN. In practice, most SEOCH Participants pledge cash collateral with SEOCH.
- 5.5 SEOCH also provides an optional facility for SEOCH Participants to transfer their surplus collateral held in their House Collateral Account to HKSCC to settle their EOT Marks and Margin requirement with HKSCC.

VALUATION AND HAIRCUT

- 5.6 SEOCH marks to market all collateral, at least once daily. SEOCH uses market data from selected information vendors for the valuation of cash collateral, stock prices from SEHK for the valuation of general stock collateral and market value published by the HKMA for the valuation of EFBN. SEOCH has the discretion to use other values if it has reasons to believe that market prices do not represent the fair values of the collateral concerned. Where the currency of the collateral is different from the settlement currency of the contracts (currently all stock options are traded and settled in HKD), haircuts are applied. SEOCH also applies haircuts on EFBN and general stock collateral in accordance with remaining time to maturity and individual stock volatility respectively.
- 5.7 In determining the haircut rates, SEOCH calculates the projected volatility of the collateral at a two-tailed confidence interval of 99.7% based on historical price movements of different time intervals (ranging from seven days to one year depending on the collateral type) and incorporates a buffer to minimise the need to adjust the rates frequently. For cash collateral, the sufficiency of haircuts is further validated by comparing the value-at-risk calculation based on historical and hypothetical stress scenarios and five-year historical data. SEOCH also takes into consideration those extreme price movements in assessing the adequacy of the haircut rate of each collateral type. For general stock collateral, the haircut rate on each individual stock is also subject to a minimum of 30%.
- 5.8 SEOCH continuously monitors the volatility of the collateral. SEOCH performs monthly review of the haircut rates to ensure their adequacy. In exceptional situations that may affect the volatility of the collateral, ad hoc reviews will be conducted to assess the adequacy of the haircut rate. SEOCH arranges an annual independent validation of the adequacy of the haircut procedures.

CAPS ON COLLATERAL

- 5.9 There are different caps imposed on collateral to ensure SEOCH has sufficient liquid resource to fulfil its payment obligations in the event of default of a SEOCH Participant.
- 5.10 SEOCH Participants are required to satisfy at least 50% of the CH Margin requirements using the settlement currency of the product.
- 5.11 In addition, SEOCH does not accept non-cash collateral to cover more than 50% of a SEOCH Participant's CH Margin requirement.

CONCENTRATION LIMITS AND SPECIFIC WRONG WAY RISK

- 5.12 SEOCH controls its risk exposure on stock collateral by setting a limit based on the issued shares for each stock acceptable for general collateral purpose.

- 5.13 Furthermore, SEOCH does not accept any stock of the SEOCH Participant or its affiliate as general collateral so as to mitigate any specific wrong-way risk arising from a deterioration of the collateral value in the event that the SEOCH Participant providing the collateral defaults.

CROSS-BORDER (OR FOREIGN) COLLATERAL

- 5.14 SEOCH accepts cash collateral in foreign currencies (i.e. USD, RMB, EUR and JPY) deposited in banks in Hong Kong, which are selected in accordance with the approved SEOCH standards, to ensure that SEOCH can use the foreign currencies cash collateral in a timely manner.

COLLATERAL MANAGEMENT SYSTEM

- 5.15 SEOCH uses an integrated collateral management system, CCMS, to manage collateral in accordance with the SEOCH Rules, SEOCH Procedures and internal procedures.
- 5.16 CCMS performs collateralisation to determine the collateral requirements of SEOCH Participants, tracks collateral movements and performs valuations. CCMS also facilitates SEOCH and SEOCH Participants to perform their daily and ad hoc reporting and monitoring of collateral balances in CCMS Collateral Accounts. It ensures that only acceptable collateral is included in the evaluation of sufficiency of collateral posted. CCMS also offers flexibility to accept different collateral types and to adjust concentration limits and haircuts to accommodate changes in the ongoing monitoring and management of collateral.

Principle 6: Margin

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

- 6.1 SEOCH uses CH Margin as the main tools to mitigate its current and future credit exposures to SEOCH Participants. In addition, SEOCH imposes Holiday Margin, Concentration Risk Margin and/or Additional Margin²³ on SEOCH Participants. SEOCH has in place the operational capacity to enforce, and does enforce, the timely calculation and collection of Margin.

CH MARGIN

- 6.2 To cover its current credit exposure, SEOCH marks all open stock option positions to market every day based on their respective settlement prices to calculate the mark-to-market margin for short stock option positions and margin credits²⁴ for fully paid long stock option positions for each Clearing Account.
- 6.3 To cover its future credit exposure, SEOCH calculates the risk margin of SEOCH Participants on a daily basis using PRiME based on its assessment of the maximum potential losses of an options contract or a portfolio of options contracts over a one-day period under 16 simulated market scenarios and a defined confidence level. The CH Margin requirement of an option contract or a portfolio of option contracts is equivalent to the sum of the mark-to-market margin (or margin credits) and the risk margin.

Benchmark Margin Rate (Benchmark Rate)

- 6.4 SEOCH determines the Benchmark Rates for each stock option class with reference to the projected volatility of the underlying instrument at a two-tailed confidence interval of 99.73% (three standard deviations) assuming a one-day close-out period using an exponentially weighted moving average model²⁵. Historical data periods of 90-days are used with the model. For new products, SEOCH determines the Benchmark Rates with reference to the potential volatility simulated using historical data from their underlying instruments or other highly correlated products.

²³ SEOCH demand Additional Margin from a SEOCH Participant who is in breach of its CBPL. Please refer to the description under Principle 4: Credit Risk.

²⁴ The mark-to-market margin represents the cost of liquidating an option position. For a long option position with premium paid upfront, the mark-to-market margin is a credit.

²⁵ A model used to project volatility based on historical data with more weight being placed on more recent ones.

Margin Rate (Margin Rate)

- 6.5 SEOCH determines the final Margin Rate based on the Benchmark Rate, subject to a minimum rate of 5% of the contract value.
- 6.6 SEOCH reviews the Margin Rates daily to keep track of changes in market volatility and also considers other market factors that might lead to unusual volatility such as unstable political or financial situations in the determination of the relevant parameters for the calculation of the Margin Rate. SEOCH informs SEOCH Participants of any change to the Margin Rate via DCASS.

Margin Position

- 6.7 Stock option positions maintained in the House Account and Market Maker Account²⁶ are margined on a net basis. Client positions maintained in an Omnibus Client Account are margined on a gross basis while those maintained in Individual Client Accounts²⁷ are margined on a net basis. Only positions owned by the same client are eligible to be maintained in an Individual Client Account.
- 6.8 In finalising the CH Margin required in net margined Clearing Accounts, SEOCH allows offsets between margin credits and risk margin of stock option positions under the same stock option class. SEOCH also allows the use of margin credits in one stock option class (an asset of the SEOCH Participant) to offset the required CH Margin of stock option positions of other stock option classes.

ASSESSMENT AND SETTLEMENT OF MARGIN REQUIREMENTS

- 6.9 The Margin requirement of each Clearing Account is assessed daily after the end of the trading session. SEOCH Participants assessed with Margin requirements are required to meet such obligations (total Margin requirement and premium net of lodged collateral) by 9:15 am on the following business day.
- 6.10 In addition, an IDM call will be triggered when there is a CH Margin erosion of 50% in any stock option class during the trading sessions. The call is conducted based on the IDM calculated using SEOCH Participants' real-time open positions and prevailing market prices. All IDM calls have to be settled by SEOCH Participants within one hour after notification.

²⁶ For margin calculation purposes, positions maintained in the Market Maker Account of a SEOCH Participant are propagated to its House Account as if they were the positions in its House Account, while positions maintained in the Market Maker Account of a client of a SEOCH Participant are propagated to the relevant Individual Client Account maintained for such client as if they were positions in such account.

²⁷ There is another net margined client account called client offset claim account (**Client Offset Claim Account**). This account is used by a SEOCH Participant to record short positions which are of an offset nature of the same beneficial owner whose positions would otherwise be recorded in an Omnibus Client Account.

HOLIDAY MARGIN

- 6.11 The Holiday Margin arrangement of SEOCH is an established risk management measure designed to mitigate the potential market risk on the reopening of the Hong Kong markets after a holiday break that could arise from significant overseas market movements or the occurrence of certain geo-political events during the Hong Kong holidays. Prior to the holiday period, SEOCH will determine the appropriate levels of Margin Rates and collect Holiday Margin based on the adjusted CH Margin levels from SEOCH Participants. A mandatory IDM call will also be made in the afternoon on the trading day prior to the holiday period and, same as the normal IDM call, it has to be settled by SEOCH Participants within one hour after notification.

CONCENTRATION RISK MARGIN

- 6.12 SEOCH also imposes Concentration Risk Margin on a SEOCH Participant if the Net Projected Loss of that SEOCH Participant is greater than 30% of the total Net Projected Loss of all SEOCH Participants and the total Net Projected Loss is in excess of HK\$500 million. The Concentration Risk Margin ranges from 20% to 50% of the CH Margin. The SEOCH Participant has to settle the Concentration Risk Margin before 11:00 am on the day of notification.

PRICE DATA FOR MARGIN CALCULATIONS

- 6.13 SEOCH receives real-time price data from HKATS. SEOCH determines the daily settlement prices for all option series for margin calculations. SEOCH primarily uses price data near market close, including quotes from market makers, to determine the daily settlement price for each contract. If it is not available, SEOCH will calculate theoretical prices with reference to other relevant information such as price data of other contracts in the same underlying instrument. SEOCH may, in its discretion, adjust or otherwise determine the price to be used if necessary.

BACK-TESTING AND SENSITIVITY ANALYSIS OF THE MARGINING MODEL

- 6.14 SEOCH conducts daily Margin back-testing to test (a) margin coverage by comparing the Margin Rates with the actual daily price movements; and (b) sufficiency of margin on all SEOCH Participants' Clearing Accounts by comparing the simulated closing-out losses with the margin.
- 6.15 SEOCH also performs sensitivity analysis of the margining model on a monthly basis to test how the level of Margin coverage and risk exposures are affected by different market conditions with different assumptions and model parameters such as a longer closing-out period or lookback periods of different duration. This analysis will be conducted more frequently when the market is unusually volatile, less liquid or when the

concentration of positions held by an individual SEOCH Participant increases significantly.

- 6.16 A high level summary of the back-testing and sensitivity analysis results is disclosed to the public via the HKEX website on a monthly basis.
- 6.17 SEOCH performs an annual independent validation of the margining model. The validation includes the assessment of the robustness and effectiveness of the model as well as the back-testing methodology.

Principle 7: Liquidity Risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

SOURCES OF LIQUIDITY RISKS

7.1 The major sources of SEOCH's liquidity risks are as follows:

- (a) **Default of SEOCH Participants** – as a CCP, SEOCH is exposed to liquidity risk primarily in relation to the funding of the defaulting SEOCH Participant's closing out loss;
- (b) **Default of liquidity providers** – HKEX has arranged committed credit facilities with selected liquidity providers to meet the liquidity needs at the HKEX Group level; hence SEOCH faces the risk of default of one or more liquidity providers;
- (c) **Operational or financial failure of Settlement Bank(s)/custodian bank(s)** – SEOCH also faces liquidity risks related to the inability to meet the release of surplus Margin and RF collateral of SEOCH Participants due to failure of Settlement Bank(s)/custodian bank(s). SEOCH also takes into account the liquidity risk associated with the default of any entity that takes on multiple roles, e.g. where a Settlement Bank is also a liquidity provider and/or an affiliate of a SEOCH Participant; and
- (d) **Illiquidity of investments or collateral** – HKEX's Investment Policy aims to ensure that investment portfolios are sufficiently liquid at all times. Please refer to the description under Principle 16: Custody and Investment Risks.

LIQUID RESOURCES

7.2 SEOCH's liquidity requirement is managed together with those of HKSCC and HKCC by HKEX at the HKEX Group level. HKEX compares the availability of respective funds against the liquidity requirement of SEOCH, HKSCC and HKCC on a daily basis when making investment decisions. Adjustments to the maturities of the funds invested will be made where necessary.

7.3 SEOCH invests Margin fund, RF and SEOCH corporate fund only in assets with low credit, market and liquidity risks in accordance with the Investment Policy. The Investment Policy also sets out minimum liquidity requirements on investments and a

concentration limit for each counterparty to ensure that SEOCH has sufficient liquid resources to meet projected and stressed funding requirements.

- 7.4 To mitigate issues relating to counterparty concentration, a cap is set on the total amount of the Margin funds, RF, guarantee fund and corporate funds of HKEX Group, including SEOCH, that can be deposited with any one of its counterparties including the systemically important HKD note-issuing banks.
- 7.5 In addition to using the Margin, RF and SEOCH corporate funds on hand, HKEX may draw on its own corporate funds (including the RM Capital) and liquidity facilities to address the liquidity needs of SEOCH. HKEX does not have access to central bank services; however, HKEX has arranged a total of HK\$10 billion unsecured committed credit facilities with options to draw down on the same day in three different currencies, namely HKD, USD and RMB from selected liquidity providers. In a SEOCH Participant default situation, these facilities, together with the defaulting SEOCH Participant's Margin, the RF, SEOCH and HKEX corporate funds would be available to meet the liquidity needs over multiple days following the occurrence of the default. Uncommitted repo facilities of HK\$6 billion are also available in case of need, but do not count as liquidity pursuant to the PFMI.
- 7.6 HKEX has established procedures in applying different types of liquid resources at the HKEX Group's disposal to complete its payment obligations. The cash on hand will first be utilised and if additional resources are needed HKEX may opt for early-termination of fixed-termed bank deposits, sales or repo of investment holdings and/or committed bank facility drawdowns based on the prevailing market conditions. Unannounced drawdown tests on liquidity providers are conducted on an annual basis to ensure that the committed credit facilities are readily available when needed.

MANAGING LIQUIDITY RISK AND STRESS TESTING

- 7.7 The liquidity requirement required for each relevant currency in relation to SEOCH Participant default is measured daily in accordance with a predefined stress testing policy, assumptions and procedures. As HKEX manages its liquidity funding at the HKEX Group level, the daily assessment covers a number of potential stress scenarios, including the default of the participant and its affiliates that generate the largest aggregate payment obligations across HKSCC, HKCC and SEOCH under extreme but plausible market conditions on a combined basis (such assumption being the same as the price movement assumptions used for the sufficiency of financial resources stress testing as described under Principle 4: Credit Risk). The daily assessment targets to cover the combined liquidity requirements of HKSCC, HKCC and SEOCH at a confidence level of at least 99% in a two-year lookback period. The assessment also considers the liquidity requirement associated with the default of Settlement Bank(s), custodian bank(s) and/or liquidity provider(s) at HKEX Group level and the results are monitored at least monthly.

7.8 The Cash & Derivatives Clearing Risk Management Department reports the liquidity stress testing results to SEOCH's senior management and the SFC on a daily basis. On a monthly basis, the Cash & Derivatives Clearing Risk Management Department reviews the liquidity stress testing model to assess the appropriateness of the assumptions, parameters and scenarios by analysing the latest local and international market dynamics, SEOCH Participant default events and new business initiatives. This monthly review will be conducted more frequently when the market is unusually volatile or less liquid or when the concentration of positions held by SEOCH Participants increases significantly. SEOCH performs an annual independent validation of the model.

CONTINGENCY ARRANGEMENT FOR UNCOVERED LIQUIDITY SHORTFALLS

SEOCH's Obligations as CCP under Market Contracts

7.9 Under SEOCH Rule 205, to the extent that the aggregate of funds or assets available to SEOCH are insufficient to meet its obligations to SEOCH Participants under Market Contracts, each SEOCH Participant is only entitled to receive payment pro-rata to the amount due to it as compared to the amount due to all SEOCH Participants. SEOCH remains liable for the Market Contracts but payment of the balance due is only made when and to the extent that funds or assets are subsequently available. In relation to SEOCH's obligations under Market Contracts to deliver underlying instruments or a particular currency to SEOCH Participants, SEOCH Rules 508B and 610A state that if SEOCH determines that it is not possible or reasonably practicable to deliver the underlying instruments or currency it may make money compensation or pay in a different currency in whole or in part to the relevant SEOCH Participants in such amounts as SEOCH may determine to be fair and reasonable.

Replenishment of Liquid Resources

7.10 For the replenishment of the RF, please refer to Principle 4: Credit Risk for more details.

Principle 8: Settlement Finality

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

- 8.1 SEOCH acts as the CCP to clear and settle stock option contracts traded on SEHK. Upon receiving trades from SEHK, via HKATS, SEOCH registers²⁸ those trades in DCASS. Once registers, such contracts shall be irrevocable. SEOCH will novate and replace the registered contracts with Market Contracts in accordance with the SEOCH Rules and SEOCH Procedures.
- 8.2 SEOCH has both daily scheduled and ad hoc money settlement processes to settle SEOCH Participants' money obligations, with different deadlines on a daily basis. SEOCH sends payment instructions to SEOCH's Settlement Banks and Designated Bank for settlement, via intra-bank transfers and RTGS payments respectively, during the day. Money settlement will only be considered final and conclusive when SEOCH receives payment confirmations from the Settlement Banks that the funds in the required currency have been received and credited to SEOCH's bank accounts. The points at which settlement of both receiving and delivering payments become final and irrevocable are stipulated in the agreements signed between SEOCH and its Settlement Banks. The deadlines to settle the relevant payments of each cash settlement process (as summarised in the table in paragraph 44 of *Chapter 3 - General Background on SEOCH*) are set out in the SEOCH Procedures.
- 8.3 For EOTs, SEOCH settles stock transactions resulting from EOTs with SEOCH Participants via HKSCC in accordance to rules of HKSCC. Once EOTs are accepted to be settled under the CNS system of HKSCC, EOTs are then deemed 'settled' by SEOCH which discharges its CCP obligation at the same time.
- 8.4 SEOCH designs its processes and operations to ensure final settlement no later than the end of the settlement day. The points at which settlement of obligations between SEOCH and SEOCH Participants become final are stipulated in the SEOCH Rules and SEOCH Procedures, which are made pursuant to the provisions of the SFO. The SFO together with the SEOCH Rules and SEOCH Procedures protect the settlement processed by SEOCH from the proceedings related to insolvency or bankruptcy.

²⁸ SEOCH has general rights to accept or refuse the registration of stock option contracts traded through HKATS. In the event that SEOCH refuses a trade, it will notify SEHK and the SEOCH Participants who were parties to the trade.

Principle 9: Money Settlements

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

- 9.1 As described under Principle 8: Settlement Finality, SEOCH conducts money settlements in HKD, RMB, USD, EUR and JPY with SEOCH Participants through Settlement Banks and Designated Bank²⁹. In Hong Kong only HKD is settled in central bank money across the books of HKMA. Because SEOCH is not an HKMA licensed bank and therefore does not have direct access to the RTGS systems operated by HKICL, it has appointed Hong Kong licensed banks as its Settlement Banks and Designated Bank to conduct money settlement with SEOCH Participants via intra-bank transfers or RTGS payments via HKICL on its behalf.
- 9.2 To manage the credit and liquidity risk exposure to the funds held or processed by its Settlement Banks, SEOCH applies criteria in selecting its Settlement Banks. Each appointed Settlement Bank must be a HKMA licensed bank, with a minimum credit rating of A3 or equivalent or be a HKD note-issuing bank, and with proven operational capability and reliability, such as the ability to meet SEOCH's payment cut-off schedules. The appointed Settlement Bank is required to sign an agreement with SEOCH, which covers obligations of the Settlement Bank, irrevocability of transfers and immediate availability of inward payments. Pursuant to the agreements, all confirmations effected by each Settlement Bank in relation to credits to SEOCH's account are final and conclusive, and may not be revoked by the Settlement Bank without the prior agreement in writing by SEOCH. Funds credited to SEOCH's bank accounts are cleared and immediately available to SEOCH.
- 9.3 SEOCH conducts due diligence reviews of each of its Settlement Banks periodically, with ad hoc reviews, where necessary. The review includes validations of its status being a HKMA licensed bank, financial strength and operational reliability. SEOCH also monitors and manages the concentration of exposures to Settlement Banks periodically. The liquidity stress testing described under Principle 7: Liquidity Risk includes scenarios for the failure of SEOCH Settlement Banks.

²⁹ Currently, only one SEOCH Participant opts to settle with SEOCH via the Designated Bank.

Principle 10: Physical Deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

As stock option contracts cleared and settled by SEOCH are not physically settled, Principle 10: Physical Deliveries is not applicable.

Principle 11: Central Securities Depositories

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

As SEOCH is not a CSD, Principle 11: Central Securities Depositories is not applicable.

Principle 12: Exchange-of-value Settlement Systems

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

- 12.1 SEOCH settles stock transactions resulting from EOTs via HKSCC, which involves the settlement of two linked obligations. SEOCH and HKSCC describe the settlement mechanisms of two linked obligations, including the delivery and payment obligations, arising from EOTs in the SEOCH Rules and SEOCH Procedures and the rules of HKSCC.
- 12.2 SEOCH and HKSCC have an arrangement in place under which EOTs are transmitted directly from DCASS to the system of HKSCC at day end for settlement. Once EOTs are accepted to be settled under the CNS system of HKSCC, they are irrevocable. HKSCC then becomes the CCP of those EOTs through novation in accordance with the rules of HKSCC. EOTs are then deemed 'settled' by SEOCH which discharges its CCP obligation at the same time. HKSCC, in its capacity as an RCH, settles EOTs in accordance with its rules.

Principle 13: Participant-default Rules and Procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

EVENT OF DEFAULT

13.1 The SEOCH Rules define the default events and the actions that can be taken when an event of default (**Event of Default**) occurs. As set out in SEOCH Rule 701, an Event of Default includes, among other things:

- (a) a SEOCH Participant's failure to meet any payment obligations due to SEOCH;
- (b) a SEOCH Participant's failure to comply with any position limits imposed by SEOCH; and
- (c) insolvency proceedings involving a SEOCH Participant.

13.2 If a SEOCH Participant commits an Event of Default, SEOCH may declare the defaulting SEOCH Participant as a defaulter under SEOCH Rule 703A and, in its absolute discretion, take certain remedial actions under SEOCH Rules 702 and 703, including:

- (a) suspend the defaulting SEOCH Participant's participation and prohibit the defaulting SEOCH Participant's access to SEOCH's facilities;
- (b) close out, set off, sell, transfer (together with the associated collateral) and hedge the open contracts of the defaulting SEOCH Participant;
- (c) realise any non-cash collateral of the defaulting SEOCH Participant; and
- (d) apply any amounts of the defaulting SEOCH Participant to meet the liability due to SEOCH, subject to certain provisions in relation to client asset protection³⁰.

DEFAULT PROCEDURES

13.3 SEOCH has appointed selected SEOCH Participants as authorised brokers to facilitate the closing-out, sale and hedging of the open contracts of a defaulting SEOCH Participant. The detailed procedures were agreed with all authorised brokers when they were appointed, and are rehearsed on an annual basis. SEOCH validates the

³⁰ SEOCH Rule 706, which form part of the SEOCH default procedures, stipulated that SEOCH shall not have a lien or other interest in fully paid long open positions held in Clearing Accounts that are client in nature and will not use such long open positions and the proceeds of their sale to set off liabilities of the defaulting SEOCH Participant.

contact details, together with any material changes in the procedures, with the authorised brokers regularly to ensure all relevant information is up-to-date.

- 13.4 SEOCH has also established internal procedures which set out the roles and responsibilities of the key stakeholders in handling an Event of Default. These procedures also specify the communication procedures with internal and external parties such as the HKEX Board, SEOCH Board, Risk Committee, RMC, SFC and market participants. They are reviewed and tested with the relevant stakeholders regularly and on an as needed basis.

TOTAL AVAILABLE RESOURCES AND DEFAULT WATERFALL

- 13.5 In the process of closing out the open positions of the defaulting SEOCH Participant, SEOCH would have access to: (a) Margin and other collateral from the defaulter and in the event that was insufficient; (b) the waterfall of resources described below including the RF; and (c) various liquid resources maintained by HKEX including committed credit facilities made available by HKEX to SEOCH. Please refer to the description under Principle 7: Liquidity Risk for further information.

- 13.6 Under SEOCH Rule 413, the order of application of the RF is as follows:

- (a) RF contributions (including Fixed Contribution and Variable Contribution) of the defaulting SEOCH Participant;
- (b) RF accumulated interest income;
- (c) the Fixed Contributions made by all non-defaulting SEOCH Participants;
- (d) the Variable Contributions of all non-defaulting SEOCH Participants;
- (e) the proceeds of any insurance policies arranged³¹; and
- (f) the proceeds of any guarantees or facilities arranged³².

ALLOCATION OF DEFAULT LOSSES AND REPLENISHMENT ARRANGEMENT

- 13.7 In the event of a SEOCH Participant default where non-defaulting SEOCH Participants' contributions to the RF are used to cover a default loss, such contributions will be applied to share the default loss on a pro-rata basis by reference to SEOCH Participants' respective contributions to the RF immediately prior to the default. SEOCH will require SEOCH Participants to replenish the deficiency of their RF Contributions as a result of

³¹ Currently there is no insurance arrangement.

³² Currently there are no guarantees or facilities arrangements.

such application within three business days or such other time period as may be specified by SEOCH.

Principle 14: Segregation and Portability

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

- 14.1 The SFO lays out various requirements for recording client trades and segregating and safeguarding of client positions and collateral by all licensed corporations including the SEOCH Participants. Compliance with these requirements is assessed as part of the routine market intermediaries' supervision program conducted by the SFC. In addition, SEOCH requires SEOCH Participants to properly identify and segregate clients' positions and collateral from their own by making use of different types of Clearing Accounts and CCMS Collateral Accounts offered by SEOCH. Please refer to the descriptions under paragraphs 14.3 and 14.5 for more details.
- 14.2 SEOCH operates a principal-based clearing model. As the CCP, SEOCH clears and settles Market Contracts with SEOCH Participants as principal in respect of each stock option contract registered in their Clearing Accounts. SEOCH provides SEOCH Participants with facilities to open various Clearing Accounts and CCMS Collateral Accounts to facilitate the recording of their clients' positions and associated collateral, and porting of these positions and collateral to another SEOCH Participant subject to the consent of the recipient SEOCH Participant and their compliance with relevant provisions of the SFO (please refer to the description under paragraph 14.4), but has no direct contractual relationship with any client of SEOCH Participants.

ACCOUNT STRUCTURE

- 14.3 SEOCH offers different types of Clearing Accounts to record the positions of SEOCH Participants and their clients. SEOCH provides a House Account to each SEOCH Participant to record its house positions, Omnibus Client Accounts and Individual Client Accounts to record its clients' positions, and Market Maker Accounts to record positions arising from market making activities. Positions maintained in the House Account and Market Maker Account³³ are margined on a net basis. Client positions maintained in an Omnibus Client Account are margined on a gross basis while those maintained in Individual Client Accounts³⁴ are margined on a net basis. Only positions owned by the same client are eligible to be maintained in an Individual Client Account.

³³ For margin calculation purposes, positions maintained in the Market Maker Account of a SEOCH Participant are propagated to its House Account as if they were the positions in its House Account, while positions maintained in the Market Maker Account of a client of a SEOCH Participant are propagated to the relevant Individual Client Account maintained for such client as if they were positions in such account.

³⁴ There is another net margined client account called Client Offset Claim Account. This account is used by a SEOCH Participant to record positions which are of an offset nature (e.g. a calendar spread trade) of the same beneficial owner whose positions would otherwise be recorded in an Omnibus Client Account.

- 14.4 The SFO requires SEOCH Participants to identify each trade as being a house or client trade and whether it was executed as principal or agent and this information is recorded in contract notes provided to the clients and maintained as part of the SEOCH Participant's records.
- 14.5 As mentioned in Principle 5, SEOCH manages collateral via CCMS. SEOCH provides a House Collateral Account and a Client Collateral Account to SEOCH Participants to allow them to separately identify and handle their clients' collateral from their own. The House Collateral Account is for recording the collateral and collateral movement transactions arising from a SEOCH Participant's own activities and market making activities. SEOCH posts all obligations arising from positions of a SEOCH Participant's House Account and Market Maker Account to this House Collateral Account of the SEOCH Participant and settles net with the SEOCH Participant. The Client Collateral Account is for recording the collateral and collateral movement transactions of all clients of a SEOCH Participant. SEOCH posts all obligations arising from positions of all client accounts of a SEOCH Participant (i.e. Omnibus Client Account, Individual Client Accounts and Market Maker Accounts of clients) to this Client Collateral Account of the SEOCH Participant and settles net with the SEOCH Participant.
- 14.6 Collateral in client accounts of a SEOCH Participant will be used for covering obligations of client positions only and SEOCH will not apply the amount standing to the credit of any Client Collateral Account of the defaulting SEOCH Participant to set off liabilities of its House Collateral Account. SEOCH Rule 707 stipulates that any amount standing to the credit of the House Collateral Account of the defaulting SEOCH Participant may be applied by SEOCH to set off liabilities of that SEOCH Participant. However, SEOCH shall not have a lien or other interest in fully paid long open positions held in Clearing Account that are client in nature and will not use such long open positions and the proceeds of their sale to set off liabilities of the defaulting SEOCH Participant under SEOCH Rule 706.
- 14.7 Details of the account structure available for SEOCH Participants to use for managing their positions and collateral are documented in Chapter 1 of the SEOCH Procedures which is publicly available on the HKEX website.

PORTABILITY ARRANGEMENTS

- 14.8 SEOCH offers facilities to support SEOCH Participants to transfer their clients' positions and, if necessary, the associated Margin to other SEOCH Participants subject to the consent of the recipient SEOCH Participant. In the event of a SEOCH Participant default, SEOCH has powers under its default procedures to facilitate the transfer of client positions of the defaulting SEOCH Participant, at the request of the clients, to a nominated non-defaulting SEOCH Participant together with the Margin in respect of such

positions, subject to consent from the recipient SEOCH Participant and other conditions³⁵.

- 14.9 SEOCH has also confirmed the legal soundness and enforceability of the segregation and portability arrangements provided by SEOCH under Hong Kong law based on the legal opinions procured from an independent law firm in Hong Kong.

³⁵ For example, prior consent may be required from relevant regulatory and/or legal authorities.

Principle 15: General Business Risk

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

IDENTIFICATION OF BUSINESS RISKS

- 15.1 SEOCH uses the HKEX Group's ERM framework to identify, monitor and manage all material risks including its general business risk. The ERM framework requires the identification of internal and external factors that could impair SEOCH's financial position, an evaluation of their impacts and the likelihood of occurrence. SEOCH establishes and implements key financial and internal controls and plans to mitigate, eliminate, monitor, and manage the risks.
- 15.2 SEOCH has identified external and internal factors that pose business risks to SEOCH including:
- (a) the pace and direction of legislative reform in Hong Kong and in overseas jurisdictions and the impact this may have on user-participation in the services of SEOCH;
 - (b) market conditions and the pace of development of offshore RMB denominated products, a developing market segment in which SEOCH expects to have a competitive advantage;
 - (c) the effectiveness of SEOCH's business strategy;
 - (d) operational issues that may impact SEOCH's expenditure and investments; and
 - (e) the investment risk in its own assets. Please refer to the description under Principle 16: Custody and Investment Risks.

FINANCIAL RESOURCES FOR BUSINESS OPERATIONS

- 15.3 In its annual budget planning, HKEX takes into account its three-year strategic plan to forecast the operating and capital budget under normal, low and high transaction volume scenarios. In addition, HKEX monitors the impact of general business risk on its financial position through monthly reviews of profit and loss, actual and budget income and expenses, cash in and out flows, both at HKEX and its subsidiary levels, including SEOCH, to ensure sufficient liquid net assets are maintained to meet general business obligations.

- 15.4 As part of its ongoing compliance requirements as an RCH, including compliance with the PFMI, and to ensure it can continue operations and services as a going concern, SEOCH maintains at all times net current assets³⁶ funded by equity in an amount sufficient to cover its projected total operating expenditure for at least the following six months, and net current assets funded by equity or loans from HKEX (not being short-term loans or loans that are repayable on demand) sufficient to cover its projected total operating expenditure for at least the following 12 months. Liquid net assets maintained by SEOCH meet the related regulatory requirements for a RCH under the PFMI³⁷.
- 15.5 SEOCH's capital would be its main defence against various potential business losses. In the event of potential capital inadequacy due to business losses SEOCH would look to recapitalise to recover its operations. HKEX, as a listed company, could inject additional capital into SEOCH and potentially raise capital via the capital markets if needed.
- 15.6 In the event that SEOCH could not continue as a viable entity and no other alternatives were available at the time, HKEX would be responsible for ensuring a smooth wind down of SEOCH. This would involve, among other things, pursuing amounts due from defaulting SEOCH Participants.

³⁶ The calculation of the net current assets excludes those being set aside for risk management purposes, such as SEOCH's contribution to the RF.

³⁷ The PFMI states that FMIs (including clearing houses) should maintain sufficient liquid net assets funded by equity to cover potential general business losses and that (i) such liquid net assets be sufficient to ensure a recovery or orderly wind-down of critical operations and (ii) such amounts should be at least equal to six months of operating expenses.

Principle 16: Custody and Investment Risks

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

- 16.1 SEOCH has a comprehensive framework to manage its custody and investment risks. SEOCH only appoints custodians with accounting practices, safekeeping procedures and internal controls that ensure optimal protection of the assets being placed with them. SEOCH invests its own assets under a conservative investment strategy described below.

CUSTODY OF ASSETS

- 16.2 SEOCH holds its assets and SEOCH Participants' assets under its control with supervised and regulated low credit risk entities with a minimum credit rating of A3 (Moody's) or above, in bank and securities accounts in the name of SEOCH. Currently, SEOCH holds:
- (a) cash assets with selected banks in Hong Kong; and
 - (b) EFBN as collateral with Central Moneymarkets Unit (**CMU**) of the HKMA.
- 16.3 In opening the accounts with CMU, SEOCH has conducted legal assessments to ensure the enforceability of the rights and interests of SEOCH, particularly in those assets kept in the accounts.

INVESTMENT STRATEGY

- 16.4 SEOCH's investment strategy follows the Investment Policy set out by the IAC and approved by the HKEX Board as follows:
- (a) **Risk management** – investments are diversified and in high-quality assets to minimise the risks. All investments are subject to limits and appropriate risk controls;
 - (b) **Preservation of capital** – safety of principal is one of the priority principles of the Investment Policy. Investments are undertaken in a manner that seeks to ensure the preservation of capital;
 - (c) **Liquidity** – investment portfolios have to be sufficiently liquid at all times and liquidity management is tightly controlled on a daily basis; and

(d) **Return** – return on investments should be optimised at the approved risk tolerance of the HKEX Group.

- 16.5 HKEX manages cash assets of HKEX Group in Hong Kong centrally through HKEX's treasury team (**HKEX Treasury**). HKEX Treasury places most of SEOCH's cash assets as deposits³⁸ in banks in Hong Kong. SEOCH can withdraw these deposits promptly and with same-day availability subject to the banks' customary notice periods. SEOCH applies the primary principles of the Investment Policy, with an aim to preserve capital, remain sufficiently liquid and minimise risk while optimising return on investments. As part of HKEX's pre-account opening due diligence in respect of a prospective custodian, HKEX Treasury assesses whether the bank meets the explicit standards, with selection criteria based on supervision, credit ratings of A3 (Moody's) or above and operational efficiency, endorsed by the IAC and approved by the HKEX Board.
- 16.6 Investment strategy is disclosed to the public through the periodic financial statements of HKEX, which is publicly available on the HKEX website.

³⁸ Currently, HKEX holds over 90% of the cash assets in the form of cash or deposits with selected banks, subject to applicable limits and concentration ratios.

Principle 17: Operational Risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

OPERATIONAL RISK MANAGEMENT FRAMEWORK

17.1 SEOCH's operational risk management framework consists of the following elements:

- (a) **ERM framework** – SEOCH applies HKEX Group's ERM framework to systematically identify, assess, monitor and control/mitigate material risks inherent in the business and operational processes including operational risk from both internal and external sources, on an ongoing basis. SEOCH establishes and implements key controls and treatment plans to mitigate, eliminate, monitor, or manage the risks; and
- (b) **MCP** – SEOCH has developed and maintains a MCP, which sets out the contingency and recovery procedures following a disruption to SEOCH's critical functions, under specific contingency scenarios. SEOCH's MCP aims to:
 - allow rapid recovery and timely resumption of critical functions following any disruptive events; and
 - minimise any damage caused by disruptions to the market and all stakeholders as a whole.

17.2 When designing the MCP, SEOCH took into account interdependencies and external links with SEOCH Participants, other FMIs and third-party service providers, such as Settlement Banks and communications network suppliers. The MCP addresses an extensive range of disruptive event scenarios, such as loss of access to workplace premises, power outages, system failures (both internal and external), natural disasters and extreme market movements. It sets out escalation and reporting procedures with various stakeholders, including the HKEX Board, RMC, SEOCH Board, regulators, SEOCH Participants, third-party service providers and market participants where appropriate.

17.3 SEOCH maintains secondary backup sites for business operations and system data centres in different districts of Hong Kong that have different power and telecommunication exchanges from SEOCH's primary production sites, in order to minimise any impact to SEOCH Participants and the market in case of contingency.

Production data of DCASS and CCMS is replicated to the system in the secondary backup site for business operations in real-time. In case of an emergency situation, the DCASS/CCMS systems in the secondary data centre would become operational, and business operations would resume at the secondary backup site within two hours.

REVIEW, AUDIT AND TESTING

- 17.4 SEOCH reviews the MCP on an annual basis or more frequently as required. In the annual MCP review exercise, SEOCH conducts business impact analyses to identify critical business processes, internal and external resources and dependencies to support those business processes. SEOCH assesses the impacts in case of disruptions and develops measures to manage the disruptions. SEOCH agrees the contingency procedures with other FMIs and third-party service providers, such as Settlement Banks, in case of failure of DCASS/CCMS or their systems. These are included in the agreements with them.
- 17.5 SEOCH performs contingency drills on selective scenarios annually and after significant changes to systems and/or services to assure the effectiveness of operational procedures and control measures. SEOCH Participants are invited to participate in the drills where appropriate. SEOCH also provides continuous operational training to SEOCH Participants, and conducts market rehearsals with SEOCH Participants to test the operational flows, contingency and fallback plans before the rollout of major system changes.
- 17.6 In addition, SEOCH participates in the Market Wide Rehearsal coordinated by the HKSAR Government which provides an opportunity to rehearse our responses to high impact issues with cross-market implications. SEOCH also participates in drills of other FMIs and service providers when needed.

OPERATIONAL RELIABILITY OBJECTIVES AND CAPACITY SCALABILITY

- 17.7 The operational reliability objectives of SEOCH are defined in the service agreements with its third-party service providers, SEOCH's MCP, and its internal policies and procedures. Quantitative objectives include system availability and resilience and performance targets. The primary resilience objective is to ensure that system recovery can be achieved within two hours.
- 17.8 The system capacity of DCASS/CCMS is scaled based on the projected transaction volumes and a capacity buffer has been put in place to handle potential stress volumes.
- 17.9 The Information Technology Division of HKEX (**ITD**) measures the system capacity utilisation on a daily basis and conducts a system capacity review at least semi-annually. The ITD performs capacity planning taking the peak volumes and business growth into consideration to ensure that sufficient system capacity is in place to meet the agreed business service-level requirements. The ITD also conducts ad hoc capacity reviews and planning for the launch of new services or unforeseeable business growth due to the

changing business environment. HKEX will perform system performance tests for any new system enhancement or upgrade to ensure the adequacy of the system capacity to meet the business service level requirements.

PHYSICAL AND INFORMATION SECURITY POLICIES

17.10 SEOCH follows HKEX Group's physical and information security policies that identify, assess, and manage potential physical and system vulnerabilities and threats. The physical security measures have been established to guard against unauthorised access, attacks and intrusions, and to minimise the impact of potential natural disasters to physical sites (i.e. all business operations offices and data centres, both primary and secondary backup sites). HKEX's Information Security and Business Continuity Department, which is independent of ITD, oversees the information security strategy and policy for all application systems within the HKEX Group. The information security policy sets out implementation safeguards in relation to system configurations and management and is designed with reference to international standards.

Principle 18: Access and Participation Requirements

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

PARTICIPATION REQUIREMENTS AND ONGOING MONITORING

- 18.1 SEOCH has established a set of objective, risk-based and transparent eligibility requirements for two categories of SEOCH Participants, namely DCP and GCP, to access its services fairly and openly. A SEOCH Participant must (a) be an Options Trading Exchange Participant of SEHK; (b) a clearing participant of HKSCC, or have a clearing agreement with clearing participant of HKSCC if it intends to settle its delivery obligations under exercised stock option contracts through a clearing participant of HKSCC; and (c) have a minimum liquid capital of the higher of its required liquid capital under the FRR, or HK\$5 million for DCP and HK\$20 million for GCP respectively.
- 18.2 SEOCH applies different financial requirements to different categories of SEOCH Participants based on the services received from, and the potential risks posed to SEOCH. SEOCH sets a higher RF Fixed Contribution level for a GCP as compared to a DCP. In addition to good financial standing, SEOCH considers key operational and internal control aspects of the applicant including the experience of its key personnel and the quality of its compliance and risk management policies and systems. Please refer to the description under Principle 4: Credit Risk for the counterparty risk monitoring process.
- 18.3 The admission criteria applicable to each category of SEOCH Participant is stipulated in the SEOCH Rules, which is publicly available on the HKEX website. SEOCH Participants must comply at all times with the SEOCH Rules and SEOCH Procedures, any conditions stipulated in the participants' agreements and letters of approval of their SEOCH participation, and any directives from time to time made by SEOCH.
- 18.4 SEOCH monitors the ongoing compliance of SEOCH Participants with their participation requirements. SEOCH has also defined and publicly disclosed the SEOCH Rules and SEOCH Procedures for facilitating the suspension and orderly exit of a SEOCH Participant that breaches or no longer meets the participation requirements. SEOCH, as a CCP, also monitors SEOCH Participants' ongoing financial standing through periodic reviews of regulatory reports submitted, such as the FRR reports and annual reports, etc.
- 18.5 SEOCH reviews participant admission, access restrictions and eligibility requirements as a result of the changing market environment and regulatory requirements on a need basis. Any change in the admission requirements as detailed in the SEOCH Rules is subject to the approvals of the SEOCH Board and SFC.

SUSPENSION OF SEOCH PARTICIPATION AND EXPULSION OF SEOCH PARTICIPANT

- 18.6 As set out in the SEOCH Rules, where a SEOCH Participant breaches or no longer meets the participation requirements, SEOCH may take disciplinary action against that SEOCH Participant, including suspending its SEOCH participantship and expelling it from SEOCH. A suspended SEOCH Participant shall continue to be bound by the SEOCH Rules and SEOCH Procedures until such time as it receives notice of termination of its SEOCH participantship. The SEOCH Board may exercise disciplinary powers to expel a SEOCH Participant by serving on it a notice of expulsion. As a general rule, an expelled SEOCH Participant will not be eligible for readmission. The expulsion of a SEOCH Participant does not affect any of its rights or obligations arising out of matters which occurred prior to expulsion. Where a SEOCH Participant has been suspended or expelled, SEOCH will as soon as practicable, notify other SEOCH Participants, the SFC, SEHK and HKSCC of the suspension or expulsion.

Principle 19: Tiered Participation Arrangements

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

THIRD-PARTY CLEARING SERVICE

- 19.1 SEOCH supports tiered participation arrangements through the offering of a third party clearing service. A GCP can clear on behalf of an Options Trading Exchange Participant who is not a participant of SEOCH (i.e. NCP).
- 19.2 SEOCH deals with the GCP as principal and not as agent, and has no contractual relationship with the NCPs. Trades of the NCP will be registered in the name of the GCP that clears for the NCP. Positions of an NCP are maintained and margined according to the different Clearing Account types as described in paragraph 6.7 under Principle 6: Margin. Chapter 4 of the SEOCH Rules governs the clearing arrangement between a GCP and an NCP. A GCP can clear and settle trades of an NCP on condition that there is in place a valid, binding and effective clearing agreement between the GCP and NCP. The GCP is required to inform SEOCH after signing a clearing agreement with the NCP. The GCP shall also give prior written notice to SEOCH if it or any of its NCP intends to terminate the clearing agreement between them.

MANAGING RISK ARISING FROM TIERED PARTICIPATION ARRANGEMENTS

- 19.3 As licensed corporations under the SFO, NCPs are required to comply with the FRR under the SFO and file with the SFC a monthly financial return reflecting their liquid capital levels for review and monitoring. The SFC, as the front-line regulator monitors and supervises the financial and operational capability of NCPs, is responsible for the regulatory oversight and risk management activities, including sending to HKEX relevant risk monitoring information on the NCPs, such as a risky broker list, where applicable. In addition, NCPs being an Options Trading Exchange Participant of SEHK are required to comply with the rules of SEHK.
- 19.4 SEOCH manages the risk arising from an NCP through active monitoring and assessment of the risk of the GCP, who is primarily responsible for the risk of that NCP. SEOCH sets higher admission requirements for GCPs in terms of minimum liquid capital level and Fixed Contribution to the RF (please refer to the description under Principle 4: Credit Risk) and requires a GCP, in conjunction with SEHK, to impose additional risk management measures and procedures on its NCP's positions where appropriate. In addition, SEOCH performs regular risk scoring analysis to assess the financial, non-financial and settlement capability of the GCPs based on the Counterparty Risk Ranking Methodology described under Principle 4: Credit Risk.

- 19.5 SEOCH has also implemented necessary processes to generate timely information from its systems to identify, monitor and manage the risk of NCPs. Reports are generated by DCASS on a daily basis to list the breakdowns of the positions and CH Margin of each of the NCPs of a GCP. In addition, for SEOCH's risk assessment purposes, SEOCH may require a GCP to provide further information of its NCPs, such as their financial resources in meeting their payment obligations. Based on the assessment results, SEOCH may impose additional risk management measures on a GCP, including but not limited to, applying a more stringent position limit and/or requiring and collecting additional CH Margin from the GCP, when necessary.
- 19.6 SEOCH has established internal operating procedures to facilitate the switching of its NCPs to a new GCP during a GCP default. SEOCH Rule 703(5) empowers SEOCH to transfer NCP's positions of a GCP together with the collateral to a new GCP that agrees to accept such transfer. NCPs of the defaulting GCP, without appointing a new GCP, will not be able to clear their trades in SEOCH and the procedures in handling the default as described in Principle 13: Participant-default Rules and Procedures will apply.

Principle 20: FMI Links

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

- 20.1 Currently, SEOCH has two links with other FMIs, namely:
- (a) a central securities depository (**CSD**) link with CMU, to safe keep EFBN as collateral, on behalf of SEOCH Participants; and
 - (b) a CSD and CCP link with HKSCC, to facilitate the settlement of the underlying stocks of stock option contracts and safe keep stocks as general collateral, on behalf of SEOCH Participants.
- 20.2 SEOCH has put in place appropriate measures to identify, monitor and manage link-related risks in these two established CSD and CCP links with CMU and HKSCC where appropriate. SEOCH has signed agreements with CMU and HKSCC to define the rights, obligations and liabilities of each party.
- 20.3 In establishing the links with CMU and HKSCC, SEOCH has conducted legal assessments to ensure the enforceability of the rights and interests of SEOCH, particularly in those assets kept in the accounts with CMU. Moreover, SEOCH has assessed the relevant risks, such as legal, credit, custody and operational risks, and put in place appropriate procedures and controls to manage those risks as needed. SEOCH reviews the link arrangements when necessary and if there are changes to the operational flows or risk management policies to ensure the link arrangements continue to meet regulatory standards and are consistent with SEOCH's policies and standards.
- 20.4 CMU is the issuer CSD for EFBN. All operations of CMU are governed by the rules and procedures of CMU, and the laws of Hong Kong. CMU is under the supervision of the HKMA. SEOCH is a recognised dealer appointed by the HKMA to operate the custody accounts with CMU in accordance with the rules and procedures of CMU.
- 20.5 Apart from being a CSD, HKSCC is the only CCP for the securities market in Hong Kong. All operations of HKSCC are governed by the rules and procedures of HKSCC, and the laws of Hong Kong. SEOCH is admitted as a clearing agency participant of HKSCC for the settlement of stock transactions resulting from EOTs in accordance with the rules of HKSCC. SEOCH is bound by the rules of HKSCC and the agreement signed between HKSCC and SEOCH, which defined the obligations and liabilities of SEOCH and HKSCC.

Principle 21: Efficiency and Effectiveness

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

DESIGN OF THE OPERATIONAL MODEL

- 21.1 SEOCH provides efficient and effective services which serve the needs of SEOCH Participants and the stock options market of Hong Kong. SEOCH has implemented mechanisms to seek input and feedback from relevant stakeholders to assess the efficiency and effectiveness of its services, operations and arrangements.
- 21.2 In determining its operational arrangements, SEOCH takes into account (a) the needs of the local market and environment; (b) the needs of the many overseas users of the stock options market in Hong Kong; and (c) the requirements of international standards and practices. SEOCH conducts soft consultations with relevant market participants and industry groups and solicits the views of the Clearing Consultative Panel on SEOCH's proposals before they are finalised. For major changes to the policies, clearing and settlement arrangement, operating structure, and regime that would affect SEOCH and SEOCH Participants, SEOCH also conducts public consultations³⁹ to seek views directly from the stakeholders.

OBJECTIVES

- 21.3 As an RCH, SEOCH has given several specific statutory duties and responsibilities as stipulated in the SFO. In summary, the objectives of SEOCH are to ensure, so far as is reasonably practicable, that there are orderly, fair and expeditious clearing and settlement arrangements for any transactions cleared or settled through its facilities, that risks associated with its business and operations are managed prudently, that it operates its facilities in accordance with its SEOCH Rules and SEOCH Procedures as approved by the SFC and that it can at all times provide and maintain facilities to meet contingencies for the conduct of its business.
- 21.4 The SFC supervises SEOCH's ongoing compliance with the statutory duties and objectives and other obligations of an RCH, including with PFMI. HKEX meets regularly with the RMC and Clearing Consultative Panel to discuss their views and feedback on HKEX's proposals, initiatives and clearing businesses. HKEX also periodically meets with market participants and industry groups to collect their views and feedback. Moreover, SEOCH Participants can submit suggestions and feedback to SEOCH via hotlines and emails.

³⁹ In recent years, HKEX conducted public consultations on the implementation of risk management reform measures.

- 21.5 HKEX develops and adopts a three-year strategic plan which lays down the corporate strategies, and provides guidance on business priorities for the preparation of the annual operating plan. The HKEX Board approves the plans and assesses the achievements against the plans at least annually.
- 21.6 Furthermore, HKEX has established mechanisms to evaluate its efficiency and effectiveness, including:
- (a) achievements are subject to quarterly review by HKEX's senior management; and
 - (b) progress of all major initiatives is monitored by the Project Portfolio Review Committee. The committee, consisting of senior business heads, will identify, prioritise, authorise, monitor and control the initiatives in order to achieve the strategic business objectives and align them to strategy. It assesses and evaluates progress, identifies problems, and where appropriate escalates matters to the Management Committee⁴⁰ and HKEX Board.

⁴⁰ The Management Committee is authorised by the HKEX Board to oversee the HKEX Group's compliance with all statutory duties imposed on the HKEX Group under the relevant legislation, rules and regulations and do any such things to discharge its powers and functions conferred on it by the HKEX Board and its sub-committees.

Principle 22: Communication Procedures and Standards

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

- 22.1 SEOCH uses internationally accepted communication procedures and protocols for exchanging messages across systems to facilitate efficient clearing and settlement arrangements. SEOCH communicates with its Settlement Banks and CMU via SWIFT. SEOCH Participants can access DCASS/CCMS via the Securities and Derivatives Network (SDNet) using TCP/IP protocol.
- 22.2 SEOCH Participants can access DCASS through (a) terminal connection with dedicated personal computers with supported configuration and installed with the standardised Window-based software; and/or (b) host-to-host connection with straight-through-processing via Application Programme Interface (**API**). The API is widely used in global markets. Any personal computer with supported versions of Microsoft Windows and Internet Explorer browser is able to access all CCMS functions.
- 22.3 SEOCH adopts international communication standards on reference data and messaging format, including:
- (a) SWIFT standard message types complying with ISO 15022 standard are adopted as the payment, clearing and settlement instruction standards;
 - (b) risk parameter files generated for Margin calculation are in PC-SPAN compatible format; and
 - (c) three-byte ISO currency codes are used to represent currencies in DCASS/CCMS.

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

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

RULES AND PROCEDURES

- 23.1 The SEOCH Rules and SEOCH Procedures contain the necessary and appropriate details of clearing and settlement, risk management, default and contingency arrangements, rights and obligations of SEOCH and SEOCH Participants, etc. Service fees, charges and other material costs incurred by SEOCH Participants are also set out in the SEOCH Rules and SEOCH Procedures, including the rates, calculation methods, timing of debit and any concession where applicable, etc. The SEOCH Rules and SEOCH Procedures are written in plain English, and are available to SEOCH Participants and the public via the HKEX website. Chinese version⁴¹ of the SEOCH Rules and SEOCH Procedures are also publicly available on the HKEX website.
- 23.2 Any amendment to the SEOCH Rules and SEOCH Procedures is subject to the approval of the SFC. SEOCH notifies SEOCH Participants of proposed changes to the SEOCH Rules and SEOCH Procedures and the effective dates of the approved amendments via circulars which are also publicly available on the HKEX website.

DISCLOSURE

- 23.3 SEOCH operates transparently, and provides sufficient information for SEOCH Participants and other interested parties to identify and evaluate the risks associated with using SEOCH's services and facilities. SEOCH makes the following information publicly available on the HKEX website:
- (a) the SEOCH Rules and SEOCH Procedures, including fees and upcoming amendments;
 - (b) risk management arrangements, including high level summaries of the back-testing and sensitivity analysis results;
 - (c) clearing and settlement arrangements during typhoons and rainstorms;

⁴¹ If there is any conflict between the meaning of words or terms in the Chinese version and in the English version, the meaning of the English version shall prevail.

- (d) DCASS/CCMS Terminal User Guides, including details of DCASS/CCMS design and operations, description of DCASS/CCMS reports, data files and report data file formats;
 - (e) PRiME Margining Guide, providing details of PRiME calculation algorithm;
 - (f) margin table, listing the estimated amount of client margin; and
 - (g) circulars and briefing materials for major projects.
- 23.4 SEOCH organises regular training classes to help SEOCH Participants and potential applicants to understand the DCASS/CCMS operations and risk management arrangements. Where appropriate, SEOCH holds briefing sessions, seminars and informal meetings with SEOCH Participants to facilitate their understanding of new initiatives (e.g. risk management reform measures and system infrastructure enhancements) and the associated risk management measures. SEOCH Participants and other interested parties can also call dedicated hotlines and send emails to SEOCH if they have any questions.
- 23.5 Currently, SEOCH publishes extensive periodic transaction data, including contract volume and open interest by derivatives products, through the HKEX website. Please refer to *Chapter 5 - List of Publicly Available Resources on the HKEX Website*, for a list of publicly available resources about SEOCH.
- 23.6 SEOCH publishes quantitative disclosure documents in accordance with the guidelines set forth in the “Public quantitative disclosure standards for central counterparties” released by CPMI-IOSCO in February 2015.
- 23.7 SEOCH has plans to update this disclosure document following material changes and, at a minimum, at least every two years in accordance with the Disclosure Framework.

Principle 24: Disclosure of Market Data by Trade Repositories

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

As SEOCH is not a TR, Principle 24: Disclosure of Market Data by Trade Repositories is not applicable.

CHAPTER 5: LIST OF PUBLICLY AVAILABLE RESOURCES ON THE HKEX WEBSITE

OPERATIONS AND RISK MANAGEMENT FRAMEWORKS

- 1 Introduction to clearing and settlement services
(http://www.hkex.com.hk/eng/prod/clr/dv_clrsett/derclgsettservices.htm)
- 2 Clearing arrangement for SEOCH Participants
(http://www.hkex.com.hk/eng/market/clr/dvclr/clarang_hkccseoch/ClrArrangeHKCCSEOC_HPart.htm)
- 3 Risk management framework
(http://www.hkex.com.hk/eng/market/rm/rm_dcrm/dmrm_indexpage.htm)
- 4 Fees schedule
(<http://www.hkex.com.hk/eng/rulesreg/clearrules/ocp/documents/app-g1.pdf>)
- 5 Clearing and settlement arrangements during typhoons and rainstorms
(http://www.hkex.com.hk/eng/market/typhoons/typhoon_situation.htm)
- 6 Derivatives market (DCASS) statistics
(<http://www.hkex.com.hk/eng/stat/statrpt/mkthl/markhighlight.htm>)

LEGAL AND REGULATORY INFORMATION

- 7 The SEOCH Rules, SEOCH Procedures and relevant updates
(<http://www.hkex.com.hk/eng/rulesreg/clearrules/clearinghouse/rules.htm>)
- 8 Circulars
(<http://www.hkex.com.hk/eng/market/partcir/seoch/seoch.htm>)
- 9 PFMI disclosure document
(<http://www.hkex.com.hk/eng/market/clr/SpecialTopics/PFMI.htm>)

GOVERNANCE ARRANGEMENTS

- 10 Organisational structure of the HKEX Group
(http://www.hkexgroup.com/-/media/HKEX-Group-Site/Hr/org_chart.pdf)
- 11 Corporate governance of the HKEX Group
(http://www.hkexgroup.com/Corporate-Governance?sc_lang=en)

- 12 List of directors of HKEX
(http://www.hkexgroup.com/About-HKEX/Organisation/Board-and-Committees/Board?sc_lang=en)
- 13 List of members of HKEX's committees and consultative panels
(http://www.hkexgroup.com/About-HKEX/Organisation/Board-and-Committees/Committees-and-Consultative-Panels?sc_lang=en)
- 14 Terms of reference of the HKEX Board and its committees, and the Clearing Consultation Panel
(http://www.hkexgroup.com/About-HKEX/Organisation/Board-and-Committees?sc_lang=en)
- 15 List of directors of SEOCH
(http://www.hkexgroup.com/About-HKEX/Organisation/Principal-Subsidiaries/List-of-Directors?sc_lang=en)
- 16 Terms of reference of the SEOCH Board
(http://www.hkexgroup.com/About-HKEX/Organisation/Principal-Subsidiaries/Terms-of-Reference?sc_lang=en)

PARTICIPANTSHIP

- 17 List of SEOCH Participants
(<http://www.hkex.com.hk/eng/plw/Search.aspx?selectType=OC>)
- 18 Admission criteria for SEOCH Participants
(http://www.hkex.com.hk/eng/market/hkex_part/criteria/AdmissionCriteria_SEOCH.htm)

CLEARING AND SETTLEMENT SYSTEM

- 19 System information and user guides
(<http://www.hkex.com.hk/eng/market/clr/dvclr/dcass/dcass.htm>)

