



**CLSA Australia Pty Ltd**

# **Crossing System User Guidelines**

Version 1.8  
December 2018

## Contents

1	Summary.....	3
1.1.	Introduction .....	3
1.2.	Requirements users must adhere to prior to using the Crossing System.....	3
2	The Crossing System .....	4
2.1	Overview of the Crossing System .....	4
2.2	Users of the Crossing System .....	4
2.3	Opt-out/Opt-in Arrangements .....	5
2.4	Supported Securities .....	5
2.5	Aggregation and other Crossing Systems .....	5
2.6	Crossing Sessions .....	6
2.7	Order Routing Execution Methodology and Transaction Pricing.....	6
3	Crossing Rules.....	13
4	Order Types .....	14
5	User Treatment .....	14
6	Anonymity .....	14
7	Principle Orders .....	14
8	Liquidity Providers.....	14
9	Fees.....	14
10	Crossing Suspension.....	15
11	Crossed Trade Indicator .....	15
12	Resilience.....	15
13	Outages.....	16
14	Disclosures.....	16
15	Other Dealing Matters.....	17
15.1	Fair and orderly operation .....	17
15.2	Order confidentiality .....	17
16	Risk Disclosure Relating to the use of the Crossing System.....	17

# 1 Summary

## 1.1. Introduction

CLSA Australia Pty Ltd ('CLSA APL') is licensed by the Australian Securities and Investments Commission ('ASIC') for providing Automated Order Processing ('AOP') services subject to the requirements set out in Part 5.6 of the ASIC Market Integrity Rules (Securities Markets) 2017. In addition CLSA APL is obligated to comply with the Crossing Systems requirements under Chapter 5A of ASIC Market Integrity Rules (Securities Markets) 2017.

CLSA APL's crossing system is named CLSA Match (hereafter referred to as 'CLSA Match') is a continuous and anonymous order matching and automated trade reporting system which seeks to cross buy orders with sell orders, and automatically report successful cross trades to either the ASX or Chi-X Exchanges accordingly.

The purpose of this document is to provide guidance to clients of CLSA APL who are Authorised Users of the Crossing System whose orders may be routed to CLSA Match for crossing.

## 1.2. Requirements users must adhere to prior to using the crossing system

Prior to users routing orders to CLSA Match, users must familiarise themselves with the information contained in these Guidelines.

In accordance with 5A.2.2 of ASIC Market Integrity Rules (Securities Markets) 2017 prior to routing any order to the crossing system for a user for the first time, CLSA APL is required to provide the client with a copy of Publicly Available Crossing System Information or inform the client of the website address where this information is held.

These Guidelines are available at the CLSA Terms of Business section of our web-site

- [CLSA Australia - Crossing System User Guidelines](#)

These Guidelines are subject to change due to the update of relevant rules and regulations of the Australian Exchanges and ASIC.

## 2 The Crossing System

### 2.1 Overview of the Crossing System

The name of CLSA APL's crossing system is CLSA Match and operates under code 2311 which commenced operating in Australia on 15 October 2012. The function of the crossing system is to match buy and sell orders in ASX/Chi-X listed securities during the continuous trading phase of the Australian securities market, and automatically report the trades to either the ASX or Chi-X exchange in real time. CLSA Match does not publish information regarding its order book to any other CLSA trading desk or to any other market participant.

The crossing system is intended for use via the following mechanisms:

- CLSA APL's internal traders have the option to route their client orders, or parts of those orders through the Crossing System, before they are sent to the exchange.
- CLSA APL's Direct Market Access ('DMA') clients have the option to directly route orders, or parts of those orders through the Crossing System, before they are sent to the exchange.

The crossing system additionally provides an option for holding an order in its own internal order book only, and not forward that order to the exchange. This option will be available for both the access mechanisms described above.

The crossing system can be configured to send trade reports to either the ASX, or Chi-X.

### 2.2 Users of CLSA Match

Users of CLSA Match must be a Wholesale Client in accordance with the definition of a Wholesale Client in s761G(4) of the *Corporations Act 2001*. All client orders access the CLSA Match via CLSA APL's algorithmic trading system. No clients have direct access to CLSA Match.

A 'user' means a Wholesale Client whose orders are placed into or whose transactions are conducted in the crossing system, and includes any qualified investor who/which is ultimately responsible for originating the instruction in relation to an order placed into, or a transaction conducted in the crossing system.

### **2.3 Opt-out/Opt-in Arrangements**

CLSA Match is available to all existing clients, unless that client has specifically requested to opt out of the crossing system.

The following opt-out/opt-in options are available to clients:

- High Touch Users may opt-out of routing their orders to the crossing system for crossing by notifying CLSA in writing of their desire to Opt-out by e-mailing [clsa\\_alp\\_optout@clsa.com](mailto:clsa_alp_optout@clsa.com).
- Electronic Trading Users may opt-in to routing their orders to the crossing system for crossing.
- Users may request to opt-out their cash desk orders but opt-in their electronic trading orders, or vice versa.
- Users may specify that their orders do not cross with orders from another user if these orders originate from another broker's ALP.
- Users may opt-out individual orders by indicating as such on the relevant FIX tag in the order message.

Should a client wish to opt out or opt in to the crossing system they must notify CLSA APL in writing by sending an e-mail to the following contact address:

[clsa\\_alp\\_optout@clsa.com](mailto:clsa_alp_optout@clsa.com)

### **2.4 Supported Securities**

The securities available on CLSA Match are:

- Australian Securities Exchange ('ASX') listed securities
- Chi-X Australia Pty Ltd ('CXA') listed securities

### **2.5 Aggregation and other Crossing Systems**

Orders within the Crossing System are not aggregated with any other orders for crossing. CLSA Match does not interact with any other Crossing System.

## 2.6 Crossing Sessions

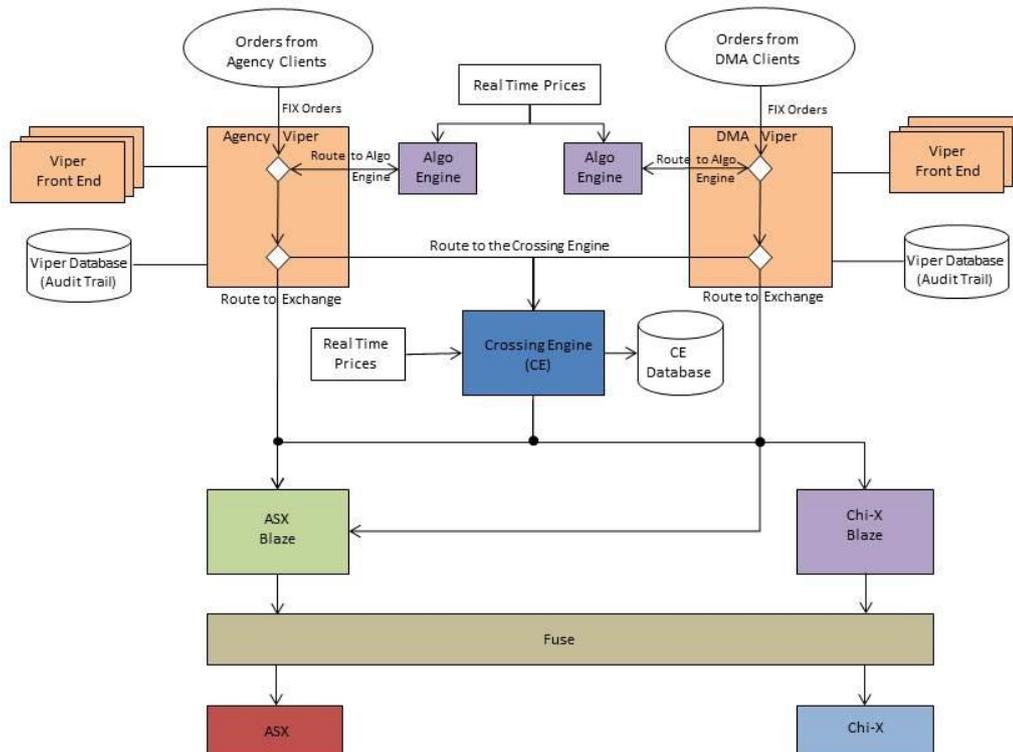
CLSA Match operates during the continuous trading hours of the ASX and CXA. The crossing system will not operate during the pre-open session, closing auction, during the lunch break, or any period that is not deemed as continuous trading by ASX and CXA.

The crossing system will cease crossing orders fifteen seconds before the close of the morning continuous trading session, and fifteen seconds before the close of the afternoon continuous trading session to allow the crossing system sufficient time to report any crossed trades to the relevant Exchange before the trading session closes. In addition, the crossing system will not start crossing orders until fifteen seconds after each session opens to avoid the volatility that is common at the Exchange open.

These time-periods may be changed from time to time by CLSA.

## 2.7 Order Routing Execution Methodology and Transaction Pricing

Diagram 1 below illustrates the order flow between the client, CLSA's various trading systems and CLSA Match:



## Crossing System Flows

CLSA APL's internal traders use Viper to route orders to the exchanges. The orders are created in Viper either manually by the relevant trader, or electronically via a FIX message sent directly from the client's Order Management System. CLSA APL's execution traders typically split client orders into smaller slices, which may be sent directly to one of the exchanges, to the crossing system only, or routed, to one of the exchanges through the crossing system.

DMA clients send orders to CLSA APL's DMA system via their FIX enabled order management system. The FIX message will include an identifier to indicate whether or not the client would like to the order to be sent directly to the exchange, directly to the crossing system, or to the exchange through the crossing system. For clients who are unable to set this identifier, it will be defaulted to an agreed value on a per client basis, prior to the client being enabled.

Both internal traders, and external DMA clients, have the option to:

1. Bypass the crossing system, sending orders directly to the exchange. These orders can only be matched on the exchange; or
2. Pass the order through the crossing system, then to the exchange. These orders may be matched on either the exchange, or the crossing system; or
3. Pass their orders to the crossing system only. These orders can only be matched in the crossing system.

## Order Flow System Components

### **Viper**

Viper is CLSA APL's internal order management and execution management system ('EMS'). All client orders are entered into Viper, either manually, or via FIX. CLSA APL use separate instances of Viper for DMA flow and for agency flow to ensure the flows are segregated.

### **Viper Front End**

Viper Front End is the graphical user interface for Viper. The Viper Front End is used by execution and sales traders to enter, route and monitor client orders.

### **Viper Database**

The Viper Database is an oracle database used to store a record of all orders, trades and a complete history of all transactions that have been performed.

## **Algo**

The Algo system is an algorithmic trading system. The Algo system interfaces with Viper for order management and routing. Users make use of the Viper front end to manage orders in the Algo system.

## **Real Time Prices**

CLSA Match uses a real time price feed.

## **CE Database**

The CE Database is an oracle database used by the crossing system for persistence. This database maintains a record of the state of all orders that have been sent to the Crossing System, and all trades that were crossed in the Crossing System.

## **ASX Blaze**

ASX Blaze is a FIX server used to connect internal CLSA trading systems, Viper and the Crossing System, to the ASX.

## **Chi-X Blaze**

Chi-X Blaze is a FIX server used to connect internal CLSA trading systems, Viper and the crossing system, to Chi-X.

## **Fuse**

Fuse is the risk checking system used to validate all orders before they are sent to either the ASX or Chi-X.

## **Crossing System and Algo Engine Interaction**

The Algo Engine which forms part of the order flow, it is independent of the Crossing System. Traders may choose, on a per order basis, whether or not slices sent to the exchange via the Algo engine, will first pass through the Crossing System.

The Algo engine views the crossing system as an executing destination, similar to a stock exchange.

## **Crossing Mechanism**

The CLSA APL crossing system is a continuous order matching system. The order matching algorithm is triggered to run under the following conditions:

1. A new order is received by CLSA Match;
2. The limit price of an existing order is amended; and
3. Periodically run the algorithm from a timer.

The order that initiates the algorithm will be termed the “initiator”.

The initiator will be one of the following:

1. The new order that has just arrived; or
2. The existing order that is being amended.

If the initiator is a buy order, then it will search through the list of existing sell orders for the same instrument. The search is conducted to ensure that the lowest priced sell orders are checked first. If there is more than one existing sell order at the same price, then they are searched in order of the time priority at which they arrived in the crossing system, at that price. This search algorithm will be known as “Price Time Priority”.

If an existing order is found with a limit price lower than or equal to the limit price of the initiator, then the two orders can match. The quantity of the match will be lower of either the initiator outstanding quantity, or the existing order outstanding quantity. The price of the match will be the limit price of the existing order.

If the initiator is a sell order, then it will search through the list of existing buy orders for the same instrument using the same Price Time Priority search algorithm described above, with the exception that higher priced orders will have priority over any lower priced orders.

When the crossing system has determined that two orders can cross, the match is then subjected to a series of validations checks, as defined in section 10 of this User Guide. The rules are executed sequentially. If any one of the rules fails, then the match is not performed. If the initiator is not matched with any existing orders, then it will be entered into the crossing system internal order book as an existing order, so it may match with any future initiators.

If all the crossing rules pass, CLSA Match can match both opposing orders with the match quantity, at the match price, as defined above. If either the buy or the sell order has been sent to the exchange, then the crossing system retrieves the match quantity back from the exchange, by either reducing, or cancelling the order. When the match quantity has been successfully retrieved from the exchange, CLSA Match sends a National Bid Best Offer (‘NBBO’) trade report to either the ASX or Chi-X. When the trade has been successfully reported, then CLSA Match applies the trade on the initiator order and the existing order.

## Crossing Indicator

The crossing system accepts a FIX tag on the order message, to indicate whether or not the order can be considered for crossing, and whether or not it should be sent to the exchange.

FIX Crossing Indicator	Meaning	Description
0	Do Not Cross	Do not cross the order, pass it through to the exchange.
1	Can Cross	Cross the order if / when there is a match Send the order to the exchange
2	Cross Only	Cross the order if / when there is a match Do not send the order to the exchange
3	Cross Mid	Cross the order if / when there is a match, only if the price is the midpoint, or better Send the order to the exchange
4	Cross Mid Internal	Cross the order if / when there is a match, only if the price is the midpoint, or better Do not send the order to the exchange

## Crossing Indicator Default

If the crossing indicator is not present on the new order FIX message received by the crossing system, then CLSA Match will assume that the order is not to be crossed. It will be sent to the exchange, and it will not be stored in within the crossing system internal order book. This is the same behavior as setting the indicator to "Do Not Cross".

## Pass Through Orders

If the crossing indicator is set to either 1 or 3, and the order cannot be matched on arrival in the crossing system, then it will stored in CLSA Match's Internal Order Book (IOB), and then passed through to the relevant exchange. These orders shall be referred to as pass-through orders. If there are multiple pass-through orders in the in the IOB from the same client consecutively at the same price, then those orders will be matched in reverse time priority. This provides the best execution performance for that client, by maintaining those orders with the best queue priority on the exchange.

## Dark Orders

If the crossing indicator is set to either 2 or 4, and the order cannot be matched on arrival in the crossing system, then it will stored in CLSA Match's Internal Order Book (IOB) only, and it will not be passed through to the exchange. These orders shall be referred to as dark orders. If there are dark orders and pass-through orders in the in the IOB from the same client consecutively at the same price, then dark orders will be matched with a higher priority than pass-through orders. This provides the best execution performance for that client, by maintaining those orders with the best queue priority on the exchange.

## Crossing Examples

### Initiator is a New Order with type 'Can Cross'

This example demonstrates the case where the matching algorithm is triggered based on a new order arriving.

Best Bid = \$5.00 Best Ask = \$5.01

10:40am	Order 1 received to buy 20K at \$5.005 as "Can Cross"
10:40am	Crossing System cannot find a suitable matching order
10:40am	Order 1 is added to the Crossing System internal order book
10:40am	Order 1 is sent to the exchange at \$5.00
10:45am	Order 2 received to sell 3K at \$4.95 as "Can Cross"
10:45am	Crossing System finds Order 1 as a match
10:45am	Order 1 is reduced to 17K on the exchange
10:45am	An NBBO trade report for 3K at \$5.005 is sent to the exchange
10:45am	Both orders receive a trade of 3K at \$5.005

### Initiator Order's Limit Price is Amended

This example demonstrates the case where the matching algorithm is triggered based on a limit price amendment for an existing order.

Best Bid = \$5.00 Best Ask = \$5.01

10:40am	Order 1 received to buy 20K at \$5.005 as "Can Cross"
10:40am	Crossing System cannot find a suitable matching order
10:40am	Order 1 is added to the Crossing System internal order book
10:40am	Order 1 is sent to the exchange at \$5.00
10:45am	Order 2 received to sell 3K at \$5.01 as "Can Cross"
10:45am	Crossing System cannot find a suitable matching order
10:45am	Order 2 is added to the Crossing System internal order book
10:45am	Order 2 is sent to the exchange at \$5.01
10:48am	Limit Price of Order 2 is amended to \$5.00
10:48am	Crossing System finds Order 1 as a match
10:48am	Order 2 is cancelled from the exchange
10:48am	Order 1 is reduced to 17K on the exchange

10:48am An NBBO trade report for 3K at \$5.005 is sent to the exchange  
10:48am Both orders receive a trade of 3K at \$5.005

### Initiator is a New Order with type 'Cross Only'

This example demonstrates the case where the matching algorithm is triggered based on the periodic timer.

Best Bid = \$5.00      Best Ask = \$5.01  
Day Low = \$5.01      Day High = \$5.25

10:40am Order 1 received to buy 20K at \$5.005 as "Can Cross"  
10:40am Crossing System cannot find a suitable matching order  
10:40am Order 1 is added to the Crossing System internal order book  
10:40am Order 1 is sent to the exchange at \$5.00  
10:45am Order 2 received to sell 3K at \$4.95 as "Cross Only"  
10:45am Crossing System finds Order 1 as a match at price \$5.00  
10:45am Cross Validation fails because day low is \$5.01  
10:45am Order 2 is added to the Crossing System internal order book

The two orders cannot cross because the match would violate the rules listed in Section 10. The Crossing System will periodically re-check if this match can occur once every 30 seconds.

10:46am Day Low = \$5.00      Day High = \$5.25  
  
10:46am Periodic Cross Check finds a match between Order 1 and Order2  
10:46am The day low price has moved to \$5.00, all cross rules pass  
10:46am Order 1 is reduced to 17K on the exchange  
10:46am An NBBO trade report for 3K at \$5.005 is sent to the exchange  
10:46am Both orders receive a trade of 3K at \$5.005

The Periodic Cross Check runs once every 30 seconds. It re-checks any orders that previously failed the cross rules defined in section 10.

### Intra-Spread Crossing

The Crossing System will only accept orders with limit prices that are aligned on an exchange tick boundary, or the mid-point price. The orders will be stored in the Crossing

System internal order book at the price set by the client. If that price is not on a tick boundary, and the order cross indicator is set to “Can Cross”, it will be rounded to a tick boundary before being sent to the exchange. Buy orders will be rounded down, and sell orders will be rounded up.

The crossing system will store orders in CLSA Match’s internal order book with the price limited to at most four decimal places, since this is the maximum number of decimal places that can be reported to the ASX or Chi-X on an NBBO trade report.

CLSA Match will only cross at the one of the following prices:

- i. Higher than the Best Available Bid and lower than the Best Available Offer by one or more Price Steps
- ii. the Best Mid-Point

### **3 Crossing Rules**

Crossing rules are specific to each exchange. Following are the current operating rules for the ASX:

- The crossing system will only match orders between the best national bid and best national offer prices, at the time the match occurs.
- The crossing system will only match orders between the day high and day low prices on the ASX, at the time the match occurs.
- The crossing system will not cross any instrument that is suspended from trading on the exchange.
- The match price must have at most 4 decimal places.
- The crossing system will not cross buy and sell orders from the same client.

To ensure ongoing compliance with price-improvement requirements, CLSA APL undertakes the following;

- CLSA Match will only match orders where the transaction entered into at a price (at the time of execution) that is:
  - at a valid price step (i.e. tick size) that is both above the best available bid and below the best available offer; or
  - at the midpoint of the best available bid and best available offer (where  $\text{midpoint} = (\text{best available bid} + \text{best available offer}) \div 2$ ).

The best available bid and best available offer are the highest pre-trade transparent bid and lowest pre-trade transparent offer available across all pre-trade transparent order books of licensed markets (also known as the national best bid and offer or NBBO). CLSAPL will not use any non-pre-trade transparent (e.g. hidden orders) in calculating the NBBO.

## **4 Order Types**

For orders with the crossing indicator set to either “Do Not Cross” or “Can Cross”, the crossing system will pass the order through to the exchange. As such, the order types accepted by the crossing system are the same as those that are supported by the exchange, either ASX or Chi-X. None of the order details are changed as a part of passing an order through to the exchange.

Orders with the crossing indicator set to “Cross Only” are not passed to the exchange. The list of accepted order types for Cross Only orders are as follows:

Limit	Orders may cross within the limit price
Market	Orders may cross at any permitted price
Immediate Or Cancel	Any unfilled quantity will be rejected immediately after order receipt.

## **5 User Treatment**

The crossing system processes orders from all sources in the same manner. The crossing system implements price time priority matching only. There is no preferential treatment afforded to any individual user or group.

## **6 Anonymity**

All orders in CLSA Match are anonymous. The crossing system internal order book cannot be viewed by any trading users, either internally to CLS APL or externally. Orders within CLSA Match can only be viewed by Compliance staff for Compliance monitoring, and by technical support staff for technical support and maintenance. There are no indications of interest published based on orders within the Crossing System.

## **7 Principle Orders**

CLSA APL does not engage in principle trading. As such, principle orders are not permitted in the Crossing System. This includes principle orders for any CLSA APL related companies.

## **8 Liquidity Providers**

The Crossing System is populated with natural client agency flow only. There are no liquidity providers or market makers providing liquidity.

## **9 Fees**

There are no additional fees charged to clients for accessing the Crossing System, other than the normal brokerage commission. The Crossing System is provided to clients as a free service to improve execution performance.

## 10 Crossing Suspension

The crossing function of CLSA Match can be manually enabled or disabled at any time, by the front office production support team. While the crossing function is disabled, the crossing system will continue to accept orders, and store them in the crossing system internal order book. If the crossing indicator is set to “Can Cross” or “Do Not Cross”, the order will be sent to the exchange. However, the Crossing System will not cross any orders while the crossing is disabled, and subsequently it will not send any trade reports to the exchange.

This function is intended to be used by CLSA APL production support staff as a safety measure in exceptional circumstances only. Examples of these circumstances are:

- Technical issues at the ASX or Chi-X which prevent securities trading; and
- Technical issues with CLSA’s connection to either the ASX or Chi-X which prevent securities trading and sending trade reports.

Crossing will resume as normal, and any orders stored in the crossing system internal order book may be crossed, when the crossing function is manually enabled.

## 11 Crossed Trade Indicator

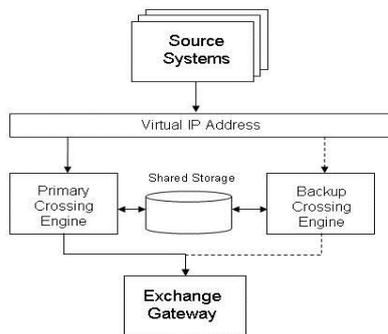
For clients who trade with CLSAAPL electronically using the FIX protocol, any trades on their orders that have been matched in the crossing system, will be indicated on the execution report messages sent to the client.

Trade matched on the ASX	FIX tag 30 (LastMkt) = “AU”
Trade matched on Chi-X	FIX tag 30 (LastMkt) = “AH”
Trade matched in CLSA Crossing System	FIX tag 30 (LastMkt) = “AUCE”

This will allow clients to readily identify the executing venue of each trade.

## 12 Resilience

The crossing system runs on two servers located in two different data centers in Sydney. Source systems connect to the Crossing System via a virtual IP address, which will always point to the primary instance. If the primary instance fails, the virtual IP will point source systems to the backup server running in the other data centre.



### 13 Outages

If technical or other system issues materially affect the efficiency of or proper functioning of the Crossing System, CLSA APL will provide the following information, in writing, to ASIC and all users with orders in the crossing system:

- (a) A description of the effect of the technical or other system issues;
- (b) How the technical or other system issues are being managed;
- (c) Any alternative arrangements for users' orders that have been put in place by CLSA APL while the technical or other systems issues persist; and
- (d) When the technical or other system issues have been resolved,

as soon as practicable after the technical or other system issue arises, or the issue is resolved, as applicable.

### 14 Disclosures

CLSA Match allows clients to cancel orders at any time prior to execution.

CLSA Match also allows clients to specify a minimum execution quantity of their choice.

All crossing system orders are good for the day only and are purged at the close of trading each trading day.

The crossing system does not allow Aggregators and does not interact with any other crossing system service providers.

CLSA APL operates the crossing system at all times in strict compliance with Chapter 5A Crossing Systems requirements of the ASIC Market Integrity Rules (Securities Markets) 2017.

## **15 Other Dealing Matters**

### **15.1 Fair and orderly operation**

CLSA APL aims to provide a fair and orderly platform for operation of the Crossing System. The Crossing System is subject to CLSA Group Policies relating to Information Technology and Compliance.

### **15.2 Order confidentiality**

The crossing system does not publish Indication of Interest ('IOI') or any information regarding its Order Book to any CLSA trading desk or other market participant.

## **16 Risk Disclosure Relating to the use of the Crossing System**

On occasion there may be a time delay before the best bid and best ask price of the security is reflected in the crossing system, due to technology or communication delay or interruption related to market data or otherwise. In such an event the price crossed in the crossing system may not reflect the market price in the relevant Exchange.

Where users specify 'Cross Only' as the crossing identifier, there is no assurance given with regards to the liquidity of orders in the crossing system. The liquidity of the crossing system may be less favorable than the same in the relevant Exchange.

CLSA have taken reasonable steps to protect the integrity and confidentiality of orders in the crossing system to a level we consider appropriate, however leakage of trading information may occur beyond our reasonable level of system and internal control.

The service of the CLSA APL crossing system is provided on an 'as is' basis and we make no warranty, representation or other assurance in connection with the system, including as to availability, accuracy, completeness, results, functionality, reliability, performance, timeliness, non-infringement, suitability, quality, merchantability, fitness for a particular purpose or otherwise. We also do not warrant that access and/or use of the system will be uninterrupted or error-free.