NZXDARK

ANONYMOUS. CONTROLLED. FUNCTIONAL.

FUNCTIONALITY OVERVIEW

13 June 2024
V4

NZX

Contents

Glossary- NZX Dark

Term	Definition
BaNCS	The NZX clearing and settlement system.
Fill and Kill (FaK)	An order which executes any quantity up to the order quantity based on the entered order details and then is immediately withdrawn even if only partially filled. The order will consider, and execute against, the volume in both NZX Dark and NZX Central, unless it is sent specifically to only one order book.
Fill or Kill (FoK)	An order which will only execute in full, immediately, otherwise it is cancelled unexecuted. The order will consider the volume resting in both NZX Dark and NZX Central unless it is sent specifically to only one order book.
Half Tick	Half of the minimum price step applicable to that security. See definition of price step below.
Immediate order	An order that does not rest in either NZX Dark or NZX Central. It executes or is cancelled (either partially or in full). See FaK and FoK for types of immediate orders.
Limit order	An order instruction to buy or sell a security at a specified price or better.
Limit Price	A minimum (for sell orders) or maximum (for buy orders) price at which an order can execute.
Matching Engine (ME)	NZX's core set of algorithms responsible for matching trades, managing order books and maintaining the state of the market.
Mid-point price	The single price equidistant from the current best bid and best offer on NZX Central, calculated as (best bid price + best offer price)/2. Note that the price steps (see Price Steps, below) in NZX Dark are half those in NZX Central.
NCBO	Trades where there is no resulting change in beneficial ownership.
Normal trading	'Normal trading' session in NZX Central from 10:00 am until 4:45 pm. *Note:* a halt applied to the market means that the market is no longer in normal trading for the purposes of NZX Dark. Once the halt is removed, if NZX Central returns to the 'normal trading' session, normal trading resumes.
NZX Central	Central Limit Order Book.

NZX Dark	Midpoint Order Book.
Price Steps	The minimum amount by which a quote on NZX Central can change. Depending on the security, this may be one cent, one-half of a cent, or one-tenth of a cent.
Spread	The difference between the current best bid and the current best offer prices quoted on NZX Central. The spread is minimal when the difference between bid and ask is only one price step.
Sweep order	An order destined for NZX Central which passes through NZX Dark, in an attempt to execute fully or partially, first. In the cases of FaK or FoK orders, volume in both NZX Dark and NZX Central is considered and/or executed.
Resting order	An order that will rest in either NZX Dark or NZX Central until executed or cancelled. Also referred to as a non-immediate or passive order.
User Group	Optional functionality that allows NZX Participants to ring-fence the visibility of their NZX Dark orders to certain users within their firm.
VWAP	The volume-weighted average price (VWAP) is a trading benchmark that represents the average price of a security over a set period of time, calculated as the total volume traded at each price, multiplied by that price, all divided by the total volume traded.

1. Purpose & Overview

This document has been developed for the purpose of providing NZX Trading Participants, Vendors and their clients a functional understanding of the operation of the NZX Midpoint Order Book (NZX Dark).

NZX operates a transparent, but anonymised, central limit order book (NZX Central) which allows investors to trade all listed products with full visibility regarding price and volume. This type of order book is usually, colloquially, known as a "lit" market.

NZX Dark is an exchange-managed hidden and anonymous mid-point order book which is only able to match orders at the current mid-point price of the central limit order book. Investors and NZX Participants have no visibility of orders in this book. This type of order book is commonly referred to as a "dark" market.

The principal objective of introducing NZX Dark, is to provide an alternative venue for investors to execute sizeable transactions with price improvement. The anonymity of NZX Dark is an important feature that will attract large, typically 'institutional', orders that are currently often executed as Off-Market Trades. The attraction of these types of orders into an exchange-delivered platform will provide the opportunity for wider investor participation, including for retail investors, and improve market integrity by reducing the potential for information leakage.

1.2 Benefits of NZX Dark

The introduction of NZX DARK to New Zealand's capital market represents one of the largest changes to NZX's markets, and is on a similar scale to the introduction of electronic trading in the 1990's and the clearing house in the 2000's. NZX Dark provides a number of key benefits to investors such as:

Price Improvement
NZX Dark provides price improvement by virtue of the fact that all executions in NZX Dark occur at the mid-point of the current best bid-offer spread in NZX Central. This midpoint execution ensures that both buyer and seller benefit from the transaction.

Access
As an exchange run venue, NZX Dark is able to be used by all NZX Trading Participants and their clients. Access ensures that all investors can benefit and are able to interact with the 'dark' liquidity.

Control
NZX Dark also features a number of tools which allow users to define criteria or parameters of their orders, ensuring that the requirements for the execution of trades are satisfied and the best possible order matching outcomes are achieved. and access to all investors.

Price Discovery & Liquidity
The richer order functionality achieved through the integration of NZX Dark and NZX Central means that NZX can attract greater liquidity to the exchange, achieving better price discovery and greater traded price transparency. The price setting nature of NZX Dark trades enhances the reported liquidity metrics of the market and improves the VWAP calculations and possible index inclusion for issuers. NZX Trading Participants must also continue to comply with the orderly market requirements captured in the NZX Trading Conduct Guidance Note.

2. NZX Dark Features

2.2 Order Placement

The user-selectable order destination determines the path of the order to market:

NZX Central Order Book

An order is routed to NZX Central with its price and volume displayed. A resting (passive) order will remain in the book until executed, subject to user-specified expiry conditions. This order will execute if:

- An opposing order is placed on NZX Central for a price at or better than the resting order's price; and

- No order with a better price or earlier placement has priority.

NZX Dark Order Book

An order is routed to NZX Dark anonymously. No Participant or investor, other than the Participant who placed the order, is aware of the order details, or even that the order is in the book. This resting (passive) order will remain in the book until executed, subject to user-specified expiry conditions. This order will only execute if:

- Both the resting and opposing order limits are at-or-better than the current NZX Central midpoint price;

- The opposing order satisfies the user-defined resting order's MEQ conditions, and

- The resting order has time priority over any other NZX Dark orders eligible for execution.

Sweep Order

A sweep order is ultimately destined for NZX Central, but passes through NZX Dark on its way, to potentially execute in full or in part before continuing to NZX Central to execute or rest as appropriate. This feature allows Participants to potentially access additional liquidity, and to benefit from price improvement on all or part of the order.

2.3 Order Anonymity

Orders created within NZX Dark are not visible to the market, offering complete order anonymity. Only the user placing the order is aware that this order is in NZX Dark. Authorised Trading Participant dealers can view orders on NZX markets for their Participant firm only, including those in NZX Dark and NZX Central.

2.4 NZX Dark User Groups

NZX Dark offers NZX Participants the ability to maintain client order anonymity across their trading operations while not restricting business collaboration (dealer teams). Participants may create defined and separate user groups for dealers within their business to limit visibility of the firm's NZX Dark orders. The user group structures are flexible and can be configured based on the Participant's needs. Use of these user groups is optional. Administration of the user groups is managed by NZX upon request from the Participant.

2.5 Minimum Execution Quantity

The Minimum Execution Quantity (MEQ) allows order placers and users of NZX Dark to specify a minimum number of shares (minimum partial fill) that an opposing order must satisfy to create a

matching trade execution within NZX Dark. MEQ is an optional tool available to users to ensure they achieve what they individually consider to be quality order executions without exposing volume resting in NZX Dark. In summary, key features of the MEQ are as follows:

- The MEQ is defined per order, by number of securities, by the order placer.

- The MEQ is a condition applied at the single opposing order level, meaning aggregation of multiple opposing orders to meet the MEQ requirement is not possible. Thus, the MEQ prevents small orders exposing quantity in the midpoint order book.

- If a resting order residual balance falls below the MEQ, the MEQ will be reduced to the outstanding remaining quantity available.

- The MEQ is not valid for immediate orders (FoK or FaK).

- The MEQ is not available for use on sweep orders or NZX Central orders.

2.6   Price Limits

Price limits are compulsory in NZX Dark. These price limits allow Participants to specify the highest price for a buy order, or the lowest price for a sell order, at which the order can execute. Key features of price limits are:

- The limit price must comply with NZX Central minimum price steps for sweep orders or for orders destined only for NZX Central, or with the minimum price steps (which are half the size of the NZX Central price steps) for NZX Dark.

2.7   Price Steps

Price steps for NZX Dark orders are half the size of price steps for NZX Central, to allow NZX Dark trades to execute at the midpoint. NZX Dark accepts price limits at NZX Dark price steps.

Price Steps - Sweep Orders

Sweep order limits must be entered at valid NZX Central price steps as these orders are ultimately destined, if not fully executed in NZX Dark, for NZX Central. A sweep order entered at a half price tick will be automatically rejected.

2.8   NZX Dark Access & Availability

- NZX Dark is available for all products traded on the NZX mainboard (NZSX).
- NZX Dark is available to all NZX Trading Participants.
- NZX Dark has no minimum order size.
- NZX Dark will only operate during the Normal Trading Session[1]
- NZX Dark maximum order duration rules match NZX Central i.e., it is not a day only venue
- During a market or security trading halt (in both NZX Central & NZX Dark) orders can only be placed, amended or withdrawn.
- NZX Dark orders can be entered via the Nasdaq ME Workstation and through connected systems leveraging NASDAQ's Native FIX and OUCH messaging protocols

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[1] As defined in NZX Participant Rule 11.4, and only while the relevant security remains in Normal Trade (i.e., not during individual security halts/suspensions).

The table below illustrates NZX Dark's features in comparison with NZX Central's features.

		Pre-Open	Normal trading	Pre-Close*	Adjust	Enquiry
Place Order	NZX Central	✓	✓	✓	✗	✗
	NZX Dark	✗	✓	✗	✗	✗
Amend order	NZX Central	✓	✓	✓	✓**	✗
	NZX Dark	✗	✓	✗	✗	✗
Activate order	NZX Central	✓	✓	✓	✗	✗
	NZX Dark	✗	✓	✗	✗	✗
Deactivate order	NZX Central	✓	✓	✓	✓	✗
	NZX Dark	✓	✓	✓	✓	✗
Withdraw order	NZX Central	✓	✓	✓	✓	✗
	NZX Dark	✓	✓	✓	✓	✗
Trade	NZX Central	✗	✓	✗	✗	✗
	NZX Dark	✗	✓	✗	✗	✗
Neg deals/crossings*	NZX Central	✓	✓	✗	✓	✗
	NZX Dark	✗	✗	✗	✗	✗

*Cannot enter negotiated deals during the pre-close.

** Can only amend quantity down.

***Participants must not place crossings / neg deals in the last 12 minutes of the Pre-Open session for NZSX.

2.9   Session Orders and Day Withdrawal Rules

- NZX Central Session Orders are withdrawn at the end of the session.
- NZX Dark Session Orders are withdrawn at the end of the continuous session.
- NZX Central Day orders are withdrawn at the start enquiry session.
- NZX Dark Day orders are withdrawn at the start of the enquiry session.

3. Matching Priority

There are four contingent criteria that determine the matching of orders in NZX Dark:

- Midpoint price;
- Limit price;
- Minimum execution quantity (MEQ) restriction; and
- Time priority

It is important to note that actual trade execution requires all the matching criteria to be satisfied for both orders for an execution to occur. These are described in detail below.

3.2   Midpoint Price

Matching on NZX Dark occurs at the midpoint price of NZX Central's best bid and offer. Orders will only match on NZX Dark if the order limit price is equal to, or better than, the midpoint price of the security on NZX Central, and there is an opposing order in NZX Dark to match against.

The midpoint price at which an NZX Dark order may execute at may be at a half price step, i.e. an additional decimal point, to deliver a precise midpoint price of NZX Central. NZX Dark orders can be entered at a half price step to ensure price improvement is always possible for both buyer and seller.

Midpoint Price Execution

If there is no midpoint price on NZX Central (for example, if a security has no bid and/or no offer), nothing can trade on NZX Dark in that security. Similarly, NZX Dark cannot trade if trading of the security is at a halt.

Midpoint Deviation Limit

NZX Dark also includes midpoint deviation limits to ensure compliance with NZX Orderly Markets rules.

Share Price	Midpoint Deviation Limit
>=$1.01	3%
51c - $1.00	4%
11c - 50	5%
<= 10c	10%

NZX Dark orders will not execute if a security's midpoint price is greater than a set percentage range distant from the NZX Central last traded price#:

- *Midpoint price < last traded price * (1 - max midpoint deviation percentage) or,*
- *Midpoint Price > last traded price * (1 + max midpoint deviation percentage)*

If no last trade price is available, the reference price is used.

 # Note that the Last Official Traded Price is the price of the last price setting trade.

If the midpoint price is outside the current midpoint price deviation limits:

- There is no midpoint price for that security in NZX Dark, hence
- No trades can occur in NZX Dark for that security, until
- Trades on NZX Central move the last traded price back within the midpoint deviation limit.
- Orders will still be able to be entered, amended and withdrawn within NZX Dark however execution won't occur until there is again a valid mid-point price.
- Sweep orders will still be able to be placed but will route directly to NZX Central.

Note that NZ RegCo Surveillance is responsible for defining the midpoint deviation limits.

3.3   Limit Price

Limits are compulsory in NZX Dark – "market" orders will not be accepted.

3.4   Minimum Execution Quantity (MEQ) restriction

To prevent the use of "toxic orders" solely designed to detect orders resting in NZX Dark, NZX has included an optional Minimum Execution Quantity (MEQ) condition. This is a user-defined parameter which allows users to define the minimum quantity the order is prepared to interact with. Should an opposing order be entered into, or pass through, NZX Dark for less than this quantity, it will not interact with this order, even if all other conditions of the order are satisfied, and the order placer will not be aware of, or even that there was, any order resting in the NZX Dark order book.

Should an order partially execute such that its balance falls below its MEQ (for example its MEQ is set at 1,000 shares, but the balance of the order due to prior executions is only 500 shares), this order balance becomes its new MEQ.

The MEQ parameter is only relevant for orders designed to rest in NZX Dark, and NZX strongly recommends their use for these orders.

3.5   Time Priority

NZX Dark operates on a time priority basis. This means that if there are multiple resting orders eligible to trade in NZX Dark (taking into account their limits versus the current midpoint price and their MEQs), the order entered earliest into NZX Dark will trade. Note:

- Time priority is unchanged as a result of partial execution.

- Time priority is lost if the order volume or price is amended by the user.
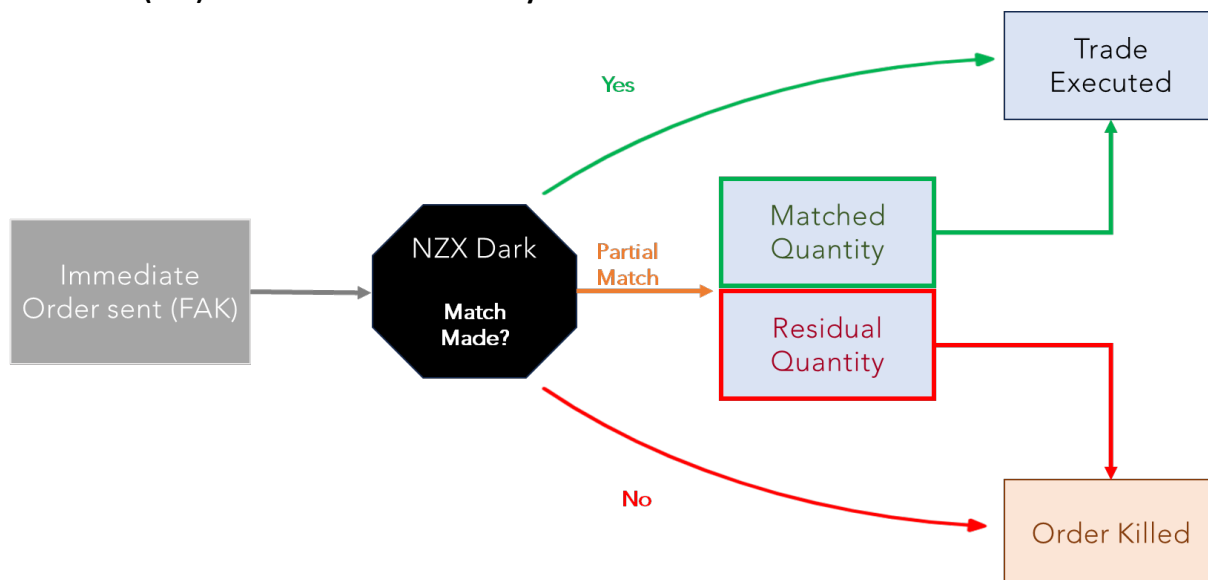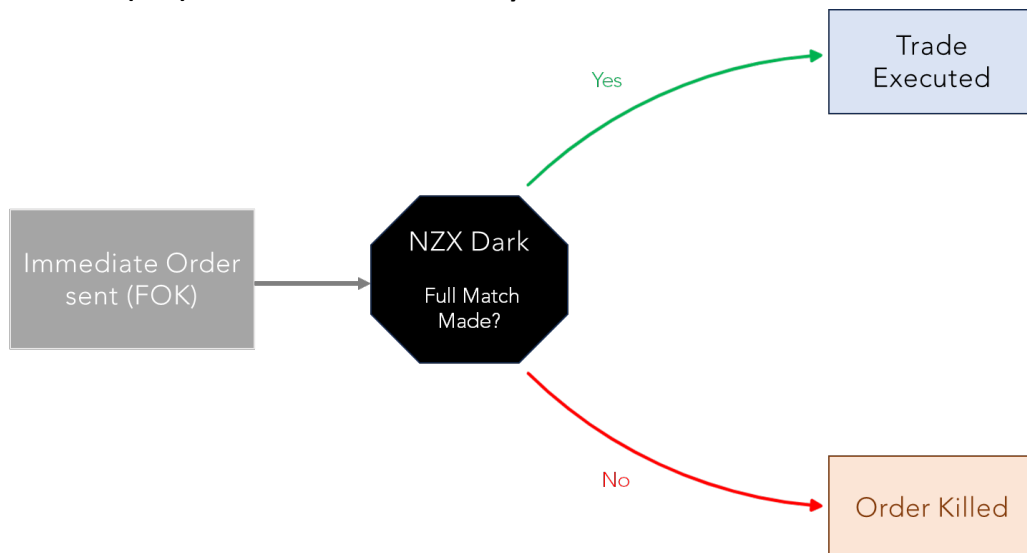
4. Order Types

4.2 Limit Orders

Limit orders will match on NZX Dark if the order price is equal to, or better than, the mid-point price (conditional on other order conditions being met). If the order price on NZX Dark is worse than the midpoint price on NZX Central, and the order was sent specifically to NZX Dark (ie, it is not a sweep order) the order will become a resting order on NZX Dark and will only become eligible for matching once the midpoint price comes into line with the order's limit price.
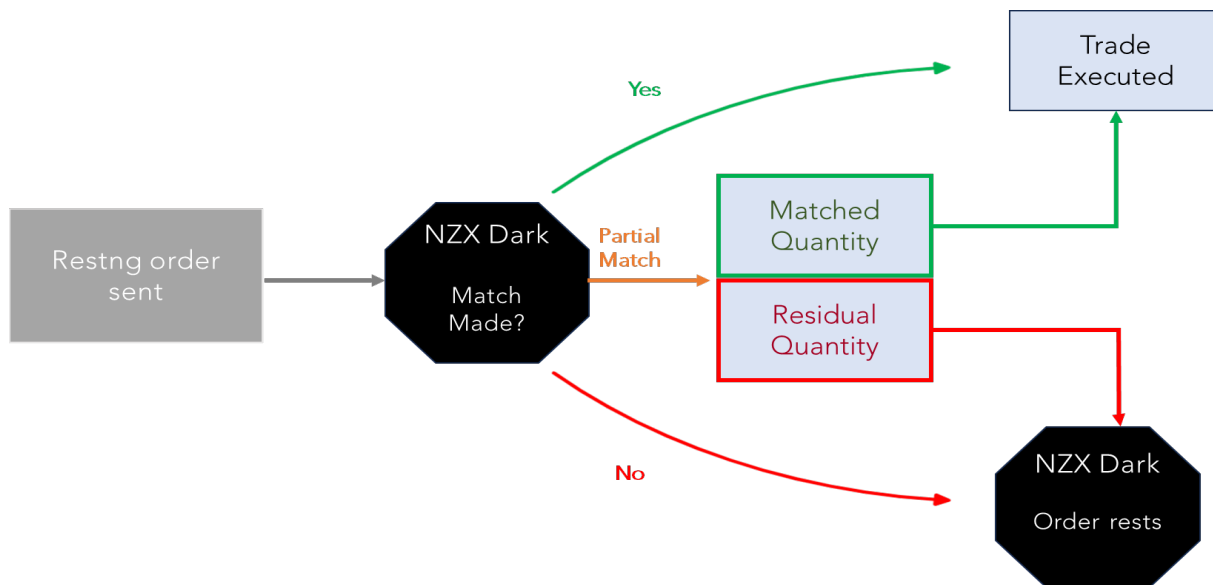
Fill and Kill (FaK) – Routed to NZX Dark Only

**Fill or Kill (FoK) – Routed to NZX Dark Only**

4.3 Sweep Orders

Sweep orders will match on NZX Dark if the order price is equal to, or better than, the midpoint price on NZX Central. If the order is not fully matched on NZX Dark, the outstanding quantity is routed to NZX Central. Any outstanding quantity will be placed as a limit order on NZX Central.

Note that sweep orders are "one and done". Should they route to NZX Central, they remain there until executed or cancelled. They do not route back to NZX Dark at any point, even if subsequent eligible-to-match orders enter NZX Dark.
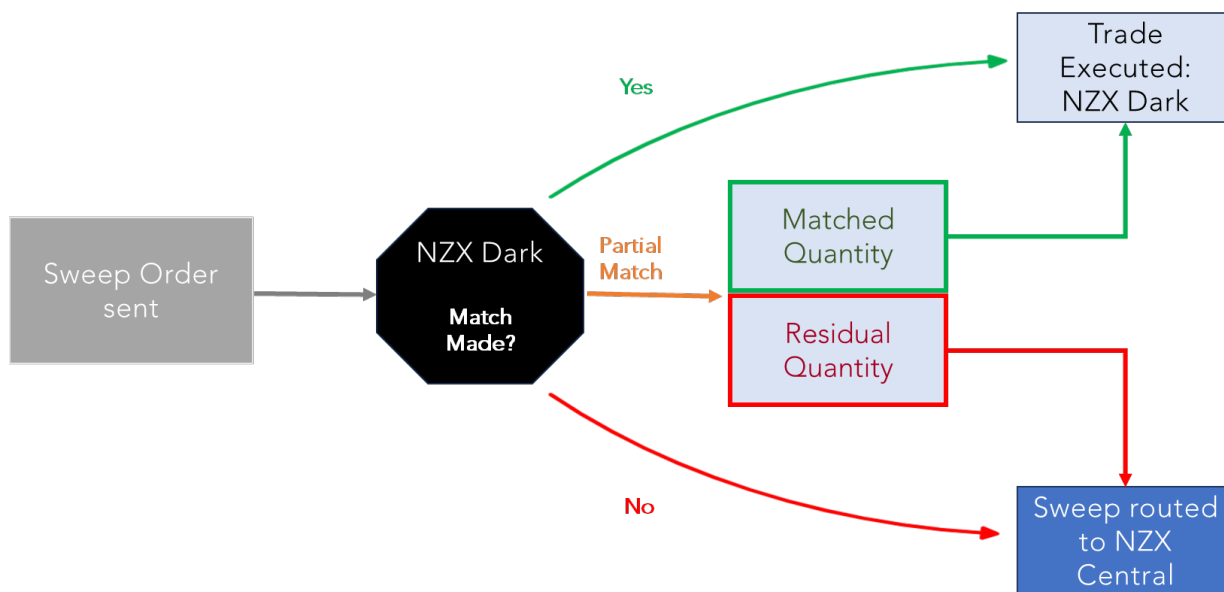
Fill & Kill (FaK) Sweep

FaK sweep orders will execute any possible quantity up to the order quantity on both NZX Dark and NZX Central after which it will be fully executed, or the balance of the order will be cancelled.
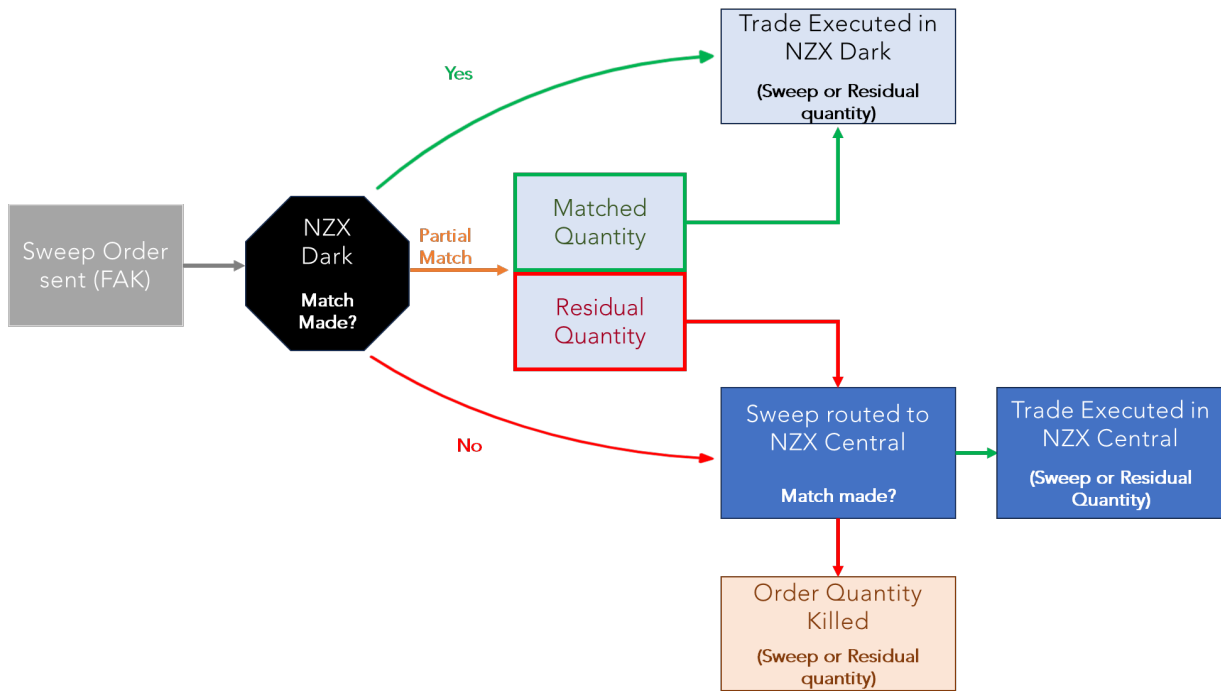
Fill or Kill (FoK) Sweep

FoK sweep orders consider the total quantity available in both NZX Dark and NZX Central. Assuming there is a sufficient volume of opposing orders to execute against, the order will first execute up to its total order quantity in NZX Dark, and then its balance in NZX Central. Its execution in NZX Dark will be half a spread better than its residual execution on NZX Central.
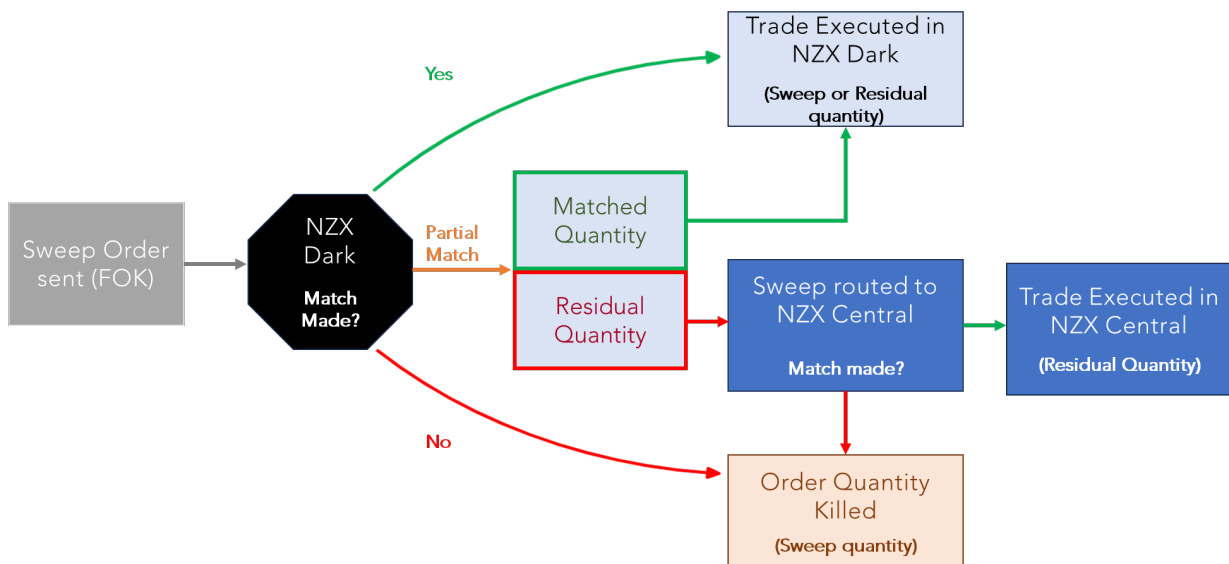
4.4 Short Selling

Short sell orders can be entered into, and executed on, NZX Dark, as long as NZX Participant short selling rules are complied with:

- NZX can restrict/limit short selling
- An issuer can also place a short selling restriction on its securities.
- Each NZX Participant may determine whether it offers short-selling services to its clients.

5. Trade Reporting & Market Data

NZX Dark orders are not disseminated to the market down any public market data feeds, however trades executed on NZX Dark are reported to market, as on-market trades, and can be identified as having been executed via this venue in ME Workstation, ITCH message protocol and the NZX Market Data Feed. Trades on NZX Dark are price setting, assuming they are "big enough" to be so, as defined by NZX Central current price setting trade parameters.

It is important to note that whilst the trades are reported to market, there is no directional information contained within this reporting – i.e., observers cannot discern the direction or quantity of any residual orders resting in the order book.

5.2 Self-Match Prevention

Self-match prevention (SMP) functionality is a tool provided by NZX to help Participants manage their obligations under Section 267 of the Financial Markets Conduct Act 2013, and NZX Participant Rule 10.13.9 relating to trades where there is no resulting change in beneficial ownership (NCBO).

Cancel Passive SMP Functionality
Cancel Passive functionality will withdraw an order in NZX Central which is about to be executed against, and which would result in an NCBO trade.

Cancel passive functionality in NZX Dark will not withdraw the resting order but will mark it ineligible for matching against the aggressor order if such a match would result in an NCBO trade. The resting order will continue to rest in NZX Dark and will remain eligible to match against any subsequent orders which would not result in an NCBO trade. The aggressor order, assuming it has not matched against any other eligible orders, will either rest in NZX Dark, available for matching against any subsequent eligible orders which would not result in an NCBO trade, or, in the case of a sweep order, route to NZX Central.

5.3 Market Surveillance

NZ RegCo Surveillance will monitor all activity on NZX Dark to ensure NZX markets remain fair, orderly and transparent and to monitor potential breaches of Participant trading conduct obligations.

5.4 Post Trade

All trades in NZX Dark are settled through the NZX Clearing House and form part of the Clearing Participants daily settlement obligation. NZX Dark trades are identifiable on the MT518 post trade message and visible on the BaNCS system.

6. Fees

NZX will charge users trading fees on the following basis

Cash Market	Fee Code	Fee
NZX Dark Trade	TRD822	Trading Fee 0.60bps per side, capped at $225 per trade

Please refer to the NZX Trading & Advising Fee Schedule for all NZX Trading fees

7. NZX Dark Messages

The following messages indicate identification of NZX Dark orders. Please note that this list is intended as a guide only and is not an exhaustive list. For full technical details please refer to the Native FIX, OUCH, ITCH, NZX Data Feed or BaNCS Cash Market message specifications documents.

7.1 Native FIX

Order Placement Native FIX

Tag	FieldName	Required	Details	Format
847	TargetStragey	N	1001 = Central Limit Orderbook	Int
847	TargetStragey	N	1002 = Midpoint Orderbook	Int
847	TargetStragey	N	1003 = Sweep Mid-Point on route to Central Limit Orderbook	Int

Used in the following Native FIX Messages: New Order Single (D)/ Order Cancel/Replace Request (G)/ Execution Report (8)

Minimum Execution Quantity in Native FIX

Tag	FieldName	Required	Details	Format
110	MinQty	N	Specifies the minimum fill quantity. If TargetStrategy = 1002 then field is used as order minimum execution quantity. Otherwise, field is used as order minimum quantity (FaK)	Qty

Used in the following Native FIX Messages: New Order Single (D)/ Order Cancel/Replace Request (G)/ Execution Report (8)

7.2 OUCH

Order Placement OUCH

Name	Offset	Len	Value	Notes
Placement	73	1	Alpha	"C"entral Limit Orderbook
Placement	73	1	Alpha	"M"idpoint Orderbook
Placement	73	1	Alpha	"S"weep Mid-Point on route to Central Limit Orderbook

Used for Inbound Un-sequenced Messages: OUCH enter order message [O]/ OUCH accepted order message [A]

Minimum Execution Quantity in OUCH

Name	Offset	Len	Value	Notes
Minimum Quantity	65	8	Integer	Specifies the minimum acceptable quantity to execute. Non 0 values are only supported for FaK and FoK.

Used for Inbound Un-sequenced Messages: OUCH enter order message [O]/ OUCH accepted order message [A]

7.3   ITCH – Market Data

System Event Codes

System Event Code	Explanation
ENABLE_MPOB	Enable the Midpoint Order Book.
DISABLE_MPOB	Disable the Midpoint Order Book.
START-MPOB	Place all midpoint orders into the book without validation. No matching or order amendment but allow private order management.

Trade Source Codes

Trade Source Code	Explanation
'M'	Midpoint trade identifier

7.4   MDF – Market Data Feed

Field Name	Picture	Description
Condition Code	Trade Condition Code: MP	MP indicates an on-market trade matched in the midpoint orderbook.

Used in the following MDF Messages: TR – Trade Details & TC - Trade Condition Code

7.5   MT518 - Post Trade Message

Status	Tag	Qualifier	Generic Field Name	Content/Options	Detailed Field Name	Field#
O	22a	TTCO	Indicator	22F::TTCO/XNZE/MIDP	MIDP for Midpoint Trade	18

8. Appendices – Further Information

Further information on NZX Dark can be found in the following locations or by contacting the NZX team at markets@nzx.com

NZX Dark Webpage

[NZX Dark - NZX, New Zealand's Exchange](#)
Includes details such as
- NZX Dark Examples
- NZX Dark FAQ's
- Links to rules and fee schedules

External Wiki
Contact NZX for access to the external wiki that includes key technical message specifications information.

Message Specification	Brief
Nasdaq ME FIX Spec	Native FIX Specification
Nasdaq ME OUCH Spec	OUCH specification
ITCH	ITCH market data specification
Nasdaq ME Functional Spec*	Functional document for Nasdaq ME

*Available to external parties after signing an NDA but please note that access to this document is granted at NZX's discretion. Contact NZX for more details.

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