TURQUOISE TRADING SERVICE DESCRIPTION

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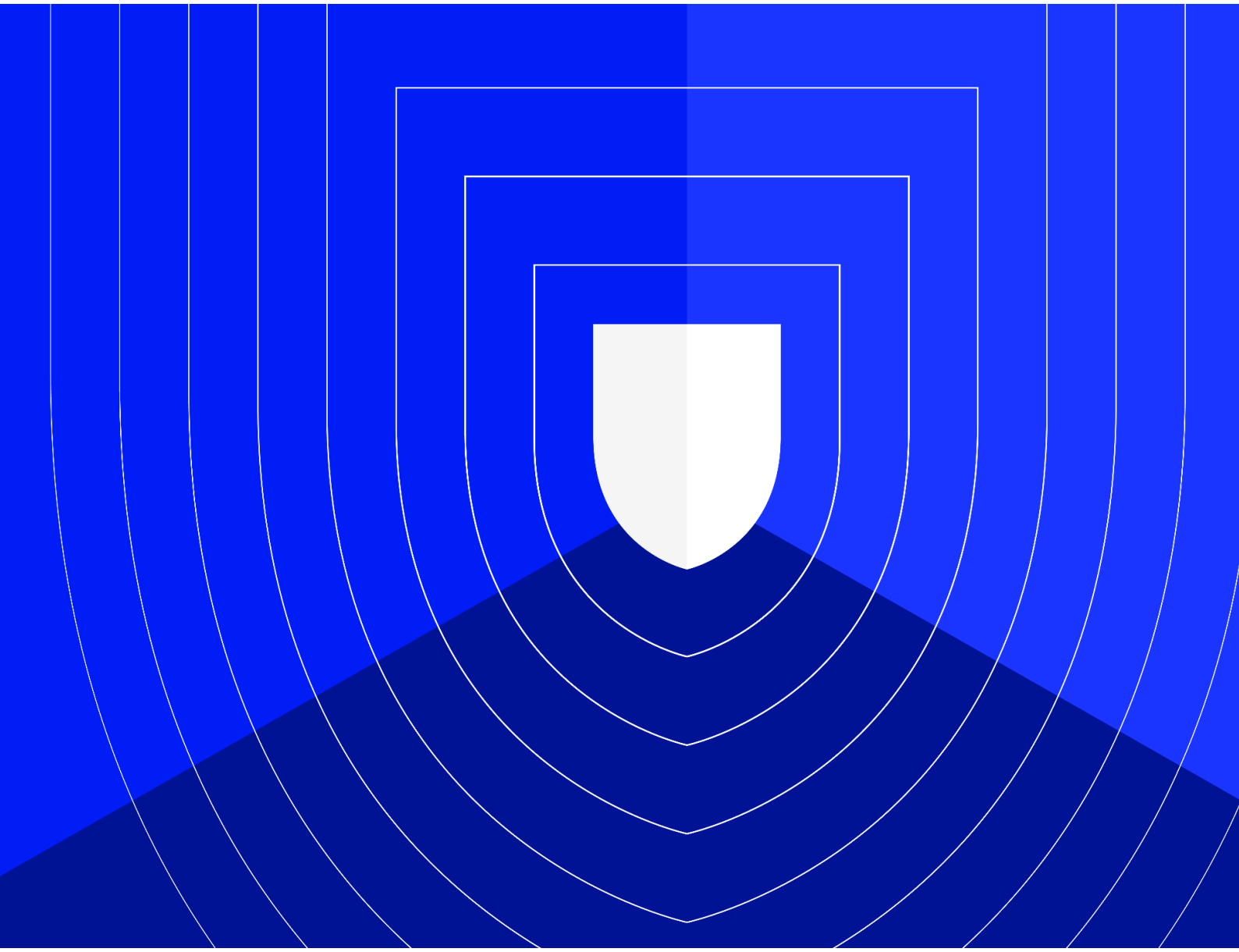

LONDON STOCK EXCHANGE

TURQUOISE

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1.0 About Turquoise

Turquoise Global Holdings Limited (TGHL or Turquoise) is an investment firm authorised and regulated by the Financial Conduct Authority (FCA) of the United Kingdom. Initially founded in 2006 by a consortium of nine investment banks, TGHL has been majority owned by London Stock Exchange Group (LSEG) in partnership with the user community since 2010.

Turquoise Global Holdings Europe B.V. (TGHE or Turquoise Europe and together with TGHL, Turquoise) is an investment firm authorised and regulated by the Autoriteit Financiële Markten (AFM) of the Netherlands. TGHE is a wholly-owned subsidiary of TGHL.

Turquoise operates two Multilateral Trading Facilities (MTF); One by TGHL, and one by TGHE. TGHL supports the trading of UK, Swiss, US and EEA Financial Instruments, whilst TGHE supports the trading of EEA instruments. With a single connection, members of TGHL and TGHE can trade shares, depository receipts, ETFs, ETCs, and European Rights Issues in up to 19 European countries, with an Open Access model that allows members to choose from 3 different CCPs to clear these trades on an interoperable basis.

Membership to TGHL and TGHE is open to eligible firms, with members including banks, brokers, specialist trading firms and retail intermediaries. Sponsored Access and Direct Market Access are available to non-member participants. Turquoise participants benefit from fully risk-managed clearing solutions, and market surveillance to ensure fair and orderly operations.

TGHL and TGHE both feature three Order Books:

- **Turquoise Lit** combines simple limit and iceberg orders with Large In Scale hidden Orders.
- **Turquoise Periodic Auctions**[1] are price forming auctions, operating frequently and with pre-trade transparency throughout the trading day, supporting simple limit and PBBO bid/midpoint/offer pegged orders, and allows users to configure a Minimum Execution Size.
- **Turquoise Retail Max** matching, provides the opportunity for Retail Liquidity Providers to provide liquidity for Retail Brokers (within **Turquoise Periodic Auctions**, with pre-trade transparency throughout the trading day.
- **Turquoise Dark**[2] non-displayed midpoint prioritises orders by size and allows users to configure a Minimum Execution Size; it features two distinct mechanisms, each executing at the midpoint of the PBBO: Continuous matching and **Turquoise Dark Uncross**, an innovation that provides randomised uncrossings during the trading day, ideal for larger and less time sensitive passive orders.
- **Turquoise Block Discovery** matches undisclosed electronic Block Indications and manual Client Block Indications and that execute in **Turquoise Dark Uncross**.
- **Turquoise Dark Lit Sweep** provides the opportunity for price improvement (with no loss of queue priority) by matching against contra liquidity in the **Turquoise Dark Order Book** at the Primary market's midpoint, before aggressing available liquidity in the **Turquoise Lit Order Book**.
- **Turquoise Dark Trade At Last** matching, provides the opportunity to continue matching at the Primary market's Closing Price at the end of the trading day.

The Turquoise securities trading platform is hosted in 3rd party datacentres and features interfaces common to other LSEG markets, including London Stock Exchange, ensuring that customers accessing other LSEG markets can enjoy access to Turquoise with little incremental cost or effort.

[1] From 4 July 2025, Turquoise rebranded its Turquoise Plato Lit Auctions™ services as Turquoise Periodic Auctions.
[2] From 4 July 2025, Turquoise rebranded its non-displayed Turquoise Plato™ services as Turquoise Dark.

2.0 About this Document

The objective of this document is to provide an understanding of the most relevant technical, operational and business features of the Equities (includes non-equities) trading platform of Turquoise, which supports two MTFs being; Turquoise (TGHL) and Turquoise Europe (TGHE).

This document is not intended to be used as a Technical Specification for the development of any software application.

This document has been updated to reflect changes to the service being introduced as part of a scheduled upgrade to the Millennium Exchange platform.

Anyone already familiar with previous versions of the document is strongly encouraged to read this update.

For any feedback or queries about this document please contact sales@tradeturquoise.com.

3.0 Change History

Date	Version	Changes
27/04/2012	3.4	Updates to functionality of the Dark Midpoint Order Book Change in priority of resting orders from Time to Size/Time Change in Minimum Fill logic from MAQ to MES Addition of a Continuous-only execution instruction Updates to reflect the availability of Sponsored Access Update to reflect the availability of EMCF as an interoperable CCP in addition to ECCP, LCH and X-Clear
11/06/2012	3.5	Accommodates text that was previously contained in the Turquoise Rule Book
22/10/2012	3.6	Updated to reflect changes to Price Band Controls and new order parameters
30/09/2013	3.7	Updates reflecting new and existing Terms and Acronyms used (e.g., Security, Participants, Minimum Quantity, **Turquoise Uncross™** replacing Periodic Uncrossing terminology etc…) Updates reflecting new TIF 'GFA' and changes to GTD (for FIX) *Updates reflecting new Call Market message for **Turquoise Uncross™**. (For Future Use Only – this is NOT available in Production, but is available in CDS for testing purposes)* Updates reflecting enhancements to Iceberg Orders, where Participants can now elect to randomise their Iceberg peaks Updates reflecting Self Execution Prevention, Passive Only and Distance from BBO and option to change Order level default for Execution Instruction features Updates reflecting new Trade Liquidity Indicator Updates to include Trade Reporting Service
24/10/2013	3.8	Update to add Iceberg Randomisation parameters Updates reflecting GTT and **Turquoise Uncross™** Only behaviour
13/02/2014	3.8.0.1	Section 5.10 and 5.11 updated for trading US and Spanish Securities. Section 6.1 updated in respect to EuroCCP and EMCF merger.
10/02/2014	3.8.1	Updates reflecting new Call Market message for **Turquoise Uncross™** is now available in Production. Sections updated: 4.0 (Call Market, Order Submission Interval, GFA, GTT terms); 9.4 (TIFs – GFA, GTT, GTD); 9.7; 9.7.1; 9.7.1.1; 9.7.1.2; 10.3 and 16.5(iii).
18/06/2014	3.8.2	Section 4.0 – Updated Order Submission Interval definition. This will not be published via MITCH Symbol Directory Message.
22/07/2014	3.8.3	Section 1.0 – Updated Introduction. Section 4.0 – Updated Definitions/Terms; added Good Till Date (GTD) definition. Section 5.6 – Added clarity to text for Lot Size. Removed TQ acronym, replacing with Turquoise; Removed TQ Dark and TQ Lit references; Removed ' – ' from Primary-market. Updated terms Client & User (where appropriate) to 'Participant'. Deleted sections 9.7.1 which referred to Call Market being 'disabled'. Updated Disclaimer (Back Page).
26/08/2014	3.8.4	Section 9.7.1 – Behaviour of Execution Instruction '**Turquoise Uncross™** only', with TIF of 'GFA' updated for when submitted between a **Turquoise Uncross™** and Call Market.

Date	Version	Changes
22/09/2014	3.8.5	Section 8.4 – Updated WFMC. Section 11.3 – Updated Trade Liquidity Indicators.
20/10/2014	3.9	Published version includes **Turquoise Block Discovery™** features.
24/10/2014	3.10	Updated all references of ITCH to MITCH following rebrand Section 9.9 – Removed GFA reference from Self Execution Prevention section
25/11/2014	3.11	Removed references to Off-Book Trade Reporting
19/12/2014	3.12	Section 12.2 updated (minor update).
16/01/2015	3.13	Updated the following sections to reflect to upgrade of Millennium Exchange. Changes include: Section 4.0/9.7 – Added **Turquoise Uncross™** then Continuous Execution Instruction Section 10.3 – Updated to reflect change in behaviour for Amendment of Execution Instruction and **Turquoise Uncross™** Only orders with a TIF of GFA, which can now not be amended or cancelled Section 9.7.1 updated to reflect a change in behaviour **Turquoise Uncross™** Only orders with a TIF of GFA and **Turquoise Uncross™** Only orders with a TIF of GTD/GTT (which are received between a Call Market and **Turquoise Uncross™**). Added behaviour of **Turquoise Uncross™** then Continuous orders with a TIF of GFA Section 1.0, 4.0, 5.0, 5.4, 5.10.1, 5.12, 6.1, 7.3, 8.4, 9.4, 9.6, 9.7, 9.9 updated (minor comments/formatting), removal or sections originally referenced 7.2 and 7.3.
19/01/2015	3.14	Updated Sections 5.10 and 5.10.1 to reflect how LIS are set for non-MiFID instruments (using ESMA methodology where possible).
21/04/2015	3.15	Section 4.0 added **Turquoise Block Discovery™** term. Section 5.4 and 11.1 updated and Section 9.10.2 added to introduce optional Member Priority Matching within the Turquoise Dark Midpoint Order Book.
28/05/2015	3.16	Sections 1.0 and 5.0 updated Instrument count. Section 4.0 updated non-Persistent and Persistent terms. Section 5.4 & 9.6 updated to add reference to and contact details to change Minimum Quantity default. Section 5.10 updated to reflect how LIS are set for non-MiFID instruments (using ESMA methodology where possible). Section 11.1 updated to add clarity regarding Minimum Quantity (MES).
08/09/2015	3.17	Section 5.11 updated to reflect Spanish securities can now be cleared via LCH Clearnet Limited (in addition to EuroCCP.NV). Section 9.9 updated to add clarity SEP does not apply during **Turquoise Plato Block Discovery™** events. Add clarity around post trade internalisation.
05/10/2015	3.18	Sections 1.0, 5.0 and 5.1 updated to reflect Polish securities can be traded in the **Turquoise Lit™** Book. Section 5.8 updated to add Polish Zloty (PLN) to currency list. Section 5.13 added to reflect the choice of CCP for Polish Securities. Section 8.3 updated to include Max Order values for Polish Securities.

Date	Version	Changes
30/10/2015	3.19	Sections 9.7.1 and 10.3 – Updated to reflect change in behaviour for Cancellation of Execution Instruction and **Turquoise Uncross™** Only orders or Continuous and **Turquoise Uncross™** with a TIF of GFA, which can now be cancelled. Sections 4.0 and 9.2 updated, 9.2.1 added for the new Dark Lit Sweep Order. Section 9.8 updated for minor terminology change (Lit to Integrated). Section 10.3 updated to reflect Time In Force is no longer amendable. Section 11.2 – Price Differential deleted. Section 11.3 renumbered to 11.2.
04/04/2016	3.20	Section 4.0 and 5.4 updated and Section 5.4.1 added to provide details around the randomness and duration of the **Turquoise Uncross™** event after the Call Market has been published. Section 8.3 updated some Maximum Order Values.
06/06/2016	3.21	Section 5.11 updated regarding US securities. Section 5.14 and 5.15 added to reflect clearing arrangements for Czech and Hungarian securities. Section 14.0 hyperlink to tariff updated.
11/07/2016	3.22	Section 1.0 and 4.0 updated to include **Turquoise SwapMatch™**.
21/07/2016	3.23	Section 10.3 updated to remove reference to primary market hours.
06/09/2016	3.24	Updated Turquoise to **Turquoise Plato™** where appropriate for Dark Midpoint Order Book and **Turquoise Plato™** Block Discovery services, and updated Turquoise to **Turquoise** where appropriate.
03/10/2016	3.25	Section 5.1 updated to reflect introduction of Czech and Hungarian for trading in the **Turquoise Plato™** Order Book. Various Sections updated to change terms and reflect that from 6 September 2016, Turquoise rebranded its non-displayed services as **Turquoise Plato™**. For further details see the press release, http://www.lseg.com/resources/media-centre/press-releases/plato-partnership-enters-cooperation-agreement-turquoise.
21/11/2016	3.26	Section 5.4 and 10.3 updated to add clarity around Size priority and Size. Section 9.9 updated to add clarity that SEP does not apply during Continuous Trading, when both sides are resting. Sections 5.14 and 5.15 updated to include LCH Clearnet Limited who now clear Czech and Hungarian securities.
07/12/2016	3.27	Section 10.3 updated to clarify behaviour when Displayed Quantity in increased. Price Type renamed Order type, which is non-amendable.
08/12/2016	3.28	Section 10.3 updated to clarify behaviour as Valid Till is amendable.
08/02/2017	3.29	Section 10.3 updated to add clarify. Section 5.4 updated to reflect the change that all **Turquoise Plato Uncross™** events are randomised to occur between 5 and 10 seconds for all instruments.
11/05/2017	3.30	Removed ® from Turquoise throughout the document. Sections 5.4, 5.4.1 updated to reflect the enhancement to the **Turquoise Plato Uncross™** event, with the introduction of Continuous matching of BIs and eligible BDNs. Section 6.4 updated to remove “CFD Give Up” capacity.
16/05/2017	3.31	Section 5.4 updated diagram at point 1.

Date	Version	Changes
28/06/2017	3.32	Various Sections updated hyperlinks which reference documents.
01/07/2017	3.33	**Turquoise Plato Block Discovery™** is now regulated activity by Turquoise, the MTF, so as everything is now an MTF activity, minor updates have been made.
03/01/2018	3.34	Turquoise Integrated or Lit book rebranded **Turquoise Lit™** Order Book. Sections 1.0 updated to include the **Turquoise Lit Auctions™** Order Book. Section 2.0 updated to reflect this document comes into effect as a result of MiFID II from 3 January 2018, including the new Member Portal and the new **Turquoise Lit Auctions™** Order Book. Section 4.0 and various other sections – Added new terms “Financial Instrument” to describe Securities/Instruments, “ESMA”, “LEI”, “**Turquoise Lit Auctions™**”, “Member Portal”, “LIS Waiver”, “OMF Waiver” and “RPW”. Section 4.0 added GFA Order behaviour for **Turquoise Lit Auctions™**. Sections 4.0, 5.4.1, 9.4, 9.7 and 9.7.1 wording changed to reference “start of Order Submission Interval” rather than “Call Market”. Note: There is no change in system behaviour. Sections 5.1, 4.3, 5.7, 6.2, 5.12, 5.14, 5.15, 7.5, 8.1, 8.1.2, 8.3, 8.4, 9.2, 9.4, 9.5, 9.6, 9.9, 9.10, 9.10.2, 10.2, 10.3, 11.1, 11.2, 11.3, 12.1, 12.3, 13, 13.1, 13.2, 14.5 created/updated to include the **Turquoise Lit Auctions™** Order Book. Section 5.2 changed to include reference to OMF Waiver and LIS Waiver. Section 5.2 and 9.6 updated to reflect the new EUR 10,000 threshold for Iceberg Orders. Section 5.4 changed to include reference to RPW and LIS Waiver, plus how Turquoise will manage Financial Instruments capped out by the Double Caps. New diagrams added re: **Turquoise Plato Uncross™** being initiated by **Turquoise Plato Block Discovery™** match or random timer. Section 5.4.2 added for **Turquoise Plato Block Discovery™**. Section 5.4.2, 6.3, 6.5, 6.10, 9.9 and 14.0 updated to reflect view and manage functionality available within the Member Portal. Section 5.7 updated to reflect all Limit Prices on all Orders must now confirm to a valid tick size. Section 5.10 updated to reflect new Pre-Trade LIS thresholds. Section 6.1 updated eligibility to align with revised rule book revisions. Section 6.1.1 created regarding the new Member Portal. Section 6.2 updated to reflect Sponsored Access to available to **Turquoise Lit™**, **Turquoise Plato™** including **Turquoise Plato Block Discovery™** only.

Date	Version	Changes
03/01/2018	3.34	Section 6.3 minor updates. Section 6.4 updated to reflect new MiFID II capacities introduced. Section 6.5 updated to add clarity about setting up clearing arrangements as a clearing member or via a general clearing member. Section 6.8 updated to add clarity around clearing/settlement internalisation. Section 7.5 updated to reflect venue's reference price used as PMP. Section 7.6 Reference Price Collar moved and merged into updated Section 8.1, 8.1.1 and 8.1.2. Section 8.3 updated to reference TQ501 and Instrument File and include thresholds for the **Turquoise Lit Auctions™** Order Book. Section 9.10 and 9.10.1 restructured. Section 10.2 updated to reflect GFA Orders within **Turquoise Plato™** cannot be amended. Note: No change in behaviour here. Section 10.3 and 10.4 updated/created to reflect Turquoise will never amend Orders or Trades, Turquoise will only ever cancel. Section 11.2 created to explain Execution Venue and MICs. Section 11.3 updated to add FIX Tag 851 and Native equivalent Trade Liquidity Indicators. Section 13.0 deleted regarding Test Securities. See Section 14.7. Section 14.7 added regarding Certification and Testing Services. Section 14.8 added regarding GTP documentation.
03/01/2018	3.34.1	Additional changes to v3.34 Section 2.0 added reference to MiFIR. Section 4.0 updated terms relating to Reference Price Collars (previously Price Bands), Financial Instrument, LIS, MiFID, MiFIR and MTF. Section 5.10.1 updated LIS to refer to MiFIR. Sections 8.2 and 10.2 updated terms relating to Reference Price Collars.
03/01/2018	3.34.2	Section 9.6 updated to with Iceberg EUR 10,000 values in other trading currencies.
03/01/2018	3.34.3	Section 9.6 updated CHF and USD Iceberg EUR 10,000 equivalent values.
03/01/2018	3.34.4	Section 5.4, 6.1 updated to reflect Turquoise has Trading Members and Members. Section 6.7 updated to refer to Primary Market (instead of Exchange)
03/01/2018	3.34.5	Section 5.4 updated to reflect BDN values when RPW trading is Allowed and RPW trading is not Allowed. Additionally all non-persistent Orders must be equal too or greater than LIS when RPW trading is not allowed. Section 6.10 added to reflect Turquoise Risk Controls are available to all Members. *Section 6.10 relabelled 6.12*. Section 6.11 added to define Turquoise Order to Trade Ratio limits for Trading Members and Market Makers. Section 10.2 updated to reflect changes to the End of Day.
03/01/2018	3.34.6	Section 4.0 updated to include Trading Venue Transaction Identification Code (TVTIC). Section 6.11 clarity added. Section 6.13 added section re: Market Making Arrangements. Heading also updated. Section 11.4 added to define Turquoise's Trading Venue Transaction Identification Code (TVTIC).
03/01/2018	3.34.7	Section 6.13 updated re: Market Making Schemes. Section 9.6 updated to reflect new instrument's trading CCY Iceberg thresholds.

Date	Version	Changes
09/01/2018	3.34.8	Section 4.0 added **Turquoise Lit Auctions™** term along with update to **Turquoise Lit™** Order Book. Section 5.7 minor updates, including hyperlink to reference data section. Section 5.3 updated and 8.3 added to include the new EUR 2,000 Minimum Order Value for **Turquoise Lit Auctions™** Order Book. Section 8.3 re-referenced Section 8.4 and Section 8.4 referenced Section 8.5.
22/01/2018	3.34.9	Sections 1.0, 4.0, 5.3, 9.6, 9.10.1, 10.3, 11.1 updated to reflect support of Minimum Quantity (MES) on all Orders within the **Turquoise Lit Auctions™** Order Book. Section 8.3 updated (minor). Section 9.10 updated to add clarity that opting into Member Priority applies to both **Turquoise Plato™** and **Turquoise Lit Auctions™** Order Books.
23/01/2018	3.34.9a	Section 8.3 updated Maximum Order Values to EUR 200m for **Turquoise Plato™** and **Turquoise Lit Auctions™** Order Books.
26/03/2018	3.34.9b	Section 5.3 updated and Section 8.3 deleted as the Minimum Order value (EUR 2,000) no longer applies to orders entering the **Turquoise Lit Auctions™** Order Book. Section 8.4 re-referenced Section 8.3 and Section 8.5 referenced Section 8.4. Section 9.7 updated to add clarity.
09/04/2018	3.34.9c	Section 2.0 updated. Section 4.0 updated **Turquoise Lit Auctions™** definition to remove reference to Minimum Order Value. Section 5.3 updated to include Member Group priority within the **Turquoise Lit Auctions™** Order Book. Section 6.2 updated to reflect Sponsored Access users can access **Turquoise Plato Block Discovery™**. Section 9.10 updated to reflect 'opt-in' to Member Priority is now available for per **Turquoise Plato™** and/or **Turquoise Lit Auctions™** Order Books and 'opt-in' is available to for Member Group Priority within the **Turquoise Lit Auctions™** Order Book. Section 9.10.1 updated to include Member Group Priority and MES reduction iterations within the **Turquoise Lit Auctions™** Order Book. Section 11.1 updated to include Member Group Priority within the **Turquoise Lit Auctions™** Order Book. Note: Member Group Priority and MES reduction iterations within the **Turquoise Lit Auctions™** Order Book are subject to FCA non-objection.
20/04/2018	3.34.9d	Sections 5.3, 9.10, 9.10.1, 11.1 updated to reflect Member Group Priority and MES reduction iterations within the **Turquoise Lit Auctions™** Order Book functionality is no longer subject to FCA non-objection.
13/07/2018	3.34.9f	Section 5.4 updated to reflect users can by default have a BDN applied to all their Orders. Sections 5.3 and 6.2 updated to reflect Sponsored Access users can access the **Turquoise Lit Auctions™** Order Book. Section 7.5 updated to reflect publication of the PBBO midpoint reference price used in the **Turquoise Plato™** and **Turquoise Lit Auctions™** Order Book. Section 11.2 updated with respect to publication of segment MICs for all Turquoise Order Books.

Date	Version	Changes
17/09/2018	3.34.9g	Section 1.0 updated to include LCH SA as a CCP. Section 5.15 created to add LCH SA (as a non-interoperable CCP) to support the clearing of Euronext Growth Financial Instruments which have been made available for trading in all Turquoise Order Books, including **Turquoise Plato Block Discovery™**. Section 6.1 updated to include LCH SA.
1/11/2018	3.34.9h	Section 4.0 updated and Section 10.5 added to define Turquoise's Corporate Action policy. Section 13.0 updated to reflect Turquoise's change to its fees tariff schedule, with the removal of the maker/taker tariff model for the **Turquoise Lit™** Order Book.
09/01/2019	3.34.9i	Sections 4.0, 7.1 and 7.2 updated to clarify the TDRP and TLTP definitions.
25/01/2019	3.34.9j	Section 5.17 added to reflect LCH SA are now available as a "Preferred CCP" for Euronext Financial Instruments (excluding Ireland). Production Go Live date to be announced. Section 14.5 updated to reflect addition of a Trade Summary Message (via GTP) for the **Turquoise Lit™** Order Book. Sections 14.5 and 14.6 updated to reflect that the MITCH market data protocol was decommissioned (2018). Updated various sections to reflect Turquoise's rebrand of **Turquoise Lit Auctions™** services as **Turquoise Plato Lit Auctions™**.
29/05/2019	3.34.9k	Sections 4.0, 5.3, 9.4, 10.3 updated to reflect within the **Turquoise Plato Lit Auctions™** GFA Orders will now be 'Locked In' when the Indicative Auction Price and Volume are both greater than 0 in the relevant instrument meaning they will not be amendable or cancellable (unless cancelled via a Mass Cancellation request or Cancellation on Disconnect event).
21/06/2019	3.34.9l	Section 5.0 updated to reflect the number of instruments tradable. Section 5.17 updated to remove footer regarding Go Live date. Section 10.2 updated to reflect change to Normal Trading Hours for some Financial Instrument(s).
28/10/2019	3.34.9li	Section 6.10 updated to reflect that Members can now opt-in to grant their GCM a monitoring Drop Copy Gateway connection. Section 7.5 updated to remove reference to PBBO midpoint publication. Sections 9.2 and 11.2 updated to reflect publication of Last Market (FIX Tag 30) in Execution Reports (Trades).
20/11/2019	3.34.9lii	Sections 4.0, 5.3, 9.4, 10.3, 12.3 updated to reflect decommissioning of the GFA TIF within the **Turquoise Plato Lit Auctions™** Order Book. Sections 1.0, 4.0, 5.3 updated and section 8.1.2 deleted to reflect the removal of the **Turquoise Plato Lit Auctions™** Order Book Price Collars, which adjusted the price of Limit Orders up to the PBB (Sell) or down to the PBO (Buy) when more marketable. Sections 4.0 and 8.1.1 updated to reflect the introduction of new Price Bands which prevent overly aggressive Limit Orders from entering the **Turquoise Plato Lit Auctions™** Order Book.
25/11/2019	3.34.9liii	Section 4.0 and 7.3 updated to reflect that when **Turquoise Plato Lit Auctions™** Financial Instruments return from a Halt, the TSRP used is usually the closing price on the Primary market, rather than the last Auction-uncrossing price disseminated by the Primary market for the Financial Instrument.
20/12/2019	3.34.9.liv	Section 8.1.1 updated to reflect the change in threshold used in Static and Dynamic Price Collars within the **Turquoise Plato Lit Auctions™** Order Book (from 50% to 10%).

Date	Version	Changes
31/12/2019	3.34.9.lv	Section 7.1 updated to reflect **Turquoise Plato Lit Auctions™** Trades are used to determine the Turquoise Last Trade Price for the **Turquoise Plato Lit Auctions™** Order Book.
27/11/2019	3.35.4	New version for the introduction of the **Turquoise NYLON™** Cash Order Book. • Sections updated: 1.0, 4.0, 5.1, 5.7, 5.10, 5.12, 5.14, 5.15, 5.16, 5.17, 7.5, 8.3, 8.4, 9.2, 9.4, 9.5, 9.6, 9.9, 10.2, 10.3, 10.4, 11.1, 11.2, 11.3, 12.1, 12.3, 13.0, 13.1, 13.2 and 14.5. • Section 5.5 added Section 5.0 updated to reflect the number of instruments Turquoise trades. Section 7.5 added footnote to reflect PBBO midpoint publication is subject to a Turquoise Market Notice announcement. Section 5.5 to 5.14 references updated to 5.6 to 5.15 respectively. Section 8.3 updated to add EUR equivalent for **Turquoise Plato Lit Auctions™** and also to reflect Minimum Orders Values for the **Turquoise Plato™** Order Book when the RPW is not allowed.
31/12/2019	3.35.5	Updated version to include versions 3.34.9liv and 3.34.9lv.
27/03/2020	3.35.6	Sections 4.0, 5.3, 9.4, 9.5, 11.1 updated to reflect the following changes to the **Turquoise Plato Lit Auctions™** Order Book: • Orders with a Good for Auction 'GFA' Time in Force 'TIF' will be reintroduced. GFA Orders will only be accepted if upon aggression the auction generates an Indicative Auction Price and Quantity greater than 0 (zero) or when there is an auction in progress which has an Indicative Auction Price and Quantity greater than 0 (zero), else the GFA Order will be expired immediately. • Changes to the matching logic to allow Pegged Orders to be considered at their Limit Price, when they are not marketable at the midpoint of the Primary Market Best Bid and Offer. Sections 4.0, 5.4, 5.4.3, 8.4, 7.6, 9.2, 9.10.2, 10.2, 11.1, 11.3, 13.2 added/updated for the introduction of a new **Turquoise Plato Trade At Last™** matching phase, which supports matching of Orders and Block Indications at the Primary Market's Closing Price until 16:45 (UK time), within the **Turquoise Plato™** Order Book (including **Turquoise Plato Block Discovery™**). Section 10.2 updated to reflect the following changes being made at the end of the Turquoise trading day: • Introduction of a new **Turquoise Plato Trade At Last™** matching phase, which supports matching of Orders and Block Indications at the Primary Market's Closing Price until 16:45 (UK time). • Following the introduction of the new TAL matching phase within the **Turquoise Plato™** Order Book, all Orders will now expire at the close of the trading session. For Example: Unexecuted Orders will now expire from the **Turquoise Lit™** Order Book at 16:30:01, instead of 16:30:02 (UK Time). Section 14.5 updated to reflect the Trade Summary Message sent via Group Ticker Plant (GTP) for the **Turquoise Lit™** Order Book now includes the 'Side' of the Passive Order.
13/07/2020	3.35.6i	Section 4.0 and 5.4 updated with a footnote, to reflect **Turquoise Plato Trade At Last™** matching is pending regulatory non-objection and a Go Live date will be announced in due course.
	3.35.6ii	Sections 1.0 and 4.0 updated to reflect the decommissioning of **Turquoise Swapmatch™**.

Date	Version	Changes
21/09/2020	3.35.7	Section 11.5 updated to add clarity for Members that have an obligation to transaction report to their National Competent Authority under MiFIR.
	3.36	New version for the introduction of Turquoise Global Holdings Europe B.V. (TGHE). Section 1.0, 4.0, 5.0, 5.1, 5.2, 5.3, 5.4, 5.4.2, 5.4.3, 5.7, 5.8, 5.10, 5.10.1, 5.11, 5.13, 6.1, 6.1.1, 6.3, 6.5, 6.8, 6.12, 6.13, 8.1.1, 8.3, 9.2, 9.2.1, 9.4, 9.5, 9.6, 9.7, 9.7.1, 9.8, 9.9, 9.10, 9.10.1, 9.10.2, 10.3, 10.4, 11.2, 11.3, 11.4, 12.3, 13.1, 13.2, 14.5 plus Disclaimer updated to reflect the above. Sections 9.2 and 11.2 updated to reflect publication of Last Market (FIX Tag 30) in Execution Reports (Trades).
	3.36.1	Updated version to reflect changes made in v3.35.7.
28/09/2020	3.36.2	Section 1.0 updated to reflect: • The introduction of the **Turquoise Plato Trade At Last™** matching phase • Turquoise Plato is a registered TradeMark of Turquoise Global Holdings Limited (TGHL) • The **Turquoise NYLON™** Cash Order Book will only be available to TGHL Members. Section 4.0, 5.2, 5.4 and 5.5 updated to add clarity how an Order's value is calculated to determine if it is Large in Scale. Section 8.4 updated to reflect Euronext does sometimes publish two different valid PCPs for some Financial Instruments on the same trading day. Section 11.2 updated to correct typo in the table headings. Section 11.5 updated to reflect FIX Execution Reports will be enhanced to deliver TVTIC in Base 10 in a custom FIX tag.
26/02/2021	3.36.3	This version of the document has been updated to reflect brand changes for London Stock Exchange Group (LSEG), Turquoise® and Turquoise Europe™. Front page – Introduces Turquoise as 'An LSEG Business'. Section 1.0 updated with new Turquoise introduction. Section 2.0 updated to reflect the document relates to Turquoise® and Turquoise Europe™. Various sections updated to reflect use of the Turquoise brand and its trade marks.
10/05/2021	3.36.4	This version has been created for Turquoise Release 1.9.6.9. and is applicable for Turquoise® and Turquoise Europe™. Section 11.4 updated to reflect that late Block Discovery Executions which occur in Turquoise Plato Continuous™; which are assigned a Trade Liquidity Indicator in FIX Tags 851/9730 with enums 8/T and the Native Trading interface in Position 120 with enum T, will instead be flagged as having 'Removed Liquidity' using FIX Tags 851/9730 enums 2/R and the Native Trading interface in Position 120 enum R. Trade Liquidity Indicator FIX Tags 851/9730 with enums 8/T and the Native Trading interface in Position 120 with enum T will then no longer be used and have therefore been decommissioned.
26/05/2021	3.36.4i	Section 1.0 updated to correct the summary description of the **Turquoise NYLON™** Cash Order Book.
10/06/2021	3.36.4ii	Section 9.10.1 updated to amend a typo.

Date	Version	Changes
28/09/2021	3.36.5	Section 4.0 updated to add DTC. Section 5.0 updated to reflect the total number of instruments supported, following the increase in US instrument universe. Section 5.11 updated to reflect LCH Limited will clear US Financial Instruments, with fungible settlement into DTC (replacing clearing via EuroCCP with settlement into Euroclear Bank). Sections 5.11 through to 5.17 updated to change LCH Clearnet Limited to LCH Limited.
24/01/2022	3.36.5i	Sections 5.4 and 5.4.1 updated to reflect the change to the Turquoise Plato Uncross™ random period from 1,500ms to 500ms. Section 9.6 Iceberg values updated (values were effective from 1 April 2021) Section 10.2 updated to reflect new email address for live incidents.
08/10/2021	3.36.6	Sections 4.0, 5.2, 6.2, 6.10, 6.11, 7.0, 7.3, 8.1, 8.3, 9.1, 9.2, 9.5, 9.6, 9.8, 9.9, 10.2, 10.3, 11.1, 11.4, 12.3, 13.1, 14.1, 14.2 and 14.5 updated to reflect the launch of Internal and Committed BTF, within the **Turquoise Lit Order Book™** for Turquoise (TGHL).
09/02/2021	3.36.7i	Sections 4.0, 5.2, 6.2, 6.10, 6.11, 8.1, 8.3, 9.1, 9.2, 9.5, 9.6, 9.8, 9.9, 10.2, 10.3, 11.1, 11.4, 12.3, 13.1, 14.1, 14.2 and 14.5 updated to reflect the change in terminology for Internal and Committed BTF to be 'pre-arranged Trades', within the **Turquoise Lit Order Book™** for Turquoise (TGHL).
01/04/2022	3.36.8	Sections 4.0, 5.2, 9.6 updated to reflect that BTF will use the NT Waiver, rather than LIS Waiver; and that only BTF originating from **Appital Turquoise BookBuilder™** will be accepted. Section 4.0 updated with Pre-arranged Trades and Affirmation definitions. Section 9.6 Iceberg values updated (values effective from 1 April 2022, with FX rates from 31st December 2021) Section 10.3 updated row in table for **Turquoise Plato Lit Auctions™**. Section 13.2 updated to reference Turquoise Tariff Schedule.
03/05/2022	3.36.8i	Section 6.10 updated typo of GCM.
08/08/2022	3.36.8ii	Section 5.12 updated to reflect that X-Clear can clear Spanish securities.
14/11/2022	3.36.8iii	Sections 5.12, 5.13, 5.14, 5.14 and 6.1 updated to reflect that effective from 14 November 2022 European Central Counterparty N.V. (ECCP) are changing their name to Cboe Clear Europe N.V.
14/11/2022	3.38.0i	Sections 1.0, 4.0, 5.3, 7.4, 9.5, 9.6, 9.10.1, 11.1, 14.5 updated to reflect changes within the **Turquoise Plato Lit Auctions Order Books™**: • Launch of Pegged Bid/Offer Order Type (TGHL & TGHE). • Launch of new trading service **Turquoise Retail Max™** to support Retail Brokers (TGHE only). Sections 4.0, 5.3 and 14.5 updated to reflect opt in orders to be classified as Retail or Retail Liquidity Provider, is available at TraderGroup (FIX) / CompID (Native) level. Section 5.3.2 added to include a new feature where members can opt in to defer a cancellation request, when an auction is in progress (than has an Indicative Auction Price and Quantity greater than 0). Sections 10.3 and 12.3 updated to add scenarios for Pending Cancellation orders, when Trading Halts are applied. *Note: v3.37.0, v3.37.1, v3.37.2 and v3.37.3 were originally published on 12 August 2022 and 22, 26, 28 September 2022 respectively with the above changes.*

Date	Version	Changes
		Sections 4.0, 5.2, 5.7, 5.10, 6.10, 9.2, 9.6, 10.2 and 13.2 updated to reflect the launch of Internal and Committed BTF, within the **Turquoise Lit Order Book™** for Turquoise Europe™ (TGHE). *Note: v3.38.0 was originally published on 5 October 2022 with above changes.* Section 5.3 updated to reflect prices points considered within **Turquoise Plato Lit Auctions™**.
21/11/2022	3.38.0ii	Section 5.3 updated to reflect Retail LP Orders which have a Time In Force 'TIF' of Good For Auction 'GFA' will be published when IAP/Q = 0 or >0 in Level 1 Top of Book service.
31/03/2023	3.38.1	Section 9.6 Iceberg values updated (values effective from 3 April 2023, with FX rates (ECB spot rates) from 30 December 2022). Section 10.2 Customer Support phone number updated.
12/05/2023	3.39.0	Section 5.17 updated to reflect that LCH SA on a preferred basis, can clear trades in Irish instruments (XDUB).
09/06/2023	3.39.1	Section 5.3 updated to add clarity to the Turquoise Plato Lit Auctions™ matching logic, in that when the maximised executable volume is equal at multiple price points, the midpoint price or the price nearest the midpoint price is selected.
30/08/2023	3.39.2	Sections 13.0, 13.1, 13.2 updated to reflect new tariff definitions for the **Turquoise Plato Lit Auctions Order Book™**.
03/11/2023	3.40.0	Section 5.18 added to support the trading of Crypto ETNs with LCH Limited.
26/01/2024	3.40.1	Sections 1.0, 4.0, 5.1, 5.7, 5.10, 5.11, 5.12, 5.14, 5.15, 5.16, 5.17, 5.18, 7.5, 8.3, 8.4, 9.2, 9.4, 9.5, 9.6, 9.9, 10.2, 10.3, 10.4, 11.1, 11.2, 11.4, 12.1, 12.3, 13, 13.1, 13.2 and Sections 5.5, 5.5.1 removed following the decommissioning of **Turquoise NYLON Cleared Contract™** and **Turquoise NYLON™** Cash Order Book. Sections 5.6 to 5.18 then renumbered from 5.5 to 5.17 respectively. Section 4.0 Professional Client term updated, to include Professional Investor.
20/03/2024	3.40.2	All references to the CCP "X-Clear" updated to "SIX x-clear". Section 5.17 updated to reflect that Crypto ETNs can now be cleared by SIX x-clear on an interoperable basis with LCH Ltd.
27/03/2024	3.40.3	Section 9.6 Iceberg values updated (values effective from 2 April 2024, with FX rates (ECB spot rates) from 30 December 2023).
04/04/2024	3.40.4	Section 10.6 created with Support / Contact Us details. This included moving some of these details from Section 10.2.
19/06/2024	3.40.5	Sections 1.0. 5.15, 5.16 and 6.1 updated to reflect decommissioning of LCH SA, including the preferred clearing model for supported Euronext Markets. Section 5.1 updated with a table to show TGHL and TGHE supported countries/markets and respective order books.
26/07/2024	3.40.i5	Section 5.17 updated to reflect Crypto ETNs are only available on TGHE.
02/09/2024	3.40.5i	Sections 5.1 and 5.17 updated to reflect Crypto ETNs are now available on TGHL (as well as TGHE).
11/10/2024	3.40.6	Section 8.3 updated to reflect an increase in the Max Order Values for the Turquoise Lit, Turquoise Plato Lit Auctions and Turquoise Plato Order Books™. FX conversions into Euro's have also been updated for all Order Books.

Date	Version	Changes
16/08/2024	3.41.0	Sections 1.0, 4.0, 5.3 updated to reflect the launch of Turquoise Retail Max™ (within the **Turquoise Plato Lit Auctions Order Book™** to support Retail Brokers for TGHL. Section 4.0 updated to reflect only Swiss equities are not available on TGHE. Swiss Non-Equity Financial Instruments are available on TGHE. Section 5.17 updated to reflect Crypto ETNs are available on TGHL.
06/12/2024	3.41.1	Section 10.6 updated with updated contact details. Section 11.5 updated table. Sections 12.1 and 12.3 updated with more information on Trading Halts. Sections 13.0 and 14.0 created with Market Outage Protocol and Recovery Model.
07/03/2025	3.41.2	Section 9.6 Minimum Iceberg Value updated with updated FX rates.
11/04/2025	3.42.0	Sections 1.0, 4.0, 5.4, 5.4.2 updated to reflect the launch of manual Client Block Indications within **Turquoise Plato Block Discovery™**; and **Turquoise Plato Order Book™.** Section 6.14 with information on becoming a Nominated Broker to support Buyside firms access Turquoise via Luminex. Sections 4.0, 5.4 and 5.4.1 updated to reflect the optimisation of **Turquoise Plato Uncross™** events that are triggered by a random timer.

04/07/2025	3.42.1	Various sections updated to reflect the rebrand following the end of the Turquoise Plato Partnership.
		• **Turquoise®** and **Turquoise Europe™** have been rebranded to **Turquoise** and **Turquoise Europe**.
		• **Turquoise Plato™** and **Turquoise Plato™ Order Books** have been rebranded to **Turquoise Dark** and **Turquoise Dark Order Books**, respectively.
		  ○ **Turquoise Plato Uncross™** has been rebranded to **Turquoise Dark Uncross**
		  ○ **Turquoise Plato Block Discovery™** has been rebranded to **Turquoise Block Discovery**
		  ○ **Turquoise Plato Trade At Last™** has been rebranded to **Turquoise Dark Trade At Last**
		  ○ **Turquoise Plato Continuous™** has been rebranded to **Turquoise Dark Continuous**
		  ○ **Turquoise Plato Dark Lit Sweep™** has been rebranded to **Turquoise Dark Lit Sweep**
		• **Turquoise Plato Lit Auctions™** and **Turquoise Plato Lit Auctions™ Order Books** have been rebranded to **Turquoise Periodic Auctions** and **Turquoise Periodic Auctions Order Books**, respectively.
		• **Turquoise Lit™** and **Turquoise Lit™ Order Books** have been rebranded to **Turquoise Lit** and **Turquoise Lit Order Books**, respectively.
		• **Appital Turquoise BookBuilder™** has been rebranded to **Appital Turquoise BookBuilder**

4.0 Terms and Acronyms

Term	Meaning
Affirmation	Occurs when both trade sides of a BTF Pre-arranged Trade have been submitted and accepted.
Algorithmic Trading	Means trading in financial instruments where a computer algorithm automatically determines individual parameters of orders such as whether to initiate the order, the timing, price or quantity of the order or how to manage the Order after its submission, with limited or no human intervention, and does not include any system that is only used for the purpose of routing Orders to one or more trading venues or the processing of Orders involving no determination of any trading parameters or for the confirmation of Orders or the post-trade processing of executed transactions.
Block Trade Facility	Means Block Trade Facility 'BTF', which is a service which supports Internal and Committed BTF pre-arranged Trades within the **Turquoise Lit Order Book** originating from the **Appital Turquoise BookBuilder** service. For further information, please refer to the Turquoise Service and Technical Description Block Trade Facility document, within the Turquoise Document Library.
Call Market	Symbol Status Message sent via market data feeds to notify Participants of an impending **Turquoise Dark Uncross** within the **Turquoise Dark Order Book,** triggered by a **Turquoise Block Discovery** match. For further information, please see Section 5.4.1.
Corporate Action	Is an event initiated by a public company that will bring an actual change to the Financial Instrument issued by the company. Corporate Actions are typically agreed upon by a company's board of directors and authorised by shareholders. Examples of Corporate Actions include stock splits, dividends, mergers and acquisitions, rights issues and spin-offs.
Dark Lit Sweep Order	An IOC order that sweeps the **Turquoise Dark Order Book** first to try and find as much liquidity as possible at the PMP during continuous trading, before sweeping the **Turquoise Lit Order Book** with any remaining unexecuted quantity.
DTC	Means Depository Trust Company.
Dynamic Reference Price Collar	Means the range of prices, as determined by Turquoise Market Operations, on each side of the TDRP by which Reference Price Collars are established for the **Turquoise Lit** (excludes BTF pre-arranged Trades) and **Turquoise Periodic Auctions Order Books**.
EEA	Means European Economic Area.
Eligible Counterparties	means investment firms, credit institutions, insurance companies, UCITS and their management companies, pension funds and their management companies, other financial institutions authorised or regulated under European Union law or under the national law of a member state of the European Union, national governments and their corresponding offices including public bodies that deal with public debt at national level, central banks and supranational organisations, as further described in Article 30 of the Directive 2014/65/EU on markets in financial instruments – or would be authorised or regulated under the same if they were subject to European Union law.
ESMA	Means European Securities and Markets Authority.
Fill and Kill (FAK)	Also referred to as Immediate or Cancel (IOC).
Fill or Kill (FOK)	An Order that is executed immediately in its entirety or expired. I.e., The Order's quantity is equal to its Minimum Quantity.
Financial Instrument	Means a Financial Instrument eligible for trading on Turquoise in accordance with Section 4 of the Turquoise Rule Book and Section 4 of the Turquoise Europe Rule Book.

Term	Meaning
	A Financial Instrument can also be referred to as an 'Instrument or Security'.
General Clearing Member (GCM)	A General Clearing Member is an entity that has been approved by the clearing house for clearing of principal transactions and Participant transactions on behalf of GCM clients.
Good for Auction (GFA)	GFA Orders are only accepted into the **Turquoise Dark Uncross** (part of the **Turquoise Dark Order Book**) and the **Turquoise Periodic Auctions Order Book**. GFA Orders for the **Turquoise Dark Uncross** are expired either after attempting to match during the **Turquoise Dark Uncross** it is scheduled to participate in or at the time of the scheduled **Turquoise Dark Uncross** if the **Turquoise Dark Uncross** fails to happen due to a WFMC failure for example. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** GFA Orders' behaviour around the start of the Order Submission Interval. Within the **Turquoise Periodic Auctions Order Book**, GFA Orders will only be accepted if upon aggression the auction generates an Indicative Auction Price and Quantity greater than 0 (zero) or when there is an auction in progress which has an Indicative Auction Price and Quantity greater than 0 (zero), else the GFA Order will be expired immediately.
Good Till Date (GTD)	An Order with Expiry Time will be treated as a Day Order, expiring at the time specified that day or the close of the normal trading day on the day on which it was entered. Applicable on the FIX Trading interface only. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** GTD Orders' behaviour around the start of the Order Submission Interval.
Good Till Time (GTT)	An Order with an expiry time which will rest passively until executed or until the expiry time (or end of trading day) has been reached. TIF of GTT is used with expiry time in the Native trading interface, whilst TIF of GTD is used with expiry time in the FIX trading interface. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** GTT Orders' behaviour around the start of the Order Submission Interval.
Hidden Order	An Order which is non-displayed and not made transparent pre-trade.
Iceberg Limit Order	Means an Order where only a portion of the total Order quantity of an Iceberg Order is visible in the Order Book at any one time. Once the designated display quantity is filled, then the display quantity is automatically and immediately refreshed reducing the quantity held in reserve. The display quantity can either be refreshed as an explicit quantity or where enabled, Participants can elect to have their refreshed peak size randomised for their Order. On each peak refresh, the randomised iceberg peak will be 1 share plus between 100% and 120% of initial peak size. The total quantity of the Order is always reflected in the matching engine and eligible for execution. The display quantity must be submitted as an explicit quantity and not a percentage of the total quantity.
Immediate or Cancel (IOC)	Also referred to as FAK (Fill And Kill). An Order that is executed as far as possible immediately with any remaining part of the Order expired.
Integrated Order Book	Is referred to within this document as the **Turquoise Lit Order Book** and is the Order Book containing only visible Orders and non-displayed Orders meeting the Large in Scale requirement.
Large in Scale (LIS)	Means a size of Order as compared to the normal market size for the share or type of share in question and as determined by MiFIR.

Term	Meaning
Large in Scale (LIS) Waiver	Is a waiver used by the **Turquoise Lit** and **Turquoise Dark Order Books**, which permits Turquoise and Turquoise Europe to support Hidden Orders which are LIS without making them pre-trade transparent to the market. For further information on the LIS Waiver and its usage, please see in Section 5.2, Section 5.4 and Section 5.5.
Leaves Quantity	Is the unexecuted quantity (number of shares) of an Order.
Leaves Value	Is the value in the Financial Instruments trading currency of the unexecuted part of an Order calculated as follows: • Leaves Quantity of the Order x price = Leaves Value
Legal Entity Identifier (LEI)	Is a unique ID associated with a single corporate entity.
Limit Order	Means an Order to buy or sell Financial Instruments at a price equal to or better than a Limit Price specified by the Participant.
Limit Price	Is specified on a Limit Order by the Participant to buy or sell a Financial Instrument at a price equal to or better than the Limit Price.
Market Identifier Codes (MIC)	Are ISO10383 codes used by Turquoise to recognise its Business (Operating MIC) and Order Books (Segment MICs) as follows: Operating MIC: • **Turquoise Global Holding Limited (TRQX)** • **Turquoise Global Holdings Europe B.V. (TQEX)** Segment MICs for TRQX: • **Turquoise Lit Order Book (TRQX)** • **Turquoise Periodic Auctions Order Book (TRQA)** • **Turquoise Dark Order Book (TRQM)** Segment MICs for TQEX: • **Turquoise Lit Order Book (TQEX)** • **Turquoise Periodic Auctions Order Book (TQEA)** • **Turquoise Dark Order Book (TQEM)**
MiFID	Means the Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU.
MiFIR	Means the Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012.
Market Order	Means an Order to buy or sell Securities at the price available in the Order Book, subject to the Reference Price Collar.
Market Order execution Limit (MOEL)	The price beyond which the balance of a Market Order will be cancelled rather than executed.
Member Portal	Means the online communication tool operated by Turquoise for the management of member firm information.
Minimum Acceptable Quantity (MAQ)	Minimum Acceptable Quantity (multiple fill match) sent on an Order by Participants as a minimum quantity that is to be matched for any non-persistent Lit Order in the **Turquoise Lit Order Book**.
Minimum Execution Size (MES)	Minimum Execution Size (single fill match) sent on an Order by Participants as a minimum quantity that is to be matched for any non-displayed Order in the **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.
Minimum Order Value	Is a minimum value of an Order (upon entry or amendment) which must be met for the Order to be accepted by the **Turquoise Periodic Auctions Order Book**.

Term	Meaning
Minimum Quantity	Means the Order's MAQ or MES that is to be matched as a minimum during Continuous trading or matched during **Turquoise Dark Uncross** events or matched during **Turquoise Periodic Auctions** events.
Multi-lateral Trading Facility (MTF)	As defined in article 4(1)(22) of MiFID.
Negotiated Trade 'NT' Waiver	The NT Waiver is used within the **Turquoise Lit Order Book** (TGHL) to support BTF pre-arranged Trades, without making them pre-trade transparent to the market. For further information on the NT Waiver and its usage, please see in Section 5.2.
Non-displayed Order	An Order that is not displayed to the market (often referred to as a 'Hidden Order').
Non-persistent Order	An Order which may execute only against persistent Orders, but which will not itself rest on the Order Book. e.g., An Order with a TIF of IOC or FOK.
Order	Means an Order to buy or sell a Financial Instrument specified by the Participant.
Order Book	Turquoise provides trading services via 6 Order Books: • **Turquoise Lit Order Books (TRQX/TQEX)** • **Turquoise Periodic Auctions Order Books (TRQA/TQEA)** • **Turquoise Dark Order Books (TRQM/TQEM)**
Order Management Facility (OMF) Waiver	Is a waiver used by the **Turquoise Lit Order Book**, which permits Turquoise and Turquoise Europe to support Iceberg Limit Orders. Please note this is also mentioned in Section 5.2.
Order Submission Interval	The **Turquoise Periodic Auctions Order Book** Order Submission Interval is a period of time for Participants to send in their Orders to participate in the **Turquoise Periodic Auctions**. • The Order Submission Interval is set at 50ms (+/- 1ms) for all Financial Instruments. The **Turquoise Dark Order Book** Order Submission Interval is triggered by a **Turquoise Block Discovery** match and is a period of time after a Call Market has been sent, for Participants to send in their Orders to participate in the **Turquoise Dark Uncross**. Note: There is no Order Submission Interval for **Turquoise Dark Uncross** events started by the random timer. • The Order Submission Interval is set at 500ms (+/- 1ms) for all Financial Instruments (and is followed by a 500ms (+/- 1ms) random period for the uncross event to take place).
Participant	A Participant is a user who accesses Trading Services provided by TGHL and/or TGHE. A Participant may also be a Member of TGHL and/or TGHE.
Pegged Order	An Order to buy or sell a financial instrument at the PMP then PCP once published by the Primary market, until the end of the trading day (with the Turquoise Dark Trade at Last session).
Pegged Limit Order	An Order to buy or sell Financial Instruments at the PMP then PCP once published by the Primary market, until the end of the trading day (with the Turquoise Dark Trade at Last session) equal to or better than a Limit Price specified by the Participant. Additionally, within the **Turquoise Periodic Auctions Order Book**, when an Order cannot execute at the PMP due to its Limit Price, it will be treated as a Limit Order.
Persistent Order	An Order which will rest on the Order Book until execution, cancellation or expiry. e.g., An Order with a TIF of DAY, GTT/GTD or GFA.
Pre-arranged Trade	A trade whose specific terms have been arranged and agreed by both Trading Members prior to submission for Affirmation.

Term	Meaning
Primary market	Means the market on which the Financial Instrument was first admitted to trading (or the market on which Turquoise management determined a Financial Instrument has its primary listing).
Primary market Best Bid (PBB)	the Primary market's Best Bid price for a Financial Instrument.
Primary market Best Bid and Offer (PBBO)	The Primary market's Best Bid and Offer price for a Financial Instrument.
Primary market Best Offer (PBO)	the Primary market's Best Offer price for a Financial Instrument.
Primary market Closing Price (PCP)	Is defined as being equal to the close price published by the Primary markets.
Primary market Midpoint Price (PMP)	Is the Midpoint Price of the PBBO for a Financial Instrument. For further information, please see Section 7.5.
Professional Client *(also referred to as a 'Professional Investor')*	means a client who possesses the experience, knowledge and expertise to make its own investment decisions and duly assess the risk those investment decisions incurs, and meets – or would, if it were subject to European Union law, meet – the criteria of Annex II of the Directive 2014/65/EU on markets in financial instruments.
Reference Price Collar	Means the range of Prices within which aggressive Limit Orders will be accepted, and within which Market Orders will be executed.
Retail Client	means a client of a Member or Participant that is a natural person, or a legal entity exclusively and directly controlled by a natural person, excluding Eligible Counterparties and Professional Clients, but including opt-up Professional Clients.
Retail Order	means an Order that originates from a Retail Client and excludes Orders that originate from Algorithmic Trading. **Conditions/rules:** - The Retail Order specified by a Member or Participant to Turquoise must reflect the trading interest of a Retail Client. - To specify a Retail Order, Members or Participants need to specify FIX Tag 522 – OwnerType (FIX) or Owner Type (Native) as "Retail" on their Order. This can be specified on each Order or defaulted for a given TraderGroup (FIX) / CompID (Native).
Retail Liquidity Provider Order	A Retail Liquidity Provider Order is defined as an Order which has the following characteristics: - An Order submitted by a Turquoise Europe Participant that has signed up to provide liquidity under the terms of the relevant Retail Liquidity Provision Scheme; and - To specify a Retail Liquidity Provider Order, Members or Participants need to specify FIX Tag 522 – OwnerType (FIX) or Owner Type (Native) as "Retail Liquidity Provider" on their Order. This can be specified on each Order or defaulted for a given TraderGroup (FIX) / CompID (Native). Such Orders will only be able to execute against Retail Orders.
Reference Price Waiver (RPW)	Is a waiver used by the **Turquoise Dark Order Book**, which permits Turquoise and Turquoise Europe to support trading at the PBBO midpoint when the LIS Waiver is not used. For further information on the RPW and its usage, please see Section 5.4.
Self Execution Prevention (SEP)	This is optional functionality, which allows firms for most Order types to prevent themselves matching against their own contra Orders, by either having their resting Order or incoming Order expired.

Term	Meaning
Static Reference Price Collar	Means the range of prices, as determined by Turquoise Market Operations, on each side of the TSRP by which Reference Price Collars are established for the **Turquoise Lit** (excludes BTF pre-arranged Trades) and **Turquoise Periodic Auctions Order Books**. Note: When **Turquoise Periodic Auctions** Financial Instruments return from a Halt, the TSRP used is usually the closing price on the Primary market, rather than the last Auction-uncrossing price disseminated by the Primary market for the Financial Instrument.
Time in Force (TIF)	Defines how long an Order is valid for.
Trade	Means an agreement between 2 counterparties to Buy/Sell shares in a Financial Instrument at a specific Price.
Trade Liquidity Indicator	Identifies the trading session the Trade was executed in. i.e., **Turquoise Dark Uncross** or **Turquoise Dark Continuous** trading, e.g. Added liquidity, Removed Liquidity, etc.
Trade Venue Transaction Indication Code (TVTIC)	Means Trading Venue Transaction Identification Code which is used for transaction reporting purposes.
Turquoise Dark Continuous and Turquoise Dark Uncross	Means the execution instruction selected by the Participant on Order entry whereby its Order is open to matching during Continuous Trading and any unexecuted volume will rest in the **Turquoise Dark Order Book** open to '**Turquoise Dark Continuous**' matching and matching during the randomised **Turquoise Dark Uncross** events.
Turquoise Dark Continuous Only	Means the execution instruction selected by the Participant on order entry whereby its Order will only be open to matching against contra-side Orders resting during the **Turquoise Dark Continuous** trading sessions.
Turquoise Dynamic Reference Price (TDRP)	Prior to the first Trade of the day on Turquoise the TDRP will be undefined unless Turquoise determines a reference price (usually the closing price on the Primary market adjusted for corporate actions or other market activity). Thereafter, the TDRP will reflect the Turquoise Last Trade Price (TLTP). Turquoise Market Operations can override the TDRP if appropriate.
Turquoise Global Holdings Limited (TGHL)	TGHL is majority owned by London Stock Exchange Group (LSEG) in partnership with the user community and operates an MTF trading UK, Swiss, EEA and US Financial Instruments. TGHL is also referred to as Turquoise.
Turquoise Global Holdings Europe B.V. (TGHE)	TGHE is a wholly-owned subsidiary of TGHL and operates an MTF trading EEA Financial Instruments. *It does not support the trading of Swiss (Equities) or UK or US Financial Instruments*. TGHE is also referred to as Turquoise Europe.
Turquoise Last Trade Price (TLTP)	Is the price of the last Trade on the: - **Turquoise Lit Order Book**, for the **Turquoise Lit Order Book**. This is set by any trade that occurs during continuous trading. Prior to the first Trade of a trading day, the Last Trade Price is deemed to be undefined. - **Turquoise Periodic Auctions Order Book**, for the **Turquoise Periodic Auctions Order Book**. This is set by any trade that occurs during **Turquoise Periodic Auctions**. Prior to the first Trade of a trading day, the Last Trade Price is deemed to be undefined.
Turquoise Lit Order Book	Means the **Turquoise Lit Order Book** containing only visible Orders and non-displayed Orders meeting the Large in Scale requirement. The BTF service is also supported within the **Turquoise Lit Order Book**.
Turquoise Block Discovery	Facilitates the trading of larger 'Parent' or 'Block' Orders by seeking and identifying block matching opportunities, between electronic Block Indications / manual Client Block Indications (with a quantity above or equal to the Minimum Indication Size threshold) and Block Discovery Notifications. Where matches are identified, Participants are required to convert their electronic Block Indications / manual Client Block Indications by submitting firm Qualifying Block Orders, designated as eligible for existing **Turquoise Dark Uncross** events that already exist as part of the

Term	Meaning
	Turquoise Dark Order Book to trade at the Midpoint of the PBBO 'PMP', then PCP once published by the Primary market, until the end of the trading day. For further information, please see the Turquoise Block Discovery Trading Services Description.
Turquoise Periodic Auctions Order Book	Facilitates the trading of non-displayed Limit Orders and/or Pegged Orders to the PMP/PBB/PBO (with or without a Limit Price, where when an Order cannot execute at the PMP/PBB/PBO respectively due to its Limit Price, it will be treated as a Limit Order), by seeking and identifying matching opportunities. When matching opportunities are identified, an indicative auction price and volume is published.
Turquoise Dark Order Book	Means the Order Book containing only non-displayed Orders pegged to the PMP, then PCP once published by the Primary market, until the end of the trading day.
Turquoise Dark Trade At Last	Is a matching phase within the trading session within the **Turquoise Dark Order Book** (including **Turquoise Block Discovery**), which matches Orders (and electronic Block Indications / manual Client Block Indications) at the PCP once published by the Primary market, until the end of the trading day.
Turquoise Dark Uncross	A **Turquoise Dark Uncross** event supports the submission and matching of persistent Order types. Participants on Order entry must select the **Turquoise Dark Uncross** execution instruction for its Order to be open to matching against contra-side Orders resting in the **Turquoise Dark Order Book** during randomised **Turquoise Dark Uncross** events. **Turquoise Dark Uncross** events are started either by the continuous matching of electronic Block Indications (BIs) and eligible Block Discovery Notifications (BDNs) or by a random timer, whichever happens sooner. • **Turquoise Dark Uncross** events started by the continuous matching of a BIs and or BDNs will take place at a random point between 0.5 seconds and 1 second after the Order Submission Interval. A call Market is published to signal the start of these events. Between the start of an Order Submission Interval and these types of **Turquoise Dark Uncross** events, continuous matching of Block Indications (BIs) / eligible BDNs and manual Client Block Indications (CBIs) is paused. • **Turquoise Dark Uncross** events started by the random timer will take place at a random point between 5 second and 10 seconds, from the last **Turquoise Dark Uncross** event. A Call Market is not published for these events, and there is no Order Submission Interval.
Turquoise Dark Uncross then Continuous	Means the execution instruction selected by the Participant on Order entry whereby its Order is not open to matching during continuous trading until it has participated in a **Turquoise Dark Uncross** event, which has a valid PMP which has passed the **Turquoise Dark** WFMC. Any unexecuted volume will then rest in the **Turquoise Dark Order Book** open to '**Turquoise Dark Continuous**' matching and matching during subsequent randomised **Turquoise Dark Uncross** events.
Turquoise Retail Max	**Turquoise Retail Max** matching provides the opportunity for Retail Liquidity Providers to provide liquidity for Retail Clients (within **Turquoise Periodic Auctions Order Books**), with pre-trade transparency throughout the trading day.
Turquoise Static Reference Price (TSRP)	The Turquoise Static Reference Price is a Turquoise determined reference price (usually the closing price on the Primary market, adjusted for corporate actions or other market activity) at start of Day. During trading hours, the TSRP will be updated to be the last Auction-uncrossing price disseminated by the Primary market for the Financial Instrument. Turquoise Market Operations can override the TSRP if appropriate. Note: When **Turquoise Periodic Auctions** Financial Instruments return from a Halt, the TSRP used is usually the closing price on the Primary market, rather than the last Auction-uncrossing price disseminated by the Primary market for the Financial Instrument.
Visible Orders	Means displayed Orders contained in the **Turquoise Lit Order Book**.

Term	Meaning
Well Formed Market Checks (WFMC)	Are a series of checks performed to check the Primary market reference prices used within the **Turquoise Dark** and **Turquoise Periodic Auctions Order Books** are well formed. For further information, please see Section 8.4.

For Turquoise and Turquoise Europe terms, as defined in the respective Rulebooks, please refer to:

Turquoise Document Library | LSEG

5.0 Market Structure, Products and Reference Data

Turquoise and Turquoise Europe offer Pan-European and US trading in approximately 4,300 Financial Instruments and ETFs from the following Markets:

Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States.

5.1 Turquoise Lit, Turquoise Periodic Auctions and Turquoise Dark Order Books

Turquoise operates six discrete Order Books; three for Turquoise (TGHL) and three for Turquoise Europe (TGHE):

- **Turquoise Lit Order Books** – which are transparent on a pre-trade and post-trade basis
- **Turquoise Periodic Auctions Order Books** – which are transparent on a pre-trade and post-trade basis
- **Turquoise Dark Order Books** – which are non-displayed pre-trade and transparent on a post-trade basis only

Most of the Financial Instruments are available for trading all Order Books, except for US Financial Instruments, Poland and Luxembourg Financial Instruments, which are available only in the **Turquoise Lit Order Book.**

Country / Market	Turquoise (TGHL)			Turquoise Europe (TGHE)		
	Turquoise Lit	Turquoise Dark	Turquoise Periodic Auctions	Turquoise Lit	Turquoise Dark	Turquoise Periodic Auctions
	(TRQX)	(TRQM)	(TRQA)	(TQEX)	(TQEM)	(TQEA)
Austria	☑	☑	☑	☑	☑	☑
Czech Republic	☑	☑	☑	☑	☑	☑
Belgium	☑	☑	☑	☑	☑	☑
Denmark	☑	☑	☑	☑	☑	☑
Finland	☑	☑	☑	☑	☑	☑
France	☑	☑	☑	☑	☑	☑
Germany	☑	☑	☑	☑	☑	☑
Hungary	☑	☑	☑	☑	☑	☑
Ireland	☑	☑	☑	☑	☑	☑
Italy	☑	☑	☑	☑	☑	☑
Luxembourg	☑	☒	☒	☑	☒	☒
Netherlands	☑	☑	☑	☑	☑	☑
Norway	☑	☑	☑	☑	☑	☑
Poland	☑	☒	☒	☑	☒	☒
Portugal	☑	☑	☑	☑	☑	☑
Spain	☑	☑	☑	☑	☑	☑
Sweden	☑	☑	☑	☑	☑	☑
Switzerland	☑	☑	☑	☑ Crypto ETNs	☑ Crypto ETNs	☑ Crypto ETNs
United Kingdom	☑	☑	☑	☒	☒	☒
United States	☑	☒	☒	☒	☒	☒

5.2 Turquoise Lit Order Books

Turquoise Lit Order Books support continuous trading and executes persistent Orders on a Price, Display type, Time priority basis.

Turquoise Lit Order Books are transparent pre-trade and post-trade, and a full depth-of-book feed including all displayed persistent orders and all Trades are published to Participants and market data vendors.

Supported persistent Order types are Limit Orders (displayed), Iceberg Orders (partly displayed)[3], LIS Hidden Orders (non-displayed)[4].

- The 'Leaves Value' of an Order is calculated as follows:
- Leaves Quantity of Order x Limit Price.

The LIS threshold of each Financial Instrument is calculated annually and can be derived from daily reference data as published in the following Daily Symbol reference data file:

- TRQX Symbol Reference

Supported non-persistent Order types, all of which are non-displayed, are IOC/FAK Orders, FOK Orders and Market Orders. Minimum Accepted Quantity (MAQ) is supported on non-persistent Order types only.

Internal and Committed BTF pre-arranged Trades are supported for TGHL using the NT Waiver for equities and LIS Waiver for non-equities. For TGHE they are supported using the LIS Waiver for both equities and non-equities. For further information, please refer to the Turquoise Service and Technical Description Block Trade Facility document, within the Turquoise Document Library.

5.3 Turquoise Periodic Auctions Order Books

Turquoise Periodic Auctions Order Books support frequent auction trading and executes persistent Orders only (and are independent from the **Turquoise Lit Order Books**).

- **Turquoise Periodic Auctions** determines the auction price by maximising the executable volume considering each Limit Order Price, the PMP, the Primary Best Bid 'PBB' price (when there is an Order Pegged to the PBB) and the Primary Best Offer 'PBO' price (when there is an Order pegged to the PBO). When the maximised executable volume is equal at multiple price points, the midpoint price or the price nearest the midpoint price is selected. When a well-formed PBBO is not available (e.g., because a Financial Instrument is in an auction phase on its Primary market, the PBBO is crossed/locked or because the Primary Market fails the Well Formed Market Checks defined by Turquoise), no matching occurs. The Well Formed Market Checks are described in Section 8.4

- Once the **Turquoise Periodic Auctions** price has been determined and the random timer for the auction end has been reached, it executes persistent Orders that can trade at the **Turquoise Periodic Auctions** price on a Member Group Priority** (in time order) basis first, followed by Member Priority** (in time order) basis second. Once all Member Group, and then Member Priority matching has been completed it executes remaining quantity using Time priority. Member Group and Member Priority** are optional and available upon request.** For further information on Member Group and Member Priority and 'opting in', please see Section 9.10.

- **Turquoise Retail Max** is a service within the **Turquoise Periodic Auctions Order Book** which supports Orders flagged as 'Retail Orders' and 'Retail Liquidity Provider Orders'. Retail Orders can match with any Order. Retail Liquidity Provider Orders can only match with Retail Orders.

    - To submit 'Retail' or 'Retail Liquidity Provider' Orders, Member firms need to meet the appropriate definitions and be permissioned. Once permissioned, Member firms can either flag each Order; or they can elect to have Retail or Retail Liquidity provider flags defaulted onto every order's specified TraderGroup (FIX) / CompID (Native).

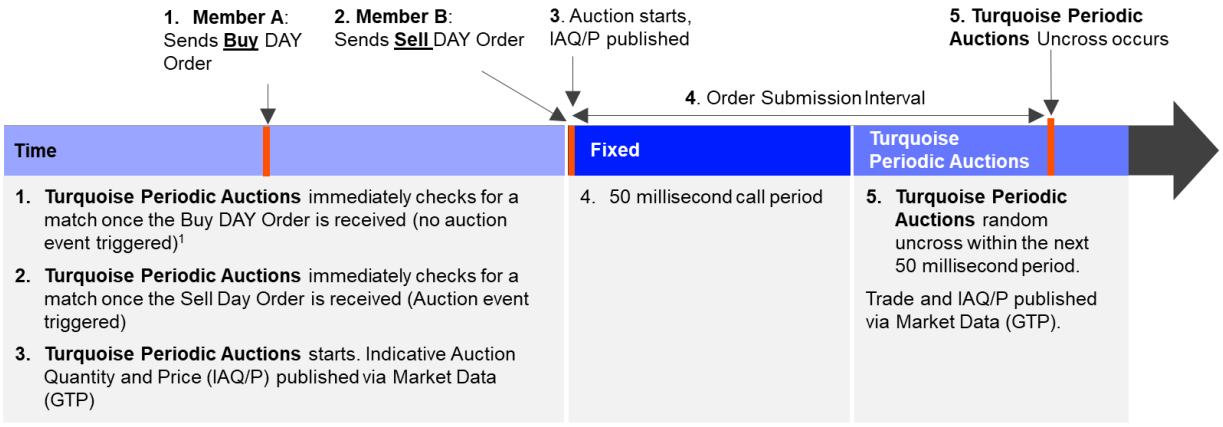
[3] Turquoise and Turquoise Europe are permitted to accept equity and non-equity Iceberg Orders using an OMF Waiver and subject to it having an Order value greater than EUR 10,000.
[4] Turquoise and Turquoise Europe are permitted to accepted Hidden Orders greater than or equal to LIS, using a LIS Waiver.

- Member firms will be able to make these requests via the Member Portal; or by contacting the Technical Account Management team:

  londontam@lseg.com
  +44 (0)20 7797 3939

- **Turquoise Periodic Auctions** are started when a Buy and Sell Order creates a crossed book.
- **Turquoise Periodic Auctions** will last for a random period between 50 and 100 milliseconds.
- Should Turquoise place a Financial Instrument into a halt during this time, the **Turquoise Periodic Auctions** will be stopped. When a halt is removed for a Financial Instrument, **Turquoise Periodic Auctions** will commence when there is a crossed book.

The following diagram shows how the **Turquoise Periodic Auctions** random timer starts when a crossed Order Book is identified:



[1] Note: If a **Turquoise Periodic Auctions** call period has started, new orders received will be added to the Order Book and an updated IAQ/P will be published if there is a change from the previously published IAQ/P. Additionally, a PBBO change may occur during the call period and has the potential to lead to a change in the IAQ/P.

Turquoise Periodic Auctions Order Books are transparent pre-trade and post-trade. When matching opportunities are identified, Indicative Auction Price and Aggregate Quantity (no imbalances) are published in real-time pre-trade and any resulting Trades are published individually to Participants and market data vendors. Additionally, for **Turquoise Retail Max**, a Level 1 Top of Book will be published comprising of the best bid price and aggregated bid size at that price, and the best offer price and aggregated offer size at that price; based on all open Retail Liquidity Provider Orders (Limit Orders only). This includes publication of Retail Liquidity Provider Orders with a TIF of GFA when the IAP/Q is = or > 0.

Supported persistent Order types are Limit Orders and bid/midpoint/offer Pegged Orders to the PBB/PMP/PBO (with or without a Limit Price, where when an Order cannot execute at the PBB/PMP/PBO due to its Limit Price, it will be treated as a Limit Order), with a Time in Force (TIF) of DAY or GFA. GFA Orders will only be accepted if upon aggression the auction generates an Indicative Auction Price and Quantity greater than 0 (zero) or when there is an auction in progress which has an Indicative Auction Price and Quantity greater than 0 (zero), else the GFA Order will be expired immediately. Individual Orders are not displayed in pre-trade market data. Minimum Quantity (MES) is supported on both persistent and non-persistent Order types.

Market Orders are not currently supported.

5.3.1 Turquoise Periodic Auctions Order Submission Interval

Turquoise Periodic Auctions have a fixed 50ms Order Submission Interval.

At the end of the Order Submission Interval, **Turquoise Periodic Auctions** will uncross and execute orders when possible at a random point during the next 50ms.

Orders may be entered, amended and deleted throughout the fixed and random intervals.

5.3.2 Turquoise Periodic Auctions Deferred Cancellation (Opt-In)

When a **Turquoise Periodic Auctions** is in progress with an Indicative Auction Price and Quantity (IAP/Q) greater than 0, TGHL and TGHE Members will be able to opt-in at SenderCompID (FIX) or CompID (Native) level, to defer their cancellation request until the end of the auction, using a single Order Cancel Request message only. When the IAP/Q is 0, Orders will be immediately cancelled.

TGHL and TGHE Trading Members will be able to "opt in" via the Member Portal; or by contacting the Technical Account Management team:

londontam@lseg.com
+44 (0)20 7797 3939

TGHL and TGHE Members will still be able to cancel their orders via a SenderCompID (FIX) or CompID (Native) not opted-in, or via mass cancel messages or cancel on disconnect features (where the opt-in doesn't apply).

TGHL and TGHE Members will also be able to amend their Order at any time, using an Order Cancel/Replace message.

5.4 Turquoise Dark Order Books

Turquoise Dark Order Books are 'non-displayed' price-referencing Order Books:

- At the start of the trading day, Trades take place at a Financial Instrument's Primary Market Midpoint Price (PMP) until the Primary market's closing auction commences, then in the **Turquoise Dark Trade At Last** matching phase, Trades take place at the Primary market Closing Price (PCP) once received, until the end of the trading day.
  - When a well-formed PMP is not available (e.g., because a Financial Instrument is in an auction phase on its Primary market, the PBBO is crossed/locked or because the Primary market fails the Well Formed Market Checks defined by Turquoise), no matching occurs.
  - When a well-formed PCP is not available (e.g. because a Financial Instrument has received 2 different valid PCPs that trading day or a manual PCP correction, the Primary market fails the Well Formed Market Checks defined by Turquoise), no matching occurs.
  - The Well Formed Market Checks for PMP and PCP are described in Section 8.4.
- It executes persistent Orders on a Size[5], Time priority basis by starting with the largest Order on the buy side of the order book and offers both Continuous and **Turquoise Dark Uncross** trading which helps achieve larger fill sizes. Optional Member Priority Matching** is available upon request.
  ** For further information on Member prioritisation and 'opting in', please see Section 9.10.

Turquoise Dark Order Books are transparent post-trade but not pre-trade, and hence only trades are published. All Orders are non-displayed.

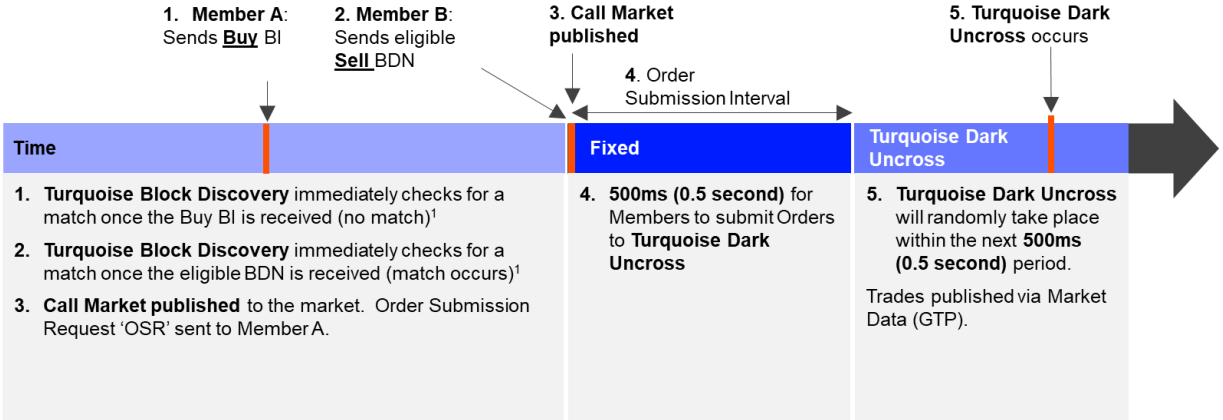
Turquoise Dark Order Books will operate with two matching modes:

- **Turquoise Dark Continuous** – allowing the submission and matching of both persistent and non-persistent Order types.
- **Turquoise Dark Uncross** – allowing the submission and matching of persistent Order types only during **Turquoise Dark Uncross** events, which occur repeatedly intraday. **Turquoise Dark Uncross** events are started either by the continuous matching of electronic Block Indications (BIs) and eligible Block Discovery Notifications (BDNs)[6] or by a random timer, whichever happens sooner.
  - **Turquoise Dark Uncross** events started by the continuous matching of a BIs and or BDNs will take place at a random point between 0.5 seconds and 1 second after the Order Submission Interval. A call Market is published to signal the start of these events. Between the start of an Order Submission Interval and these types of **Turquoise Dark Uncross** events, continuous matching of Block Indications (BIs) / eligible BDNs and CBIs is paused.

[5] Size is defined as the Order's original Order quantity. When the original Order quantity is amended up, the Order's size priority may increase and when amended down, the Order's priority may decrease (depending upon other Orders resting in the Order book at the time).
[6] An eligible BDN has a remaining value equal to or greater than 25% of LIS when Reference Price Waiver Trading is allowed OR 100% of LIS when Reference Price Waiver Trading is not allowed.

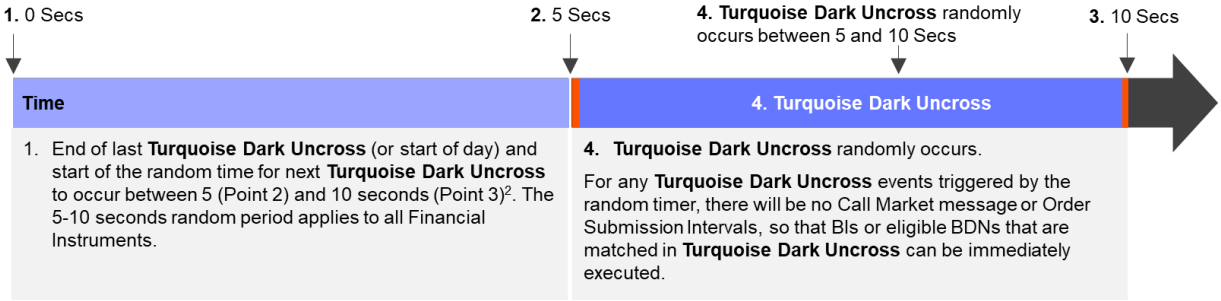
- **Turquoise Dark Uncross** events started by the random timer will take place at a random point between 5 second and 10 seconds, from the last **Turquoise Dark Uncross** event. A Call Market is not published for these events, and there is no Order Submission Interval.
- These matching modes are both supported when matching orders at the PMP and PCP (in the **Turquoise Dark Trade At Last** matching phase).

The following diagram shows how the **Turquoise Dark Uncross** works, when initiated by a **Turquoise Block Discovery** continuous match of BIs (and/or eligible BDNs).



[1] Note: If a **Turquoise Dark Uncross** event is already under way and the Order Submission Interval has already started, **Turquoise Block Discovery** waits for the **Turquoise Dark Uncross** event to complete before checking for a match between BIs/eligible BDNs and CBIs.

The following diagram shows how the **Turquoise Dark Uncross** random timer works:



[2]Note: If a **Turquoise Dark Uncross** event is started by **Turquoise Block Discovery** matching BIs/eligible BDNs, the 5-10 second timer will be reset at the end of the **Turquoise Dark Uncross** event.

Please refer to Section 5.4.1 for more information on the Order Submission Interval, Call Market and timings of the **Turquoise Dark Uncross** event.

Persistent Orders can be designated to Trade in one or both of Continuous trading and in the **Turquoise Dark Uncross**, and by default will be eligible for both.

Orders designated for **Turquoise Dark Uncross** Only will not interact with non-persistent (immediacy demanding) Orders. This provides Participants with discretion over whether to interact with immediacy demanding flow, or to constrain interaction to patient flow.

Non-persistent Orders are only accepted for Continuous trading.

Unexecuted Orders will automatically persist into the **Turquoise Dark Trade At Last** matching phase until the end of the trading day (unless cancelled).

Supported persistent Order types are Midpoint Pegged Orders (with or without a Peg Cap/Floor), Limit Orders (which are interpreted as Midpoint Peg Orders with a Peg Cap/Floor), and Market Orders (which are interpreted as Midpoint Peg Orders without a Peg Cap/Floor).

Supported non-persistent Order types are IOC/FAK Orders and FOK Orders. For all Order types a Limit Price or Peg Cap/Floor determines an Order's eligibility to be matched at the prevailing PMP or PCP and will not otherwise influence the execution price.

Turquoise Dark Order Books are permitted to accept persistent and non-persistent Order types using the Reference Price Waiver (RPW) and Large in Scale (LIS) Waiver. When **Turquoise Dark Order Books** are unable to accept Orders under the RPW (e.g., due to the ESMA Double Cap Mechanism), Turquoise will continue to accept all persistent and non-persistent Order types where the remaining ('Leaves') value is equal to or above the LIS threshold at the time of entry or amendment but reject new Orders or amendments which have a 'Leaves' value less than the LIS threshold for the Financial Instrument.

- The 'Leaves Value' of a Buy Order is calculated as follows:
  - Leaves Quantity of Order x Limit Price, where Limit Price is < or = to PBBO Mid-Price (PMP); or
  - Leaves Quantity of Order x PBBO mid-price (PMP), where Market Order* or where Limit Price is > or = to PBBO Mid-Price (PMP)**
- The 'Leaves Value' of a Sell Order is calculated as follows:
  - Leaves Quantity of Order x Limit Price, where Limit Price is > or = to PBBO Mid-Price (PMP); or
  - Leaves Quantity of Order x PBBO mid-price (PMP), where Market Order* or where Limit Price is < or = to PBBO Mid-Price (PMP)**

**When the PBBO Mid-Price (PMP) is not available to value Market Orders, the TSRP is used.*

***When the PBBO Mid-Price (PMP) is not available to value Limit Orders, the Order's Limit Price is used.*

The LIS threshold of each Financial Instrument is calculated annually and can be derived from daily reference data as published in the following Daily Symbol reference data file:

- TRQX Symbol Reference

For further information on whether an Order in a Financial Instrument will be accepted under the RPW, TQ501 – Guide to Reference Data Services defines the Instrument Files (YYYYMMDD_TRQX_Instrument.csv for TGHL and YYYYMMDD_TQEX_Instrument.csv for TGHE) which has a field "RPW Allowed", which is populated with a 'Y' when Orders less that the LIS threshold are allowed, and 'N' when they are not.

Minimum Quantity (MES) is supported on both persistent and non-persistent Order types. Participants can specify (per User) whether MES will apply to the first execution only (default for non-persistent Orders) or to persist for the lifetime of the Order (default for persistent Orders). For more details, please refer to Section 9.6.

Please see Section 9.7.1 for details of **Turquoise Dark Uncross** Orders' behaviour around the start of the Order Submission Interval.

Member Firms can elect on a per user basis to add a Block Discovery Notification (BDN) by default applied to their Order *(excluding QBOs)*, when they send in an OrderSubType of 'Order'. To change your OrderSubType default a member firm should contact Turquoise Market Operations at London Stock Exchange:

- market.operations@tradeturquoise.com
- +44 (0)20 7382 7676

5.4.1 Turquoise Dark Order Submission Interval and Call Market

Turquoise Dark Uncross events started by the continuous matching of a BIs and or BDNs (i.e. a **Turquoise Block Discovery** match), will trigger the start of an Order Submission Interval and a Call Market message (a Symbol Status Message) is sent via market data feeds to notify of an impending **Turquoise Dark Uncross** within **Turquoise Dark Order Books**.

An Order Submission Interval of 500ms (+/- 1ms) follows the publication of each Call Market message which provides a period for Participants to send Orders specifically for the next **Turquoise Dark Uncross**.

At the end of the Order Submission Interval, **Turquoise Dark Uncross** will uncross and execute orders when possible at a random point during the next 500ms (0.5 seconds).

5.4.2 Turquoise Block Discovery

Turquoise Block Discovery facilitates the trading of larger "Parent" or "Block" Orders by seeking and identifying block matching opportunities, between electronic Block Indications / manual Client Block Indications (with a quantity above or equal to the Minimum Indication Size threshold) and Block Discovery Notifications. Where matches are identified, Participants are required to convert their Block Indications by submitting firm Qualifying Block Orders, designated as eligible for existing **Turquoise Dark Uncross** events that already exist as part of **Turquoise Dark Order Books**, which match Orders and Trade at the midpoint of the PBBO.

For further information, please see the **Turquoise Block Discovery** Trading Services Description.

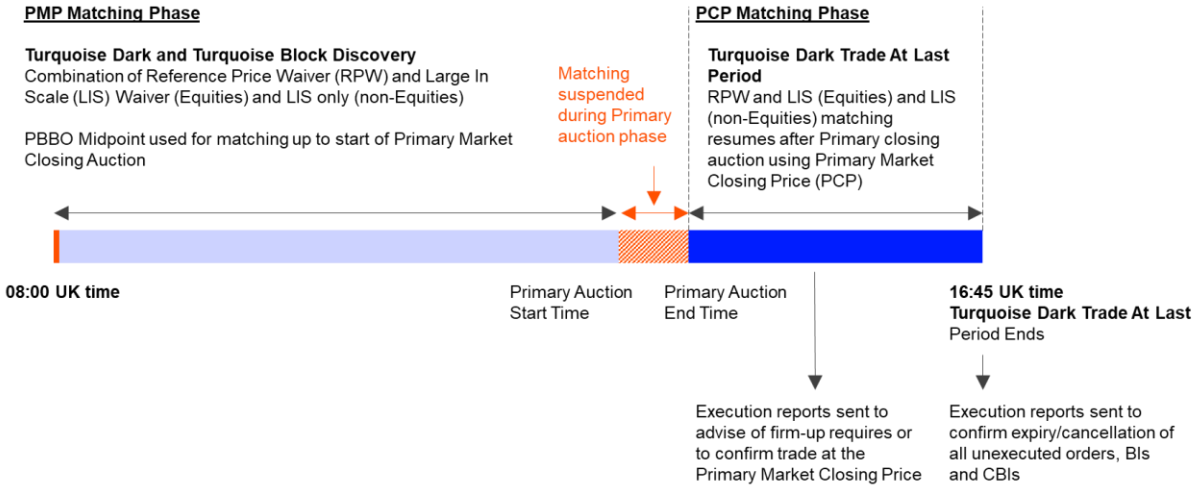
Trading Members of TGHL and TGHE can view whether they have access to **Turquoise Block Discovery** via the Member Portal.

5.4.3 Turquoise Dark Trade at Last

Turquoise Dark Trade at Last allows Participants to match Orders and Trade at the Primary market's Closing Price (PCP) at the end of the trading day (within **Turquoise Dark Order Books**).

As defined in Section 5.4, the **Turquoise Dark Trade at Last** is an extension to **Turquoise Dark Order Books** trading services, where Turquoise and Turquoise Europe support matching at the PCP within continuous matching, **Turquoise Dark Uncross** events (including **Turquoise Block Discovery**), with all order types and features supported.

Participants can enter Orders into the **Turquoise Dark Trade at Last**, matching phase as soon as the Primary market commences its call period for its closing auction. Unexecuted Orders (not executed at the PMP earlier in the trading day) will automatically persist into the **Turquoise Dark Trade at Last** matching phase until the end of the trading day (unless cancelled). **Turquoise Dark Trade at Last** matching will only commence if a Primary market publishes a valid PCP before 16:45 UK time. If for any reason the Primary market doesn't publish a PCP before this time (for example due to price monitoring auction extensions), no **Turquoise Dark Trade at Last**, matching will occur that trading day.



5.5 Lot Size

A lot size of one (1) is used for all the Financial Instruments in all Order Books.

5.6 Tick Sizes

Turquoise Lit (excludes BTF pre-arranged Trades)**, Turquoise Periodic Auctions** and **Turquoise Dark Order Books** follow the tick size structure as defined in Section 3.5.1 of TQ501 – Guide to Reference Data Services and in the Price Tick File (YYYMMDD_TRQX_PriceTick.csv for TGHL and YYYMMDD_TQEX_PriceTick.csv for TGHE). All Orders submitted to the **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** with a Limit Price must conform to the tick structure published by Turquoise, otherwise they will be rejected.

Turquoise Periodic Auctions and **Turquoise Dark Order Books** will publish trades using half tick sizes (when applicable), as it uses the PBBO midpoint. Management of changes to tick size structures is handled by Turquoise Market Operations. Changes made by Market Operations are subsequently communicated to Participants.

Turquoise advises the specific tick size structure via a daily reference file published in the Turquoise Reference Data section on its website. Turquoise endeavours to provide a reasonable period of notice prior to implementing any change.

BTF pre-arranged Trades can be submitted into the **Turquoise Lit Order Books** off tick with a price with no more than 5 decimal places in the instrument's currency (and do not need to be a multiple of the relevant tick size of the instrument). For further information in respect to Tick Sizes , please refer to the Turquoise Service and Technical Description Block Trade Facility document, within the Turquoise Document Library.

5.7 Currencies and Lines Traded

Trading is supported for the following currencies:

GBX (for clarification, this acronym refers to GBP in pence), EUR, CHF, DKK, NOK, PLN, SEK, USD, CZK and HUF.

TGHL supports billing in GBP and EUR, not in local currencies.

TGHE only supports billing in EUR, again not in local currencies

5.8 Reference Data/Financial Instrument Identification

All messages use the common symbology naming scheme; a string that consists of the Primary market symbol, plus an identifier for the Primary market e.g., "RDSAI" and "RDSAa". Additionally, Orders submitted via the FIX Trading gateway can use a combination of ISIN, Currency and Primary market MIC to specify the Financial Instrument.

For further information on Reference Data see Turquoise Market Data specification document "TQ501 – Guide to Reference Data Services".

For further information on the FIX Trading Gateway refer to the specification document "TQ201 – FIX 5.0 Trading Gateway".

5.9 Pre-Trade Large in Scale (LIS) Thresholds

For MiFID Financial Instruments, ESMA defines a Pre-Trade LIS threshold above which supports the following:

- Limit Orders may be hidden in the **Turquoise Lit Order Books**.
- BTF Pre-arranged Trades to be hidden within **Turquoise Lit Order Books**.
- All Orders may persist in **Turquoise Dark Order Books** when they have a persistent TIF (i.e., DAY, GTD/GTT, GFA) and a 'Leaves Value' equal too, or greater than the LIS upon Order entry (or amendment).

5.9.1 Eligibility to qualify as LIS under MiFIR

An Order shall be considered to be large in scale compared with **normal market size** if it is equal to or larger than the minimum size of Order. For the purposes of determining whether an Order is large in scale compared to **normal market size**, all Financial Instruments admitted to trading on a regulated market shall be classified in accordance with their average daily turnover, which shall be calculated in accordance with the procedure set out by ESMA.

The ESMA website maintains the reference values and FX rates used for determining the Pre-Trade LIS criteria are as follows:

Orders large in scale compared with normal market size for shares and depositary receipts

Class in terms of Average Daily Turnover	ADT <€50K	€50K ≤ ADT <€100K	€100K ≤ ADT < €500K	€500K ≤ ADT < €1M	€1M ≤ ADT < €5M	€5M ≤ ADT < €25M	€25M ≤ ADT < €50M	€50M ≤ ADT < €100M	ADT ≥ €100M	All ETFs
Min Size of Orders qualifying as LIS compared with normal market size	€15K	€30K	€60K	€100K	€200K	€300K	€400K	€500K	€650K	€1M

Orders large in scale compared with normal market size for ETCs determined to have a liquid and non-liquid market

Bond Type – ETCs	Liquid	Non-Liquid
Min Size of Orders qualifying as LIS compared with normal market size	€1,000,000	€900,000

Pre-Trade LIS Values in the Financial Instrument's trading currency known as "Pre-Trade LIS Value (Currency)" are defined in Sections 3.3.1 and 3.6.1 and Liquidity Indicator known as "Liquid" is defined in Section 3.3.1 of TQ501 – Guide to Reference Data Services. They are available in the Instrument File (YYYYMMDD_TRQX_Instrument.csv for TGHL and YYYYMMDD_TQEX_Instrument.csv for TGHE) and Block Discovery Min Values (YYYYMMDD_TRQX_BlockDiscoveryMinValues.csv for TGHL and YYYYMMDD_TQEX_BlockDiscoveryMinValues.csv for TGHE), respectively.

5.10 US Financial Instruments

The following applies for US Financial Instruments

- LCH Limited clears all US Financial Instruments for the **Turquoise Lit Order Book** for TGHL. Firms are required to have a settlement account with Depository Trust Company (DTC), either directly or indirectly via a GCM.

5.11 Spanish Financial Instruments

The following applies for Spanish Financial Instruments.

- LCH Limited, Cboe Clear Europe N.V. (previously EuroCCP N.V.) and SIX x-clear clear all Spanish Financial Instruments for **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.

5.12 Polish Financial Instruments

The following applies for Polish Financial Instruments.

- LCH Limited and Cboe Clear Europe N.V. (previously EuroCCP N.V.) clear all Polish Financial Instruments for **Turquoise Lit Order Books.**

5.13 Czech Financial Instruments

The following applies for Czech Financial Instruments.

- LCH Limited, Cboe Clear Europe N.V. (previously EuroCCP N.V.) and SIX x-clear clear all Czech Financial Instruments for **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise** Dark Order Books.

5.14 Hungarian Financial Instruments

The following applies for Hungarian Financial Instruments.

- LCH Limited, Cboe Clear Europe N.V. (previously EuroCCP N.V.) and SIX x-clear clear all Hungarian Financial Instruments for **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise** Dark Order Books.

5.15 Euronext Growth Financial Instruments

The following applies for Euronext Growth Financial Instruments.

- LCH Limited, Cboe Clear Europe N.V. (previously EuroCCP N.V.) and SIX x-clear clear all Euronext Growth Financial Instruments for **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.

5.16 Euronext Financial Instruments

The following applies for Euronext Markets - Paris, Amsterdam, Brussels, Lisbon, Dublin, Oslo and Milan (excludes Euronext Growth) Financial Instruments.

- LCH Limited, Cboe Clear Europe N.V. (previously EuroCCP N.V.) and SIX x-clear clear all Euronext Financial Instruments for **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.

5.17 Crypto ETN Financial Instruments

The following applies for Crypto ETN Financial Instruments for - Frankfurt (XETR), Zurich (XSWX) and Euroclear Bank issued Crypto ETNs where the listed market can be Frankfurt (XETR) or Zurich (XSWX):

- LCH Limited and SIX x-clear clear all Crypto ETN Financial Instruments for **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.

6.0 Membership, Sponsored Access and Market Making Arrangements

6.1 Eligibility for Membership

Applicants are eligible to apply to become Trading Members of TGHL and TGHE provided they meet the following criteria:

1. The applicant must be an EEA regulated investment firm or credit institution (as defined under MiFID) Or
2. the applicant must show that it is:

- is of sufficiently good repute;
- has a sufficient level of trading ability, competence and experience;
- has, where applicable, adequate organisational arrangements; and
- has sufficient resources for the role they are to perform and, where applicable, clearing and settlement arrangements.

The applicant will also have to complete technical and functional conformance testing prior to conducting any business on Turquoise. The applicant must have relevant systems and controls, including pre-trade controls on price, volume and value of orders and usage of the system and, post-trade controls on its trading activities.

TGHL and TGHE Trading Members must have clearing arrangements in place with a Central Counterparty connected to Turquoise, which include LCH Limited, SIX x-clear and Cboe Clear Europe N.V. (previously EuroCCP N.V.), as either an independent clearing member of the central clearing party or by having an arrangement with a General Clearing Member (GCM).

Additionally, TGHL and TGHE allows Membership for firms without direct trading access to Turquoise, who do not qualify as Trading Members. For more details, refer to Section 3 of the Turquoise or Turquoise Europe Rule Books, available on the Turquoise website at: https://www.lseg.com/markets-products-and-services/our-markets/turquoise/information-centre/document-library.

6.1.1 Member Portal

The Member Portal in an online communication tool that enables TGHL or TGHE members to view and manage their membership profile and technical configuration. This includes:

- *Company Details* – view and manage company name, address, regulatory authorisation, Legal Entity Identifier;
- *Contact Information* – view and manage business and compliance contacts for the member; register of persons authorised to request order deletions;
- *Trading Access* – view instrument group access for the Turquoise trading system;
- *Technical Configuration* – view and manage technical user set-up and related properties;
- *Trading Declarations* relating to algorithmic trading and Direct Electronic Access;
- *Market Making* agreement and related security registration;
- *Short code/long code mapping* for Turquoise order records;

For more information on the Member Portal and how to register to gain access, please click the following link here.

Alternatively, please contact the Membership Team:

- membership@lseg.com
- +44 (0)20 7797 1900

6.2 Sponsored Access

Non-members may access **Turquoise Lit** (excludes BTF pre-arranged Trades), **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** (including **Turquoise Block Discovery**) through the infrastructure of a member (Direct Market Access) or as a Sponsored Participant trading under the membership of a Sponsoring Member and subject to pre-trade risk controls developed by Turquoise.

Further information on Sponsored Access can be found under ‘Sponsored Access’ in the Turquoise Document Library.

6.3 Nodes and Users

Trading Participants can organise their Turquoise activity into Nodes, Trader Groups and Users (Traders/Sessions). Nodes can be used by a Member to align its marketplace activity along certain defined organisational units, or to achieve flexibility in clearing.

A Member of TGHL and TGHE must have at least one Node, and each User must belong to a single Node. User configuration can be viewed and managed via the Member Portal.

Each Node can have its own permissions with respect to Instrument Groups that can be traded, and its own clearing arrangements per Instrument Group. Permissions can also be set at a User level, should such degree of flexibility be required.

Further information on setting up Nodes and Users is included in the Turquoise Technical Specifications found in the Turquoise Document Library.

6.4 Trading

Turquoise supports the following trading capacities modelled after the standard market implementation.

- Dealing on own account (DEAL)
- Matched Principal (MTCH)
- Any other trading capacity (AOTC)

A trading Participant is required to flag each Order with the relevant trading capacity. If this information is not included, the Order will be rejected by Turquoise.

6.5 Clearing and Settlement

It is necessary to specify Clearing Instructions (the Clearing Member and Account) for each Node and Instrument Group combination. Without appropriate clearing instructions, a User associated with a Node will not be permitted to submit Orders.

Where a TGHL or TGHE Member is a member of a Central Counterparty connected to Turquoise, they should contact the Central Counterparty to configure their clearing and settlement arrangements for Turquoise trades. Where a TGHL or TGHE Member uses a third-party General Clearing Member (GCM) to support their Turquoise trading, they should contact their GCM to arrange this.

For the avoidance of doubt, membership with TGHL or TGHE as a Trading Member is entirely separate from clearing membership with the CCP, although a clearing and settlement relationship must exist for each and every Trading Member.

A TGHL and/or TGHE Member’s clearing configuration can be viewed via the Member Portal.

6.6 Fungibility

From a clearing perspective, Financial Instruments traded in Turquoise are fungible only with those that belong to the same line. Any cross-border clearing arrangements are to be arranged separately.

6.7 Settlement Instructions

All Trades executed by Turquoise are settled according to the default settlement practices of the Primary Market of the line that is being traded.

Non-standard settlement instructions are not supported.

6.8 Internalisation – Choice of Sending Trades to Clearing

Trades that are executed with the same Member Firm on both sides are by default sent to the relevant CCP.

A TGHL and/or TGHE Member can optionally sign up for the service of not passing self-matched Trades to clearing. This can be done on the basis of a group of Users within a Member. A Trade will be internalised and not sent to clearing if:

- Both sides of the Trade belong to a User within the specified group; and
- Each side of the trade has the dealing capacities[7] Dealing on own account (DEAL) or Matched Principal (MTCH); and
- Each side of the trades has the same clearing account type (i.e., House or Client).

Such trades will be identified as internalised trades by setting the Novated Indicator (Custom Tag 20111) to 0 on Trade Capture Reports sent by the Post Trade FIX Gateway. Two Trade Capture Reports will be sent, one for each side of the trade. On each Trade Capture Report the counterparty will be specified as the Firm on the opposite side of the trade, not the CCP.

Likewise, Execution reports will also have the counterparty specified as the Firm on the opposite side of the trade.

To 'opt in' to internalisation a member firm should contact the Technical Account Management team:

- londontam@lseg.com
- +44 (0)20 7797 3939

6.9 Risk Management and Exposure Monitoring

Trading Participants' exposure is monitored by the CCP or GCM.

Turquoise has a mechanism to suspend Order entry for a Trading Participant should this be required by any CCP, GCM or regulator, or required by Turquoise to preserve the orderliness of its marketplace.

6.10 Turquoise Risk Controls

Turquoise Risk Controls are provided by Turquoise as part of its Sponsored Access Service. These controls are applied to all Orders (except for Internal and Committed BTF pre-arranged Trades) and Block Indications submitted by Sponsored Users, in order to restrict and prevent trading beyond certain limits.

TGHL or TGHE Members can also grant Turquoise permission for their GCM to monitor their Execution Reports via a Drop Copy Gateway connection (includes BTF pre-arranged Trades), without incremental latency impact on their trading. Whilst specifically designed for Sponsored Access use, Turquoise Risk Controls are available to all Members.

For full details of the Turquoise Risk Controls which are available and to 'opt in' to use the controls, please refer to the Turquoise Risk Controls Technical Description which can be found in the Turquoise Document Library.

6.11 Turquoise Order to Trade Ratio (OTR) Limits

As required by European Regulation, Turquoise will calculate the ratio of unexecuted Orders (excludes BTF pre-arranged Trades) to transactions effectively entered into the system by each of their Trading Members for every Financial Instrument traded under an electronic continuous auction order book or a quote-driven or a hybrid trading system.

Turquoise will calculate the ratio of unexecuted Orders to transactions for each of their TGHL and TGHE Trading Members at least at the end of every trading session in both of the following ways:

- in volume terms: (total volume of orders/total volume of transactions) – 1;
- in number terms: (total number of orders/total number of transactions) – 1. Note, if total number of transactions is 0, then 1 will be used for the calculation.

Turquoise has determined OTR limits apply to all Trading Members, with separate limits applying to Market Makers (defined as any Trading Member which has entered into a Market Making Agreement or is registered with Turquoise as a Liquidity Provider).

[7] Under MiFID I, this would have been applicable to Riskless Principal and Principal dealing capacities.

The OTR limits are set per TGHL/TGHE Trading Member/Market Maker, per Financial Instrument, per Trading Day.

The following tables provide maximum OTR limits by Number and by Volume of transactions for Trading Members/Market Makers. The Volume OTR Floor of 10,000 is a minimum total volume of transactions necessary for the Volume OTR calculation to apply.

Asset Class	Number OTR Trading Member	Number OTR Market Maker
Equities, DRs	100,000	200,000
ETFs, ETPs	150,000	300,000

Asset Class	Volume OTR Trading Member	Volume OTR Market Maker
Equities, DRs	2,000,000	40,000,000
ETFs, ETPs	2,000,000	40,000,000

Turquoise OTR levels are monitored on a T+1 basis. If a Member Firm breaches the OTR limit, Turquoise may seek to engage with firms to enable a better understanding of a Trading Member's/Market Maker's activities in the context of maintaining a high quality service. Turquoise may consider taking disciplinary action in following non-exhaustive cases:

- Consistent breaches of the OTR limits, particularly a high concentration of breaches over a short period of time;
- Where the OTR limit breach(es) was/were as a result of a system and control failure
- Where the OTR limit breach(es) was/were as a result of a manipulative or abusive strategy
- Where OTR limit breaches continue to occur after Turquoise has directed the Trading Member/Market Maker to reduce OTR levels below OTR limits

6.12 Hosting and Network Connectivity

Turquoise Hosting is available at the London Stock Exchange Primary Data Centre. Details of the Hosting service and Network Connectivity options can be found on the London Stock Exchange website at:

Exchange Hosting | London Stock Exchange

Please also refer to the Turquoise Guide to Connectivity (TQ102) found on the Turquoise website here.

Should a Firm only wish to connect to Turquoise but not connect to other LSEG Markets, then alternative arrangements can be made.

TGHL and/or TGHE Members can view and manage their Systems, Applications and Products (SAP) configuration via the Member Portal.

Please contact connectivity@lseg.com for more information.

6.13 Market Making Arrangements

As required by European Regulation, Turquoise provides details of the Market Making Arrangements in relation to:

- Market Making Agreements for Trading Members engaging in algorithmic trading whilst pursuing a market making strategy; and
- a mandatory Market Making Scheme.

TGHL and/or TGHE Trading Members can notify Turquoise they have entered into a Market Making Agreement, as well as "opting in" to a Market Making scheme where desired, via the Member Portal, and upload Financial Instruments in which they want to register.

Details of Turquoise Market Making Arrangements and the terms of the Market Making Scheme can be found within the Turquoise Document Library "Market Making and Liquidity Provision" sections.

6.14 Nominated Broker Model

Non-member Buyside firms (and their traders) who have access to Luminex, may access **Turquoise Dark Order Books** (including **Turquoise Block Discovery**) through the infrastructure of a member, subject to appropriate agreements being in place and use of FIX Drop Copy Gateway and pre-trade risk controls developed by Turquoise and Luminex.

Nominated Brokers will be required to have:

- A Turquoise FIX Drop Copy 'Trades Only' connection (with Cancel on Disconnect enabled) to manage usage/risks of Buyside firms using their FIX Trading connection between Turquoise and Luminex.

  Further information can be found in TQ203 – Drop Copy Gateway (FIX 5.0) in the Turquoise Document Library.

- An agreement with Luminex (a technology provider) to use their pre-trade risk controls, which includes Restricting Instrument functionality via GUI or csv file update.

Turquoise Members wishing to become Nominated Brokers to support their Buyside clients, should liaise with their Business Development Manager or the Business Development Team:

- TQSales@tradeturquoise.com
- +44 (0) 20 7382 7650

For technical assistance, Turquoise Members should liaise with their Technical Account Manager or the Technical Account Management team:

- LondonTAM@lseg.com
- +44 (0) 207 7797 3939

7.0 Reference Prices

Turquoise relies on a number of reference prices to control market behaviour and determine execution prices. These reference prices are derived from external and Turquoise Best Bid and Offer prices, the previous day's Primary market Closing Price, Turquoise Last Traded Prices etc...

7.1 Turquoise Last Trade Price (TLTP)

The TLTP is defined as the price of the last Trade on the:

- **Turquoise Lit Order Book**, for the respective **Turquoise Lit Order Book**. This is set by any trade that occurs during continuous trading (excluding BTF Trades). Prior to the first Trade of a trading day, the Last Trade Price is deemed to be undefined.
- **Turquoise Periodic Auctions Order Book** for the respective **Turquoise Periodic Auctions Order Book**. This is set by any trade that occurs during **Turquoise Periodic Auctions**. Prior to the first Trade of a trading day, the Last Trade Price is deemed to be undefined.

7.2 Turquoise Dynamic Reference Price (TDRP)

Prior to the first Trade of the day on Turquoise the TDRP will be undefined unless Turquoise determines a reference price (usually the closing price on the Primary market adjusted for corporate actions or other market activity). Thereafter, the TDRP will reflect the Turquoise Last Trade Price (TLTP). Turquoise Market Operations can override the TDRP if appropriate.

7.3 Turquoise Static Reference Price (TSRP)

The Turquoise Static Reference Price is a Turquoise determined reference price (usually the closing price on the Primary market, adjusted for corporate actions or other market activity) at start of Day. During trading hours, the TSRP will be updated to be the last Auction-uncrossing price disseminated by the Primary market for the Financial Instrument. Turquoise Market Operations can override the TSRP if appropriate.

Note: When **Turquoise Periodic Auctions** Financial Instruments return from a halt, the TSRP used is usually the closing price on the Primary market, rather than the last Auction-uncrossing price disseminated by the Primary market for the Financial Instrument.

7.4 Primary market Best Bid and Offer (PBBO)

The PBBO is defined as the Primary market Best Bid (PBB) and Primary market Best Offer (PBO) prices as represented by visible Orders in the Primary Market's Order Book when that market is in Continuous Trading.

If there are no Orders in the relevant Primary Market Order Book, or if the Primary Market is not in continuous trading the PBBO is deemed to be undefined.

7.5 Primary market Midpoint Price (PMP)

The PMP is defined as the average of the Primary Best Bid and Offer ('PBBO') prices. When the Primary market is locked/crossed the PMP is undefined.

Turquoise derives the price of the Financial Instrument from the trading venue where that Financial Instrument was first admitted to trading (i.e., the primary market). Alternatively, in certain cases, Turquoise may choose to derive the price using the most relevant market in terms of liquidity as permitted by ESMA.

Turquoise will continue to reference the SIX Swiss Exchange (the primary market), for its reference prices, for Swiss Financial Instruments admitted to trading on Turquoise; for the purpose of executions using both the RPW and LIS waivers in **Turquoise Dark Order Books**.

The PMP can have values with half-tick increments where there are an odd number of ticks between the PBBO prices. When the PBBO is undefined the PMP is also deemed to be undefined.

7.6 Primary market Closing Price (PCP)

The PCP is defined as being equal to the close price as published by the Primary markets.

8.0 Price, Value and Market Checks

8.1 Reference Price Collars

8.1.1 Turquoise Lit and Turquoise Periodic Auctions Order Books

Reference Price Collars prevent Limit Orders with an overly aggressive limit price from entering **Turquoise Lit** and **Turquoise Periodic Auctions Order Books** and trading. This also helps to protect the trader from executing at an unexpected price due to a 'fat finger' error.

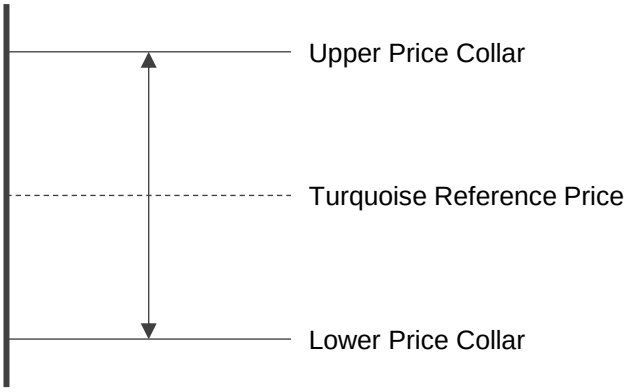
For each Financial Instrument/Instrument Group/Order Book, Turquoise defines two Reference Price Collars, a Static Reference Price Collar (applied to the Turquoise Static Reference Price) and a Dynamic Reference Price Collar (applied to the Turquoise Dynamic Reference Price). Each Reference Price Collar is applied to the applicable Reference Price to generate a single Price Collar for the Financial Instrument/Order Book.

The ceiling of the Price Collar is the more conservative (lower) of the values generated by the Static and Dynamic calculations. The floor of the Price Collar is the more conservative (higher) of the values generated by the Static and Dynamic calculations.

Example of Calculations

	Reference Price	Reference Price Collars	Floor	Ceiling
Static	77.80	25%	58.35	97.25
Dynamic	93.00	5%	88.35	97.65
Reference Price Collar Floor			88.35	
Reference Price Collar Ceiling				97.25

Limit Orders with a price to buy greater than the upper Reference Price Collar limit, and Limit Orders with a price to sell less than the lower Reference Price Collar limit, will be rejected.



Turquoise Lit Order Book Reference Price Collar Percentages are defined in Section 3.3.1 of TQ501 – Guide to Reference Data Services and available in the Instrument File (YYYYMMDD_TRQX_Instrument.csv for TGHL and YYYYMMDD_TQEX_Instrument.csv for TGHE) and monitored and maintained on an ongoing basis to ensure the limits set and imposed by Turquoise are suitable and effective. If any further information is required on Reference Price Collars, please contact Turquoise Market Operations (MOPS).

The **Turquoise Lit Order Book** Reference Price Collars defined in this section apply to Orders. They do not apply to BTF pre-arranged Trades, which have their own Turquoise Best Bid/Best Offer or Turquoise Static Reference Price collar.

Turquoise Periodic Auctions Order Book Reference Price Collar Percentages for all Financial Instruments are defined as follows:

- Static Reference Price Collar – 10%
- Dynamic Reference Price Collar – 10%

8.2 Market Order Execution Limit (MOEL)

An 'Execution Limit' is applied to ensure that the Market Orders entering **Turquoise Lit Order Books** do not execute beyond a certain price point.

If persistent Orders exist on the sell side, a Buy Market Order will only execute up to the ceiling of the Reference Price Collar, with the unexecuted balance of the Order being cancelled.

If persistent Orders exist on the buy side, a Sell Market Order will only execute down to the floor of the Reference Price Collar, with the unexecuted balance of the Order being cancelled.

8.3 Maximum Order Value

A 'Maximum Order Value' is specified by Turquoise to ensure that a trader does not commit to an excessively large execution erroneously. All Orders in excess of the specified Maximum Order Value will be rejected.

	Max Order Value (Trading Currency)		Approx Max Order Value in euro (€)	
CCY	**Turquoise Lit Order Book (excludes BTF pre-arranged Trades)**	**Turquoise Periodic Auctions, Turquoise Dark Order Books**	**Turquoise Lit Order Book (Excluding BTF pre-arranged Trades)**	**Turquoise Periodic Auctions, Turquoise Dark Order Books**
CHF	46,000,000	425,800,000	50,000,000	460,000,000
CZK	1,225,000,000	11,370,000,000	50,000,000	460,000,000
DKK	370,000,000	3,425,000,000	50,000,000	460,000,000
EUR	50,000,000	460,000,000	50,000,000	460,000,000
GBX	4,325,000,000	40,000,000,000	50,000,000	460,000,000
HUF	19,000,000,000	40,000,000,000	50,000,000	105,000,000
NOK	560,000,000	5,170,000,000	50,000,000	460,000,000
PLN	215,000,000	n/a	50,000,000	n/a
SEK	550,000,000	5,100,000,000	50,000,000	460,000,000
USD	55,000,000	508,000,000	50,000,000	460,000,000

Turquoise Lit, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** Max Order Values in the Financial Instrument's trading currency are defined in Section 3.3.1 of TQ501 – Guide to Reference Data Services and available in the Instrument File (YYYYMMDD_TRQX_Instrument.csv for TGHL and YYYYMMDD_TQEX_Instrument.csv for TGHE). Should there be a difference between the values in the above table and the Instrument File, the value in the Instrument File will take precedence for the Financial Instrument.

Maximum BTF pre-arranged Trade Values can be found in the Turquoise Service and Technical Description Block Trade Facility document, in the Turquoise Document Library.

8.4 Well Formed Market Checks

The Turquoise platform will carry out Well Formed Market Check (WFMC) validation upon receipt of PBBO updates and Primary market status updates to determine if the PMP/PBBO is valid and Primary market Closing Price updates to determine if the PCP is valid.

If the WFMC fails for a Financial Instrument, the market for that Financial Instrument is deemed not well formed, resulting in matches in the **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** not being permitted.

The WFMC will fail if anyone of the following is true in respect to PMP matching within the **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**:

- The Market Feed for the Primary market data is flagged as 'stale'
- If the Primary market data is not available
- The Primary market symbol does not have a valid PBBO spread, i.e.,
  - if either or both the Primary Market Bid and/or Offer don't exist, or
  - either or both the Primary Market Bid and/or Offer is equal to 0
- The PBBO spread is greater than a defined Maximum Spread threshold or lesser than the Minimum Spread threshold for the specific Financial Instrument as defined by Turquoise Operations

The WFMC will fail if anyone of the following is true in respect to PCP matching within **Turquoise Dark Order Books**, **Turquoise Dark Trade At Last** matching phases:

- The Primary market is in its closing auction call phase.
- The Primary market publishes two different valid PCPs for the same Financial Instrument. This includes any manual PCP correction published by a Primary market.
  Note: Euronext (e.g., XPAR, XDUB) is one such exchange that does, for some Financial Instruments, publish two valid PCPs for the same Financial Instrument on a given trading day.
- The Primary market only publishes a manual PCP correction.

9.0 Turquoise Order Types

This section defines the various types of Orders (including Market, Limit and Pegged) that are supported by Turquoise in terms of the key attributes that determines their behaviour and handling:

- Order type
- Target Book
- Display Quantity
- Duration (Time in Force)
- Price
- Size (including Minimum Quantity)
- Execution Instruction
- Passive Only and Distance from BBO
- Self-Execution Prevention

9.1 Order Type

On Order entry a trader can specify the type of Order which is received by Turquoise.

- Order

9.2 Target Book

On Order entry a TGHL or TGHE Member's trader can specify the appropriate Target Book(s), indicating whether the Order should be routed to the **Turquoise Lit Order Book**, or **Turquoise Periodic Auctions Order Book**, or **Turquoise Dark Order Book**, or routed to the **Turquoise Dark Order Book** then the **Turquoise Lit Order Book** (see Section 9.2.1 for details on **Turquoise Dark Lit Sweep** Orders). This is mandatory for Orders (except BTF pre-arranged Trades) submitted via the Native Gateway but is optional for Orders submitted via FIX.

If the Target Book is not specified, the Order will be routed as summarised below.

Where an Order Book is not explicitly specified, the following Orders will be routed to the appropriate **Turquoise Lit Order Book** (based on the membership of the trader):

- All visible Limit Orders (with Display Quantity > 0 or not specified);
- All Iceberg (partially visible) Limit Orders;
- All non-displayed Limit Orders that meet the MiFID Large in Scale (LIS) criteria and for which Minimum Quantity is not specified or is specified as 0;
- All IOC/FAK, FOK and Market Orders where Display Quantity <> 0.

Where an Order Book is not explicitly specified, the following Orders will be routed to the appropriate **Turquoise Dark Order Book** (based on the membership of the trader):

- All orders with a valid Midpoint Peg instruction;
- All Limit or Peg Orders with Display Quantity = 0 (with the exception of above LIS Limit Orders with no minimum quantity);
- All IOC/FAK, FOK and Market Orders with Display Quantity = 0.

BTF pre-arranged Trades are always routed to the relevant **Turquoise Lit Order Book** (TGHL or TGHE) based on the membership type of the Executing Firm.

9.2.1 Turquoise Dark Lit Sweep Order

On Order entry, a TGHL or TGHE trader can specify for IOC Orders to sweep the appropriate **Turquoise Dark Order Book** first to try and find as much liquidity as possible at the PMP during continuous trading, before sweeping the **Turquoise Lit Order Book** with any remaining unexecuted quantity.

A **Turquoise Dark Lit Sweep** Order will maintain its priority in the appropriate **Turquoise Lit Order Book** queue, whilst it sweeps the corresponding **Turquoise Dark Order Book**.

To specify a **Turquoise Dark Lit Sweep** Order, Participants need to specify Tag 9303 – Routing Instruction (FIX) or the Target Book field (Native) on their Order as follows:

	FIX Trading Gateway	Native Trading Gateway
Field Name	Routing Instruction (Tag 9303)	TargetBook (offset 89)
Enum	S – Dark Lit Sweep	3 – Dark Lit Sweep

The following are supported characteristics for **Turquoise Dark Lit Sweep** Orders:

- Time in Force (TIF) – IOC only
- Order types – Market and Limit only *(Pegged Orders are not supported)*
- Any Displayed Quantity (Displayed Quantity is ignored for Orders with a TIF of IOC)
- Minimum Quantity – Acts as a MES as it sweeps the appropriate **Turquoise Dark Order Book** and MAQ as it enters the corresponding **Turquoise Lit Order Book**.
- Note: As detailed in Section 9.6, Participants can specify (per User) whether MES will apply to the first execution only (default for non-persistent Orders such as Orders with a TIF of IOC) or to persist for the lifetime of the Order.
- Self Execution Prevention (SEP) – The standard SEP validations (if enabled) will be applicable to **Turquoise Dark Lit Sweep** Orders and the SEP behaviour will remain unchanged. For details on SEP, please see Section 9.9. Below are two examples of what will happen should SEP validation fail as a **Turquoise Dark Lit Sweep** Order tries to execute in the **Turquoise Dark** Order Book:
  - CIO (Cancel Incoming Order) – **Turquoise Dark Lit Sweep** Order will be completely expired (will *not* be swept onto the corresponding **Turquoise Lit Order Book**).
  - CRO (Cancel Resting Order) – **Turquoise Dark Lit Sweep** Order will aggress the Turquoise Dark Order Book and then be swept onto the **Turquoise Lit Order Book**. The resting Turquoise Dark Order which interacted with the **Turquoise Dark Lit Sweep** Order will be completely expired.
- Self Execution Prevention will also apply as appropriate for **Turquoise Dark Lit Sweep** Orders in the **Turquoise Lit Order Books**.

A **Turquoise Dark Lit Sweep** Order will maintain its Order details as it sweeps from the **Turquoise Dark Order Book** to the **Turquoise Lit Order Book**. The following table shows how Execution Reports will be populated throughout the lifecycle of the **Turquoise Dark Lit Sweep** Order:

Order Attribute	Description
Client Order ID	The client specified identifier will remain unchanged throughout the lifecycle of the order.
Order ID	The Order ID will be the same for **Turquoise Dark Order Book** and **Turquoise Lit Order Book** executions.
Order Status	The Order will carry its previous Order status when transitioning to the **Turquoise Lit Order Book**. E.g., If the Order was partially filled in the **Turquoise Dark Order Book**, it will enter the **Turquoise Lit Order Book** as a partially filled Order.
Cumulative Quantity/Leaves Quantity	The cumulative quantity value and the leaves quantity value will be updated and maintained for both **Turquoise Dark Order Book** and **Turquoise Lit Order Book** executions.
Order type/Time in Force (TIF)/Side/Order Quantity/Price/Account Type/Order Capacity	The client specified values will remain unchanged throughout the lifecycle of the Order.

All Execution Reports will stamp in the Routing Instruction (FIX) or Target Book (Native) field the appropriate Order Book to allow firms to determine where:

- Trades have occurred. i.e., **Turquoise Dark Order Book** or **Turquoise Lit Order Book**.
- The Order expires where there is unexecuted quantity. Note: This will always be the **Turquoise Lit Order Book**.
- The Order is rejected where there is no executed quantity. Note: This will always be the **Turquoise Lit Order Book**.

Additionally, all trades will contain the TGHL or TGHE MIC for the respective Order Book where the Trade took place in the Last Market field (FIX Tag 30 or Native field).

A **Turquoise Dark Lit Sweep** Order that is rejected by the **Turquoise Dark Order Book** will continue to be swept to the **Turquoise Lit Order Book**. No Reject message will be sent in this instance.

E.g., When the **Turquoise Dark Order Book** has transitioned to match using the PCP, all **Turquoise Dark Lit Sweep** Orders are rejected and swept to the **Turquoise Lit Order Book.**

Where a **Turquoise Dark Lit Sweep** Order is rejected by the **Turquoise Lit Order Book**, if the Order was partially filled in the **Turquoise Dark Order Book**, the Order will be expired. If the Order was completely unfilled, the Order will be rejected.

9.3 Display Quantity

Orders can either be Displayed or non-displayed (also referred to as Hidden), qualified by Displayed Quantity (0=non-displayed). A Display Quantity greater than zero but less than the total Order Quantity implies an Iceberg Order.

Where a target Order Book is not explicitly specified, Display Quantity is one factor that determines the Order Book that Orders are routed to. See Section 9.2 for details.

9.4 Duration (Time in Force)

Below is a list of the durations that Turquoise supports based on their maximum life expectancy within their Order Books (from shorter to longer).

Fill or Kill (FOK)	Must either be executed *immediately and in full* against one or more eligible (in price and size) persistent, opposite side Orders, or cancelled.
IOC (Immediate or Cancel)/Fill and Kill (FAK)	Will be executed *immediately, either partially or in full* against one or more eligible (in price) persistent, opposite side Orders, with any unexecuted balance immediately cancelled.
Good for Auction (GFA)	GFA Orders are only accepted into the **Turquoise Dark Uncross** (part of **Turquoise Dark Order Books**), **Turquoise Periodic Auctions Order Books**. GFA Orders for the **Turquoise Dark Uncross** are expired either after attempting to match during the **Turquoise Dark Uncross** they are scheduled to participate in, or at the time of the scheduled **Turquoise Dark Uncross,** if the **Turquoise Uncross** fails to happen due to a WFMC failure for example. If the instrument is halted from trading, GFA Orders are expired immediately. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** GFA Orders' behaviour around the start of the Order Submission Interval. Within **Turquoise Periodic Auctions Order Books**, GFA Orders will only be accepted if, upon aggression, the auction generates an Indicative Auction Price and Quantity greater than 0 (zero) or when there is an auction in progress which that has an Indicative Auction Price and Quantity greater than 0 (zero). Otherwise the GFA Order will be expired immediately.
Good Till Time (GTT)	An Order with an Expiry Time which will rest passively until executed, or until the specified time or the close of the normal trading day on the day on which it was entered. Applicable on the Native Trading interface only. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** GTT Orders' behaviour around the start of the Order Submission Interval.

Good Till Date (GTD) + Expiry Time	A GTD Order with Expiry Time will be treated as a Day Order, expiring at the time specified that day or the close of the normal trading day on the day on which it was entered. Applicable on the FIX Trading interface only. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** GTD Orders' behaviour around the start of the Order Submission Interval.
Day	The Order is valid until close of the normal trading day on the day on which it was entered. The close of the normal trading day is 16:45 UK-time or 17:45 Netherlands-time.

9.5 Price

Market	The Order does not have a specified price. All Market Orders are non-displayed (i.e., never pre-trade transparent), regardless of which Order Book they are routed to. In **Turquoise Lit Order Books**, a Market Order will be executed according to the priority of contra-side Orders up/down to the MOEL. An incoming Market Order can potentially Trade through one or more price levels. Market Orders are non-persistent (unexecuted balances will be cancelled immediately). In **Turquoise Dark Order Books**, a Market Order can be persistent or non-persistent, depending on the Order duration qualifier (Day, GFD, GTT, GTD (with expiry time) and GFA 'Time In Force' qualifiers will persist in the book, whilst IOC/FAK and FOK qualifiers will not). Market Orders are interpreted as Midpoint (PMP) or when in the **Turquoise Dark Trade At Last** matching phase, Primary market Closing Price (PCP) Pegged Orders without a Peg Cap. **Turquoise Periodic Auctions** do not accept Market Orders (unless Pegged to the PBB/PMP/PBO).
Limit	The Order will be executed against any Order(s) (excludes BTF pre-arranged Trades) in the opposite side of the book at a price that will never be worse than its Limit. Depending on the duration qualifier, a Limit Order can be persistent or non-persistent. Limit Prices must be set in whole ticks for all Orders (excludes BTF pre-arranged Trades).
Pegged	Turquoise supports Pegged Orders that are pegged to the PMP, and these can be routed to the **Turquoise Dark** or **Turquoise Periodic Auctions** Order Books. Additionally, Pegged Orders that are pegged to the PBO or PBB can be routed to the **Turquoise Periodic Auctions Order Books**. Scenarios with other Peg instructions will be rejected. Within the **Turquoise Dark Order Books**, Pegged Orders may have a Limit Price (a.k.a. Peg Cap). Whilst the PMP (or PCP in the **Turquoise Dark Order Books** in the **Turquoise Dark Trade At Last** matching phase) is worse than the Limit Price, the Order will be excluded from matching. Within the **Turquoise Periodic Auctions Order Books**, Pegged Orders may have a Limit Price which determines if the Order is available for matching at the PBB/PMP/PBO. Whilst the PBB/PMP/PBO is worse than the Limit Price, the Order will be considered for matching at its Limit Price.

9.6 Size

Non-displayed LIS (Large In Scale)	An Order is Large in Scale (LIS) if it meets the requirements described in Section 5.10. Orders that meet the LIS criteria can be non-displayed (Hidden) (or non-equity BTF pre-arranged Trades for TGHL and equity/non-equity BTF pre-arranged Trades for TGHE), are accepted in Turquoise Lit Order Books as persistent (passive) Limit Orders. Orders that meet the LIS criteria (excludes BTF pre-arranged Trades) can also be routed to Turquoise Dark Order Books by explicitly specifying the target book. The evaluation as to whether an Order qualifies as LIS will take place at the time the Order is submitted, or its quantity or price is amended. A partial fill of an Order that is LIS will not change its qualification for being a non-displayed Order. **BTF non-equity (and equity – see below) pre-arranged Trades are accepted into the Turquoise Lit Order Book, if equal to/above LIS thresholds as described in Section 5.10.**
Non-displayed NT (Negotiated Trades)	Equity BTF pre-arranged Trades (TGHL only) are accepted into the **Turquoise Lit Order Book**, if equal to/above LIS thresholds as described in Section 5.10.
Non-displayed Non-LIS	Non-displayed persistent (passive) Orders that are smaller than LIS will: • Always be accepted into **Turquoise Periodic Auctions Order Books**. • Only be accepted into **Turquoise Dark Order Books** when use of the RPW is allowed.
MAQ (Minimum Acceptable Quantity)	Turquoise supports MAQ on non-persistent Order types in **Turquoise Lit Order Books**. An Order with MAQ will only be matched subject to, at minimum, fulfilling its MAQ. The match quantity may be formed by multiple fills.
MES (Minimum Execution Size)	Turquoise supports MES on all Order types in **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**. Each individual fill will be equal to or greater than the specified MES. When an Order with MES is partially filled, if the remaining quantity is below the MES initially set then the MES value is set to the remaining Order quantity. Within **Turquoise Dark Order Books**, Participants can specify (per User) whether MES will apply to the first execution only (default for non-persistent Orders) or to persist for the lifetime of the Order (default for persistent Orders). To change your Minimum Quantity default a member firm should contact Turquoise Market Operations at London Stock Exchange: • market.operations@tradeturquoise.com • +44 (0) 20 7382 7676
Iceberg	Turquoise supports Iceberg Orders within **Turquoise Lit Order Books** only. All equity and non-equity Iceberg Orders must have an Order value greater than EUR 10,000 (or equivalent in the instrument's trading currency, else they will be rejected (as per the table below):

Currency	Minimum Iceberg Value (CCY)
EUR	10,000
GBX	829,180
USD	10,389
CHF	9,412
CZK	25,185
DKK	74,548
HUF	4,113,500
NOK	117,950
PLN	42,750

SEK	114,590

Iceberg Orders display only a portion of their total interest, with the remaining being hidden. The displayed quantity is replenished to its original size or a randomised value only when it is fully matched, at which point the time priority of the Order is reset.

Participants can elect to have their refreshed peak size randomised for their Order. On each peak refresh, the randomised iceberg peak will be 1 share plus between 100% and 120% of initial peak size.

The display quantity is always defined as an explicit quantity.

If the remaining quantity is less than the original display quantity, the new display quantity will be set to the remaining quantity.

9.7 Execution Instruction

This attribute is relevant to **Turquoise Dark Order Books** only. The Execution Instruction of an Order should be selected on Order entry from one of the options below:

Execution Instruction	Description
Turquoise Dark Uncross Only	Persistent Orders can be submitted at any time during Normal Trading but will only be open to matching against contra-side persistent Orders in the Order Book during the randomised **Turquoise Dark Uncross** events. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** Orders' behaviour around the start of the Order Submission Interval.
Turquoise Dark Uncross then Continuous	Orders submitted are not open to matching during **Turquoise Dark Continuous** trading until it has participated in a **Turquoise Dark Uncross** event which has a valid PMP which has passed the **Turquoise Dark** WFMC. Any unexecuted volume will then rest in **Turquoise Dark Order Books** open to **Turquoise Dark Continuous** matching and matching during subsequent randomised **Turquoise Dark Uncross** events. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** Orders' behaviour around the start of the Order Submission Interval.
Continuous and Turquoise Dark Uncross (default if omitted)*	Orders submitted will be open to immediate execution against contra persistent Orders during Normal Trading and any unexecuted volume will rest on the Order Book, open to **Turquoise Dark Continuous** matching and matching during the randomised **Turquoise Dark Uncross** events. Please see Section 9.7.1 for details of **Turquoise Dark Uncross** Orders' behaviour around the start of the Order Submission Interval.
Continuous Only	Orders submitted as **Turquoise Dark Continuous** only will only execute during **Turquoise Dark Continuous** trading and will not match during randomised **Turquoise Dark Uncross** events.

The Execution Instruction attribute is only applicable to Day, GFA, GTT and GTD Orders. FOK and IOC Orders will only ever execute against Orders resting on the Order Book (persistent Orders) during **Turquoise Dark Continuous** trading (i.e., persistent Orders with Execution Instructions set to '**Turquoise Dark Continuous** and **Turquoise Dark Uncross**' or '**Turquoise Dark Uncross** then **Turquoise Dark Continuous** ' after the Order has participated in a **Turquoise Dark Uncross** event.

* TGHL and/or TGHE Member Firms can elect on a per user basis to change the default Execution Instruction applied to their Order when omitted to any other Execution Instruction, e.g., **Turquoise Dark Uncross** Only or **Turquoise Dark Continuous** Only. To change your Execution Instruction default a member firm should contact Turquoise Market Operations:

- market.operations@tradeturquoise.com
- +44 (0)20 7382 7676

9.7.1 Behaviour of an Orders TIF and Execution Instruction around the Order Submission Interval within Turquoise Dark Order Books

At the start of the Order Submission Interval, a Call Market is sent by **Turquoise Dark Order Book**, to indicate to Participants that there is an impending **Turquoise Dark Uncross** in the respective **Turquoise Dark Order Book**. Orders with the following Execution Instructions and TIF behave differently if submitted after a **Turquoise Dark Uncross** but before the next start of an Order Submission Interval and when submitted after the start of an Order Submission Interval and before the next **Turquoise Dark Uncross**:

Order Details (Combination of TIF and Execution Instructions)	Behaviour if the Order is submitted between a Turquoise Uncross and the start of the Order Submission Interval	Behaviour if the Order is submitted between the start of the Order Submission Interval and its Turquoise Uncross
GFA – Continuous and **Turquoise Dark Uncross**	Acts as an IOC Order in Continuous trading with any remainder expired. Orders are not amendable but can be cancelled.	The Order will not participate during Continuous trading and will wait to take part in the next immediate **Turquoise Dark Uncross**. Any remainder will be expired after the **Turquoise Dark Uncross**. Orders are not amendable but can be cancelled.
GFA – **Turquoise Dark Uncross** Only	The Order will be immediately expired. Orders are not amendable but can be cancelled.	The Order will take part in the next immediate **Turquoise Dark Uncross**. Any remainder will be expired after the **Turquoise Dark Uncross.** Orders are not amendable but can be cancelled.
GFA – **Turquoise Dark Uncross** then **Turquoise Dark Continuous**	The Order will not participate during **Turquoise Dark Continuous** trading and will wait to take part in the next immediate **Turquoise Dark Uncross**. Any remainder will be expired after the **Turquoise Dark Uncross**. Orders are amendable and can be cancelled.	
GTT or GTD + Expiry Time – **Turquoise Dark Uncross** Only	The Order will take part in the next immediate **Turquoise Dark Uncross**. If the Order's expiry time elapses before participation in any **Turquoise Dark Uncross** it will be expired immediately. Any remainder will persist, participating in subsequent **Turquoise Dark Uncross** events until the Order's expiry time is reached. Orders are amendable and can be cancelled.	

9.8 Passive-Only and Distance from BBO

This attribute is relevant to **Turquoise Lit Order Books** only.

During **Turquoise Dark Continuous** Trading Participants are able to specify a visible price point below which they would not like the instruction to add the Order to be completed. Available options are:

Value	Description
0 or Null	No constraint. The Order will not be treated as Passive-Only.
99	Balance of Order will be expired rather than execute against a displayed Limit Order.
100	Balance of Order will be expired rather than execute against a displayed Limit Order, and Order will only be posted on the Order Book if it sets a new BBO.
1	Balance of Order will be expired rather than execute against a displayed Limit Order, and Order will only be posted on the Order Book if it sets a new BBO or joins the existing BBO.
2	Balance of Order will be expired rather than execute against a displayed Limit Order, and Order will only be posted on the Order Book if it sets a new BBO, joins the existing BBO, or joins/sets the next visible price point behind the BBO.
3	Balance of Order will be expired rather than execute against a displayed Limit Order, and Order will only be posted on the Order Book if it sets a new BBO, joins the existing BBO, or joins/sets one of the next two visible price points behind the BBO.

On submission of a Passive Only Order, it will match with any contra Hidden Order at a price better than the visible Turquoise BBO. If the quantity remaining would have otherwise matched with a visible Order, the remainder will be expired. If the remainder can rest on the Order Book it will follow the instruction laid down above. Where the instruction above cannot be followed the remainder of the Order will be expired.

Where the Passive Order indicator is selected for a Hidden Order, only adding as a new Turquoise BBO may be selected otherwise the Order will be rejected on submission.

Passive Only Order indicators are ignored on Market Orders; and not relevant or available for BTF pre-arranged Trades.

9.9 Self Execution Prevention (Optional)

TGHL and/or TGHE Member firms that wish to avoid self-execution can register one or more of their own Native UserIDs or FIX CompIDs as a single Self Execution Prevention ("SEP") group. Where 2 Orders from the same SEP group would otherwise execute against each other, one of the Orders will instead be expired:

- Cancel Incoming Order (CIO), leaves the resting Order intact; or
- Cancel Resting Order (CRO), allows the incoming Order to execute/rest.

TGHL and/or TGHE Member firms can either opt for all its Native UserIDs/FIX CompIDs in a SEP group to have the same standing instruction or alternatively can specify an individual instruction for each constituent of the SEP group, in which case the standing instruction attached to the aggressing (non-resting) constituent will be applied.

A SEP group can only consist of a single member firm's Native UserIDs/FIX CompIDs. Each individual Native UserIDs/FIX CompIDs can only be applied to a single SEP group. An individual member firm may have more than one SEP group.

SEP can be applied to all supported Order types (excluding BTF pre-arranged Trades). SEP will only prevent executions during Continuous Trading. It does not function during Continuous Trading when both orders are resting, **Turquoise Periodic Auctions** events, **Turquoise Dark Uncross** events (or during **Turquoise Block Discovery** events) or for any of the following Time in Forces: FOK. Post trade internalisation is still available where SEP does not function.

SEP can be used in tandem with Sponsored Access functionality. Maximum Gross Consideration validation will be applied prior to SEP, whilst the Current Gross Consideration will exclude anything captured by SEP.

Self Execution Prevention configuration can be viewed and managed via the Member Portal.

9.10 Member Group and Member Priority Matching within Turquoise Periodic Auctions and Member Priority Matching within Turquoise Dark Order Books (Optional)

TGHL and TGHE Member Firms that wish to increase the probability of matching with themselves within **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** are now able to do so by registering their firm for Member Priority Matching. Should a TGHL and TGHE Member Firm 'opt in' to Member Priority Matching, the functionality will apply to all of its Native UserIDs and FIX CompIDs once enabled for either or both Order Books.

TGHL and TGHE Members, who 'opt in' to Member Priority matching within **Turquoise Periodic Auctions Order Books**, can also 'opt in' to Member Group Priority9 matching. Should a TGHL and TGHE Member Firm 'opt in' to Member Group Matching, the functionality will apply to Native UserIDs and FIX CompIDs which have been assigned to a Member Group. Native UserIDs and FIX CompIDs can only belong to a single Member Group.

To 'opt in' to Member Priority Matching and Member Group Priority Matching within **Turquoise Periodic Auctions Order Books**, a Member firm of TGHL or TGHE should contact the Technical Account Management team:

- londontam@lseg.com
- +44 (0)20 7797 3939

9.10.1. Within Turquoise Periodic Auctions Order Book (Optional)

If Member Group Matching is enabled, all passive Orders submitted by Member Firms that have 'opted in' to Member Group Priority Matching in **Turquoise Periodic Auctions Order Books** will attempt to match all Orders which can match at the auction price against their Member Firm's own Orders in the same Member Group(s) on a Time priority order first, before attempting to match any remaining quantity with Orders from their own Member Firm in a Time priority order.

Once Member Group Priority and Member Priority matching has been completed, the auction will attempt to match any remaining quantity with Orders from other Firms on a Time priority basis.

The following matching logic applies:

1. Member Group Priority – The Order with Time priority on the BUY side of **Turquoise Periodic Auctions Order Books**, are always selected first for matching.
   a. If the Member that has input the Order with Time priority on the BUY side of the Order Book has 'opted in' to Member Group Priority Matching, the matching engine looks to match against SELL Orders from that Member Group on a Time priority basis.
   b. If the Member that has input the largest order on the BUY side of the Order Book has not 'opted in' to Member Group Priority Matching, the matching engine will move to the next Order on the BUY side (and repeat step 1a or this step 1b accordingly).**
2. Member Priority – Once all the Orders on the BUY side have been completely assessed for Member Group Priority matching with corresponding SELL orders, subject to there being unexecuted BUY Orders, the Order with Time priority on the BUY side of **Turquoise Periodic Auctions Order Books** are reconsidered for matching against any remaining SELL Orders.
   a. If the Member that has input the Order with Time priority on the BUY side of the Order Book has 'opted in' to Member Priority Matching, the matching engine looks to match against SELL Orders from that Member on a Time priority basis.
   b. If the Member that has input the largest order on the BUY side of the Order Book has not 'opted in' to Member Priority Matching, the matching engine will move to the next Order on the BUY side (and repeat step 2a or this step 2b accordingly).**
3. Time Priority – Once all the Orders on the BUY side have been completely assessed for Member Priority matching with corresponding SELL orders, subject to there being unexecuted BUY Orders, the Order with Time priority on the BUY side of **Turquoise Periodic Auctions Order Books** is reconsidered for matching against any remaining SELL Orders on a Time priority basis. The matching engine will then progress down the BUY side of the Order Book, until all Orders have been considered.**

**When an Order's MES reduces as a result of a Trade during a matching phase, subject to the number of iterations (set as a system parameter) not having been exceeded, the system will repeat that matching phase before moving onto to the next phase.

For Example: An Order for 20,000 shares, with a MES of 5,000 shares received a fill of 18,000 shares in the Member Group Priority phase. As a result of the Order's MES reduction to 2,000 shares, once all BUY Orders had been considered for matching during the phase, the matching logic will repeat the Member Group Priority phase (up to the maximum number of iteration attempts), before moving onto the Member Priority phase.

Any Minimum Quantity (MES) on an Order will always apply when attempting to match on a Member Group/Time, Member/Time or Time priority basis.

Member Group Priority, Member Priority and Time Priority matching does not apply to two contra Retail Liquidity Provider Orders, as Retail Liquidity Provider Orders cannot match with each other.

Self Execution Prevention does not apply.

9.10.2. Within Turquoise Dark Order Books (Optional)

Once enabled, aggressive Orders submitted by Member Firms that have 'opted in' to Member Priority Matching in Continuous Trading in **Turquoise Dark Order Books**, will first attempt to match against their Member Firm's own Orders before attempting to match any remaining quantity with Orders from other Firms on a Size/Time priority basis. Self Execution Prevention will remain enforced where the two users of the Member Firm are part of the same Self Execution Prevention group.

During Continuous trading where Orders on both sides of **Turquoise Dark Order Books** are passively resting when matching occurs due to a change in the PMP or a relevant change to the WFMC, or during **Turquoise Dark Uncross** events, the following matching logic applies:

1. The largest Order on the BUY side of a **Turquoise Dark Order Book** is always selected first for matching.
   a. If the Member that has input the largest Order on the BUY side of the Order Book has 'opted in' to Member Priority Matching, the matching engine first looks to match against SELL Orders from that Member on a Size/Time priority basis. If there is any remaining quantity unexecuted from this BUY order, the matching engine will attempt to complete the Order by matching against any remaining SELL Orders on a Size/Time priority basis.
   b. If the Member that has input the largest order on the BUY side of the Order Book has not 'opted in' to Member Priority Matching, the matching engine looks to match against SELL orders on a Size/Time priority basis, irrespective of which Members have submitted these Orders.
2. Once the largest Order on the BUY side has been completely assessed for matching with corresponding SELL Orders, the matching engine will select the next largest BUY Order and repeat the process outlined in 1a or 1b as appropriate.

When a Member Firm opts in, should the firm also be permissioned for **Turquoise Block Discovery**, Member Priority Matching will equally apply to **Turquoise Block Discovery** events in the same way it does for **Turquoise Dark Uncross** events. Member Priority Matching will also equally apply at the PCP within the **Turquoise Dark Trade At Last** matching phase. For more details on Member Priority Matching within **Turquoise Block Discovery**, see Section 9.8 of the **Turquoise Block Discovery** Trading Service Description.

10.0 Trading at Turquoise

10.1 Trading Calendar

Turquoise typically observes the domestic market practice for open business days. Therefore, where the Primary market of a Financial Instrument is closed on a business day, Turquoise will also be closed for that Market (for example, OMX Oslo is closed on the 24th December so Turquoise is also closed for the Norwegian Market). This applies to Turquoise Trading services.

Where there is cause for doubt a Turquoise Notice is sent out to Participants for clarification. The up-to-date Turquoise Trading Calendar can also found in the Turquoise Reference Data section on the Turquoise Website.

10.2 Trading Sessions

Each of the trading days within Turquoise is divided into the sessions shown in the following table and diagram.

Daily Trading Schedule

Time (UK)	Session Name	Order Book Type	Summary
04:31 – 07:59:59	System Start-up	**Turquoise Lit, Turquoise Periodic Auctions,** and **Turquoise** Dark Order Books	System connectivity allowed. No Order entry/amendment allowed.
08:00-16:30	Normal Trading	**Turquoise Lit** and **Turquoise Periodic Auctions Order Books**	Order entry/amendment allowed for most Financial Instruments[8]. All Order constraints enforced. Price and Value Checks enforced. Reference Price Collar Validation and Execution Limit Enforced (when applicable). Continuous Matching in the **Turquoise Lit Order Books**.
08:00-16:45	Normal Trading	**Turquoise Dark Order Book**	Order entry/amendment allowed for most Financial Instruments[10]. All Order constraints enforced. Price and Value Checks enforced. Continuous and random **Turquoise Uncross** matching in the **Turquoise Dark Order Books**. Orders are matched using the PMP, until **Turquoise Dark Trade At Last** commences, when Orders are then matched using the Primary Market Closing Price (PCP).

[8 & 10] Where a Primary Market operates different trading hours for a Financial Instrument, Turquoise at its discretion will follow the Primary Market's trading hours for that Financial Instrument. The GTP Instrument Status message advises the trading status of all Financial Instruments.

Time (UK)	Session Name	Order Book Type	Summary
Ad-Hoc	Trading Halt	**Turquoise Lit, Turquoise Periodic Auctions**, and **Turquoise Dark Order Books**	No Matching allowed. No Order entry/amendment allowed. Cancellation of Orders is permitted but amendments are not.
16:30:01	Close	**Turquoise Lit,** and **Turquoise Periodic Auctions Order Books**	No Order management. No matching. Persistent Orders (including unaffirmed BTF pre-arranged Trades) are cancelled/expired.
16:45	Close	**Turquoise Dark Order Book**	No Order management. No matching. Persistent Orders are cancelled.
16:45:01	End of Day	**Turquoise Lit, Turquoise Periodic Auctions,** and **Turquoise Dark Order Books**	Turquoise Market End.
17:30	End Of Day (CCPs)	**Turquoise Lit, Turquoise Periodic Auctions,** and **Turquoise Dark Order Books**	End Of Day Syncing with all CCPs.
17:30	System shutdown Start of end-of-day processes	**Turquoise Lit, Turquoise Periodic Auctions,** and **Turquoise Dark Order Books**	No access for market Participants. The Turquoise Closing Price will be calculated.

10.3 Order Amendment and Cancellation during Trading Sessions

Amendments to Orders are allowed at any time that the system accepts Orders.

Not all fields are amendable by Participants, and some amendments may cause the time priority of an Order to be re-set.

For example, reducing the Quantity of an Order in **Turquoise Lit Order Books** will not re-set the time priority.

Below is a summary of the main Order attributes and their amendment capabilities.

Order Book Type	Buy/Sell	Target Book	Symbol	Order type	Price	Qty		Displayed Qty		MinQty MAQ/MES		Valid Till	Exec Inst	Client Ref
						+	-	+	-	+	-			
Turquoise Lit	x	x	x	x	↓	↓	✓	↓	✓	n/a	n/a	✓	n/a	✓
Turquoise Periodic Auctions	x	x	x	x	↓	↓	↓	n/a	n/a	↓	↓	n/a	n/a	✓
Turquoise Dark *	x	x	x	x	↓	↑	↓	n/a	n/a	↓	↓	✓	↓	✓

✓ Change allowed without affecting Time (**Turquoise Lit** and **Turquoise Periodic Auctions Order Books**) or Size/Time (**Turquoise Dark** non-displayed) priority

↑ Change allowed, increases priority based on amendment of the original Order quantity (**Turquoise Dark** non-displayed only)

↓ Change allowed, affecting Time priority (**Turquoise Lit** and **Turquoise Periodic Auctions Order Books**) or Size/Time priority (**Turquoise Dark** non-displayed – where Orders are of the same Size)

x Change not allowed, Order must be cancelled and re-entered

* Orders which have a TIF of GFA with an Execution Instruction of "Continuous and **Turquoise Dark Uncross**" or "**Turquoise Dark Uncross** Only" for the **Turquoise Dark Order Book** are not amendable but can be cancelled. Any unfilled Quantity will automatically expire at the end of the **Turquoise Dark Uncross** for which the Order was intended to participate (or will act as an IOC 'match and expire if not fully filled' in Continuous Trading if submitted between a **Turquoise Dark Uncross** and the start of an Order Submission Interval).

Internal BTF pre-arranged Trades cannot be amended or cancelled at any time. Committed BTF pre-arranged Trades can only be cancelled using individual Cancellation messages (and if via FIX Trading Gateway they must be cancelled using the original Sender CompID); they cannot be amended. Unmatched Committed BTF pre-arranged Trades cannot be cancelled via Mass Cancellation messages; or by using Cancellation on Disconnect (for Native and FIX Trading; and FIX Drop Copy Gateways).

With the exception of the above scenarios, Order Cancellations by Participants can be made at any time, including during Trade Halts.

Additionally, Orders are cancelled by the system in the following circumstances:

- An Order has reached its expiration as set by the Participant (including GFA Orders).
- DAY orders with Pending cancelled status will be cancelled as a result of Turquoise applying a halt to the Financial Instrument within **Turquoise Periodic Auctions**.
- GFA Orders are expired, as a result of Turquoise applying a halt to the Financial Instrument within **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.
- A Participant disconnects from the trading gateway, if the Cancel-on-Disconnect feature is specified by the Participant or is mandatory as part of the interface being used.
- Eligible Orders may execute partially up to the MOEL, with the remainder of the Order being cancelled.
- Turquoise may in certain circumstances, including if requested by a Participant, intervene and cancel an Order. Turquoise will never amend or end orders manually.
- If a user enters a Mass Cancellation, all Orders within the same Trader Group are cancelled from a single FIX session (FIX specific).

10.4 Trade Cancellations and Amendments during Trading Sessions

Cancellations of Trades on **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** cannot be made by Participants at any time.

Turquoise may in certain circumstances, including if requested by a Participant, intervene and cancel a Trade.

Turquoise will never amend trades.

10.5 Corporate Actions

Turquoise follows the Primary market of the Financial Instrument with respect to Corporate Actions.

As a result, Turquoise will update a Financial Instrument's reference data (e.g., When its ISIN changes); and Turquoise may in certain circumstances update a Financial Instrument's reference price, due to a Corporate Action.

10.6 Support / Contact Us

Client Support Team

For incident and problem management (Live Service and Customer Development Services (CDS)):

Hours: 07:00 – 18:00

Telephone: +44 (0)20 7797 1500

Email: support@lseg.com

Market Operations

Enquiries in connection with deleting live orders from the trading system:

Hours: 07:00 – 18:00

Telephone: +44 (0)20 7382 7676

Email: Turquoiseliveservice@tradeturquoise.com (immediate intraday live service actions)

Market Management

Instrument reference data queries:

Hours: 07:00 – 18:00

Telephone: 020 7797 3775

Email: market.operations@tradeturquoise.com (reference data)

Market Supervision

Enquiries in connection with real-time trading issues, oversight of the market's operation and Rules of Turquoise and Turquoise Europe:

Hours: 07:30 – 17:30

Telephone: + 44 (0)20 7797 3666 (option 2)

Membership Team

For Membership enquiries and queries relating to trading profile amendments and clearing and settlement static data:

Telephone: +44 (0)20 7797 1900

Email: membership@lseg.com

Member Portal:

www.lseg.com/markets-products-and-services/our-markets/markets-membership/member-portal

Technical Account Management

For functional queries, client on-boarding and technical advice about Turquoise's trading services:

Hours: 07:30 – 18:00

Telephone: +44 (0)20 7797 3939 (option 1)

Email: londontam@lseg.com

Equities Technical Onboarding

Enquiries in connection with user setups, certification testing, connectivity testing and issues around market maker registration:

Hours: 07:30 – 18:00

Telephone: +44 (0)20 7797 3939 (option 2)

Email: eqtechonboarding@lseg.com

Business & Product

Enquiries in connection with Turquoise's business operation of its trading services:

Telephone: +44 (0)20 7382 7650

Email: TQSales@tradeturquoise.com

Credit Control

For Invoice enquiries.

Telephone: +44 (0) 20 7797 1010

Email: capitalmarketscreditcontrol@lseg.com

11.0 Normal Trading

11.1 Execution Priority

The system determines execution priority based on the following hierarchy.

Turquoise Lit Order Books:

- Price: Orders that are priced more aggressively have priority
- Visibility: Within a price point, Visible quantities of all Orders, will have priority over Hidden quantities. Hidden quantities of Iceberg Orders have priority over Hidden LIS order quantities
- Time: Within a price point and visibility category, earlier time priority has preference.

Time priority is assigned:

- when an Order is received during Normal Trading
- when an Order is modified (only for certain modification types)
- when an Iceberg Order's Visible display size is replenished after depletion.

Size constraints (MAQ): Applies only to Orders with IOC, FOK time qualifiers and Market Orders with MAQ specified.

Execution Priority is not applicable to BTF pre-arranged Trades.

Turquoise Periodic Auctions Order Books:

Once the auction price has been determined which maximises the quantity that can be matched at applicable prices, including the PMP, the following execution priority applies:

- Member Group Priority: For Member Firms that have opted into Member Group Priority matching, these Member Firm Groups will have all their Orders matched first, before they match with other orders not in their Member Group from their own Member Firm.
- Member Priority: For Member Firms that have opted into Member Priority matching, these Firms will have all their Orders matched first, before they match with other Firms.
- Time: Time priority is assigned at the point of Order entry and may be updated when the Order is modified (only for certain modification types).

Member Group Priority, Member Priority and Time Priority matching does not apply to two contra Retail Liquidity Provider Orders, as Retail Liquidity Provider Orders cannot match with each other.

If the Limit Price (on a Pegged Order) precludes an Order matching at the prevailing PMP, the Limit Order will retain its queue priority and will be available for matching at its specified Limit.

For Firms that opt into Member Group Priority Matching/Member Priority Matching, upon aggression or once their Order has been selected for matching within **Turquoise Periodic Auctions Order Books**, an attempt to match against their own Orders first will be made, before attempting to match any remaining quantity with Orders from other Firms on a Time priority basis. See Section 9.10.1 for details of Member Group Priority and Member Priority.

Size constraints (MES): Applies to any Order with Minimum Quantity specified.

Turquoise Dark Order Books:

Orders with larger sizes will be given higher priority than Orders of smaller sizes. Partial filling of an Order will not result in an Order losing its priority.

Where two Orders share the same Size priority, Time priority will then apply. Time priority is assigned at the point of Order entry and may be updated when the Order is modified (only for certain modification types).

If the Limit Price precludes an Order matching at the prevailing PMP or PCP (when in the **Turquoise Dark Trade At Last** session), the Limit Order will retain its queue priority, but will be prevented from matching whilst the prevailing PMP/PCP is beyond the specified Limit.

Turquoise Dark executes persistent Orders starting with the largest Order on the Buy side of the book and will work its way down the Buy side until no further executions are possible.

For Firms that opt into Member Priority Matching, upon aggression or once their Order has been selected for matching within the Turquoise Order Book, an attempt to match against their own Orders first will be made, before attempting to match any remaining quantity with Orders from other Firms on a Size/Time priority basis. See

Section 9.10.2 for details of Member Priority Matching, during **Turquoise Dark Continuous** Trading, **Turquoise Dark Uncross** events and **Turquoise Block Discovery**.

Size constraints (MES): Applies to all Orders with Minimum Quantity specified.

11.2 Execution Venue

The Execution Venue Market Identifier Code (MIC) for all Trades can be identified on Execution Reports in a couple of ways:

1. The Last Market (FIX Tag 30 or Native field) is populated with the appropriate MIC for the fill.
2. The Routing Instruction (FIX Tag 9303) or Target Book (Native 137) advise Participants whether their Order was executed in **Turquoise Lit, Turquoise Periodic Auctions** or **Turquoise Dark Order Books**. The table below shows how Members can derive the MIC for their Trade.

FIX Tag 9303 Values	Native Position 137 Values	MIC (TGHL)	MIC (TGHE)	Description
I	**1**	**TRQX**	**TQEX**	**Turquoise Lit Order Books**
A	**4**	**TRQA**	**TQEA**	**Turquoise Periodic Auctions Order Books**
M	**0**	**TRQM**	**TQEM**	**Turquoise Dark Order Books**

Whether an instrument is tradable in and the associated segment MIC for the **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** are defined in Section 3.3.1 of TQ501 – Guide to Reference Data Services and available in the Instrument File (YYYYMMDD_TRQX_Instrument.csv for TGHL and YYYYMMDD_TQEX_Instrument.csv for TGHE).

11.3 Execution Price Type

The PegPriceType (FIX Tag 1094) advises Participants whether the PMP or PCP was used to match their Order within **Turquoise Dark Order Books**.

Enum	Description
0	Midpoint (PMP)
1	Closing Price (PCP)

11.4 Trade Liquidity Indication

The Trade Liquidity Indicator advises Participants how their Order impacted liquidity on **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.

FIX Tags 851/9730 Values	Native Position 120 Values	Description
1/A	**A**	Added Liquidity – An Order which upon receipt rests passively adding liquidity
2/R	**R**	Removed Liquidity – An Order which upon receipt aggressively executes against a passive Order, therefore removing liquidity
4/C	**C**	**Turquoise Periodic Auctions** or **Turquoise Dark Uncross** Execution – An Order which executes during a **Turquoise Periodic Auctions** or **Turquoise Dark Uncross** event
8/B	**B**	**Turquoise Lit** Internal and Committed BTF pre-arranged Trade Execution
9/S	**S**	Block Discovery Execution – **Turquoise Dark Uncross** – An Order which executes during a **Turquoise Dark Uncross** event, which has a valid Client Order Link ID linking it back to an Order Submission Request from **Turquoise Block Discovery**

11.5 Trading Venue Transaction Indication Code (TVTIC) for Transaction Reporting

TGHL and TGHE Members must use the transaction identifier supplied by Turquoise to satisfy TVTIC reporting standards mandated under Commission Delegated Regulation (EU) 2017/590. The TVTIC field must be populated by investment firms submitting transaction reports to their relevant competent authority.

TGHL and TGHE Members must use the transaction identifier supplied by Turquoise in the transaction report for specific trades. The TVTIC submitted in a transaction report must be in Base 10 numbering system i.e., the universe of permitted characters is 0123456789.

Depending on the Member's type of connection to the venue (FIX or Native), the transaction identifier may be supplied to the Member in alphanumeric or numeric form. In all cases, a Member providing the transaction identifier in a subsequent transaction report to its national competent authority must be supplied in Base 10 numeric form. The necessary conversion performed as follows:

Protocol	Field	Format Received	Conversion
Native	TradeMatchID	Native numeric Base 10	No conversion required
FIX	Tag 27020 (DecimalTVTIC)	Base 10	No conversion required
	Tag 880 (TradeMatchID)	Base 36	Convert to Base 10

Base 36 with G Offset decoding alphabet

DEC	ASCII	DEC	ASCII
0	G	18	Y
1	H	19	Z
2	I	20	0
3	J	21	1
4	K	22	2
5	L	23	3
6	M	24	4
7	N	25	5
8	O	26	6
9	P	27	7
10	Q	28	8
11	R	29	9
12	S	30	A
13	T	31	B
14	U	32	C
15	V	33	D
16	W	34	E
17	X	35	F

12.0 Trading Halts

Trading Halts are controlled by Turquoise Market Operations. A Trading Halt may be followed by resumption of the Normal Trading session if the market is not closed before Market Operations deems a Financial Instrument tradable.

12.1 Within Turquoise Lit, Turquoise Periodic Auctions and Turquoise Dark Order Books

In response to information within Turquoise, Market Operations can halt Financial Instruments immediately via an ad-hoc change to a Financial Instruments Trading Status. When there is a trading halt, Group Ticker Plant (GTP) disseminates the change in status of that instrument via the instrument status message. Please see GTP002 – Technical Guide for further information.

12.2 Within Primary markets

Turquoise will ascertain from a Primary market's feed or a regulatory request whether a Trading Suspension/Halt was based on regulatory reasons, a volatility break or a technical fault and may halt a Financial Instrument if it considers there may be a disorderly market.

12.3 Impact of a Trading Halt

If a Trading Halt is enforced by Turquoise Market Operations, the trading on **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books** for the Financial Instrument halted will be affected as follows:

- Existing Orders (including BTF pre-arranged Trades) will remain in the Order Book, except for GFA Orders which will be expired within the **Turquoise Periodic Auctions** and **Turquoise Dark Order Book**.
- DAY orders with Pending Cancelled status will be cancelled within the **Turquoise Periodic Auctions Order Book**.
- New Orders (including BTF pre-arranged Trades) will be rejected, with appropriate error message.
- Participants will be able to cancel their Orders (including Committed BTF pre-arranged Trades), but no Order amendment will be permitted.
- No matching will occur (updates to the PMP affecting the set of Orders available for matching in the **Turquoise Periodic Auctions** or **Turquoise Dark Order Books** will not result in any matches).
- The Halt and Close state will be used if Turquoise concludes that there is no prospect of trading resuming on the trading day of the outage. The Turquoise Static Reference Price (TSRP) for all securities will be set and published in the Instrument File (YYYYMMDD_TRQX_Instrument.csv for TGHL and YYYYMMDD_TQEX_Instrument.csv for TGHE). The affected securities will not then reopen until the next trading day.

13.0 Market Outage

The term 'outage' is used in this section to describe a significant, unforeseen interruption to Turquoise's customer facing critical IT systems – usually the trading or market data systems. Outages may result from either technological failure or from a physical security/safety issue and will vary in length and severity of impact on the market and its participants.

When an issue is sufficiently serious to constitute an outage, Turquoise will endeavour to follow this outage protocol in its handling of the situation. This protocol should be read in conjunction with Section 14.0 Recovery Model. For market data related information please see Sections 4.2, 4.3 and 4.5 within GTP001 (GTP).

13.1 Overarching Principles

In managing outages, Turquoise will seek to act in the interests of all market participants and of the wider market. Turquoise will generally seek to keep its markets open even if it has serious system issues. However, if Turquoise considers the orderliness or fairness of our markets and/or the wider market to be impaired by the incident, then Turquoise will intervene to pause, halt or suspend the affected market(s).

13.2 Different types of Outages

Since outages can be caused by a variety of different situations, it is difficult to be specific or prescriptive about how any particular situation will be managed. Some examples of the causes of outages are:

- Failure/malfunction of significant components of the trading system.
- Sustained or repeated loss of connectivity between customers' systems and Turquoise's systems.
- Major delays or gaps in the dissemination or receipt of market data.

Turquoise will use its judgement to decide how best to manage any particular outage and is mindful of the fact that many but not all market participants are now able to trade securities on other trading venues.

13.3 Assessment and Response

Turquoise has a comprehensive internal escalation process to identify and manage its system issues. Most of these system issues are very minor and are entirely invisible to market participants. However, in the unfortunate event that we experience a major service interruption (an outage) we will invoke our incident management procedures and form an incident management team, which is responsible for deciding on the appropriate response to the outage.

Once an outage has been identified, Turquoise will undertake an initial assessment of its severity and the likelihood of an immediate resumption of service. If a resumption of service is not imminent then the incident management team is likely to decide to intervene in the affected market(s). The following are the intervention options, one or more of which are then likely to be implemented.

Trading Halt

If Turquoise determines the outage is likely to be very severe or long-lasting and particularly if it wishes to suspend all order entry and deletion, then a Trading Halt will be invoked at either market or partition level. For the securities impacted, no matching is allowed, no order entry or amendments are allowed, and cancellation of orders is permitted.

Halt and Close

This state will be used if Turquoise concludes that there is no prospect of trading resuming on the trading day of the outage. The Turquoise Static Reference Price (TSRP) for all securities will be set and published in the Instrument File (YYYYMMDD_TRQX_Instrument.csv for TGHL and YYYYMMDD_TQEX_Instrument.csv for TGHE). The affected securities will not then reopen until the next trading day.

For more details on Trading Halts, see Section 12.0.

13.4 Alternative Site Procedures

If the outage relates to a hardware failure or environmental incident in Turquoise's Primary Data Centre, the Incident Management Team may decide to invoke the Secondary Site in order to utilise Turquoise's backup hardware at the Secondary Data Centre.

The likely delay between the invocation of the Secondary Site and restoration of electronic trading is difficult to forecast exactly but is likely to take in the region of two hours. Once trading resumes at the Secondary Data Centre, Turquoise's electronic order books will be wiped clean and participants are encouraged to perform an Own Order Book Download to prepare themselves for the resumption of trading. Importantly, if there has been a significant interruption of service (defined by whether the incident team has been deployed) Turquoise will always restore trading where at least 20 minutes notice will be given.

Turquoise undertakes regular tests of its Secondary Site procedures to check the technical performance of the system, the readiness of Turquoise personnel and to ensure that participants are familiar with the operation of the procedures.

13.5 Resumption of Trading

During an outage, all updates on the status of existing orders and the timetable for the resumption of trading will be posted on the Live Service Portal and disseminated through email/SMS updates.

Once the outage has been resolved by Turquoise, the market will be restored to normal service by resuming with the trading session scheduled for that time.

13.6 Live Service Portal

Turquoise is committed to communicating with customers frequently during an outage and will provide as much information as possible in the circumstances. Given the unpredictable real-time nature of outages, it is not possible for Turquoise to guarantee how often communications will be issued but during an outage, updates will normally be provided every time the situation changes, with a minimum period between updates of 30 minutes.

Turquoise has a dedicated Live Service Portal, which is the primary means of communicating with market participants and other relevant parties during an outage and allows clients to register for email and SMS service alerts. Updates posted on the Live Service Portal will always include an indication of when the next update will be provided. Currently, an email/SMS alert will be issued to inform the market that the Live Service Portal is active and should be utilised by all relevant parties.

To register for email/SMS alerts notifying that the Live Service Portal should be utilised, please see: http://liveservice.lseg.com

14.0 Recovery Model

The recovery model in case of serious incident is described below.

14.1 Turquoise Connection

Each participant connection (identified by CompID) will be enabled for access to the trading system via a Primary and Secondary Gateway for each interface:

- FIX Trading
- FIX Post Trade (two connections, one for Post Trade, one for OTBD)
- FIX Drop Copy (two connections, one for Drop Copy, one for OOBD)
- Native Trading (two connection, one for real time messages, and one for recovery)

14.1.1. FIX Recovery

One of the pair of Gateways is designated the Primary, and the other Secondary. In the event of failure of the Primary Gateway, participants should connect/log in via the Secondary Gateway. Any attempt to log in to the Secondary Gateway outside of any failure event will be refused.

- In case of unexpected disconnection from the Primary Gateway participants should attempt to re-connect to the Primary Gateway a total of three times, with three seconds between each attempt, before attempting to connect to the Secondary Gateway.

Likewise, if there are further issues in connecting to the Secondary Gateway, a total of three connections, with three seconds between them, should be attempted.

After six failed connection attempts (three on each Gateway) please contact the Technical Account Management at Turquoise for further guidance on +44 (0)20 7797 3939 (option 1) or email londontam@lseg.com.

Both Primary and Secondary Gateways are duplicated at the Disaster Recovery Site.

14.1.2. Native Recovery

Customers can connect to any Native Gateway. Whilst we do not assign connections, customers should avoid unnecessary connections to the Native Gateways to guarantee maximum performance.

In case of unexpected disconnection from a Native Gateway, participants should connect to a different Gateway.

14.2 Turquoise Disaster Recovery Site

Turquoise operates in cold standby mode. In the event of total loss of the Primary Site, Turquoise will activate the Disaster Recovery Site. This procedure is expected to take in the order of two hours.

In the event of disaster then only those trades that have been sent to participants via a Trade Capture Report from the Post Trade Gateway can be guaranteed to have been sent to clearing and settlement (if applicable). Participants should disregard any trades for which only an Execution Report has been sent.

Once the Disaster Recovery Site is active then all order books will be cleared down and the trading system re-started.

Participants should note that no updated Execution Reports will be sent identifying those orders that have been deleted.

Following this, participants will be asked to connect to the Disaster Recovery Gateways.

All securities will be made available for trading for all order books from a specified time.

Following recovery to the Disaster Recovery Site, it is recommended that all participants should:

- Carry out an Own Trade Download to confirm which trades have been sent to clearing and settlement
- Carry out an Own Order Book Download to confirm that no orders are currently active

15.0 Trading Tariff Model

Turquoise uses a flat tariff model for its **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**. Pricing promotions including volume discounts are sometimes offered.

All tariff information is publicly available.

For full details, see Tariff Schedule within the Turquoise Document Library | LSEG.

15.1 Categorisation of Trades

Turquoise Lit Order Books

Executed Orders will be categorised as Passive or Aggressive or BTF pre-arranged Trades.

- Orders that 'rest' on the book prior to execution are Passive
- Orders (or portions of Orders) that execute without resting are Aggressive.
- BTF pre-arranged Trades

Executed Orders will additionally be categorised as Displayed or Hidden or BTF pre-arranged Trades.

- Executed visible Passive Orders (including the visible portion of iceberg orders) disseminated in market data before execution are Displayed.
- LIS Hidden Orders and the non-displayed portion of iceberg Orders are Hidden
- Non-persistent Orders and LIS Hidden will be designated as Hidden
- BTF pre-arranged Trades

Note: Only the Passive Order will receive this categorisation. The Aggressive Order will always be "Not Specified".

Turquoise Periodic Auctions and Turquoise Dark Order Books

All trades on **Turquoise Periodic Auctions**, are typically considered as Hidden (charged standard fee) for the purposes of billing; unless they are deemed to be Self Matched. All trades on **Turquoise Dark Order Books** are considered as Hidden for the purposes of billing.

15.2 Types of Trade for Billing

Turquoise currently charges differently for the following categories:

- Non-displayed – including **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**, including **Turquoise Dark Trade At Last**, executions and Hidden Passive executions on **Turquoise Lit Order Books**.
- Passive – Displayed Passive executions on **Turquoise Lit Order Books**.
- Aggressive – All Aggressive executions on **Turquoise Lit Order Books**.
- Auction Passive: Marketable resting mid-point pegged order (DAY mid-point pegged order that does not trigger or join an auction when sent to the **Turquoise Periodic Auctions Order Books**)
- Auction Aggressive: (a) GFA or DAY mid-point pegged order that triggers or joins an ongoing auction or (b) When an auction is triggered as a result of a move in the primary market Best Bid and Offer price, the resting DAY mid-point pegged order that becomes marketable as a result of that move - **Turquoise Periodic Auctions Order Books**.
- Self Matched: Defined as trades executed with the same Member on both sides, where the Member has opted into optional Member Priority Matching within **Turquoise Periodic Auctions Order Books**.
- BTF Trades within the **Turquoise Lit Order Book** originating from **Appital Turquoise BookBuilder** service.

For full details, see Tariff Schedule within the Turquoise Document Library | LSEG.

16.0 Interfaces and Information Dissemination

Turquoise provides gateways to enter Orders into the trading system, receive market data, download own Order and Trade information.

Participants can request and maintain CompIDs and UserIDs via the Member Portal.

16.1 Native Trading Gateway

The Native trading gateway provides a low latency trading interface which allows Participants to send and manage Orders on the trading system. The interface enables Participants to perform the following activities:

1. Submit an Order
2. Cancel an Order
3. Mass Cancel Orders (excluding BTF pre-arranged Trades)
4. Cancel/Replace an Order (excluding BTF pre-arranged Trades)

The Native Trading Gateway uses a proprietary interface referred to as the Native interface. The Native interface consists of two channels. A Real-Time channel that provides the main Order management functionality and a Recovery channel that allows Participants to subscribe to missed messages due to a disconnection from the Real-Time channel.

16.2 FIX Trading Gateway

The FIX trading gateway allows Participants to send and manage Orders on the trading system. The interface enables Participants to perform the activities outlined below.

1. Submit an Order
2. Cancel an Order
3. Mass Cancel Orders (excluding BTF pre-arranged Trades)
4. Cancel/Replace an Order (excluding BTF pre-arranged Trades)

16.3 FIX Drop Copy Gateway

Turquoise provides a gateway to receive additional copies of Execution Reports generated by the trading system. This gateway may also be used by Participants to download the current status of all their active Orders in the event of a failure. The drop copy service cannot be used to submit Orders or receive market data. The Drop Copy Gateway uses the FIX 5.0 SP2 protocol.

16.4 FIX Post Trade Gateway

Turquoise provides a FIX Post Trade Gateway that permits Participants to perform the activities outlined below:

1. Receive real-time updates on executed Trades
2. Receive information on executed Trades via a query-based service to facilitate a recovery after a failure.

The entry of Orders (or Quotes) is not supported by the Post Trade Gateway. The Post Trade Gateway uses the FIX 5.0 SP2 protocol.

16.5 Market Data Gateway

The Market Data gateway provides a stream of fixed width binary messages which provides the following real-time information:

1. Order depth for **Turquoise Lit Order Books** (excludes Hidden and BTF pre-arranged Trades).
2. Level 1 Top of Book for **Turquoise Periodic Auctions Order Book** (TGHE only) Best Bid and Best Offer aggregate Quantity and Price from Retail Liquidity Provider Limit Orders.
3. Indicative Auction Quantity and Price (no imbalance) for **Turquoise Periodic Auctions Order Books**.

4. Aggregated executed and expired volume, side of the passive order and the further price at which volume is depleted for each individual and multiple trade event (via a Trade Summary Message) for **Turquoise Lit Order Books**.
5. Price and volume for each executed on-book Trade for **Turquoise Lit**, **Turquoise Periodic Auctions** and **Turquoise Dark Order Books**.
6. Call Market message to notify Participants of a **Turquoise Dark Uncross** event in **Turquoise Dark Order Books**.
7. Trading status of each Financial Instrument.

The feed also includes a daily download of the Financial Instrument list of Turquoise (Symbol Directory). For further information on Turquoise Market Data, see Section 16.8.

16.6 Detailed information regarding interfacing and information dissemination

For further information regarding interfacing with Turquoise please refer to the following documentation which can be found on the Turquoise website at the 'Document Library':

- TQ102 – Connectivity Guide
- TQ201 – Trading Gateway (FIX 5.0)
- TQ202 – Post Trade Gateway (FIX 5.0)
- TQ203 – Drop Copy Gateway (FIX 5.0)
- TQ301 – Trading Gateway (Native)
- TQ501 – Guide to Reference Data Services

16.7 Detailed information regarding Certification and Testing Services

For further information regarding Certification of Participant's software and ongoing testing obligations with Turquoise, please refer to the following documentation which can be found on the Turquoise website at the 'Document Library':

- TQ601 – Guide to Certification
- TQ602 – Certification Report
- TQ603 – Guide to Testing Services

16.8 Detailed information regarding LSEG's Group Ticker Plant and Turquoise

For further information regarding interfacing with LSEG's Group Ticker Plant (GTP) to receive Turquoise market data, please refer to the following documentation which can be found on the GTP website at the 'GTP Documentation Library':

- GTP001 – Product Guide
- GTP002 – Technical Guide
- GTP003 – Statistics Guide
- GTP004 – Parameters Guide
- GTP005 – Testing Service Guide
- GTP006 – External Source Guide
- GTP008 – Market Attributes Guide

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