ets connect UK

ETS Connect UK Data Quality Framework

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Data Quality Framework

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1. Introduction

This document sets out the Data Quality Framework applied by the UK bond Consolidated Tape Provider (CTP) to post-trade transparency reports from the point of receipt through to publication within the consolidated tape.

The purpose of the Framework is to define the principles, governance structure and processes through which the CTP monitors and manages data quality, in support of its regulatory obligations.

The Framework is principles-based and is designed to operate alongside the CTP's broader operational and regulatory arrangements. It does not seek to prescribe exhaustive technical requirements, nor does it replace the responsibilities of data contributors under applicable reporting regulations.

The CTP's approach to data quality is based on a layered assessment model. At the point of receipt, trade reports are subject to validation to confirm completeness, technical correctness and compliance with applicable reporting requirements. Where a report fails at this stage, it is not accepted for publication. Where a report is technically valid but gives rise to data quality concerns, the report may still be published in accordance with regulatory requirements, with relevant indicators and notifications applied as appropriate.

All identified data quality issues are recorded and communicated to the relevant data contributor, supporting remediation at source and promoting continuous improvement over time. The application of data quality flags and advisory notifications is intended to enhance transparency for users of the consolidated tape, rather than to assign fault or liability.

The sections that follow describe the Framework in greater detail, including the governing data quality principles, categories and severity levels applied by the CTP, as well as the inventory of validation and outlier checks currently in use. These components are expected to evolve over time in line with market experience, regulatory guidance and ongoing governance oversight, governed by the Data Quality Policy.

2. Data Quality Context

The data quality checks applied by the CTP are grouped into a number of categories. These categories reflect both regulatory requirements and operational considerations, and are intended to provide a transparent and proportionate framework for the handling of post-trade transparency reports:

- **FIX Message Formatting checks**: failure results in rejection of the message back to the contributor.
- **Regulatory Compliance checks**: failure results in rejection of the message back to the contributor.
- **Advisory checks**: detection results in an advisory message sent to the contributor, record is published without an indication of the highlighted issue.
- **Reference Data checks**: detection results in an advisory message sent to the contributor, record is published without an indication of the highlighted issue (and the Data Quality Indicator Flag set to FALSE).
- **Economic Outlier checks**: detection results in a message sent to the contributor. The record is published with the Data Quality Indicator Flag set to TRUE.

The detection of issues at different stages of the process result in different actions, from technical rejection (for a badly formatted trade report) through to publication with the Data Quality Indicator Flag set to TRUE (for a potentially erroneous price or notional amount). While the regulations that guide the behaviour of the CTP require the CTP to apply a Boolean flag to the message when it is deemed “likely to be erroneous”, all identified data quality issues will be recorded against the message and the CTP will inform the data contributor of the precise reason(s) for the issue.

The categorisation and treatment of data quality issues described in this section are intended to support a transparent and proportionate approach to data quality oversight in line with applicable regulatory requirements. The identification of a data quality issue, including the application of the ‘likely to be erroneous’ classification and associated Boolean indicator, does not constitute a determination of factual error, nor does it imply fault or liability on the part of a data contributor. All identified issues are recorded and communicated in order to support dialogue, monitoring and continuous improvement.

2.1. Data Quality Principles

The CTP’s approach to supporting high standards of data quality is primarily focused on the real-time assessment of received records, together with the automated communication of

identified data quality issues to Data Contributors, supporting timely investigation and remediation at source where appropriate.

The CTP will take a layered approach to the assessment of the quality of the submitted trade reports, based on the following principles:

- Trade reports that fail basic technical or formatting validation are not accepted for publication;
- Trade reports that do not meet applicable regulatory reporting requirements are not published; and
- Trade reports that meet the regulatory criteria for classification as "likely to be erroneous" in respect of economic fields such as price or notional amount, will be published with Data Quality (DQ) Indicator set to TRUE.

The CTP will communicate the details of any identified issue to the Data Contributor, including the relevant evaluation code, severity and reason. This enables the Data Contributor to assess the feedback and, where appropriate, to submit cancellation and amendment reports in order to address the identified issue.

In addition to the above, the CTP may return a number of advisory messages to the Data Contributor. In these cases, the trade report will be published without setting the DQ Indicator Flag, but the Data Contributor will receive a message identifying a possible issue.

These principles are intended to guide the consistent and proportionate application of data quality checks and do not constitute a determination of factual correctness or liability.

2.2. Data Quality Categories

This section describes the Data Quality Categories used by the CTP to classify identified data quality issues. Data Quality Categories are intended to group issues of a similar nature in order to support consistent application of controls, escalation and reporting under the DQ Framework.

The categorisation of an issue reflects the type of control or analysis through which the issue was identified and does not represent an assessment of relative severity, or impact on users of the consolidated tape.

Each data quality check is assigned to, and reported with, a particular category that determines whether the post-trade report is to be published or returned to the Data Contributor.

The table below presents the categories of data quality checks that are implemented and the actions that result from the detection of each type of issue.

Data Quality Categories	
Category	**Result**
Missing Field	Rejection message sent to Data Contributor, record not published
Invalid Format	
Conditional Values	Rejection message sent to Data Contributor, record not published
Advisory	Issue notification message sent to Data Contributor, record published. Data Quality Indicator set to FALSE.
Reference Data	
Basic Outlier	Issue notification message sent to Data Contributor, record published. Data Quality Indicator set to TRUE.
Statistical Outlier	

2.3. Data Quality Severity

In addition to the above categorisation of issues, each data quality check is also assigned a Severity Level Indicator that provides the recipient with a rating of the importance of any identified issue.

For example, a record that does not conform to applicable regulatory or technical formatting requirements (for example, due to missing mandatory attributes or incorrectly formatted fields) will be assigned a Severity Level of Critical (5), reflecting that the record cannot be processed or published by the CTP.

By contrast, a record that meets the criteria for classification as “likely to be erroneous” in respect of price will be assigned a Severity Level of Severe (4), reflecting that the record may be published by the CTP in accordance with regulatory requirements, with the Data Quality Indicator Flag set to TRUE.

The Severity Levels applied under the Framework are listed below. Severity Levels are applied consistently based on the nature of the identified issue.

Severity Definition			
Severity Level	**Severity**	**Description**	**Data Quality Indicator**
0	Good	No issues detected.	FALSE
1	Minor	A valid record that includes issues that do not impact the core economics of the record.	FALSE
2	Medium	Possible issues with additional data reported in key fields or economic information.	FALSE
3	Major	Possible issues with non-economic information based on available reference data or transaction history.	FALSE
4	Severe	An issue with key economic information has been identified.	TRUE
5	Critical	Message does not conform to the regulatory instructions including conditional formatting issues.	N/A (rejection)

2.4. FIX Session-Layer Controls

Contributors submit trade reports to the CTP over a FIX (Financial Information eXchange) connection, established and operated in accordance with the ETS Connect UK Contributor FIX Rules of Engagement. Before any submitted message is assessed for data quality, it must first be accepted at the FIX session layer, which validates that the message conforms to the structural and protocol requirements of the FIX specification.

The data quality checks described in this Framework are applied only to trade reports that have been successfully received and accepted at the FIX session layer. They do not extend to session-level rejects, which arise from FIX protocol or structural failures and are detected before a message reaches the CTP's data quality validation engine. Session-level rejects therefore precede the category and severity model set out in this section.

Session-level rejects are raised automatically where a submitted message deviates from the FIX specification, and are communicated to the Data Contributor as a FIX Reject message (MsgType 35=3). This is distinct from the MarketDataAck (MsgType 35=EQ) used to convey the application-level rejection, advisory, and Data Quality Indicator outcomes defined in this Framework.

A FIX Reject message carries a defined structure that identifies the nature and location of the failure. The principal fields are:

- RefSeqNum (45): the sequence number of the rejected message;
- RefTagID (371): the tag number of the FIX field to which the reject relates, where applicable;
- RefMsgType (372): the MsgType of the message being referenced;

- SessionRejectReason (373): a coded value identifying the reason for the reject (see code set below); and
- Text (58): a human-readable explanation of the reason for rejection, where available.

The code set and field structure above are reproduced for reference only. For the authoritative definitions and detailed technical implementation, readers should refer to the applicable FIX Specification and to the ETS Connect UK Contributor FIX Rules of Engagement.

The following table provides a list of session-level rejects that include fields set out in MAR 11 Annex 2 Table 2.

SessionRejectReason	Reject Description	Test Details
1 – required tag missing	Missing field: InstrumentIdentificationCode Type	Mandatory field
1 – required tag missing	Missing field: InstrumentIdentificationCode	Mandatory field
1 – required tag missing	Missing field: VenueOfExecution	Mandatory field
6 – incorrect data format for value	Incorrectly formatted: TradingDateAndTime	Required Format: YYYY-MM-DDThh:mm:ss.ddddddZ
6 – incorrect data format for value	Incorrectly formatted: PublicationDateAndTime	Required Format: YYYY-MM-DDThh:mm:ss.ddddddZ
5 – value is incorrect, or out of range, for this tag	Incorrectly formatted: PriceConditions	Required Format: {ENUM} "PNDG", "NOAP"
5 – value is incorrect, or out of range, for this tag	Incorrectly formatted: InstrumentIdentificationCodeType	Required Format: {ENUM} "ISIN"
5 – value is incorrect, or out of range, for this tag	Incorrectly formatted: PriceNotation	Required Format: {ENUM} "MONE", "PERC", "YIEL", "BAPO"

Any non-conformance with the FIX Specification results in a session-level rejection, thus this table is not an exhaustive list of reasons session-level reject may arise.

3. Data Quality Checks

The following table provides a list of the current data quality checks along with the assigned category and severity for those checks.

ID	Category	Evaluation Rule Title	Sev	Rej/Pub	DQ Flag	Test Details
R0001	Missing Field	Missing field: TradingDateAndTime	5	Reject	NA	Missing field: TradingDateAndTime
R0005	Missing Field	Missing field: PublicationDateAndTime	5	Reject	NA	Missing field: PublicationDateAndTime
R0007	Missing Field	Missing field: TransactionIdentificationCode	5	Reject	NA	Missing field: TransactionIdentificationCode
R0011	Invalid format	Incorrectly formatted: InstrumentIdentificationCode	5	Reject	NA	Required Format: {ALPHANUM-12} Exactly 12 characters (first 2 must be letters)
R0014	Invalid format	Incorrectly formatted: Price	5	Reject	NA	Required Format: {DECIMAL-18/17}
R0016	Invalid format	Incorrectly formatted: PriceCurrency	5	Reject	NA	Required Format: {ALPHANUM-3 Exactly 3 characters
R0021	Invalid format	Incorrectly formatted: NotionalAmount	5	Reject	NA	Required Format: {DECIMAL-18/5}
R0022	Invalid format	Incorrectly formatted: NotionalCurrency	5	Reject	NA	Required Format: {ALPHANUM-3} Exactly 3 characters
R0024	Invalid format	Incorrectly formatted: VenueOfExecution	5	Reject	NA	Required Format: {ALPHANUM-4} Exactly 4 characters
R0026	Invalid format	Incorrectly formatted: VenueOfPublication	5	Reject	NA	Required Format: {ALPHANUM-4} Exactly 4 characters
R0034	Invalid format	Incorrectly formatted: TransactionIdentificationCode	5	Reject	NA	Required Format: {free-text string with an explicit allowed character set.} Allowed character set – upper case, lowercase letter, integers, "-", ".", ",", "!", "?", "/", "#", "&", "'", """, ":", ";", "(", ")", "[", "]", "+" Maximum of 52 characters
R0035	Conditional Values	Price or Price condition must be populated	5	Reject	NA	IF PriceConditions is NULL THEN Price MUST NOT be NULL
R0036	Conditional Values	Price Currency must be reported for a Price in monetary value	5	Reject	NA	IF PriceNotation is "MONE" THEN PriceCurrency MUST NOT be NULL

ID	Category	Evaluation Rule Title	Sev	Rej/Pub	DQ Flag	Test Details
R0037	Conditional Values	Price Notation must be reported if price is reported	5	Reject	NA	IF Price IS NOT NULL AND Price is NOT = 0 AND PriceConditions is NOT "PNDG" THEN PriceNotation MUST NOT be NULL
R0038	Conditional Values	Notional Amount must be reported for a non-limited details trade	5	Reject	NA	IF FLAGS DOES NOT contain "VOLO" THEN NotionalAmount MUST NOT be NULL AND NotionalAmount MUST NOT be 0
R0039	Conditional Values	Notional Currency must be reported for a non-limited details trade	5	Reject	NA	IF FLAGS DOES NOT contains "VOLO", THEN NotionalCurrency MUST NOT be NULL
R0041	Conditional Values	PORT cannot be combined with TPAC	5	Reject	NA	IF FLAGS contains "PORT" THEN FLAGS MUST NOT contain "TPAC"
R0042	Conditional Values	LRGS cannot be combined with VOLO	5	Reject	NA	IF FLAGS contains "LRGS" THEN FLAGS MUST NOT contain "VOLO"
R0043	Conditional Values	TPAC cannot be combined with XFPH	5	Reject	NA	IF FLAGS contains "TPAC" THEN FLAGS MUST NOT contain "XFPH"
R0044	Conditional Values	VOLO cannot be combined with FULV	5	Reject	NA	IF FLAGS contains "VOLO" THEN FLAGS MUST NOT contain "FULV"
R0045	Conditional Values	AMND cannot be combined with CANC	5	Reject	NA	IF FLAGS contains "AMND" THEN FLAGS MUST NOT contain "CANC"
R0046	Invalid Format	Incorrectly formatted: Price	5	Reject	NA	If Price is NOT (NULL or 0) If PriceNotation="PERC" then Price format MUST be DECIMAL-11/10 OR If PriceNotation="YIEL" then Price format MUST be DECIMAL-11/10 OR If PriceNotation="MONE" then Price format MUST be DECIMAL-18/13 OR If PriceNotation="BAPO" then Price format MUST be DECIMAL-18/17
R0047	Conditional Values	Price must be NULL if PriceCondition used	5	Reject	NA	IF PriceConditions is NOT NULL THEN Price MUST be NULL
R0048	Invalid format	Number of entries in Market Data message need to be 1	5	Reject	NA	Number of entries in Market Data message need to be 1

ID	Category	Evaluation Rule Title	Sev	Rej/Pub	DQ Flag	Test Details
R0049	Invalid format	Number of entries for TradePriceConditions need to be 1	5	Reject	NA	Number of entries for TradePriceConditions (if populated) should only be 1
R0050	Invalid format	Number of entries for TrdRegPublication need to be 1	5	Reject	NA	Number of entries for TrdRegPublications (if populated) should only be 1
R0051	Invalid format	Number of entries for RegulatoryTradeIDs need to be 1	5	Reject	NA	Number of entries for RegulatoryTradeID should be 1
R0052	Invalid format	The maximum number of entries for Trading date and time needs to be 1	5	Reject	NA	Single entry for TradingDateAndTime, where TrdRegTimestampType(770)=1 (Execution time), and TrdRegTimestampOrigin(771)=C (Contributor)
R0053	Invalid format	Number of entries for Venue of Publication need to be 1	5	Reject	NA	Number of entries for venue of publication should only be 1
R0054	Invalid format	The maximum number of entries for Publication date and time needs to be 1	5	Reject	NA	Single entry for PublicationDateAndTime, where TrdRegTimestampType(770)=11 (Publicly reported)), and TrdRegTimestampOrigin(771)=C(Contributor)
W0007	Advisory	Price Currency should be left blank if the PriceNotation is different from “MONE”	2	Publish	FALSE	IF PriceNotation is NOT "MONE" THEN PriceCurrency MUST be NULL
W0009	Advisory	Price Notation is not required for a missing price	2	Publish	FALSE	IF (PriceConditions = "PNDG" OR PriceConditions= "NOAP" OR Price is NULL OR Price = 0) THEN PriceNotation MUST be NULL
W0016	Advisory	Notional Amount should NOT be reported for a limited details trade	2	Publish	FALSE	IF FLAGS contains "VOLO", THEN NotionalAmount MUST be NULL OR NotionalAmount MUST = 0
W0020	Advisory	Notional Currency should NOT be reported for a limited details trade	2	Publish	FALSE	IF FLAGS contains "VOLO" THEN NotionalCurrency MUST be NULL
W0041	Basic Outlier	Negative Notional Amount	4	Publish	TRUE	NotionalAmount MUST NOT < 0
W0054	Basic Outlier	Zero Notional Amount	4	Publish	TRUE	NotionalAmount MUST NOT= 0 IF Flags DOES NOT CONTAIN "VOLO"

By way of guidance, the columns in the above table contain the following:

1. **ID**: Unique identifier for each DQ check.
    a. **R** codes are used for Rejection messages*: these messages **are not** published and the details of the evaluation are returned to the contributor*.
    b. **W** codes are used for Warning messages: *these messages **are** published and the details of the evaluation are returned to the contributor*.
2. **Category**: The classification of the DQ checks.
    a. **Missing Field:** the reported trade does not contain all the mandatory attributes.
    b. **Invalid Format:** the reported trade contains an attribute that is not formatted correctly.
    c. **Conditional Values:** the reported trade contains fields that are incorrect in combination.
    d. **Advisory:** a communication of a possible issue with the reported trade.
    e. **Reference Data:** the reported trade is tested against CTP reference data.
    f. **Basic Outlier:** the economic details of the reported trade are outside of an historical range.
    g. **Statistical Outlier:** the economic details of the reported trade are recognised as potentially erroneous based on advanced statistical checks.
3. **Evaluation Rule Title**: A simple description of the DQ check.
4. **Severity**: An indication of the severity of the evaluation (from 5=Critical to 1=Minor)
5. **Rej/Pub**: An indication of whether a failure of this DQ check would result in Rejection or Publication of the report.
6. **Flag**: An indication of whether the DQ Indicator Flag is set to TRUE (possibly erroneous economic details) or FALSE.
7. **Test Details**: A definition of the data quality check