



Crossrail

Document Number: RFLI-OPS-PE-SPE-0004

Revision: 3.0

Revision Date: Aug 2017

Crossrail Central Operating Section Performance Data Accuracy Code

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Note: This document is uncontrolled when printed.

Document History

Revision	Date	Change	Author
1.0	June 2017	Consultation Draft	Tim Jones
2.0	June 2017	Incorporation of feedback from SH legal review 15/06/2017. Appendix C (Change Request form) formatted.	Russell Parish
3.0	Aug 2017	Updated for consultation feedback	Russell Parish

Record of Holds in Document

Specify any Holds within the document.

Hold No	Section	Description of Hold

Revision Tracking

Specify significant change from previous revisions of the document. (From Rev. 1.0 onwards)

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Explanatory Note

This Explanatory Note does not form part of this Code.

Part B of the CCOS Network Code requires RfL(I) to operate a system for monitoring train performance and which, amongst other things, must accurately record the times at which trains arrive at, depart from or pass Recording Points, along with the difference between those times and the corresponding times published in the Working Timetable.

This Code governs the interpretation of the phrase accurately record in that context. It also provides a mechanism for agreeing and notifying changes in standards, including the characteristics of Recording Points.

1. Definitions

1.1 In this Code, the following definitions apply except where the context requires a different meaning:-

"Access Agreement"	has the meaning given to it in Part A of the CCOS Network Code;
"Accounting Period"	means one of RfL(I)'s 13 annual accounting periods;
"CCOS Network Code"	means the document entitled "CCOS Network Code", as may be amended from time to time;
"CCOS Performance Monitoring System"	means a system fed from signalling data, recording historic information at each Reporting Point;
"Code"	means this CCOS Performance Data Accuracy Code including its Appendices, each as may be amended from time to time;
"Margin Book"	means a collection of the characteristics of the Recording Points relevant to a particular Access Agreement, as described in section 5;
"Monitoring Point"	means a Recording Point used to record the lateness of trains under the relevant Access Agreement performance regime and which is described as a "monitoring point" in the Margin Book;
"Performance Monitoring"	means RfL(I)'s operation of the CCOS Performance Monitoring System;
"Recording" (as a noun)	means time data posted into the CCOS Performance Monitoring System or otherwise noted as the time at which a train arrives at, departs from or passes a Recording Point, as required by Part B of the CCOS Network Code;
"Recording Point"	means a point at which RfL(I) measures and records time data of trains during Performance Monitoring;
"RfL(I)"	has the meaning given to it in Part A of the CCOS Network Code;
"Systems Code"	means the document entitled the CCOS Railway Systems Code,;
"this Code"	means this CCOS Performance Data Accuracy Code, including its

appendices;

"Time from NPL"

means time transmitted by the Anthorn VLF transmitter which serves as the United Kingdom's national time reference or any successor or replacement signal notified by RfL(I) to Access Beneficiaries;

"Timing"

means (as a verb) reading a clock or (as a noun) the time read from a clock, in each case, whether the reading is made by a human agent or by automatic means; and

"Triggering Point"

means a location at which a train movement is physically detected at the start of the process of making a Timing at an Automatic Point.

1.2 This Code is incorporated into, and forms part of, the CCOS Network Code. Where the context admits, words and expressions defined in the CCOS Network Code, and the rules of interpretation set out in Condition A1.1 of the CCOS Network Code, apply throughout this Code and references to the CCOS Network Code in such words, expressions and rules shall, in this document, be construed as references to this Code.

2. Aims

2.1 The aims of this Code are:-

- a) to define the standards of measurements and Recording required for the CCOS Performance Monitoring System; and
- b) to provide a process for managing the changes consequent on alterations in measurement and recording.

3. Effects of the Code

3.1 This Code has no effect on:

- a) any safety-related obligations of any person; or
- b) any rights or obligations of Access Parties relating to data which are incorrect in a sense not contemplated in this Code (for example, in relation to the Recording of the cause of train delays and cancellations) or to have regard to other data where alternative evidence as to actual train performance is available.

3.2 Nothing in this Code entitles:-

- a) any Access Party to abridge any process required under any Access Agreement to implement any change;
- b) any person to abridge any process required under the Systems Code; or
- c) RfL(I) to make any charge for any train movement to the extent that it has not in fact occurred.

3.3 In connection with any Access Agreement, a Recording at a Recording Point which is based on a Timing (as opposed to recreated data) is accurate if it is made in an Accounting Period during which RfL(I) achieves at that Recording Point the standards set out in this Code.

- 3.4 If RfL(I) omits or becomes aware that it is likely to omit to make a Timing of an event for a Recording, it must notify each affected Access Beneficiary as soon as it reasonably can. In respect of any day on which RfL(I) gives such notice:-
- a) each affected Access Beneficiary must as soon as it reasonably can supply in good faith all information available to that Access Beneficiary which is relevant to that Timing omitted on that day. RfL(I) must use all appropriate information provided by the Access Beneficiary in creating a Recording related to the omitted Timing. RfL(I) may disregard information provided by the Access Beneficiary if and to the extent that it is reasonable to do so owing to manifest error, failure of the Access Beneficiary to act in good faith or demonstrable bias; and
 - b) if, having made use of appropriate information supplied by Access Beneficiaries, RfL(I) still has omitted Recordings then RfL(I) may use an appropriate procedure to interpolate or otherwise create Timings and related Recordings.
- 3.5 Recordings created under paragraph 3.4 must be agreed with the affected Access Beneficiary. If and to the extent that they are not agreed, then (subject to the provisions of the relevant Access Agreement) either party may refer the failure to agree as a dispute for resolution under section 10. Recordings agreed with the affected Access Beneficiary (or which are determined in accordance with such dispute resolution or which are not disputed by an Access Beneficiary within 21 days of RfL(I) first notifying the affected Access Beneficiary of the Recording) are deemed accurate.
- 3.6 Recordings omitted in good faith which have not been created are nonetheless deemed accurate provided that RfL(I) achieves the data completeness standard set out in the Access Beneficiary's Margin Book for the Recording Point in the relevant Accounting Period or on that day or otherwise applying under Appendix A, as the case may be.
- 3.7 Recordings at any Recording Point which are accurate in accordance with paragraphs 3.3, 3.4, or 3.6, when RfL(I) has observed the obligation of good faith (see section 11) and except in the case of manifest error, constitute a sufficient discharge of all obligations on RfL(I) under the Access Agreement with respect to them, and none of those Recordings may be challenged.
- 3.8 If Recordings at a Recording Point are not accurate in accordance with paragraphs 3.3, 3.4, or, 3.6, or are manifestly in error or if RfL(I) has not observed the obligation of good faith in relation to those Recordings, then RfL(I) is at fault and those Recordings may be challenged. If agreement to correct such errors is not reached within 28 days, any affected party or parties may refer the matter as a dispute for resolution under section 10. If an affected party or parties do not refer the matter as a dispute for resolution within a further 7 days, such affected party or parties shall be deemed to have agreed RfL(I)'s proposals to correct such errors.
- 3.9 Recordings are presumed to be accurate unless:-
- a) they are shown not to be; or
 - b) in respect of Recordings at a particular Recording Point, a review of standards achieved in the CCOS Performance Monitoring System carried out in accordance with the terms of section 7 causes RfL(I) to doubt the accuracy (in accordance with its meaning in the Code) of Recording there.

4. Characteristics of Recording Points and Other Standards

- 4.1 The Characteristics of a Recording Point include:-
- a) its location; and

b) the technology employed to make Recordings at the Recording Point.

4.2 Appendix A sets out the data completeness standard which applies under this Code. Part A relates to the completeness standard which applies in respect of any Recording Points which are subject to a common mode failure. Part B relates to the standard which applies otherwise than in respect of common mode failures. The particular category of standard which RfL(I) is required to meet at a particular Recording Point for a particular Access Agreement under Part B is set out in the Margin Book related to that Access Agreement.

4.3 Appendix B sets out the timing standard that applies under this Code. The category of timing standard for a Recording Point is determined by the technology usually employed for making Recordings there. Appendix B also sets out the Recording technologies, allocates each to a category, and states the standard of timing that RfL(I) is required to meet in that category.

4.4 RfL(I) must on request supply to any Access Beneficiary a statement of the characteristics of any Recording Point relevant to that Access Beneficiary, or of changes to those characteristics, within a reasonable time and on payment of its reasonable charges.

5. Margin Books

5.1 For each Access Agreement, RfL(I) must compile a Margin Book setting out the characteristics of each Recording Point relevant to that Access Agreement. For each Recording Point, RfL(I) must state in the Margin Book whether it is a Monitoring Point for the purposes of Appendix A and what category of data completeness standards applies. RfL(I) must supply a copy of the Margin Book to the relevant Access Beneficiary without charge at the commencement of the Access Agreement.

5.2 RfL(I) and the Access Beneficiary must seek to agree the Margin Book and any changes made to it from time to time. If and to the extent that they do not agree within 28 days from the date of the Access Beneficiary being supplied with a copy of the first Margin Book under paragraph 5.1 or a revised Margin Book under paragraph 5.3 then either party may refer the failure to agree as a dispute for resolution under section 10. If a failure to agree is not referred as a dispute for resolution under section 10 within 35 days from the date of the Access Beneficiary being supplied with a copy of the first Margin Book under paragraph 5.1 or a revised Margin Book under paragraph 5.3, the parties shall be deemed to have agreed the Margin Book. Agreement of the Margin Book specifically signifies that the relevant Access Parties are content that:-

- a) the Margin Book covers all the Recording Points appropriate to the Access Agreement;
- b) the Recording Points are correctly described as being, or as not being, Monitoring Points;
- c) the data completeness categories to which the Recording Points are allocated are appropriate having regard to the circumstances at that time; and
- d) the Margin Book contains no gross or obvious errors.

5.3 Notwithstanding any agreement of the Margin Book, either party may at any time notify the other of:-

- a) an error in the Margin Book;
- b) any Recording Point becoming or ceasing to be a Monitoring Point; or
- c) any different data completeness category becoming applicable; and
- d) request that the Margin Book be amended,

In the event that agreement to amend the Margin Book cannot be reached within 28 days of the

notification, the matter may be referred as a dispute for resolution under section 10. If agreement to amend the Margin Book is reached or it is determined by dispute resolution that the Margin Book should be amended, then RfL(I) must amend the Margin Book appropriately within 28 days of agreement or the determination of the dispute process. The amendments will take effect from the time at which the error or requirement for change was first notified.

5.4 The minimum category of data completeness standard to which each Recording Point in a Margin Book must be allocated is determined as follows:-

- a) If the Recording Point is not a Monitoring Point, the category is Silver.
- b) Monitoring Points should be Categorised as Gold.
- c) Any Recording Point which is a destination point on the CCOS for a Service must be placed in at least the Gold category.

5.5 If the characteristics of any Recording Point change, RfL(I) must update each Margin Book and provide revisions or supplements to the relevant Access Party. Before making any change to the characteristics of the Recording Point, RfL(I) must notify each affected Access Beneficiary.

6. Changes to Characteristics of Recording Points

6.1 Any change to a lower category of timing standard applicable to a Recording Point is a material change to the operation of the CCOS for the purposes of Part G of the CCOS Network Code.

6.2 If a change to characteristics of a Recording Point comprises:-

- a) a change of category pertaining to Appendix A Table A;
- b) a change in the requirements of a standard in Appendix A or Appendix B; or
- c) a change within any part of the CCOS Performance Monitoring System of the units in which time Recordings are held,

and there are reasonable grounds for believing there to be a financial impact on a Performance Regime in an Access Agreement, then the potentially affected Access Party shall be entitled to notify the other that it wishes to negotiate with a view to neutralising that financial impact. Notification may take place at any time but any financial impact that may have occurred before the start of the Accounting Period in which the notification is given will stand without neutralisation (unless the parties agree otherwise). If the parties do not within 28 days after notification reach agreement on the need to neutralise a financial effect or how to neutralise it, then either party may refer the dispute for resolution under section 10. Once agreement is reached on a way to neutralise the financial effect of a change, or a decision is reached through dispute resolution, or if a party does not refer the dispute for resolution with 35 days after notification, it is binding on the parties. One party alone cannot demand further negotiation on neutralisation, but it may take place if the relevant other Access Party agrees.

6.3 If the agreement or decision described in paragraph 6.2 requires or is equivalent to an amendment to an Access Agreement, such an amendment may take effect only in accordance with the process for amending Access Agreements as published by the ORR. A proposed amendment cannot be implemented until ORR's approval has been obtained.

6.4 Parties to each Access Agreement must seek to limit negotiations to neutralise financial effects to not more than 2 in any one year; but there may be more if changes to Recording technology occur more frequently or other circumstances require it. Parties must try to identify likely financial effects during consultation on the annual proposals for improving standards.

7. Accuracy of Recording Point Times in the CCOS Performance Monitoring System

- 7.1 Refer to Appendix C for the template Recording Point Change Request (RPCR) Form Parts A&B.
- 7.2 Where the Recording Point in question is not a Monitoring Point in the Access Agreement of any affected Access Beneficiary, the following shall apply:-
- a) Where there is unanimous agreement, or agreement from a sufficient number of affected Access Beneficiaries to represent a majority of services at that Recording Point, RfL(I) shall be entitled to make the alterations; or
 - b) Where there is unanimous disagreement, or the level of agreement fails to meet the requirements of paragraph 7.2(a), RfL(I) shall not be entitled to make the alterations.
- 7.3 Within 7 days following the deadline for the receipt of responses, RfL(I) shall, having taken due notice of such responses; issue a notice of the decision to each affected Access Beneficiary.
- 7.4 Within 14 days following receipt of such a notice, any affected Access Beneficiary that does not agree with its contents may refer the matter for resolution under section 10. If an Access Beneficiary does not refer the matter for resolution within such period, it shall be deemed to have agreed the contents of such a notice.

8. Review of Standards in the CCOS Performance Monitoring System

- 8.1 RfL(I) must at least once in each year review the standards of measurement and Recording achieved in the CCOS Performance Monitoring System. RfL(I) must aim to carry out the review at about the same time each year. In formulating the terms for the review, RfL(I) should give adequate consideration to the materiality of data to each individual affected Access Party.
- 8.2 Following the review, RfL(I) must publish to the Access Parties a report of its review and any proposals it may have for improving standards in the following year. In formulating any such proposals, RfL(I) should give adequate consideration to the materiality of data inaccuracy to each of the Access Parties.
- 8.3 The report must include an assessment of the standards in measurement and Recording achieved across the CCOS over the previous year. This may be done by reference to a suitable sample of the Recording Points.
- 8.4 Following publication of the report, Access Parties shall be entitled to require RfL(I) to take account of reasonable modifications (including additional proposals) suggested by the respondents.

9. Revision to the Code

- 9.1 This Code may be amended in the same manner as the CCOS Network Code and Part C of the CCOS Network Code shall apply to amendments to this Code in the same manner.

10. Dispute Resolution

- 10.1 The CCOS Access Dispute Resolution Rules shall apply to this Code. A dispute arising out of or in connection with this Code shall, unless otherwise agreed by RfL(I) and the affected Access Party, be referred to Access Dispute Adjudication under Chapter G of the CCOS Access Dispute Resolution Rules.

11. Good Faith

- 11.1 The obligation of good faith set out in Condition 1.5 of Part A of the CCOS Network Code applies in respect of this Code.
- 11.2 Amongst other things, good faith requires all Access Parties:-
- a) to strive to achieve zero bias in Recordings;
 - b) to be fair and honest when interpolating or otherwise creating Recordings (after a failure to make a Timing); and
 - c) not to conceal any Timing actually made, or unfairly and deliberately to omit to make any Timing or Recording.
- 11.3 All Access Parties must request, and RfL(I) must make, changes to characteristics of Recording Points in good faith. All such changes must be fair and equitable and not discriminate unduly between participants in the CCOS.

APPENDIX A -DATA COMPLETENESS STANDARD

In this Appendix:

- “**common mode failure**” means a failure that affects both train performance and Recording (such as signalling failure);
- “**other failure**” means a failure that affects Recording but not train performance (such as failure of a Recording device); and
- “**completeness**” is the ratio of the number of Timings actually made to the number that would have been made if there had been no omissions.

Planned downtime agreed between affected parties is not treated as a failure, and the Timings not made on that account are not treated as omissions.

Part A – Common Mode Failures

On any day during which a common mode failure occurs or persists, data for each failed individual Monitoring Point is identified in Margin Book, and each failed Recording Point which is described as a destination point on the CCOS for a Service in a relevant Access Agreement, must be created to the following level of completeness: 99%.

Data need not be created under this Part A for other Recording Points subject to a common mode failure.

Part B – Other Failures

For all other days in an Accounting Period taken together (that is, excluding in respect of any Recording Point which is a Monitoring Point, days on which that Recording Point is subject to a common-mode failure):

Table A: Monitoring Point Completeness Standard

Category	Completeness at each Recording Point (%)	For the average of all Recording Points of a category in a Margin Book, the number of days in which Completeness is less than 50% is not to exceed
GOLD	99	1
SILVER	99 (Note 1)	2

Note 1: If there is a failure of any equipment at a Specified Point which is not a Monitoring Point or a destination point on the CCOS for a Service, as a result of which Timings are missed, then the Silver category of completeness in Part 2 is reduced to 85% for the relevant Accounting Period. This is intended to allow priority to be given to the collection of data at the commercially more important points.

APPENDIX B: TIMING STANDARD

Table B: Timing Standard for Monitoring Points

Technology	Standard at each Recording Point over an Accounting Period		Average of all Recording Points of a category in a single Margin Book over an Accounting Period
	Bias equal to or less than	Scatter	Bias equal to or less than
CBTC Automatic	+/.3 sec	100% within +/. 1 sec of zero error	+/.1.5 sec

The above table is subject to the following:

Relationship to Time from NPL

“-” Indicates an understatement of lateness. For example, if a clock at a Recording Point runs 3 seconds slow in comparison to Time from NPL, a train arriving at that Recording Point at 12.00 and 3 seconds by Time from NPL will be timed at 12.00 and nil seconds. Accordingly for the purposes of Table B, that Timing is regarded as having an error of minus 3 seconds.

Bias

The bias at a Recording Point is the sum of all the errors, divided by the number of Timings. The average bias at several Recording Points is the sum of the individual errors divided by the sum of the number of Timings.

Error

The error is the difference between the Timing and Time from NPL at the moment when the Timing is made for use in the Recording.

The bias at each Recording Point, and the average bias of all Recording Points of a category in a single Margin Book, shall be the underlying long-term biases and not biases over a single Accounting Period. In relation to trains stopping at a Recording Point, the event which is the subject of the Timing is the train coming to a stand at that Recording Point.

APPENDIX C -RECORDING POINT CHANGE REQUEST FORM (RPCR)

Part A Description of Change					
CCOS LOCATION:		Status:	Monitoring Point /Recording Point (delete as required)		
Review Date(s)					
Description of and Reason for Change:					
Part B Neutralisation request – Monitoring Points only (if applicable)					
Is neutralisation required? Delete as appropriate					
Operator response	Yes/No	RfL(I) response	Yes/No		
Has an agreement been reached to undertake re-benchmarking?					Yes/No
Agreed By:		Signed:		Date:	
		For Access Party			
Agreed By:		Signed		Date:	
		For RfL(I)			
If neutralisation has not been undertaken please state why:					
Part C Train Operator neutralisation output (Monitoring Points only)					
Completed after neutralisation undertaken (where requested)					
Name of Train Operator Consulted:					
Approved / Rejected (Delete as appropriate)		Signed:		Date:	
		For Train Operator			
Comments:					
Part D Train Operator agreement of changes					
The above changes have been agreed as valid and can be updated in the system		Signed:		Date:	
		For Train Operator			
Part E RfL(I) Confirmation of Agreement for Change					
(To be completed once all consultation undertaken and agreement reached)					
The above changes have been agreed with all affected Train Operators and, where appropriate, any recalibrations approved by the ORR.		Signed:		Date:	
		RfL(I) Performance Manager			
Part F Confirmation of Change					
The above changes were entered into the appropriate Margin Books.		At:			
RfL(I) Reference Number:		Signed:		Date:	
		Performance Manager			
Has a new copy of the Margin Book been issued to the relevant parties?		Yes/No Delete as appropriate			