

Annexure 1.9:

Returnable Documents

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1 GENERAL

1.1 Purpose of the Document

- 1.1.1 The purpose of this document is to provide the minimum Returnable Documents which form part of the minimum Requirements of the Passenger Rail Agency of South Africa ("PRASA") that the Bidder shall submit as part of the Bid for the planning, design, supply, construction, installation, testing, commissioning and maintenance of a new fully integrated, functional, complete and future-proofed PRASA Train Control System ("PTCS") in PRASA's KwaZulu-Natal ("KZN") service region ("the Project") that the Bidder shall meet and deliver at the Bidder's cost therefore within the Bid Price.

1.2 Executive Overview

- 1.2.1 The information and requirements specified in this document is additional to, and does not replace, all other information requested, from the Bidder as part of the Bid, throughout the RFP.

2 RETURNABLE DOCUMENTS

2.1 General

2.1.1 Project description and understanding:

- a) The Bidder shall submit a detailed description and understanding of the Project as understood by the Bidder.

2.1.2 Statement of Compliance:

- a) The Bidder shall submit a clause-by-clause/item-by-item unambiguous statement of full compliance to all requirements and specifications provided throughout the RFP.
- b) The Bidder shall submit a clause-by-clause/item-by-item unambiguous statement of compliance with all relevant standards, specifications, regulations and procedures in the MTR.

2.1.3 References:

- a) The Bidder shall submit detailed case studies for similar projects implemented in the last 5 years in suburban areas together with associated verifiable client references and contact details.
- b) The Bidder will provide a list of signalling projects or railway projects with a signalling scope completed in the last 15 years, with client contact information for each project (Only contactable projects will be considered).
 - (i) The tender value of the signalling scope of the project (in ZAR - calculated at an exchange rate of GBP1=ZAR19 / EUR1=ZAR17 / USD1=ZAR15) will be provided for verification.
 - (ii) The Bidder will provide completion/handover certificates for each project as proof of completion.
 - (iii) In the case of a joint venture or consortium, each member of the joint venture/consortium will provide an individual list
- c) The Bidder will provide a list of signalling projects or railway projects completed in the last 15 years, with client contact information for each project (Only contactable projects will be considered), which meets ALL the following criteria:
 - Signalling scope tender value higher than or equal to R500 million.
 - Less than 18 months total delay compared to tender project baseline.
 - Less than 20% Variance at Completion based on the Earned Value Model utilised on each Project
 - Less than 12 months to adapt all of the clients' requirements (interlocking, points, axle counters, signals, etc)

- (i) The tender value of the signalling scope of the project (in ZAR - calculated at an exchange rate of GBP1=ZAR19 / EUR1=ZAR17 / USD1=ZAR15) will be provided for verification.
- (ii) In the case of a joint venture or consortium, each member of the joint venture/consortium will provide an individual list.

2.2 Works Delivery Method Statements

2.2.1 The Bidder shall provide comprehensive method statements on how all aspects of the Planning, Design, Supply, Construction, Installation, Testing, Commissioning and Maintenance of the Works shall be delivered by the Bidder, in strict compliance and adherence with the RFP. The method statements to be provided include, but are not limited to:

- a) General.
- b) Management and Implementation.
- c) Project Programme and Time Management.
- d) Interface Management.
- e) Key Personnel Requirements.
- f) Project Office Co-location and Resourcing.
- g) Document Management.
- h) Reporting.
- i) Project Meetings.
- j) Occupational Health and Safety Management.
- k) Environmental and Heritage Management
- l) Quality Management.
- m) Temporary Works, Site(s) Services and Construction Constraints.
- n) Reporting of Faults and Failures.
- o) Occupations.
- p) Operational Readiness.
- q) Training and Technology Transfer.
- r) Inspections, Interim Tests, Tests on Completion, Commissioning, Completion, Taking Over and Defects After Taking Over.
- s) Decommissioning.
- t) Spares, Maintenance and Life Cycle Cost ("LCC") Replacement Plan and Financial Model.
- u) Project Exit Strategy

- v) Any other method statements as required to clearly demonstrated how the Works shall be delivered.

- 2.2.2 The Bidder will provide a detailed Bid Programme as stipulated, taking into consideration all stipulated and foreseen constraints and clearly showing the critical path in calendar days (shortest possible time to complete the project)
- 2.2.3 The Bidder will provide CVs and qualifications for all key staff as stipulated in the RFP
- 2.2.4 The Bidder will provide a comprehensive and transparent Financial Management Plan detailing how all financial aspects of the Project will be managed and clearly indicating the proposed payment milestones.
- 2.2.5 The Bidder will provide the required average payment (as a percentage) of the total cost of a station, to be made prior to handover of the station (Including cost for enabling works).

2.3 General Technical Requirements

2.3.1 Systems descriptions:

- a) The Bidder shall submit a detailed description of all Systems and sub-Systems that the Bidder shall provide as part of the Works.
- b) Such description shall include a description of all Systems, sub-Systems, Plant and Materials that shall be delivered as part of the Works.
- c) The Systems descriptions shall, where applicable, for each System, sub-System and Plant and Materials describe the diagnostic features of the System, sub-System and Plant and Materials together with the data that shall be transmitted to the Maintenance server.

2.3.2 Theft and Vandalism method statement:

- a) The Bidder shall submit a detailed method statement on all measures, techniques and Installation rules the Bidder shall implement toward addressing the Theft and Vandalism concerns and requirements stated throughout the RFP to suitably and adequately protect and deliver the Works.
- b) The Bidder will provide a concept anti-theft and vandalism design for the sample station provided, based on the solution offered by the Bidder, clearly indicating which signal elements will be protected:
 - In line with the minimum requirements specified in the RFP; and/or
 - In line with minimum requirements specified in the RFP and through additional measures proposed by the Bidder (Clearly indicating which is additional from the RFP).

2.3.3 Electromagnetic Compatibility (“EMC”) Plan:

- a) The Bidder shall submit a detailed EMC Plan covering all applicable Systems, sub-Systems and Plant and Materials that shall be provided as part of the Works.
- b) The EMC plan shall, at a minimum:
 - Give details on how the Bidder shall meet the EMC and lightning requirements for each applicable System, sub-System and Plant and Materials
 - Indicate applicable certificates

2.3.4 Earthing and bonding concept:

- a) The Bidder shall submit a detailed earthing and bonding concept covering all applicable Systems, sub-Systems and Plant and Materials that shall be provided as part of the Works.
- b) The earthing and bonding concept shall, at a minimum:
 - Give details on how the Bidder shall meet the earthing and bonding requirements
 - Give details on how the earthing and bonding conditions already implemented shall not be affected during the implementation of any new System
 - How the interfaces between any new and old Systems shall be managed
 - Indicate applicable certificates

2.3.5 Environmental and Heritage:

- a) In conjunction with other Environmental and Heritage method statements requirements specified throughout the RFP, the Bidder shall:
 - Indicate applicable certificates
 - Provide evidence that Systems, sub-Systems and Plant and Materials shall work in the KZN environment.

2.3.6 Copper reduction and minimisation:

- a) The Bidder shall submit a detailed “Copper Reduction and Minimisation Method Statement.”
- b) The method statement shall provide detail on how the Bidder shall eliminate or reduce copper cable within the Works.
- c) The method statement shall give an estimation of the length in meters of copper cable that shall be used in the implementation of the Works.

- d) The Bidder will provide a concept cable plan for the sample station provided, indicating the estimated total length of single copper cable cores (Power, main and tail cables) that will be used, based on the solution offered by the Bidder.
- e) The Bidder will provide a statement of the total length of copper cable cores that will be used at the sample station.

2.4 Railway Signalling System (“RSS”)

2.4.1 References:

- a) The Bidder shall submit detailed case studies for the offered RSS, subsystems and Plant and Materials being in operation during the last 5 years in suburban projects and situated preferably in subtropical coastal areas together with associated verifiable client references and contact details.

2.4.2 Validation certificates:

- a) The Bidder shall submit all necessary Validation certificates with detailed relevant documentation (Safety and Performance standards, etc.).
- b) The Bidder shall submit PRASA and/or TFR approvals where applicable.

2.4.3 Station grouping:

- a) The Bidder shall submit a detailed diagram clearly indicating which stations shall be grouped together and controlled by one interlocking.
- b) One interlocking controlling all Signalling elements in KZN shall not be accepted.

2.4.4 RAMS calculations:

- a) The Bidder will submit detailed theoretical RAMS calculations for the Railway Signalling System as it shall be implemented at the sample station provided

2.4.5 Power consumption calculations

- a) The Bidder shall submit detailed theoretical power consumption calculations for:
 - The RSS CTCC System
 - The RSS as it shall be implemented at the sample station provide

2.4.6 Maintenance and Life Cycle Cost (“LCC”) Replacement Plan and Financial Model:

- a) The Bidder shall submit the estimated detailed, all-inclusive; Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model for the whole of the Works.

- b) The Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model shall adhere OEM requirements and specifications, proven local best practice and proven international best practice.
- c) The Financial Model shall be based on a useable life of 20 years for all Plant and Materials further transparently showing all detailed calculations and assumptions.
- d) The Financial Model shall include Equipment price increases based on the Consumer Price Index ("CPI") estimations for the next 20 years, also taking into consideration any foreign exchange factors.
- e) The calculations shall further be based on the detailed theoretical RAMS calculations done by the Bidder.
- f) The strategy shall include resource requirements for maintaining the Works. Resource requirements shall show number of technical workers, Engineering technicians and technologists needed to carry out effective; planned Maintenance, preventative Maintenance and Life Cycle replacements whilst minimising disruption to PRASA operations.

2.4.7 Method statement:

- a) The Bidder shall submit a high-level implementation, Testing and Commissioning method statement.
- b) The method statement shall provide an overview of how the Bidder shall change over from the old to the new RSS.
- c) The method statement shall include details regarding Installation methods, FAT, SAT and final Testing and Commissioning, indicating which activities shall be conducted under Occupation-between-trains conditions and which shall require total Occupation.

2.5 Train Control System ("ETCS Level 2")

2.5.1 Preliminary Conceptual Design:

- a) The Bidder shall submit a preliminary conceptual Design for the implementation of all the mandatory functions with the goal of avoiding the use of balises as far as possible.
- b) The preliminary conceptual Design shall include feedback on the feasibility of the proposed guidelines to reduce the number of balises.

2.5.2 Alternative proposals:

- a) The Bidder may propose and describe any suitable innovative solutions (e.g. replacement of balises by other devices) and clearly state the feasibility and applicability.

2.5.3 Development/Engineering Plan:

- a) The Bidder shall submit a Development/Engineering plan that covers all the activities, processes, methods and Tools to be put in place to ensure that the delivered ETCS Level 2 meets all the requirements. The plan shall mention the technical references and sources used for the Design, Testing and verification and Validation of the ETCS Level 2 and its integration in the PRASA environment.
- b) The Development/Engineering plan shall, at a minimum, cover the following aspects:
 - Generic development to customize the ETCS Level 2 implementation to the South African context and define the principles and Design rules to be applied to each subproject
 - The adaptations of the ETCS Level 2 products to fit the South African context
 - The production Engineering and Testing (processes, activities and Tools) for the execution of the Works

2.5.4 References:

- a) The Bidder shall submit detailed case studies for the offered ETCS Level 2, subsystems and Plant and Materials being in operation during the last 5 years in suburban projects and situated preferably in subtropical coastal areas together with associated verifiable client references and contact details.

2.5.5 Validation certificates:

- a) The Bidder shall submit all necessary Validation certificates with detailed relevant documentation (Safety and Performance standards, etc.).

2.5.6 ETCS Level 2 Copper reduction method statement:

- a) The Bidder shall submit a detailed ETCS Level 2 Copper reduction method statement
- b) The method statement shall provide detail on how the Bidder shall eliminate or reduce copper cable within the ETCS Level 2.
- c) The method statement shall give an estimation of the length in meters of copper cable that shall be used in the implementation of the ETCS Level 2.

2.5.7 RAMS calculations:

- a) The Bidder shall submit detailed theoretical RAMS calculations for the ETCS Level 2 as it shall be implemented for the sample section provided.

2.5.8 Power consumption calculations:

- a) The Bidder shall submit detailed theoretical power consumption calculations for:
 - The ETCS Level 2 CTCC System
 - The ETCS Level 2 as it shall be implemented for the sample section provided

2.5.9 Maintenance and Life Cycle Cost (“LCC”) Replacement Plan and Financial Model:

- a) The Bidder shall submit the estimated detailed, all-inclusive; Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model for the whole of the Works.
- b) The Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model shall adhere OEM requirements and specifications, proven local best practice and proven international best practice.
- c) The Financial Model shall be based on a useable life of 20 years for all Plant and Materials further transparently showing all detailed calculations and assumptions.
- d) The Financial Model shall include Equipment price increases based on the Consumer Price Index (“CPI”) estimations for the next 20 years, also taking into consideration any foreign exchange factors.
- e) The calculations shall further be based on the detailed theoretical RAMS calculations done by the Bidder.
- f) The strategy shall include resource requirements for maintaining the Works. Resource requirements shall show number of technical workers, Engineering technicians and technologists needed to carry out effective; planned Maintenance, preventative Maintenance and Life Cycle replacements whilst minimising disruption to PRASA operations.

2.5.10 Method statement:

- a) The Bidder shall submit a high-level implementation, Testing and Commissioning method statement
- b) The method statement shall provide an overview of how the Bidder intends to implement the ETCS Level 2.
- c) The method statement shall include details regarding Installation methods, FAT, SAT and final Testing and Commissioning, indicating which activities shall be conducted under Occupation-between-trains conditions and which shall require total Occupation.

2.6 Centralised Train Control Centre (“CTCC”)

2.6.1 References:

- a) The Bidder shall submit detailed case studies for the offered CTCC Systems, subsystems and Plant and Materials being in operation during the last 5 years in suburban projects and situated preferably in subtropical coastal areas together with associated verifiable client references and contact details.

2.6.2 Building preliminary conceptual Design:

- a) The Bidder shall submit a preliminary conceptual Design for the CTCC building, based on the requirements and designs included in the GTRs and MTR.
- b) The Bidder shall indicate any required and/or proposed changes to the issued designs.

2.6.3 Power Supply System (“PSS”) preliminary Design:

- a) The Bidder shall submit a preliminary Design report for the PSS.
- b) The Design report shall indicate to what level the CTCC shall be self-sufficient in terms of power requirement.
- c) The Design shall show the power System Redundancy, the fall-back sequence and the Systems that shall be supplied by the backup power Systems.

2.6.4 Security method statement:

- a) The Successful Bidder shall submit a detailed security method statement, indicating how the CTCC shall be protected against at least the following threats:
 - Physical Security threats
 - Cyber Security threats
 - Theft and vandalism
- b) The method statement shall include a description of how the requirements in the GTRs shall be implemented.
- c) The method statement shall include a description of any other mechanisms and/or Systems that shall be implemented.

2.6.5 Method statement:

- a) The Bidder shall submit a high-level method statement for the migration to the new CTCC.

2.6.6 Maintenance and Life Cycle Cost (“LCC”) Replacement Plan and Financial Model:

- a) The Bidder shall submit the estimated detailed, all-inclusive; Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model for the whole of the Works.
- b) The Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model shall adhere OEM requirements and specifications, proven local best practice and proven international best practice.
- c) The Financial Model shall be based on a useable life of 20 years for all Plant and Materials further transparently showing all detailed calculations and assumptions.
- d) The Financial Model shall include Equipment price increases based on the Consumer Price Index (“CPI”) estimations for the next 20 years, also taking into consideration any foreign exchange factors.
- e) The strategy shall include resource requirements for maintaining the Works. Resource requirements shall show number of technical workers, Engineering technicians and technologists needed to carry out effective; planned Maintenance, preventative Maintenance and Life Cycle replacements whilst minimising disruption to PRASA operations.

2.7 Telecommunication Systems

2.7.1 References:

- a) The Bidder shall submit detailed case studies for the offered Telecommunication Systems, subsystems and Plant and Materials being in operation during the last 5 years in suburban projects and situated preferably in subtropical coastal areas together with associated verifiable client references and contact details.

2.7.2 Equipment Life Cycle:

- a) The Bidder shall submit the following information for each System, sub-System and Plant and Material type that the Bidder shall implement:
 - The date at which the product was released
 - The anticipated date at which the product shall be withdrawn from sale, but support shall continue to be supplied.
 - The anticipated date that product support shall be withdrawn, i.e. Spare shall no longer be available and technical support is no longer provided.

2.7.3 Certificates:

- a) The Bidder shall submit all necessary Equipment certification, showing compliance with the standards in the GTR and MTR, with detailed relevant documentation (Safety and Performance standards, etc.).

2.7.4 RAMS calculations:

- a) The Bidder shall submit detailed theoretical RAMS calculations for the Telecommunication Systems and sub-Systems.
- b) The Bidder shall provide the predicted mean time to failure and the mean time to repair of the Equipment.
- c) Where insufficient historical dates are available, the Bidder shall state the methods used to determine the reliability performance.

2.7.5 Power consumption calculations:

- a) The Bidder shall submit detailed theoretical power consumption calculations for:
 - The Telecoms CTCC Systems
 - The Telecoms Systems as it shall be implemented at the sample station provided.

2.7.6 Maintenance and Life Cycle Cost (“LCC”) Replacement Plan and Financial Model:

- a) The Bidder shall submit the estimated detailed, all-inclusive; Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model for the whole of the Works.
- b) The Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model shall adhere OEM requirements and specifications, proven local best practice and proven international best practice.
- c) The Financial Model shall be based on a useable life of 20 years for all Plant and Materials further transparently showing all detailed calculations and assumptions.
- d) The Financial Model shall include Equipment price increases based on the Consumer Price Index (“CPI”) estimations for the next 20 years, also taking into consideration any foreign exchange factors.
- e) The calculations shall further be based on the detailed theoretical RAMS calculations done by the Bidder.
- f) The strategy shall include resource requirements for maintaining the Works. Resource requirements shall show number of technical workers, Engineering technicians and technologists needed to carry out effective; planned Maintenance, preventative Maintenance and Life Cycle replacements whilst minimising disruption to PRASA operations.