

## **Annexure 1:**

### **General Technical Requirements**

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## 1 GENERAL

### 1.1 Purpose of the Document

- 1.1.1 The purpose of this document is to provide the General Technical Requirements ("GTR") which form part of the minimum Requirements of the Passenger Rail Agency of South Africa ("PRASA") 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.
- 1.1.2 This document further introduces the associated Particular Technical Requirements ("PTR") documentation and the Commercial and Financial Requirements ("CFR").

### 1.2 Introduction

- 1.2.1 In conjunction with the contractual definitions and requirements of this Request for Proposal ("the RFP"), this document contains Conditions of Invitation and Instructions to Bidders to which the Bidder shall comply. The Bidder shall confirm unequivocal compliance with these Conditions of Invitation and Instructions to Bidders in the Statements of Compliance. PRASA Requirements, Conditions of Invitation and Instructions to Bidders are, at a minimum, comprised of the following sets of documents that shall be read in conjunction:
- a) The General Technical Requirements ("GTR"), which defines overarching requirements, needs, expectations and outputs of the Project which the Bidder shall meet and achieve.
  - b) The Particular Technical Requirements ("PTR"), which defines specific requirements, needs, expectations and outputs of the Project which the Bidder shall meet and achieve.
  - c) The Commercial and Financial Requirements ("CFR"), which defines specific requirements, needs, expectations and outputs of the Project which the Bidder shall meet and achieve.

### 1.3 Executive Overview

- 1.3.1 Notwithstanding any other PRASA Requirements stated throughout the RFP, the Bidder shall uncompromisingly deliver the whole of the Works required to achieve successful delivery of the Project.
- 1.3.2 The Works is, at a minimum, summarised as follows:
- a) Provision of a Train Control System ("ETCS Level 2") with an integrated Railway Signalling System ("RSS").
  - b) Resignalling of all specified railway lines according to the stated headways and flexibility.

- c) Completion of all enabling and specified Telecommunication, Track, Electrical, Civil and other works.
- d) Establishment of a new Centralised Traffic Control Centre (“CTCC”).
- e) Classification and upgrading of all level crossings in accordance with the latest standards and specifications.
- f) Signalling all the yards access.
- g) A new Optical Transmission Network (“OTN”) that will be used for at least interlocking Signalling remote monitoring and controls, tractions substations remote control and monitoring, telephone Systems, security surveillance System, access control and passenger information Systems.
- h) Provision of all required solutions (to be approved by PRASA) and resources (to be approved by PRASA) to deliver and maintain the Works.
- i) Any other works, activities and resources required to achieve a fully integrated, functional, complete, and future-proofed PTCS and meet any other requirements and specifications as requested throughout the RFP or as otherwise instructed in writing by PRASA

## **1.4 Location and Extent of the Works**

1.4.1 The boundaries of the Site(s) are PRASA’s KZN Region rail servitudes for the Sections:

- ❖ Avoca to Springfield
- ❖ Clairwood to Crossmoor
- ❖ Congela to Durban
- ❖ Durban CTCC
- ❖ Isipingo to Kelso
- ❖ KwaMashu to Temple
- ❖ Reunion to Umlazi
- ❖ Rosburgh CTCC
- ❖ Rosburgh to Pinetown

1.4.2 The extent of the Site(s) is approximately 130km and includes at least:

- ❖ 2 CTCCs and 43 Crossing places
- ❖ 21 Halts
- ❖ 6 Interfaces to the Transnet Freight Rail (“TFR”) Network
- ❖ 12 Substations
- ❖ 36 Global System for Mobile Communications–Railway (“GSM-R”) sites
- ❖ 4 10 Level Crossings (“LX”)

1.4.3 A schematic representation of the Site(s) with estimated distances is given in Figure 1.4.1 below.

## Durban Region - Route Distances (KM)

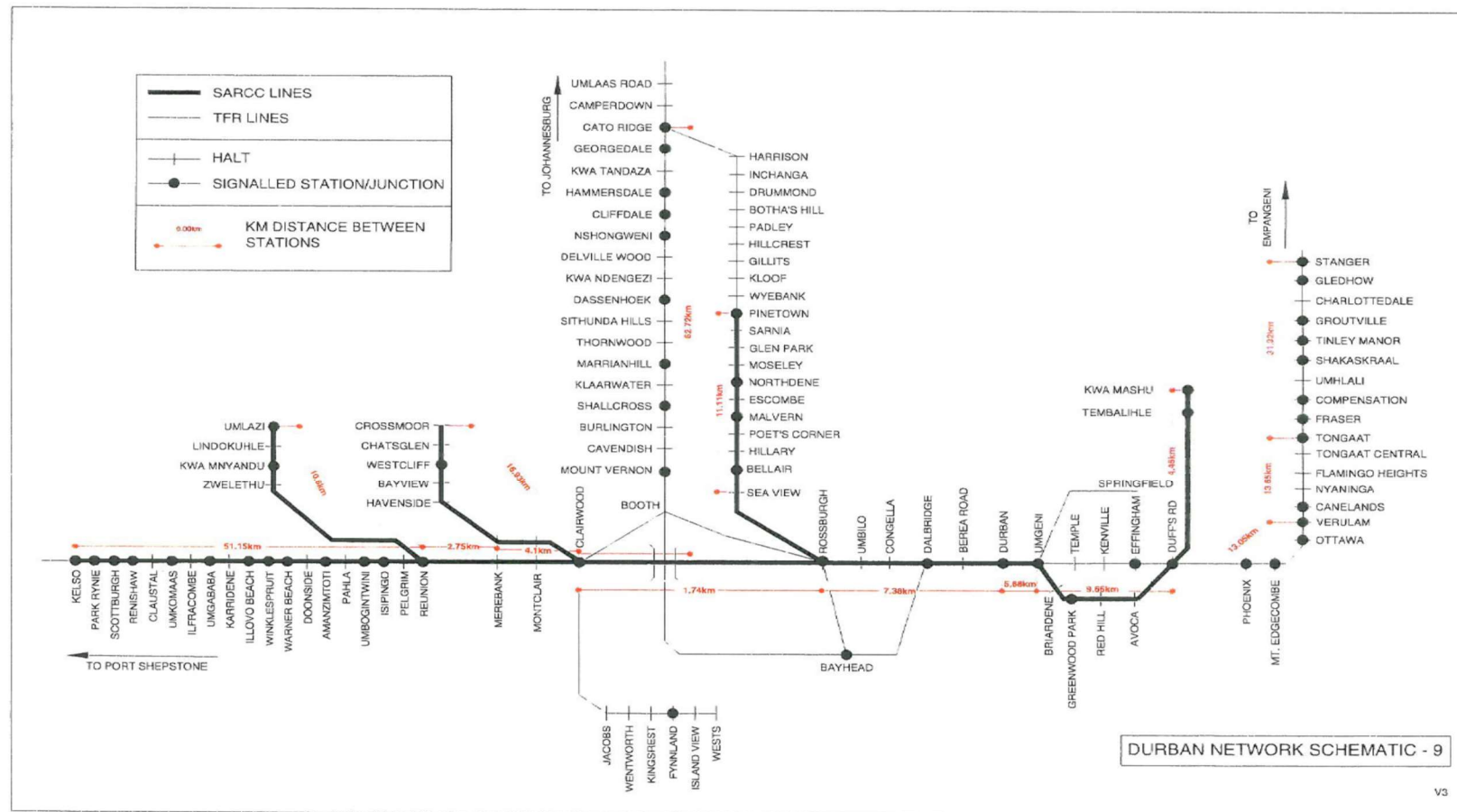


Figure 1.4.1: Schematic Representation of the Site(s)

1.4.4 The Site(s) includes at least the following crossing places:

- |                  |                |
|------------------|----------------|
| ❖ Amanzimtoti    | ❖ Merebank     |
| ❖ Avoca          | ❖ Montclair    |
| ❖ Bellair        | ❖ Montclair    |
| ❖ Booth          | ❖ Northdene    |
| ❖ Bridge City    | ❖ Park Rynie   |
| ❖ Clairwood      | ❖ Pinetown     |
| ❖ Crossmoor      | ❖ Renishaw     |
| ❖ Dalbridge      | ❖ Reunion      |
| ❖ Duff's Road    | ❖ Rosburgh     |
| ❖ Durban         | ❖ Scottburgh   |
| ❖ Effingham      | ❖ Tembalihle   |
| ❖ Greenwood Park | ❖ Umbilo       |
| ❖ Havenside      | ❖ Umbogintwini |
| ❖ Illovo Beach   | ❖ Umgababa     |
| ❖ Isipingo       | ❖ Umgeni       |
| ❖ Kelso          | ❖ Umkomaas     |
| ❖ Kenville       | ❖ Umlazi       |
| ❖ Kwa Mnyandu    | ❖ Warner Beach |
| ❖ KwaMashu       | ❖ Westcliff    |
| ❖ Lindokuhle     | ❖ Winkelspruit |
| ❖ Malvern        | ❖ Zwelethu     |
| ❖ Merebank       |                |

1.4.5 The Site(s) includes at least the following halts:

- |              |              |                 |
|--------------|--------------|-----------------|
| ❖ Bayhead    | ❖ Escombe    | ❖ Pelgrim       |
| ❖ Berea Road | ❖ Glen Park  | ❖ Poet's corner |
| ❖ Briardene  | ❖ Hillary    | ❖ Red Hill      |
| ❖ Chatsglen  | ❖ Ilfracombe | ❖ Sarnia        |
| ❖ Claustal   | ❖ Karridene  | ❖ Seaview       |
| ❖ Congella   | ❖ Moseley    | ❖ Springfield   |
| ❖ Doonside   | ❖ Pahla      | ❖ Temple        |

1.4.6 The Site(s) includes at least the following interfaces to the TFR Network:

- |           |                |           |
|-----------|----------------|-----------|
| ❖ Bayview | ❖ Mount Vernon | ❖ Phoenix |
| ❖ Jacobs  | ❖ Pennington   | ❖ SDG289  |

1.4.7 The Site(s) includes at least the following substations:

- |               |             |                |
|---------------|-------------|----------------|
| ❖ Duff's Road | ❖ Northdene | ❖ Winkelspruit |
| ❖ Springfield | ❖ Pinetown  | ❖ Claustal     |
| ❖ Durban      | ❖ Reunion   | ❖ Kelso        |
| ❖ Booth       | ❖ Umlazi    | ❖ Umbilo       |

1.4.8 The Site(s) includes at least the following GSM-R sites:

- |                     |                  |
|---------------------|------------------|
| ❖ Amanzimtoti       | ❖ KwaMnyandu     |
| ❖ Avoca             | ❖ Lindokuhle_T   |
| ❖ Bellair           | ❖ Merebank       |
| ❖ Berea Road_T      | ❖ Park Rynie     |
| ❖ Bridge City       | ❖ Pelgrim        |
| ❖ Chatsglen         | ❖ Pinetown       |
| ❖ Clairwood         | ❖ Red Hill_T     |
| ❖ Claustal          | ❖ Renishaw       |
| ❖ Duffs_T_North     | ❖ Sarnia         |
| ❖ Durban            | ❖ Tembalihle     |
| ❖ Effingham         | ❖ Temple_T_North |
| ❖ Escombe           | ❖ Umbilo         |
| ❖ Greenwood Park    | ❖ Umbogintwini   |
| ❖ Havenside         | ❖ Umgababa       |
| ❖ Ilfracombe        | ❖ Umgeni         |
| ❖ Illovo Beach      | ❖ Umlazi_T       |
| ❖ Kelso             | ❖ Winkelspruit   |
| ❖ Kennville_T_North | ❖ Zwelethu_T     |

1.4.9 The Site(s) includes at least the following level crossings:

- |                       |                           |
|-----------------------|---------------------------|
| ❖ Moseley             | ❖ Ilfracombe              |
| ❖ Umgababa            | ❖ Kelso (Happy Wanderers) |
| ❖ Park Rynie          | ❖ Claustal                |
| ❖ Duff's Road         | ❖ Kelso (Rocky Bay)       |
| ❖ Hillary (Berwyn Rd) | ❖ Kelso (Abrahams RD)     |



## 1.5 Employer's Objectives

### 1.5.1 PRASA's objectives are:

- a) The installation and maintenance of a new KZN PTCS will improve the reliability, safety, availability, and affordability of a traffic system
- b) The new KZN PTCS will improve headways and flexibility aligned with PRASA's operational requirements
- c) Installation of additional fibre on PRASA's network will achieve the required capacity to have redundancy in PRASA's network further allowing PRASA & its end users to enjoy full benefit of the new technology solutions implemented through other projects
- d) Procurement of appropriate tools, and adequate, spares will facilitate a more efficient and effective repairs and maintenance regime
- e) Any other works, activities and resources required to achieve a fully integrated, functional, complete, and future-proofed PTCS and meet any other requirements and specifications as requested throughout the RFP or as otherwise instructed in writing by PRASA

## 1.6 Technical Requirements Overview

### 1.6.1 The Technical Requirements are defined in the following documents, that should all be read in conjunction with each other:

- a) General Technical Requirements:
  - Annexure 1: GTR
  - Annexure 1.1: GTR Signalling
  - Annexure 1.2: GTR ETCS Level 2
  - Annexure 1.3: GTR CTCC
  - Annexure 1.4: GTR Telecommunication
  - Annexure 1.5: GTR Electrical
  - Annexure 1.6: GTR Civil & Track
  - Annexure 1.7: Main Technical References
  - Annexure 1.8: Glossary of Terms
  - Annexure 1.9: Returnable Documents
- b) Particular Technical Requirements:
  - Annexure 2: PTR
  - Annexure 2.1: PTR Rossburgh to Pinetown
  - Annexure 2.2: PTR KwaMashu to Temple

- Annexure 2.3: PTR Avoca to Springfield
- Annexure 2.4: PTR Clairwood to Crossmoor
- Annexure 2.5: PTR Reunion to Umlazi
- Annexure 2.6: PTR Isipingo to Kelso
- Annexure 2.7: PTR Congela to Durban

## **2 MINIMUM APPLICABLE CONDITIONS**

### **2.1 Infrastructure**

- 2.1.1 The following minimum conditions in respect of delivery of infrastructure shall apply, unless the Bidder is otherwise instructed in writing by PRASA:
- a) The infrastructure shall consist of single and double lines.
  - b) Rails shall be at 48kg/m.
  - c) Sleepers may be concrete and wooden.
  - d) Gauge shall be at 1065mm.
  - e) Standard crossing angle of points shall be 1:12.
  - f) Traction shall be at 3kV DC.

### **2.2 Operations**

- 2.2.1 The following minimum conditions in respect of operation shall apply, unless the Bidder is otherwise instructed in writing by PRASA:
- a) The lines are operated with mixed traffic, i.e. passenger and goods trains.
  - b) Current maximum line speed is 90 km/h.
  - c) Future line speed to be achieved is 120 km/h.

### **2.3 Rolling Stock**

- 2.3.1 The minimum conditions in respect of rolling stock which shall apply, unless the Bidder is otherwise instructed in writing by PRASA, is included in the MTR.

### **2.4 General**

- 2.4.1 The Bidder shall, at the Bidder's cost, undertake any other works, activities and provide the necessary resources required to meet all conditions specified by PRASA, throughout the RFP and throughout the duration of the Contract, to achieve a fully integrated, functional, complete and future-proofed PRASA PTCS and meet any other requirements as otherwise instructed in writing by PRASA.

### 3 MINIMUM TECHNICAL REQUIREMENTS

#### 3.1 Works Specification

- 3.1.1 The Works Specification includes, inter alia; all general specifications and requirements, technical specifications and requirements, particular specifications and requirements, and all other specifications and requirements included throughout the RFP (including Annexures/Appendices etc.) and all instructions provided and/or to be provided in writing by PRASA – all of which shall form part of the Contract to be entered into between PRASA and the Bidder.
- 3.1.2 The Bidder shall unequivocally commit to comprehensive and uncompromised execution of the Works through strict adherence to the Works Specification and achievement of all Key Dates, within the specified Time for Completion for the whole of the Works. Failure of the Bidder to meet any of these requirements at any time throughout the duration of the Contract shall give PRASA an unprejudiced discretionary right to immediately terminate the Contract, without allowing the Bidder any period of rectification, and all costs, damages and penalties related to such termination shall be borne by the Bidder.
- 3.1.3 The Bidder shall submit all reports, Designs and/or other Project documentation, for all Works (as stated throughout the RFP or as instructed in writing by PRASA), to PRASA for acceptance and approval by PRASA before any procurement and Installation of the Works.
- 3.1.4 Each completed Section of the Works shall be tested, commissioned and handed over to PRASA, as soon as possible for interim operational purposes, for which such hand over shall be signed and accepted by PRASA. Notwithstanding this interim Sectional completion, final Tests on Completion, Commissioning, Completion and Taking Over of the whole of the Works by PRASA shall be done by the Completion Date.
- 3.1.5 The Bidder shall, at the Bidder's cost and regardless of the extent of this requirement, take interim Maintenance, Warranty and Defects Liability responsibility for each Section that has been tested, commissioned and handed over to PRASA from the date of interim hand over to the Completion Date.
- 3.1.6 The Bidder shall, at the Bidder's cost and regardless of the extent of this requirement, take full Maintenance, Warranty and Defects Liability responsibility for 730 calendar days commencing on the Completion Date for the whole of the Works until PRASA issuance of the Performance Certificate.

#### 3.2 PTCS System Overview

- 3.2.1 The PTCS System shall consist of at least the follow, which shall first be approved by PRASA prior to implementation, unless otherwise instructed in writing by PRASA:
- a) A CTCC, hosting the Train Control and associated support functions.
  - b) An RSS, including interlocking and Lineside Signalling.
  - c) A suitable ETCS Level 2.

- d) Associated Telecommunication, Civil, Electrical, Overhead Traction Equipment (“OHE”), Perway and other Systems, sub-Systems and Equipment.
- e) All other Works as specified by PRASA throughout the RFP, the duration of the Contract and as required to deliver the Project.

3.2.2 The PTCS System, subsystems and Equipment shall, at a minimum, comply with all standards, specifications, regulations and procedures as defined throughout the RFP.

3.2.3 The Bidder shall take full responsibility and implement all necessary legal measures to protect the PTCS, sub-Systems and all Equipment against at least the following threats, throughout the duration of the Bidder’s Contract duration and the duration of the useful life of the Plant and Materials, at the Bidder’s cost:

- a) Theft and vandalism.
- b) Illegal encroachment and/or illegal occupation.
- c) Continues exposure to extreme direct sunlight and elevated temperatures.
- d) Continues exposure to high humidity.
- e) Coastal environmental conditions causing damaged such as corrosion.
- f) Incoming high voltages, spikes, Electromagnetic Compatibility (“EMC”) and fluctuating voltages.
- g) Intermittent flash flooding in low laying areas.
- h) Severe thunderstorms with extreme lightning.

3.2.4 The Bidder shall, at the Bidder’s cost, undertake any other works, activities and provide all necessary resources (provide a minimum organogram), collocated in the Durban Area required to meet all requirements specified by PRASA throughout the RFP and to achieve a fully integrated, functional, complete and future-proofed PTCS.

3.2.5 The Bidder shall, at the Bidder’s cost, undertake any other works, activities and provide all necessary resources required to meet any other requirements and specifications as requested throughout the RFP or as otherwise instructed in writing by PRASA.

### **3.3 Site(s) Data and Security of the Site(s)**

3.3.1 The Bidder shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances, which may influence or affect the Works and the Bidder’s pricing. To the same extent, the Bidder shall be deemed to have inspected and examined the Site(s) and surroundings, and other available information, and to have been satisfied before submitting the Bid as to all relevant matters, including (without limitation):

- a) The form and nature of the Site, including sub-surface conditions.
- b) The hydrological, climatic, heritage and environmental conditions and requirements.

- c) The extent and nature of all Works including, but not limited to, all necessary requirements and solutions that the Bidder shall have to meet, and respectively provide, for the Bidder's achievement of successful execution and completion of the Works, the Project and the Contract (including remedying of any defects).
- d) The Laws, procedures and labour practices of South Africa.
- e) The Bidder's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.
- f) The Bidder's requirements for capturing the required geographic map data ("Geodata"), including all resources, Material and Equipment.
- g) The extent and nature of all Works including, but not limited to, all necessary requirements and solutions that the Bidder shall have to meet to protect the Site(s) and the Works by preventing theft, vandalism, illegal encroachment and/or illegal occupation, and respectively provide, for the Bidder's achievement of successful execution and completion of the Works, the Project and the Contract (including remedying of any defects).

- 3.3.2 The Bidder shall, at the Bidder's cost and regardless of the extent of this requirement, be responsible for removing and keeping all unauthorised persons, illegal encroachers and illegal occupants off the Site(s) for the duration of the Contract. The Bidder shall use any legal means necessary to meet this requirement further making all necessary allowances for resolution of all related issues in all the Bidder's Programmes.
- 3.3.3 The Bidder shall, at the Bidder's cost and regardless of the extent of this requirement, be responsible for protection the Site(s) and the whole of the Works for the duration of the Contract. The Bidder shall use any legal means necessary to meet this requirement further making all necessary allowances for resolution of all related issues in all the Bidder's Programmes.
- 3.3.4 Authorised persons shall be limited to the Bidder's personnel, PRASA's personnel and to any other personnel notified to the Bidder, by PRASA, as authorised personnel of PRASA's other Bidders on the Site(s).

### **3.4 Theft and Vandalism**

- 3.4.1 The Bidder shall, at the Bidder's cost and regardless of the extent of this requirement, be responsible for preventing all theft and vandalism of the whole of the Works for the duration of the Contract (including the full Maintenance, Warranty and Defects Liability period). The Bidder shall use any legal means necessary to meet this requirement and shall, at a minimum, implement all requisite measures to detect, defer, delay and prevent any attempted theft and vandalism.
- 3.4.2 The Bidder shall take full responsibility and accept all liability in respect of any vandalised PRASA/Project assets that form part of the Contract and/or Project and/or Works. The Bidder shall further ensure that any stolen or vandalised assets are reinstated to standards approved by PRASA, within timeframes stipulated by PRASA, and at the Bidder's cost regardless of the number of incidents that may occur throughout the duration of the Contract and for each and every incident that occurs.

- 3.4.3 The Bidder shall, at a minimum, implement measures described throughout the RFP for which such implementation shall not, in any manner whatsoever, relieve the Bidder of the Bidder's responsibility to implement additional measures to prevent of theft and vandalism of the whole of the Works for the duration of the Contract.
- 3.4.4 The Bidder shall, as part of the Bid, submit a detailed method statement describing all the measures, techniques, and Installation rules it intends to implement addressing all theft and vandalism matters that could affect delivery of the Works and the Project in its entirety.

### **3.5 Use of Existing Information**

- 3.5.1 Existing information, approved Designs and as-built drawings relevant to some of the Works shall, at the discretion of PRASA, be supplied to the Bidder in PDF, TIFF or DWG Software format, for updating and to aid the Bidder with Planning and Design development.
- 3.5.2 The Bidder shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances, which may influence or affect the Works and the Bidder's pricing. To the same extent, the Bidder shall be deemed to have inspected and examined the information provided, and to have been satisfied before submitting the Bid as to all relevant matters.
- 3.5.3 The Bidder shall verify the accuracy of all existing as-built drawings, notify PRASA of any discrepancies and rectify all discrepancies, as part of the Works, to ensure that the version of as-built drawings to be issued by the Bidder, as part of the Works, are accurate.

### **3.6 Design Services and Activity Matrix**

- 3.6.1 The Bidder shall uncompromisingly Design the whole of the Works, unless the use of Designs issued by PRASA is expressly permitted or required as requested throughout the RFP or as otherwise instructed in writing by PRASA. All Designs shall be done locally (in South Africa), by the Bidder, unless special permission is obtained from PRASA to do specific Designs elsewhere.
- 3.6.2 The Bidder shall submit requests to do specific Designs elsewhere to PRASA for review and approval by PRASA prior to such Designs being done elsewhere. The request shall contain a detailed description of the type of Designs anticipated to be done elsewhere and apparent reasons as to why such Design cannot be done locally. PRASA shall have the right to refuse such requests and shall not, under any circumstance nor in any manner whatsoever, be held liable for any costs, delays or any other impacts (Material or otherwise) resulting from such refusal(s).



### **3.7 PRASA Acceptance of Bidder's Project Documentation, Reports and Designs**

- 3.7.1 Failure of the Bidder to meet any document management, reporting and Design procedures and requirements at any time throughout the duration of the Contract, shall give PRASA an unprejudiced right to immediately apply penalties (as specified throughout the RFP) for each incident (from the date that PRASA decides is the date on which the incident commenced until the date on which PRASA confirms, in writing, that PRASA is completely satisfied that the incident is completely resolved by the Bidder).
- 3.7.2 The Bidder shall uncompromisingly submit all reports, Designs and/or other Project documentation, for all Works (as stated throughout the RFP or as otherwise instructed in writing by PRASA), to PRASA for acceptance and approval by PRASA before any procurement and Installation of the Works.
- 3.7.3 The Bidder shall uncompromisingly correct, re-check and re-submit any portions of his reports, Designs and/or other Project documentation that do not comply with the RFP (and instructions issued in writing by PRASA) until unequivocal compliance is achieved to the absolute satisfaction of PRASA. PRASA need not give any exhaustive details as to why PRASA does not accept the Bidder's reports, Designs and/or other Project documentation or portions thereof.
- 3.7.4 Despite any checks done by PRASA, it remains the Bidder's responsibility to check his reports, Designs and/or other Project documentation and ensure unequivocal compliance with the RFP or as otherwise instructed in writing by PRASA. For all the Designs, the Bidder shall provide proof of certification by a professional in terms of the South African Engineering Act and any other South African professional body as required in terms of South African legislation, regulations and by-laws.
- 3.7.5 PRASA shall have the right to reject any and/or all of the Bidder's reports, Designs and/or other Project documentation should such reports, Designs and/or other Project documentation not uncompromisingly and unequivocally comply with the RFP (and instructions issued in writing by PRASA) to the absolute satisfaction of PRASA. PRASA shall not, under any circumstance nor in any manner whatsoever, be held liable for any costs, delays or any other impacts (Material or otherwise) resulting from such rejection(s).

### **3.8 Plant and Materials**

- 3.8.1 All Plant and Materials (which by definition shall include, but not be limited to, all Plant, Materials, Furniture, Equipment, Tools, Spares, Software, Technology and Components) to be provided by the Bidder to deliver the Project shall be brand new.
- 3.8.2 In the case of use of old or refurbished Equipment and Materials, such use shall first be proposed by the Bidder and expressly permitted in writing by PRASA and as stated elsewhere in the RFP or as otherwise instructed in writing by PRASA.



- 3.8.3 All imported Plant and Materials to be provided by the Bidder shall be brand new and of merchantable quality, to recognised South African national standards and approved by PRASA, with all proprietary products installed to manufacturers' instructions.
- 3.8.4 The Bidder shall, uncompromisingly and without hesitation, replace any damaged Plant and Materials (whether on the Site(s) or not and whether part of the temporary or permanent Works) and any Plant and Materials with defects further notifying PRASA each time such replacement is required and scheduled.
- 3.8.5 PRASA may have certain Equipment and Materials available in storage that may be used by the Bidder, subject to the Bidder's complete offered solution remaining compliant with the RFP and that the Bidder has satisfied itself that such Equipment and Materials are suitable for use by the Bidder therefore the Bidder shall accept all risk related to the use of such Equipment and Materials.
- 3.8.6 The Bidder shall use as much existing, Equipment and Materials as possible and if not possible then motivate why not in a robust but controllable manner. Should the Bidder wish to replace any existing Equipment and Materials with new Equipment and Materials, the Bidder shall first make PRASA a fair market value offer to pay PRASA for such existing Equipment and Materials for which such offer shall first be accepted by PRASA. The Bidder's disposal of existing Equipment and Materials can thereafter be implemented.
- 3.8.7 Useful life of all Plant and Materials shall be a minimum of 20 years from the date on which PRASA issues the Performance Certificate unless otherwise specified throughout the RFP.

## 4 DELIVERY OF THE WORKS

### 4.1 General

- 4.1.1 A Project of this magnitude can only be successfully implemented on time and within budget with a precise coordination of all tasks to achieve a high standard of quality.
- 4.1.2 Project Engineering views the individual parts of project management in isolation and in their reciprocal effects to achieve the optimum results in the interaction between project execution, project scheduling, project controlling and Project supervision. All these need to follow a well-defined and founded methodology throughout the whole lifecycle of the Project to prevent:
- a) Programme slippages.
  - b) Cost slippages.
  - c) Misunderstanding and gaps in communication within the own organisation.
  - d) Misunderstanding and gaps in communication with the other contractual partner.
  - e) Waste of capacity in respect to human recourses.
  - f) Waste of Plants and Material.
- 4.1.3 The Bidder shall plan all Works in a manner that ensures minimal interruption to normal train services and any other services rendered by PRASA.
- 4.1.4 Works execution may start simultaneously for the whole of the Works (in Sections) only after Validation of the RSS and ETCS Level 2 is completed to the absolute satisfaction of PRASA (and so confirmed in writing by PRASA). Should the Bidder commence any other Works prior to the completion of Validation, such works shall be deemed to have been undertaken by the Bidder at the Bidder's own peril and cost (for which such cost may not be reimbursed by PRASA if the Contract is terminated).
- 4.1.5 The Works shall be executed as per prioritization of sequencing of the delivery Works as follows unless otherwise agreed to in writing with PRASA:
- a) Section 1: Crossmoor to Havenside:
    - Sub-Section 1A:
      - Section 1 COT and Telecommunications (implementation of enabling and other COT and Telecommunications)
      - Electronic interlocking Validation and reliability testing (if required and/or requested by PRASA)
      - Validation and reliability testing non-approved technologies and Equipment
      - ETCS development
    - Sub-Section 1B:
      - ETCS Validation and reliability testing

- Section 1 Resignalling
- Section 2 COT & Telecommunications
- b) Section 2: KwaMashu to Bridge City:
  - Section 2 Resignalling
  - Section 3 COT and Telecommunications
  - Section 1 ETCS implementation
- c) Section 3: Avoca to Springfield:
  - Section 3 Resignalling
  - Section 4 COT and Telecommunications
  - Section 2 ETCS implementation
- d) Section 4: Congela to Durban:
  - Section 4 Resignalling
  - Section 5 COT and Telecommunications
  - Section 3 ETCS implementation
- e) Section 5: Clairwood to Umlazi:
  - Section 5 Resignalling
  - Section 6 COT and Telecommunications
  - Section 4 ETCS implementation
- f) Section 6: Isipingo to Kelso:
  - Section 6 Resignalling
  - Section 7 COT and Telecommunications
  - Section 5 ETCS implementation
- g) Section 7: Rossburgh to Pinetown:
  - Section 7 Resignalling
  - Section 8 COT and Telecommunications (if required)
  - Section 6 ETCS implementation
- h) Section 8: Rossburgh CTCC (in parallel with other Sections):
  - Rossburgh CTCC delivery
  - Migration to Rossburgh CTCC
  - Section 8 ETCS implementation
  - All outstanding Work

## 4.2 Management and Implementation Methodology

4.2.1 The Bidder shall, at a minimum and as part of the Bid, provide the following comprehensive Management and Implementation Methodology, for which detailed; organisation, strategy, policies, procedures, sequencing and Construction processes that the Bidder shall put in place, at a minimum in accordance with the Project Management Body of Knowledge (“PMBOK® Guide”) for; Planning, execution, scheduling, controlling and supervision of the delivery of Works, is required:

a) Project Management:

- Organisation Chart
- Contract Management and Reporting Responsibilities
- Roles and Responsibilities Matrix
- Interdependency and Integration
- Document Management

b) Human Resources:

- Identification and Planning
- In-house or Acquisition
- Training and Development
- Management and Control

c) Procurement:

- Subcontractor(s) Procurement, Contracting and Management
- Plant and Materials Supplier(s) Procurement, Contracting and Management
- B-BBEE Target Achievement and Compliance Matrix
- Localisation Target Achievement and Compliance Matrix

d) Communications and Stakeholder Engagement:

- Planning
- Protocols
- Information distribution
- Performance reporting
- Stakeholder management (identification and relationship management)

e) Project Programme:

- Identification and definition of Major Milestones, Deliverables and Key Dates
- Identification and definition of Work Breakdown Structure (“WBS”)

- Identification and definition of tasks and activities including resource and duration estimation
  - Sequencing of tasks and activities including resource and duration estimation
  - Programme Development and Progress Reporting
  - Programme Change/Update Control
- f) Project Cost Control:
- Resource Planning
  - Cost Estimating, Budgeting and Control
  - Payment Milestone Schedule linked to/extracted from the Bid Programme
- g) Project Quality Management:
- Planning
  - Assurance
  - Control
- h) Occupational Health, Safety and Security (“OHS”):
- Site(s)
  - Project Team
  - Public and Third Parties
- i) Environmental and Heritage:
- Air and Dust Control
  - Noise Pollution Prevention
  - Flora and Fauna Protection
  - Sustainable Construction Practice
  - Stormwater Management
  - Waste Management
- j) Risks, Issues and Lessons Learnt:
- Risks management Planning and identification, analysis (qualitative and quantitative), response (action) Planning, monitoring and control
  - Issues management Planning and identification, analysis (qualitative and quantitative), response (action) Planning, monitoring and control
  - Lessons Learnt identification, analysis (qualitative and quantitative) and logging

k) Construction Technology and Methodology:

- Site(s) Hand Over to Bidder
- Project Signage
- Site Logistics
- Local Authority(s) Management, Coordination and Compliance
- Step by Step Construction Method Statements linked to sequencing of tasks and activities in the Bid Programme
- Interim Inspections, Tests and Commissioning (strategy, approach, deliverables)
- Sectional Interim hand over to PRASA
- Final Inspections, Tests on Completion, Commissioning, Completion (strategy, approach, deliverables)
- Provision of As-built Information
- Decommissioning
- PRASA Acceptance of Works
- Taking Over, Maintenance, Warranties and Defects Liability After PRASA Taking Over (strategy, approach, deliverables)
- Project Close-out

4.2.2 The above-mentioned Implementation Methodology and Management Plans shall be finalised and agreed between PRASA and the Bidder during Contract negotiations thereafter included in the Contract as the Approved Project Charter/Project Execution Plan/ Project Management Procedure Handbook.

### **4.3 Project Programme and Time Management**

4.3.1 Notwithstanding the date of signature of the Contract, the Time for Completion for the Design and Construction ("D&C") portion of the Works (including the interim Maintenance, Warranty and Defects Liability Period but excluding the full Maintenance, Warranty and Defects Liability Period of 730 calendar days) shall be 2555 calendar days from the agreed Commencement Date (agreed Commencement Date inclusive).

4.3.2 Notwithstanding the date of signature of the Contract, the Time for Completion for the whole of the Works (including the full Maintenance, Warranty and Defects Liability Period of 730 calendar days) shall be 3285 calendar days from the agreed Commencement Date (agreed Commencement Date inclusive) or until PRASA issuance of the Performance Certificate (the later of the 2 dates at PRASA's sole discretion).

- 4.3.3 Notwithstanding the date of signature of the Contract, the Time for Completion for the for Contract Close-out Administrative Processes for whole of the Works (including the full Maintenance, Warranty and Defects Liability Period of 730 calendar days) shall be 3465 calendar days from the agreed Commencement Date (agreed Commencement Date inclusive) or until PRASA issuance of the Performance Certificate (the later of the 2 dates at PRASA's sole discretion).
- 4.3.4 Notwithstanding the date of signature of the Contract, the initial Contract Period shall be 3465 calendar days from the agreed Commencement Date (agreed Commencement Date inclusive) or until PRASA issuance of the Performance Certificate (the later of the 2 dates at PRASA's sole discretion).
- 4.3.5 Achievement of this timeline will require an accelerated Project Programme with possible weekend work, overtime work and work during the night. The Bidder shall allow for all activities, time and costs associated with all such requirements in the Bidder's proposal.
- 4.3.6 Major Milestones, Deliverables and Key Dates shall, at a minimum, include the Time for Completion, the Completion Date and Section completion dates.
- 4.3.7 The first Major Milestone and Deliverable, that the Bidder shall include in the Bid Project Programme (the "Bid Programme"), shall be successful completion of Validation of the RSS and ETCS Level 2, and any other technologies and Equipment as specified throughout the RFP, to the absolute satisfaction of PRASA for which the Key Date is fixed as the 548<sup>th</sup> calendar day after the agreed Commencement Date. Failure of the Bidder to achieve this Major Milestone and Deliverable on this Key Date shall give PRASA an unprejudiced right to immediately Terminate the Contract and claim damages from the Bidder and/or apply penalties (as specified throughout the RFP) from the aforementioned date until the date on which PRASA confirms, in writing, that PRASA is completely satisfied that all Validation is completed.
- 4.3.8 Other Major Milestones, Deliverables and Key Dates that the Bidder shall include in the Bid Programme, at a minimum, are:
- a) Completion of each Section of the Works.
  - b) Completion of each CTCC building.
  - c) Completion of each CTCC System.
  - d) Completion of each crossing place.
  - e) Completion of each halt.
  - f) Completion of each interface to the TFR Network.
  - g) Completion of each substation.
  - h) Completion of each GSM-R site related works.
  - i) Completion of each LX.
  - j) Completion of each station and yard.
  - k) Completion of each line.

- l) Provision of complete interlockings included RBCs, interfaces and relevant blocks.
- m) Time for Completion date for the Design and Construction (“D&C”) portion of the Works calculated 2555 calendar days from the agreed Commencement Date (agreed Commencement Date inclusive).
- n) Time for Completion for the whole of the Works calculated 3285 calendar days from the agreed Commencement Date (agreed Commencement Date inclusive).
- o) Time for Completion date for Contract Close-out Administrative Processes calculated 3465 calendar days from the agreed Commencement Date (agreed Commencement Date inclusive).

4.3.9 Failure of the Bidder to achieve any of these Major Milestones and Deliverables on these Key Dates shall give PRASA an unprejudiced discretionary right to immediately Terminate the Contract and claim damages from the Bidder and/or apply penalties (as specified throughout the RFP) from the aforementioned date until the date on which PRASA confirms, in writing, that PRASA is completely satisfied that all Validation is completed. The minimum costs and damages that the Bidder shall pay PRASA is the total amount of money paid to the Bidder plus any other amounts which the Bidder may have been due as at the date of each Key Date.

4.3.10 The Bidder shall submit a comprehensive Microsoft Project Bid Programme (showing durations of activities in working days) which shall, at a minimum, clearly show:

- a) Major Milestones and Deliverables including Key Dates throughout the life of the Project that must be met for the Project to finish on time. Major Milestones, Deliverables and Key Dates shall identify intervals that shall reflect appropriate progress of the Project and whether or not the Bidder is meeting the Bidder’s contractual obligations (including, but not limited to; completion of Sections, the Time for Completion of the whole of the Works, Material rate of progress of the Works, measurement of Bidder performance, penalty calculations and Contract termination) and establish intervals that shall reflect appropriate progress of the Project.
- b) A detailed Work Breakdown Structure (“WBS”) which shall be a description of tasks arranged and linked in layers of detail. The WBS shall further incorporate all Major Milestones, Deliverables and linked Key Dates.
- c) A detailed Project Plan which shall list and link all activities that are needed to accomplish the tasks identified in the WBS.
- d) The sequencing of the activities according to the order in which the activities are to be accomplished including a Logic Diagram that shall represent the logical sequence of the activities required to complete the Project.
- e) The start and finish dates of each task and activity and the duration of each task and activity whereby some tasks and activities may have to be done sequentially and some concurrently.



- f) The longest path to the completion of the Project therefore the critical path including linking of all dependencies affecting the critical path.
- g) The total Bid Price allocated to each Major Milestone, Deliverable, task and activity in detail.
- h) Project Resources (overheads, human resources, Plant and Equipment etc.) allocated to each Major Milestone, Deliverable, task and activity.
- i) Scheduling of activities in a manner that effectively and efficiently uses Project Resources and completes the Project in the shortest practical time.
- j) Sundays as non-working calendar days.
- k) All official statutory Public Holidays, as declared by the South African National Government as non-working calendar days.
- l) All foreseeable statutory national, provincial or municipal Election Days as declared by the South African National Government.
- m) 14 calendar days (including Sundays, Public Holidays and Election Days) as non-working days for Easter breaks in each calendar year.
- n) 28 calendar days (including Sundays, Public Holidays and Election Days) as non-working calendar days for mid-December to mid-January Construction industry breaks in each calendar year.
- o) Provision for adequate calendar rain days throughout the Contract duration for which such determination shall, at a minimum, be guided by reports officially published by the South African Weather Service ("SAWS").
- p) The following levels:
  - Level 1 Master Programme - defines the major operations and interfaces between Engineering Design, procurement, fabrication and assembly of Plant and Materials, transportation, Construction, Testing and pre-Commissioning, Commissioning, finalisation and completion
  - Level 2 Project Programme - summary Programmes 'rolled up' from Level 3 Project Programme described below
  - Level 3 Project Programme - detailed Programmes generated to demonstrate all operations identified on the Programme from the starting date to Completion
  - Level 4 Project Programme - detailed discipline specific level developed and maintained by the Bidder relating to all operations identified on the Programme representing the daily activities by each discipline
  - A narrative status report, which includes precise status and performance of operations in the Working Areas, precise status and performance of operations outside the Working Areas, manpower histograms, S-curve of overall progress, critical action items (top 20) and deviations from the Accepted Programme and action plan to rectify

- q) All other activities of the Project and PRASA, approval authorities, TFR and other interdependencies and interfaces which affect the delivery of the Works.

4.3.11 Scheduling constraints that the Bidder shall adequately plan and provide for in the Bid Programme include:

- a) The lead-time for arranging Site(s) access is at least 60 working days after all requirements for Site(s) access are met and at least 60 working days after the Commencement Date.
- b) The Bidder gives PRASA notice of at least 40 working days to source specific existing information and as-built drawings.
- c) PRASA shall be given at least 40 working days each to check, comment on and/or approve all of the Bidder's Project Documentation submitted throughout the duration of the Contract (including, but not limited to, methodologies, implementation plans, reports, Designs, quality plan, safety case, safety management plan and environmental management plan).
- d) PRASA acceptance checking of the Bidder's Designs shall take at least 40 working days per crossing place. No more than 2 crossing places shall be checked for acceptance at any given time.
- e) Excluding the Commissioning Occupation, ad-hoc Testing and inspections by PRASA shall take on average 5 working days per crossing place which may run concurrently if 2 crossing places are required at the same time.
- f) The minimum lead-time for PRASA arranging Occupations is 60 working days after PRASA's acceptance of the Bidder's Occupation plan and Test copies of all relevant drawings related to an Occupation.
- g) Occupations shall not take place on any non-working calendar days.
- h) The Bidder shall submit the Occupation plan and Test copies of all relevant drawings for PRASA acceptance of any Occupation at least 120 working days before each Occupation.
- i) PRASA's acceptance inspection (walk-through) shall take 5 working days per crossing place, which may run concurrently, if more than 1 crossing place is required at the same time.
- j) PRASA acceptance Testing and Commissioning shall take 10 working days during each Commissioning Occupation.
- k) After Commissioning each station, 40 working days are allowed for the Bidder's decommissioning and the finalisation of as-built drawings, manuals, quality records, Software data records, Technology transfer and other documentation, or as specified throughout the RFP (including but not limited to that which is specified in the GTRs, PTRs and/or MTR).
- l) The Bidder's initial submission of all as-built documentation for a Section shall be within 10 working days after a Section is commissioned and within 40 working days after the whole of the Works is commissioned.

4.3.12 Sequence of the Works:

- a) The Bidder shall plan the Works to meet the Sectional completion dates, otherwise also included under the definition of Key Dates.
- b) The enabling and specified Civil, Track, OHTE, Electrical, Telecommunications and other Works, shall not precede the Signalling Works with more than 1 Section.
- c) The Signalling Works shall not precede the ETCS Level 2 Works with more than 1 Section.
- d) The Commissioning Occupation dates for different Sections shall not overlap.

4.3.13 The Bid Programme shall be finalised and agreed between PRASA and the Bidder during Contract negotiations thereafter included in the Contract as the “Approved Baseline Contract Programme/Approved Programme.”

4.3.14 Approved Programme Change Log (“APCL”):

- a) Any changes and/or updates to the Approved Programme (including, but not limited to, tracking progress or relating to PRASA approved changes i.e. extensions of time claims, variation order time impacts etc.) shall be recorded in detail in an APCL.
- b) The APCL shall state the activity number and the changes made (constraint date, logic that was changed, duration change), the reason for the change and the date of the change.
- c) The process of changing and/or updating the Approved Programme shall include the following steps:
  - Collect data on actual Works completed and remaining Works to be completed
  - Update the current Approved Programme with actual progress of Works completed
  - Compare and resolve any deviations and/or anomalies
  - Update the current Approved Programme with the PRASA approved changes
  - Distribute the next version the Programme for PRASA approval
  - The next version of the Programme, that is approved by PRASA becomes the new “Approved Contract Programme/Approved Programme”
- d) On each revised Programme, the Bidder shall show a resource histogram showing planned progress versus actual, deviations from the Accepted Programme and any remedial actions proposed by the Bidder.

- 4.3.15 The Bidder's Programme shall show the requirements of the Construction Environmental Management Plan (CEMP), System Engineering Services (SES), Project Engineering Services (PES), Safety Management Plan and the Environmental Method Statements.

#### **4.4 Interface Management**

- 4.4.1 The Bidder must be a strong power that forces the Engineers and all parties involved in the Planning, Design, Supply, Construction, Installation, Testing, Commissioning to consider problems outside of their area of responsibility.
- 4.4.2 The experience of Project of this nature and magnitude shows that only an institution equipped with high power and authority can mediate between interface partners. Only under supervision of such institution can solutions that meet the requirements of the RFP be created.
- 4.4.3 Interface management shall be the responsibility of the Bidder and unsolved interface problems shall lead to the consumption of more work, more time and more money for an extraordinary complex Project like this.
- 4.4.4 The Bidder shall split the whole of the Works into several disciplines forming various work packages to be provided by different joint venture partners and/or consortium members and/or subcontractors. Activities to be completed by each joint venture partner and/or consortium member and/or subcontractor, shall be done seamlessly to achieve successful delivery of the whole of the Works which shall further require suitable integration into existing infrastructure.
- 4.4.5 This interface work shall ensure that information and clarifications required for the integration and co-ordination of Planning, Design, Supply, Construction, Installation, Testing, Commissioning activities between all parties concerned are identified, detailed and clarified in due time.
- 4.4.6 The Bidder shall bear the responsibility for establishing an effective Interface Management procedure and take full risk for all interfaces required for successful delivery of the Works (including, but not limited to, interfaces with TFR) including all consequential and/or related delays.
- 4.4.7 The Bidder shall appoint an Interface Management director in his area of responsibility who leads an Interface Management group. The Interface Management group shall, at a minimum, consist of joint venture partners and/or consortium members and/or subcontractors. The responsibilities of the Interface Management director and his group shall be the following, at a minimum:
- a) Establishment and update of the Interface Management Plan and Interface Identification Log.
  - b) Assisting the System Engineers and Designers in identifying the interfaces.
  - c) Detection of interfaces not identified by System Engineers and Designers.
  - d) Registration of all interfaces in an Interface Identification Log.
  - e) Establishment and updating of an Interface Matrix.

## 4.5 Key Personnel Requirements

- 4.5.1 The Bidder shall provide all necessary personnel required by Bidder for the Bidder's successful delivery of the Works in accordance with the Contract. All personnel to be deployed on the Project shall be detailed under the relevant Sections of the Management and Implementation Methodology.
- 4.5.2 The Bidder's Project office and key personnel, all of whom shall have enough knowledge and experience on all aspects of the Works and shall be fully conversant with current railway practices in South Africa, shall be stationed in Durban, South Africa.
- 4.5.3 The Bidder shall employ full-time a railway Engineer in each discipline, registered with the Engineering Council of South Africa ("ECSA") as a professional Engineer or professional technologist, all of whom shall be fully conversant with current railway practices in South Africa and always readily available for delivery of the Works when required.
- 4.5.4 The Bidder shall have suitably qualified supervision staff in charge of the Works. All such supervision staff shall be in direct full-time employment of the main Bidder and/or joint venture partners and/or consortium members and/or subcontractors.
- 4.5.5 Any member and/or representative of PRASA, who may be associated with the Works, is responsible for inspection and acceptance Testing/checking only shall not be required to render any other assistance to the Bidder unless otherwise instructed in writing by PRASA.
- 4.5.6 The Bidder shall, at all times, have an effective and efficient organisational structure in place to deliver the Works and provide the following Key Personnel, at a minimum, further providing signed and verifiable logbooks for each resource as part of the Bid:
- a) General:
- 1 Senior Project Manager with experience exceeding 9 years on similar Projects
  - 1 Senior Commercial Manager with experience exceeding 5 years on similar Projects
  - 1 Senior Controls Manager with experience exceeding 5 years on similar Projects
  - 1 Senior Quantity Surveyor with experience exceeding 5 years on similar Projects
  - 1 Senior Programmer/Scheduler with experience exceeding 5 years on similar Projects
  - 1 Senior Occupational Health and Safety Manager with experience exceeding 5 years on similar Projects
  - 1 Senior Environmental and Heritage Manager with experience exceeding 5 years on similar Projects

- 1 Senior Quality Manager with experience exceeding 5 years on similar Projects
- 1 Senior BEE and Localisation Manager with experience exceeding 5 years on similar Projects
- 1 Senior Public Participation and Community Liaison Manager with experience exceeding 5 years on similar Projects
- 1 Senior Skills Development and Training Manager with experience exceeding 5 years on similar Projects

b) Signalling:

- Design:
  - 2 Senior Signalling Designers with experience exceeding 5 years on similar Projects
  - 7 Signalling Designers with experience exceeding 3 years on similar Projects
  - 1 Signalling Checker with experience exceeding 7 years on similar Projects
  - 1 External Signalling Checker with experience exceeding 7 years on similar Projects
- Installation:
  - 2 Senior Project Engineers with experience exceeding 7 years on similar Projects
  - 2 Project Engineers with experience exceeding 5 years on similar Projects
  - 17 Installers with experience exceeding 5 years on similar Projects
- Testing:
  - 1 Tester in Charge with experience exceeding 9 years on similar Projects
  - 2 Senior Testers with experience exceeding 7 years on similar Projects
  - 5 Testers with experience exceeding 5 years on similar Projects

c) Validation:

- 1 Senior Signalling Engineer with overall experience exceeding 11 years, which includes Validation experience of at least 7 years, on similar Projects
- 3 Signalling Engineers with overall experience exceeding 7 years, which includes Validation experience of at least 5 years, on similar Projects

#### 4.6 Project Office Co-location and Resourcing

4.6.1 The Bidder shall, at the Bidder's Project office and at the Bidder's cost, provide; safe, private, confidential, fully operational and functional offices for PRASA and all other PRASA representatives to use on ongoing basis throughout the duration of the Contract. Provision of offices shall, at a minimum, include:

- a) Unfettered but secure access to PRASA and all other PRASA representatives with no accessibility by the Bidder or any of the Bidder's representatives without written permission from PRASA granting access as may be requested by the Bidder.
- b) 6 Lockable cellular offices (interleading to the open plan office space and meeting room) for PRASA's; Project Director, Deputy Project Director, Project Leader, Project Commercial Manager, Project Finance Manager, Project Controls and Technical Manager, each with:
  - A new large desk with 2 lockable drawers or more including fully wired and operational multi-purpose power and data points
  - 3 New wheelable and ergonomic office chairs
  - A new telephone, able to call local and international landline and cell phone numbers
  - A minimum of 2 new suitable lockable office cabinets to file documents, Designs, etc.
  - A minimum of 1 new locker suitable for the storage of personal belongings
  - A new 4-seater meeting table with 4 non-wheelable but ergonomic chairs
  - A new bar fridge
  - A new small to medium sized dustbin/wastebasket which shall always and timeously be cleaned and sanitised by the Bidder
  - A new small volume A3 colour printer and scanner for which paper ink shall always and timeously be replenished by the Bidder
  - New comprehensive office stationery and consumables which shall always and timeously be replenished by the Bidder
- c) 1 Lockable open plan office space (interleading to the cellular offices and meeting room), for PRASA's other Project personnel, complete with:
  - A minimum of 15 new large desks each with 2 lockable drawers or more including fully wired and operational multi-purpose power and data points
  - 15 New wheelable and ergonomic office chairs
  - 15 New telephones, able to call local and international landline and cell phone numbers



- A minimum of 30 new suitable lockable office cabinets to file documents, Designs, etc.
  - A minimum of 15 new lockers suitable for the storage of personal belongings
  - A new tall fridge/freezer combination unit
  - 15 New small to medium sized dustbins/wastebaskets which shall always and timeously be cleaned and sanitised by the Bidder
  - A medium volume cold filtered water dispenser for which water shall always and timeously be replenished by the Bidder
  - A medium volume hot water dispenser for which water shall always and timeously be replenished by the Bidder
  - A medium volume coffee machine for which water, coffee, milk, sugar, artificial sweeteners and other related consumables shall always and timeously be replenished by the Bidder
  - A medium volume tea station for which water, tea, milk, sugar, artificial sweeteners and other related consumables shall always and timeously be replenished by the Bidder
  - A new high volume/bulk A3 colour printer and scanner for which paper ink shall always and timeously be replenished by the Bidder
  - A large-scale high definition colour plotter with operators to print larger Designs and plans for which paper and ink shall always and timeously be replenished by the Bidder
  - A large-scale paper shredder which shall always and timeously be cleaned (as confidential waste) by the Bidder
  - A large-scale paper stapler and binding machine for which all binding Materials and consumables shall always and timeously be replenished by the Bidder
  - New comprehensive office stationery and consumables for a minimum of 15 people which shall always and timeously be replenished immediately upon request from PRASA
- d) A secure and private meeting room (interleading to the cellular offices and open plan office), for all PRASA personnel, complete with:
- A new 30-seater table including fully wired and operational multi-purpose power and data points per seat
  - 30 New wheelable and ergonomic office chairs
  - A new high definition Project with retractable screen and connection cables etc.



- New high-quality teleconference facilities able to call local and international landline and cell phone numbers
  - New universally adaptable and flexible high-quality video conference facility
  - 1 New medium to large sized dustbin/wastebasket which shall always and timeously be cleaned and sanitised by the Bidder
- e) Wired and wireless Networks with unrestricted and unlimited ultra-high-speed access to the internet in the cellular offices, the open plan office and the meeting room.
- f) Suitably sized and fully fitted male and female ablutions that shall always and timeously be cleaned, sanitised and equipped with consumables by the Bidder.
- g) All cutlery and crockery as required to service 30 people at any one point in time.
- h) Full-time cleaning and waste removal service including all machinery and consumables which shall always be replenished by the Bidder.
- i) Full-time portage service including all support requirements.
- j) Any other office Equipment and consumables as may be requested by PRASA which the Bidder shall provide.
- 4.6.2 The Bidder shall, at the Bidder's cost, provide PRASA with 9 ultra-high specification laptops with accessories (best available at the time of procurement) for which the final choice and instruction shall be made and granted by PRASA respectively. The Bidder shall always ensure that each laptop is always be provided with the latest available and fully licensed Software (at a minimum; Microsoft Windows Operating System, best antivirus, full Microsoft Office suite, Microsoft Project, Adobe Professional (PDF) and AutoCAD/similar and any other Software used by the Bidder and required by PRASA for the Delivery of the Works as requested).
- 4.6.3 The Bidder shall, at the Bidder's cost, provide PRASA with at least 30 full sets of Personal Protective Equipment ("PPE"), including safety boots, reflector vests, hard hats, hearing protection and gloves in the sizes as advised by the PRASA.
- 4.6.4 Ownership of all laptops (including Software and accessories) and PPE shall pass to PRASA immediately upon receipt of each laptop (and accompanying accessories) and PPE by PRASA. Ownership of all other office; Furniture, Equipment, stationery and consumables shall pass to PRASA at the Completion Date or at a date of Suspension or Termination of the Contract (regardless of whether PRASA or the Bidder suspends or terminates the Contract).
- 4.6.5 The Bidder shall, at the Bidder's cost, always make, 4 double cab 4x4 bakkies (or similar) and any other vehicle(s) and other means required to travel to the local Site(s), and for any other purpose of this Project, available to PRASA.

- 4.6.6 The Bidder shall, for all PRASA representatives (minimum 7 personnel or at any given instance as instructed by PRASA) and at the Bidder's cost, uncompromisingly provide all unlimited; Materials, facilities, samples, Equipment, travel (air and rail and road), accommodation, meals, incidentals, unfettered access and any other means required for PRASA to attend and/or perform any local and international; rail-related conferences/workshops, knowledge sharing events, skills development events, inspections, Validation, Plant and Materials reviews, Technology reviews and Training. In this regard, allowance for international events shall be made for:
- a) All related Training.
  - b) All related Validation.
  - c) All Factory Acceptance Tests.
  - d) 2 RSS related conferences in total.
  - e) 2 ETCS related conferences in total.
  - f) 2 Trips to visit other Bidder Clients for whom projects and Technology have been successfully implemented by the Bidder in total.
- 4.6.7 The Bidder shall always make any measuring Tools and Equipment, required to perform quality inspections, tests, Commissioning etc., and for any other purpose of this Project, available to PRASA.

## **4.7 Document Management**

- 4.7.1 The Bidder shall strictly adhere to document management procedures and requirements stated throughout the RFP. In particular, the Bidder shall, or unless otherwise instructed in writing by PRASA, only use full Microsoft Office suite and Adobe (PDF) Software to produce and issue/submit all Project documentation (other than the Project Programme and drawings). The Project Programme shall be issued in Microsoft Project and Adobe (PDF) formats and drawings shall be issued in DGN, DWG and Adobe (PDF) formats.
- 4.7.2 All Project documentation shall follow strict certification, date stamping and version control and shall be issued with transmittal notes clearly identifying the sender, receiver, contents and purpose of the submission. The Bidder shall implement proper Software configuration management, including version control and CRC numbers for all Software data and configuration files. The Bidder shall submit the relevant configuration management records to PRASA with every submission of Software data or configuration files. All formats of all Project documentation, as prepared by any Project team member, shall first be approved by PRASA prior to transmission to the rest of the Project team and stakeholders. The Bidder shall, unless otherwise instructed in writing by PRASA, submit all Project documentation to PRASA as follows:
- a) 1 Electronic copy by email.
  - b) 2 Bound paper copies by hand.
  - c) 2 Electronic copies on compact disk/memory stick.

4.7.3 All Project documentation shall bear the logo of PRASA either at the extreme top right of, or above, any other logos (depending of positioning in headers or drawing blocks etc.). Other logos may be added subject to approval by PRASA. The following Project documentation naming conventions shall always be adhered to the Project team:

a) Project Documentation:

- All Project Documentation: “yyyymmdd-PRASA-KZN PTCS D&C-[Insert Document Title]-(Version Control)-”
- The above translates to the following examples; “20210101-PRASA-KZN PTCS D&C-Project Naming Conventions-(Rev00)” in which case the next version of the same document shall for instance read: “20210202-PRASA-KZN PTCS D&C-Project Naming Conventions-(Rev01)” and so forth until a final version is reached which shall for instance read “20210303-PRASA-KZN PTCS D&C-Project Naming Conventions-(Final)”
- One shall not leave any spaces between the dashes else this shall negatively affect chronological e-filing sequences

b) Email and Other Correspondence:

- All Titles: “PRASA-KZN PTCS D&C-[Insert Subject Title]”
- The above translates to the following example: “PRASA-KZN PTCS D&C-Project Naming Conventions”
- One shall not leave any space between the dash else this shall negatively affect chronological e-filing sequences
- However, if one is attaching a document in an email for discussion etc., then the Email Title should be the Document Title of the attached which shall be in accordance with Project Documentation naming convention example; “20210101-PRASA-KZN PTCS D&C-Project Naming Conventions-(Rev00)”

4.7.4 All contract documentation and other key documents containing signature shall be held in hard copy by PRASA and the Bidder as appropriate. Project Team members shall hold and/or file all Project documents in accordance with PRASA’s document management Systems.

## 4.8 Reporting

4.8.1 The Bidder shall collect and distribute performance information, including status reports, progress measurements and forecasts. The performance reporting process involves the periodic collection and analysis of baseline versus actual data to understand and communicate the Project progress and performance as well to forecast the Project results.

- 4.8.2 The Bidder shall, without contest, provide any and all reports and unredacted detailed support information as may be requested from PRASA throughout the duration of the Contract. All reporting shall therefore continue until the Performance Certificate has been issued by PRASA or until otherwise instructed by PRASA.
- 4.8.3 Unless otherwise stated throughout the RFP, all Final and/or Close-out Reports shall be issued 75 calendar days prior to the Completion Date for the whole of the Works.
- 4.8.4 The minimum reporting requirements are:
- a) Project Initiation Report:
    - The Bidder shall prepare and submit a Project Initiation Report no later than 15 working days after the Commencement Date
    - This report shall include the main activities performed since the Commencement Date, the main observations regarding the current situation, identified most critical problems and proposals for the main measures that should be undertaken in joint actions between the Bidder and PRASA
  - b) Weekly Dashboard Reports:
    - The Bidder shall prepare high-level Weekly Dashboard Reports and submit same to PRASA
    - The 1<sup>st</sup> Dashboard Report shall be issued on the 1<sup>st</sup> Thursday of the calendar month after the calendar month in which the Commencement Date falls thereafter every Thursday
    - The Weekly Dashboard Report shall, at a minimum, contain the following information:
      - Level 4 Project Programme review showing two separate bars for each task i.e. the primary bar reflects the current forecast dates and the secondary bar the latest Accepted/Approved Programme
      - 4-Week Look-ahead Programme showing two separate bars for each task i.e. the primary bar reflects the current forecast dates and the secondary bar the latest Accepted/Approved Programme
      - A Manpower Histogram reflecting actual, forecasted and planned activities
      - S-curves - reflecting the actual percentage complete versus the planned percentage for the overall Contract
      - Financial status
      - Charts and descriptions of progress, including each stage of Design, documents, procurement, manufacture, delivery to Site(s), Construction, erection, Testing and Commissioning
      - Records of personnel and Equipment utilised for the past week

- Quality assurance documents, Test results and certificates of Materials
- Notices (PRASA's Claims, Notices (Bidder's Claims) and Variations
- Safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations
- Risks and Issues with details of any events or circumstances which may jeopardise the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays

c) Monthly Progress Reports:

- The Bidder shall prepare detailed Monthly Progress Reports and submit same to PRASA on the 2<sup>nd</sup> Thursday of each calendar month
- The 1<sup>st</sup> Monthly Progress Report shall be issued on the 2<sup>nd</sup> Thursday of the calendar month after the calendar month in which the Commencement Date falls
- The Monthly Progress Report shall, at a minimum, contain the following information:
  - Executive Summary:
    - Introduction
    - Purpose of this Document
    - Issue Status of this Document
    - Validation of this Document
  - Project Data:
    - Project Description
    - Project Location
    - Project Team
  - Executive Progress:
    - Overall Project Health Chart
    - Table of Approved Project Change Requests and Variation Orders
    - Incident Reports (Environmental / Heritage / Occupational Health and Safety)
    - Table of Claims and/or Notices Issued by Bidder and PRASA
    - Approved Programme Summary and Chart Analysis (Major Milestones, Deliverables and Key Dates)

- Earned Value Analysis
- Quality Assurance and Management Summary
- Community Liaison and Participation Summary
- B-BBEE, Localisation, and Training Target Compliance
- Critical Risks, Issues and Lessons Learnt Review
- Key Decisions and/or Approvals Required from PRASA
- Comprehensive Progress:
  - Detailed Project Health Status
  - Detailed Approved Programme Progress Review (Major Milestones, Deliverables and Key Dates, Tasks, Activities, Interdependencies and Critical Path Analysis)
  - Detailed Financial Cost Report (Bid Price versus current approved Contract Price, Payment Milestones Claimed vs Payment Milestones Approved, Invoices Issued versus Payments Received etc.)
  - Detailed Quality Assurance and Management Report
  - Detailed Community Liaison and Participation Feedback
  - Detailed B-BBEE, Localisation, and Training Target Compliance Report
  - Detailed Risks, Issues and Lessons Learnt Review
  - Detailed Schedule of Claims and Notices issued by Bidder and PRASA
- Annexures:
  - Annexure A – Updated Approved Programme
  - Annexure B – Copies of Project Change Requests and Variation Orders submitted in the current reporting period
  - Annexure C – Copy of Environmental Control Officer (“ECO”) Agent Monthly Audit Report
  - Annexure D – Copy of OHS Agent Monthly Audit Report
  - Annexure E – Copies of Claims and/or Notices issued by Bidder and PRASA in the current reporting period
  - Annexure F – Copy of Community Liaison Officer (“CLO”) Monthly Report
  - Annexure G – Copy of Community Participation Consultant (“CPC”) Monthly Report
  - Annexure H – Updated Versions of Risks, Issues and Lessons Learnt Registers

- Notwithstanding the above, each Monthly Progress Report shall further include:
  - Charts and detailed descriptions of progress, including each stage of Design, Bidder's documents, procurement, manufacture, delivery to Site(s), Construction, erection, Testing and Commissioning
  - Photographs showing the status of manufacture and of progress on the Site
  - For the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of; commencement of manufacture, Bidder inspections and factory acceptance tests, shipment and arrival on Site
  - Detailed records of the Bidder's Personnel, Plant, Plant and Materials deployed on the Project including detailed Site(s) diaries
  - Copies of all quality assurance documents, Test results and certificates of Materials

d) Annual Progress Reports:

- The Bidder shall prepare detailed Annual Progress Reports and submit same to PRASA. The 1<sup>st</sup> Annual Progress Report shall be issued on the 365<sup>th</sup> calendar day from the Commencement Date thereafter every 365 calendar days
- The Annual Progress Report shall, at a minimum, contain an abstract of work performed during the previous year

e) B-BBEE and Preferential Procurement Compliance Reports:

- The Bidder shall prepare and submit detailed B-BBEE Compliance Reports to PRASA further attaching full copies of all unredacted subcontracts, employment contracts and purchase contracts (including unredacted invoices and corresponding proofs of payment etc.) proving actual B-BBEE and Preferential Procurement achievements measured against the B-BBEE and Preferential Procurement Targets and Performance Scorecard. These reports shall further provide substantiating reasons as to why such achievement failed to meet the B-BBEE and Preferential Procurement Targets



- B-BBEE and Preferential Procurement Compliance Reports shall be audited by an Independent Auditor registered with the South African Institute of Chartered Accountants (“SAICA”). The Independent Auditor shall issue an Independent B-BBEE and Preferential Procurement Audit Report which shall include a clear statement as to whether “the Bidder failed to meet the B-BBEE and Preferential Procurement Targets” or “the Bidder has met the B-BBEE and Preferential Procurement Targets”. Cost of Independent Auditor’s services shall be borne by the Bidder
  - The 1<sup>st</sup> B-BBEE Compliance Reports shall be issued 150 calendar days after the Commencement Date thereafter every 150 calendar days
  - B-BBEE and Preferential Procurement Targets and Performance Measurement shall be finalised and agreed between PRASA and the Bidder during Contract negotiations thereafter included in the Contract as the B-BBEE and Preferential Procurement Targets and Performance Measurement Scorecard
- f) Localisation Compliance Reports:
- The Bidder shall submit detailed Localisation Compliance Reports to PRASA further attaching full copies of all unredacted subcontracts, employment contracts and purchase contracts (including unredacted invoices and corresponding proofs of payment etc.) proving actual Localisation achievements measured against the Localisation Targets and Performance Scorecard. These reports shall further provide substantiating reasons as to why such achievement failed to meet the Localisation Targets
  - The Localisation Compliance Reports shall be audited by an Independent Auditor who is registered with the South African Institute of Chartered Accountants (“SAICA”). The Independent Auditor shall issue an Independent Localisation Audit Report which shall include a clear statement as to whether “the Bidder failed to meet the Localisation Targets” or “the Bidder has met the Localisation Targets”. The cost of the Independent Auditor’s services shall be borne by the Bidder
  - The 1<sup>st</sup> Localisation Compliance Reports shall be issued 150 calendar days after the Commencement Date thereafter every 150 calendar days
  - Localisation Targets and Performance Measurement shall be finalised and agreed between PRASA and the Bidder during Contract negotiations thereafter included in the Contract as the Localisation Targets and Performance Measurement Scorecard



g) Training Compliance Reports:

- The Bidder shall submit detailed Training Compliance Reports to PRASA further attaching full copies of all unredacted subcontracts, employment contracts and purchase contracts (including unredacted invoices and corresponding proofs of payment etc.) proving actual Training achievements measured against the Training Targets and Performance Scorecard. These reports shall further provide substantiating reasons as to why such achievement failed to meet the Training Targets
- The Training Compliance Reports shall be audited by an Independent Auditor who is registered with the South African Institute of Chartered Accountants (“SAICA”). The Independent Auditor shall issue and Independent Training Audit Report which shall include a clear statement as to whether “the Bidder failed to meet the Training Targets” or “the Bidder has met the Training Targets”. The cost of the Independent Auditor’s services shall be borne by the Bidder
- The 1<sup>st</sup> Training Compliance Reports shall be issued 150 calendar days after the Commencement Date thereafter every 150 calendar days
- Training Targets and Performance Measurement shall be finalised and agreed between PRASA and the Bidder during Contract negotiations thereafter included in the Contract as the Training Targets and Performance Measurement Scorecard

h) Spares, Maintenance and Life Cycle Cost (“LCC”) Replacement Reports:

- The Bidder shall submit detailed Spares, Maintenance and Life Cycle Cost (“LCC”) Replacement Reports to PRASA further attaching full copies of all unredacted subcontracts, employment contracts and purchase contracts (including unredacted invoices and corresponding proofs of payment etc.) proving actual Spares, Maintenance and Life Cycle Replacements measured against the PRASA approved Spares, Maintenance and Life Cycle Cost Replacement Plan and Financial Model. These reports shall further provide substantiating reasons as to why such achievement failed to meet the Spares, Maintenance and Life Cycle Cost Replacement Plan and Financial Model Targets.
- The 1<sup>st</sup> Spares, Maintenance and Life Cycle Cost (“LCC”) Replacement Report shall be issued 150 calendar days after the first Section that has been tested, commissioned and handed over to PRASA thereafter every 150 calendar days until completion of the full Maintenance, Warranty and Defects Liability responsibility period.
- The final Spares, Maintenance and Life Cycle Cost (“LCC”) Replacement Report shall be issued 75 calendar days prior to completion of the full Maintenance, Warranty and Defects Liability responsibility period.

#### **4.9 Project Meetings**

- 4.9.1 The Bidder shall attend Project meetings as instructed by PRASA or convened by PRASA.
- 4.9.2 Meeting venues, agendas and attendees shall first be approved by PRASA prior to issuance.
- 4.9.3 Secretariat requirements for each meeting shall be as instructed by PRASA for each type of meeting and minutes of each meeting shall be approved by PRASA prior to issuance to the list of attendees.
- 4.9.4 Monthly Project Management:
- a) Monthly Project Management Meetings shall be held between the Bidder, PRASA and other Project Stakeholders. The primary purpose of these meetings shall be the Bidder's provision of detailed Project progress and Contract performance updates to PRASA as well as to raise key matters which require direction and/or approval from PRASA's Project leadership and management team(s).
  - b) Such meetings may therefore include discussions on all aspects included under Monthly Progress Reports and all other contractual matters.
- 4.9.5 Monthly Technical Management and Coordination:
- a) Monthly Technical Management and Coordination Meetings shall be held between the Bidder, PRASA and other Project Stakeholders. The primary purpose of these meetings shall be to coordinate and address technical matters which require PRASA direction and or approval at the Monthly Progress Meetings.
- 4.9.6 Ad-hoc/Other:
- a) Ad-hoc and/or Other Meetings shall be held between the Bidder, PRASA and other Project Stakeholders on an as and when required basis.
  - b) Such meetings may address specific issues or problems relating to the delivery of the Works. Meetings of a specialist nature shall be convened at times and locations upon approval by PRASA. Records of these meetings shall be submitted to PRASA, by the PRASA approved chairperson of a meeting, within 10 working days of the meeting or as otherwise instructed by PRASA.

#### **4.10 Occupational Health and Safety Management**

- 4.10.1 The Bidder is responsible for all Occupational Health and Safety ("OHS") matters on the Project for the entire duration of the Contract therefore including Maintenance, Warranty and Defects Liability period.
- 4.10.2 The Bidder shall implement an OHS Management Plan ("OHS Plan") that complies with the Health and Safety specifications as stated throughout the RFP.

4.10.3 Use of PPE:

- a) The wearing of specified personal protective Equipment is compulsory whilst on or near railway lines or service roads.
- b) PPE requirements for personnel working on or near railway lines or services roads are as follows:
  - Reflective vests shall be required for all personnel in the vicinity of a railway line or service road and an Equipment Room
  - Safety boots shall be required for all personnel on Site(s)
  - Hard hats shall be required where there is a danger of falling objects or close to overhead work
  - Overalls shall be required for all Installation personnel

4.10.4 Use of vehicles:

- a) When using service roads, the Bidder shall comply with the relevant legislation and ordinances including, but not limited to, all the traffic signs, speed limits, etc. on service roads.
- b) Vehicles' main head lights and taillights are always switched on when moving on service roads.

4.10.5 High voltage Electrical Equipment:

- a) The Site(s) may have "live" Electrical overhead wires or underground cables and there is a danger of contact with such wires or piercing underground Electrical cable during excavations.
- b) When doing Installations or working in the vicinity of high voltage Equipment, the Bidder shall take the necessary precautionary measures to safeguard all personnel against injury.
- c) The Bidder shall consider all Equipment as "live", notwithstanding any safety measures in the System to reduce induced stray voltages to a safe level.
- d) Before work commences the Bidder shall make all personnel aware of the danger of "live" Electrical wires and cables as well as induced stray voltages from AC electrification into Signalling cables and Equipment.

4.10.6 Trackside Works:

- a) When arriving at any Site(s), including Equipment Rooms and substations, the Bidder shall inform the Train Control Operator ("TCO") of his presence. The Bidder shall also accurately record the date, time and his activities daily in the Equipment Maintenance book.

- b) When the Bidder enters a CTCC or any other train control office, the Bidder shall:
  - Identify all applicable personnel to the Section Manager in charge and states the purpose of his visit and enter the details of and reason for the Bidder's visit in the CTCC or train control office logbook and signs the entry
- c) Before the Bidder leaves the Site(s) or CTCC or train control office, the Bidder shall report all intended movements to the Section Manager in charge.

4.10.7 Protection of the public:

- a) The Bidder shall ensure that restricted access is in place at all Construction Sites and Site(s) camps.

4.10.8 Security:

- a) The Bidder shall provide security guards on Site(s) for all personnel, Equipment, Plant and Materials, and PRASA representatives performing their duties. Deployment of security personnel shall be arranged in consultation with PRASA subject to the applicable PRASA regulations.
- b) The Bidder shall liaise with PRASA's security personnel so that they are always aware of the Bidder's security arrangements on Site(s) and Supply all personnel with clearly identifiable clothing clearly marked with Project and Bidder details.
- c) The Bidder shall Supply all personnel with an ID card containing the personnel's photo and identity number and statement of employment with the Bidder. All personnel shall always carry this document. The Bidder shall also ensure that persons no longer in the Bidder's employ, do not have those ID cards in their possession.
- d) Persons with criminal convictions shall not be employed on Site(s).
- e) Employees shall not be hired nor paid at the Site(s).
- f) All vehicles on Site(s) shall have the Bidder's name clearly marked in a conspicuous position.
- g) All Bidder personnel shall undergo a security briefing before they are allowed on Site(s).
- h) The Bidder's OHS Plan shall include a detailed method statement on how security matters shall be managed on the Site(s).

4.10.9 General:

- a) The Bidder shall comply with all applicable legislation, regulations issued in terms thereof and PRASA's safety rules, regulations and guidelines entirely at the Bidder's own cost.
- b) The Bidder's OHS Plan shall, at a minimum, comply with all standards, specifications, regulations and procedures as stated throughout the RFP.

- c) For the application of the Occupational Health and Safety Act, 1993 the Site(s) is deemed to be under the Bidder's control for the duration of the Contract, The Bidder is responsible for all Occupational Health and Safety ("OHS") matters on the Project for the entire duration of the Contract therefore including execution of the Works during the Maintenance, Warranty and Defects Liability period and including subsequent defects correction periods during which work is taking place. The Bidder may, at the discretion of PRASA, be regarded as PRASA and is responsible for ensuring that the requirements of the Act and the regulations are implemented in the working areas.
- d) All the Bidder's Site(s) personnel shall attend PRASA's and/or TFR's safety induction courses before commencement of any Works on any Site(s). The duration of each course is anticipated to be a maximum of 8 hours during normal working hours.
- e) Blasting is not allowed on Site(s).
- f) In accordance with the safety case between the Parties, the Bidder shall, at a minimum, comply with the following Acts: -
  - The Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993). The Bidder produces proof of his registration and good standing with the Compensation Commissioner in terms of the Act
  - The Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended and Regulations issued in terms thereof or un-repealed regulations issued in terms of the former Act no. 6 of 1983, in his entirety
  - The Explosives Act No. 26 of 1956 (as amended): The Bidder, where applicable, furnishes the Project Manager with copies of the permits authorising the Bidder to establish an explosives magazine on or near the Site(s)
  - Act 85 of 1993 registration of the Site(s) on behalf of PRASA shall be done by the Bidder, in consultation with the PRASA.
- g) PRASA's safety representative may attend all Site(s) safety meetings called for in terms of Act 85 of 1993. The Bidder shall promptly submit copies of the minutes of these meetings to PRASA. These meetings shall be monitored to identify any action required to rectify problems.
- h) The storage of flammable Materials shall require attention and management.
- i) Exceptional care shall be required when welding, flame-cutting or other fire-hazard operations occur, and the Bidder shall provide suitable firefighting Equipment at close hand to those operations.
- j) The Bidder shall report all accidents in writing to PRASA. Any accident resulting in the death of or injury to any person in the working areas shall be reported within 24 hours of its occurrence, and any other accident shall be reported within 48 hours of its occurrence.

- k) Telephone numbers of emergency services, including the local firefighting service, shall be posted conspicuously in the Bidder's Site(s) office near the telephone.
- l) The Bidder shall provide suitable shoring for cable trenches.
- m) The Bidder shall provide the required services to clean and sanitise the Site(s) from hazards, including raw sewerage, as and when required for the purpose of performing the Works.
- n) The Bidder shall provide additional protection Equipment and clothing for all personnel required for working in areas where environmental and health issues exists.

#### **4.11 Environmental and Heritage Management**

- 4.11.1 The Bidder is responsible for all Environmental and Heritage matters on the Project.
- 4.11.2 The Bidder's Environmental and Heritage Management shall, at a minimum, comply with all standards, specifications, regulations and procedures as defined throughout the RFP and all legislation, regulations, and by-laws of South Africa.

#### **4.12 Quality Management**

- 4.12.1 The Bidder's Quality Management System ("QMS") shall, at a minimum, comply with all standards, specifications, regulations and procedures as defined throughout the RFP.
- 4.12.2 The Bidder shall submit his QMS documents to PRASA for acceptance as part of the Programme. The documents shall include details of the:
  - a) Quality Plan for the Works.
  - b) Quality policy.
  - c) Index of procedures to be used.
  - d) Document register.
  - e) Schedule of internal and external audits for the Works.
- 4.12.3 The Bidder shall develop and maintain a comprehensive register of documents that are generated on the Contract including all quality related documents. PRASA shall indicate those documents to be submitted for information, review or acceptance and the Bidder indicates such requirements within his register of documents. The register indicates the dates of issue of the documents with PRASA responding to documents submitted by the Bidder for review or acceptance within the period for reply (except where stated otherwise) prior to such documents being used by the Bidder.
- 4.12.4 The Bidder shall submit a detailed Test and inspection plan to PRASA for acceptance before manufacturing and Installation start. The Bidder's Test and inspection plan includes detailed trenching records, witness points and hold points for critical activities.



- 4.12.5 The Quality Plan means the Bidder's statement, which outlines strategy, methodology, resources allocation, quality assurance and quality control co-ordination activities to ensure that the works meet the standards stated in throughout the RFP. It includes a description of the Bidder's Test and inspection activities, and check/Test sheets.

#### **4.13 Temporary Works, Site(s) Services and Construction Constraints**

- 4.13.1 PRASA's Site(s) entry and security control, permits, Site(s) regulations and restrictions on Site(s) use are that:

- a) PRASA may allow access to Site(s), on request, after:
  - The Bidder has requested access from PRASA
  - The Bidder has made all safety, health, environment, quality and any other appointments required to proceed with Site(s) activities
  - The Bidder has provided the safety case as accepted by the relevant Parties
  - PRASA has issued a Site(s) Access Certificate
- b) The Bidder shall be given access to the various Sites at PRASA's discretion therefore as considered necessary by PRASA.
- c) The Bidder shall comply with the following requirements of PRASA:
  - Accurate and transparent reporting of faults and failures
  - Adherence to Occupation requirements
  - Proactive and effective Safety risk management
  - Suitable environmental and heritage constraints compliance, control and management

- 4.13.2 Access to any third-party property:

- a) The Bidder shall obtain a letter of introduction from PRASA as may be required to enter any third-party property required to deliver the Works.
- b) The Bidder shall ensure that no third-party property is entered, nor any Works executed prior to granting of the required permits and/or wayleaves.
- c) The Bidder shall be responsible to apply and pay for all required permits and/or wayleaves.
- d) The Bidder shall ensure steps taken to ensure that unauthorised persons or livestock do not obtain passage through fences temporarily damaged when executing the Works.
- e) The Bidder shall, at the cost of the Bidder, make good any damage to third party property, resultant from the execution of the Works.
- f) Third party property owners shall be kept informed, proactively by the Bidder, about any changes to the scheduling of the Works should they be affected.

4.13.3 People restrictions on Site(s), hours of work, conduct and records:

- a) The Bidder shall comply with the following hours of work on the Site(s):
  - Normal working hours on Site(s) means the hours of work, as determined by a wage regulating measure or statutory enactment for any trade or activity, in respect of which the basic minimum rate of pay is applicable and excludes all time for which a higher rate of pay is obligatory. Where no wage regulating measure is in force, the normal hours shall be 07h00 to 17h00 Mondays to Fridays, including statutory meal breaks etc.
  - The Bidder shall confine his work to normal working hours except when work outside these hours is:
    - Specifically provided for in the Contract
    - Permitted by PRASA at the Bidder's request
    - Instructed in writing by PRASA
- b) Acceptance Testing and Commissioning may occur during undefined hours, and may include weekends, public holidays and night work, solely at the discretion of PRASA and in accordance with PRASA's requirements.
- c) When the Bidder proposes to work outside normal working hours, the Bidder shall apply to PRASA at least 21 working days in advance. PRASA may, at PRASA's discretion, not unnecessarily withhold permission however such permission is subject to such conditions as PRASA may impose on the Bidder to protect PRASA's interests. Such permission may be withdrawn by PRASA at any time and without consequence and liability to PRASA. The Bidder is not entitled to any claim for additional payment or time arising from either PRASA refusal to permit such work or the granting of such permission or withdrawal of permission by PRASA.

4.13.4 Cooperating with, obtaining acceptance of and checking the work of others:

- a) The Bidder shall inspect the work of others with which the Works interfaces, with support from PRASA, to ensure compliance with the RFP.

4.13.5 Bidder's Equipment:

- a) The Bidder shall Supply all Equipment necessary to provide the Works.
- b) The Bidder shall promptly replace or repair any faulty Equipment to ensure delivery of the Works.

4.13.6 Existing services, including cable and pipe trenches:

- a) The Bidder shall verify the boundaries of the Rail servitude.
- b) The Bidder shall locate existing services before commencing work on Site(s).
- c) Where the Bidder encounters existing services, he shall take extreme care not to damage them. The Bidder shall, at the cost of the Bidder, repair any such damage caused through the delivery of the Works.



- d) The Bidder shall contact all relevant stakeholders and authorities, with assistance from PRASA, to co-ordinate all Site(s) activities.

4.13.7 Hook ups to existing Installations:

- a) The Bidder shall promptly notify PRASA in writing if any suspected discrepancies with as-built information are noted.
- b) The Bidder shall only implement changes as per red and yellow working drawings accepted by PRASA.
- c) The Bidder shall, in accordance with timeframes specified in writing by PRASA, submit proper Occupation plans for PRASA to arrange Occupations for Work.
- d) The Bidder shall ensure prevention of faults as far as possible.
- e) The Bidder shall promptly and transparently notify PRASA of any faults and failures immediately upon becoming aware of such faults and failures further providing the rectification plan to correct the faults and failures.

4.13.8 Construction Trains:

- a) Should the Bidder use Construction trains (e.g. for the Installation of new sleepers), the Bidder shall apply the relevant RSR guidance notice “Construction Train Safety Permits” regarding Construction train safety permits.

4.13.9 Temporary Construction Level-Crossings:

- a) The Bidder shall obtain all necessary approvals from the RSR for all temporary Construction level crossings required for the Project, as per South African National Standard (“SANS”) 3000-2-2-1.

## 4.14 Reporting of Faults and Failures

4.14.1 The Bidder shall keep the Duty Manager in the CTCC informed of all Site(s) activities so that each may be contacted without delay in case of an emergency.

4.14.2 The Bidder shall keep PRASA and the Duty Manager in the CTCC informed of the names of all personnel who are available to receive calls during specific periods.

## 4.15 Occupations

4.15.1 Before the Bidder undertakes work involving Track crossings, the Occupation of the Track, dead orders or other interruption of PRASA and/or TFR service, the Bidder shall submit a request for an Occupation in writing to PRASA.

4.15.2 The Bidder shall contact PRASA the calendar day before the date of an Occupation to ascertain whether the Occupation is going ahead and whether the Occupation details have changed. PRASA is at liberty to cancel or postpone any Occupation at any time and at sole PRASA’s discretion for which PRASA shall not accept any liability therefore that Bidder shall accept all liability and consequence for such cancelation or postponement further absorbing any loss of time within the Approved/Contract Programme.

- 4.15.3 The Bidder shall provide PRASA with a detailed Occupation plan for acceptance, showing details of:
- a) All decommissioning activities.
  - b) All disciplines involved.
  - c) Hours of work.
  - d) All Equipment, personnel, Plant and Materials and other resources the Bidder plans to use on the Occupation.
  - e) Activities that have already been completed in preparation for the Occupation.
  - f) Activities that still needs to be completed in preparation for the Occupation.
  - g) Programme of work for the Occupation.
  - h) All portions of existing Installations that shall be affected by the Works, including a detailed method statement on what measures the Bidder shall implement to minimise the Occupation duration and how the existing Installations shall be protected/isolated from safety risks and disruption.
- 4.15.4 Submission of the Occupation plan serves as confirmation that the Bidder shall use the Occupation subject to approval in writing by PRASA. Failure to submit an Occupation plan puts the Occupation at risk of being cancelled.
- 4.15.5 The Bidder shall provide qualified flagmen with detonators, radios and all other Equipment to protect trains where the Works affect safety of trains.
- 4.15.6 The Bidder shall provide protection to all personnel from the danger of passing trains.
- 4.15.7 Before disconnecting or working on any Equipment connected to a working System, the Bidder shall take a local Occupation. Cooperation with the operating staff is essential for safe working and for the efficient completion of work.
- 4.15.8 When an Occupation for work on an existing Installation takes longer than expected, the Bidder promptly notifies PRASA who applies for an extended Occupation.
- 4.15.9 All safety precautions in PRASA's and/or TFR's Train Working Rules ("TWR") shall apply.
- 4.15.10 The Bidder shall provide all points clamps complete with padlocks, and signal crosses and blanking plates for the protection of trains.

#### **4.16 Operational Readiness**

- 4.16.1 The Bidder shall conduct an operational readiness assessment before the Commissioning of each Section and implement required action to ensure operational readiness by time of Commissioning.
- 4.16.2 The Bidder shall ensure operational readiness before Commissioning starts for each Section through at least the following activities:
- a) Change management.
  - b) Operating procedure development.

- c) Maintenance strategy and procedure development.
- d) Training and Technology transfer.

4.16.3 The Bidder shall conduct change management sessions for PRASA Corporate, PRASA Rail, PRASA Tech, PRASA's KZN Region Management, Traffic Control personnel, Train driver personnel, Technical personnel and all other effected parties, including third parties such as TFR and the RSR.

- a) Various change management session is held to accommodate shift working and operational restrictions and requirements.
- b) Change management shall be conducted in the form of a presentation, covering at least the following topics:
  - Background on Project
  - The benefits of the new System
  - Key changes
  - Project status and timelines
- c) The Bidder shall submit the change management plan and relevant presentations and documentation PRASA for approval prior to implementation.
- d) The Bidder shall update and resubmit the change management plan and relevant presentations and documentation as and when necessary and submit it to PRASA for approval.

4.16.4 The Bidder shall review the Train Working Rules ("TWS"), all relevant operating procedures and local instructions and identify required changes.

- a) Identified required changes are submitted to PRASA for approval and updating of the TWS, relevant operating procedures and local instructions.
- b) The TWS, relevant operating procedures and local instructions are updated prior to Commissioning of the first Section or prior to the Commissioning of a specific Section that the changes are relevant to.
- c) Where it is not practical to update the TWS and/or operating procedures prior to Commissioning, the change can be addressed by means of a local instruction with prior approval from PRASA.

4.16.5 The Bidder shall review all relevant Maintenance strategies and Maintenance procedures and identify required changes and develop new Maintenance strategies and Maintenance procedures where required for new Technology implemented as part of the Project.

- a) Identified required changes are submitted to PRASA for approval and updating of the required Maintenance strategies and procedures.
- b) The relevant Maintenance strategies and procedures are updated prior to Commissioning of the first Section or specific Sections where the changes are relevant.

- c) The Maintenance strategies and procedures are updated in accordance to the approved PRASA format.
- 4.16.6 For each type of Equipment to be installed as part of the Project, the Bidder shall produce Installation procedures document(s) containing:
  - a) Detailed Installation methods.
  - b) Detailed Testing procedures.
- 4.16.7 The Bidder shall for all Systems, sub-Systems and Equipment installed as part of the Project define nomenclature and asset Componentization structures according the PRASA standards.

#### **4.17 Training and Technology Transfer**

- 4.17.1 The Bidder shall, for all PRASA representatives (minimum 8 personnel or at any given instance as instructed by PRASA) and at the Bidder's cost, arrange detailed ERTMS project management training by an accredited training facility to be delivered within 6 calendar months from the Completion Date. The Bidder shall be responsible for the cost of the course, travel, accommodation and any other cost related to the attendance of the training.
- 4.17.2 The Bidder shall, for all PRASA representatives (minimum 8 personnel or at any given instance as instructed by PRASA) and at the Bidder's cost, arrange detailed ERTMS and RSS (Technology offered in the Bid at a minimum) technical training by an accredited training facility to be delivered within 6 calendar months from the Completion Date. The Bidder shall be responsible for the cost of the course, travel, accommodation and any other cost related to the attendance of the training.
- 4.17.3 The Bidder shall, at a minimum, provide all necessary Training (Theoretical, Practical, Technical and Operational), as instructed by PRASA, for all PRASA TCOs, Section Managers and Duty Managers in KZN as follows:
  - a) Various Training sessions conducted to accommodate shift working.
  - b) Traffic Control personnel working specific Sections are not trained more than 2 months prior Commissioning of that Section.
  - c) Traffic Control personnel Training consists of an operating procedure module and an Equipment module. The operating procedure module include all changes to the operating procedures and rules. The Equipment module provides Training on how to operate the newly installed PTCS and associated Systems.
  - d) The Training includes a theoretical session as well as a practical session on the Training simulator.
  - e) Any other Training as instructed in writing by PRASA.

- 4.17.4 The Bidder shall, at a minimum, provide all necessary Training (Theoretical, Practical, Technical and Operational), as instructed by PRASA, for all PRASA and TFR Train Drivers, Section managers, Track Masters and other relevant train driver personnel in the KZN:
- a) Various Training sessions conducted to accommodate shift working
  - b) Train driver personnel working specific Sections are not trained more than 2 months prior Commissioning of that Section.
  - c) Train Driver personnel Training consists of an operating procedure module including all changes to the operating procedures and rules.
  - d) The Training includes a theoretical session as well as a practical session on the Training simulator.
  - e) Any other Training as instructed in writing by PRASA.
- 4.17.5 The Bidder shall, at a minimum, provide all necessary Training (Theoretical, Practical, Technical and Operational), as instructed by PRASA, for all PRASA Maintenance personnel and associated managers in KZN as specified throughout the RFP:
- a) Various Training sessions for the different Training modules are conducted to accommodate PRASA operational constraints and requirements.
  - b) Maintenance personnel working specific Sections are not trained more than 2 months prior to the Installation work for the specific discipline commencing in that Section.
  - c) Training is provided for all and any proprietary Plant and Materials or new Technology installed as part of the Project.
  - d) Different Training modules are provided for different level maintainers as per the developed Maintenance strategy.
  - e) Training is focused on installation, maintenance, condition monitoring, fault finding and fault correction at the appropriate level as per the developed Maintenance strategy.
  - f) Training is conducted for each individual Equipment type and new Technology installed as part of the project, as well as all sub-Systems and the PTCS as a whole, including all interfaces.
  - g) The Training includes a theoretical session, a practical session on the Training simulator or an actual Installation, as well as on the job Training during Construction, Testing and Commissioning.
  - h) Courses include practical exposure to the actual Installations involved as well as the use of any Test Equipment supplied.
  - i) Any other Training as instructed in writing by PRASA.
- 4.17.6 The Bidder shall, at a minimum, provide Technical Refresher Training for all PRASA Maintenance personnel and associated managers in KZN as specified throughout the RFP:

- a) Various Training sessions for the different Training modules are conducted to accommodate PRASA operational constraints and requirements.
- b) Refresher training is provided 8 months prior to the end of the Maintenance, Warranty and Defects Liability period.
- c) Training is provided for all and any proprietary Plant and Materials or new Technology installed as part of the Project.
- d) Different Training modules are provided for different level maintainers as per the developed Maintenance strategy.
- e) Training is focused on installation, maintenance, condition monitoring, fault finding and fault correction at the appropriate level as per the developed Maintenance strategy.
- f) Training is conducted for each individual Equipment type and new Technology installed as part of the project, as well as all sub-Systems and the holistic PTCS (including all interfaces).
- g) The Training includes a theoretical session, a practical session on the Training simulator or an actual Installation, as well as at least 6 months on the job Training during the Maintenance, Warranty and Defects Liability period.
- h) Courses include practical exposure to the actual Installations involved as well as the use of any Test Equipment supplied.
- i) Any other Training as instructed in writing by PRASA.

4.17.7 The Bidder shall train all relevant PRASA and TFR technical and operational trainers and provide the trainers with Training Material to continue Training activities after the Completion Date. The Bidder shall certify the trainer competent to conduct Training for a specified module. The Bidder repeats trainer Training up to 3 times for each module where required to ensure trainer competence.

4.17.8 The Bidder shall train at least 15 members of the PRASA Project staff on the Installation, operation, Maintenance and fault finding of any proprietary Plant and Materials and new Technology including, but not limited to:

- a) Design checking staff before acceptance checking of plans.
- b) PRASA's Site(s) representatives before Installation starts.
- c) 5 Persons doing acceptance Testing and Commissioning before Commissioning starts.

4.17.9 The Bidder shall provide Training to at least 10 members of the PRASA's staff to do data Engineering and configuration changes including, but not limited to:

- a) Trainee competence are evaluated through a formal assessment.
- b) Competent trainees are certified as competent to do data Engineering and configuration changes.

4.17.10 All Training and courses shall be presented in English. Comprehensive student notes are prepared in English and issued to all course attendants.



- 4.17.11 The Bidder shall submit the Training concept, Training plan and Training Material to PRASA for approval before the commencement of Training.
- 4.17.12 The Bidder shall arrange for Technology transfer to PRASA. The Bidder shall provide comprehensive Installation manuals, Maintenance manuals, operating manuals and Spares catalogues for all Plant and Materials, and for Test Equipment installed or used as part of the Contract and Project.
- 4.17.13 The Bidder shall submit at least 5 copies of complete sets of draft manuals in English to PRASA for approval.
- 4.17.14 The Bidder shall submit at least 20 copies of complete sets of manuals in English to PRASA in compliance with the approved Project Programme. In addition, the Bidder shall submit at least 20 copies stored on DVD's for all approved Manuals.
- 4.17.15 All Printouts shall be bound with hard covers and of detachable design. Convenience of detaching pages within the manuals shall be put into consideration. All Manuals shall adopt A4 size with double side printed pages except reference drawings that shall use A3 size with single side printed pages.
- 4.17.16 The Manuals shall be consistent in format, layout, identifiers and revisions approved in writing by PRASA. A master index covering all individual manuals' versions shall be provided. The master index shall bear a unique number which shall be revised when an individual manual is updated.

#### **4.18 Inspections, Interim Tests, Tests on Completion, Commissioning, Completion, Taking Over and Defects After Taking Over**

- 4.18.1 Materials, samples, facilities, logistics and amenities required for; inspections, interim tests, Tests on Completion, Commissioning, Completion and Taking Over:
  - a) The Bidder shall, for all PRASA representatives (minimum 15 personnel or at any given instance as instructed by PRASA) and at the Bidder's cost, uncompromisingly provide all unlimited; Materials, facilities, samples, Equipment, travel (air and rail and road), accommodation, meals, incidentals, unfettered access and any other means required for PRASA to attend and/or perform any local and international; inspections, Validation, Factory Acceptance Testing ("FAT"), Site Acceptance Testing ("SAT"), Tests on Completion, Commissioning, Completion and Taking Over of the Works by PRASA (in Sections thereafter the whole of the Works).
- 4.18.2 Commissioning and Taking Over procedures:
  - a) Tests on Completion, Commissioning and Taking Over shall be done according to the procedures described in the GTRs and MTR or as otherwise instructed in writing by PRASA throughout the duration of the Contract.
  - b) After (Sectional) Completion, the Bidder shall, at a minimum, arrange a Taking Over inspection to allow PRASA certification of (Sectional) Completion subject to a Defects list or as otherwise instructed in writing by PRASA.

- c) The Bidder shall, without hesitation, ensure that PRASA has a full, accurate and unredacted dossier of all Project information (including but not limited to as-built documents and drawings) that represent the status of the completed Works, in all formats requested by PRASA.

**4.18.3 Work to be done by the Completion Date:**

- a) On or before the date of completion of a Section of the Works and then the Completion Date of the whole of the Works, the Bidder shall do all thing necessary to ensure that the Section of the Works and the whole of the Works respectively is delivered to the absolute satisfaction of PRASA, including the work listed below shall be done by completion of each Sectional thereafter comprehensively combined by the Completion Date.
- b) PRASA shall not certify Completion until the whole of the Works, including all the work listed below, is completed to the absolute satisfaction of PRASA and free of all Defects which shall, in PRASA's opinion, prevent PRASA and other Project beneficiaries from using the Works:

NO	ITEM OF WORK	TO BE COMPLETED WHEN
1	As-built drawings, quality records, and other documentation as requested by PRASA	By the date of completion of each Section thereafter a combined submission by the Completion Date
2	Spares and Test Equipment	Before the first Commissioning Occupation
3	Final Testing and Commissioning	See Testing and Commissioning requirements and programming constraints in the GTRs and MTR
4	Correction of all Defects notified by the end of the Bidder's post Commissioning performance Testing	Within 30 days from the end of the Bidder's post Commissioning performance Testing and holistically by the Completion Date

**4.18.4 Use of the Works before Completion has been certified:**

- a) PRASA may use the following Sections of the Works before Completion is certified which does not constitute Taking Over by PRASA:
- After each Section is commissioned and is handed back to PRASA to continue their train operations in the interim until issuance of Performance Certificate
  - Any inspections done to allow PRASA's use of commissioned Sections of the Works are done to aid prompt correction of Defects and should not be confused with Taking Over procedures

**4.18.5 Performance tests:**

- a) Directly after Commissioning a Section and before Completion can be certified, the Bidder shall monitor and provide records to prove fault-free performance of the PTCS for a continuous period of at least 48 hours.
- b) Reliability, availability and safety performance tests shall be required for the duration of the Contract.



- 4.18.6 The Bidder shall have permanent technical representation, on a 24/7hour basis, in the CTCCs during the Construction period from the first Commissioning until the end of the Maintenance, Warranty and Defects Liability period. The function of the technical representative(s) shall, at a minimum, be to:
- a) Assist PRASA's operating personnel with operating of the new System(s), providing ad hoc on-the-job Training and support when needed.
  - b) Perform System Maintenance, fault finding and System support.
  - c) Assist PRASA's CTCC based and field based technical personnel with System Maintenance, fault finding and System support, providing ad hoc on-the job Training and support when needed. Field based technical personnel may be assisted telephonically if possible.
  - d) Monitor System performance, recommending corrective actions to the PRASA Maintenance personnel or the Bidder to correct System non-performance.
- 4.18.7 Access given by PRASA for correction of Defects:
- a) The Bidder shall comply with all constraints and procedures stated as requested throughout the RFP or as otherwise instructed in writing by PRASA and where PRASA arranges access for the Bidder after Completion.

#### **4.19 Decommissioning**

- 4.19.1 The Bidder shall decommission and dismantle all old Plant and Material within 40 working days after Commissioning of the new Plant and Material, as requested throughout the RFP or as otherwise instructed in writing by PRASA.
- 4.19.2 The Bidder shall take care to not damage useable Plant and Material during the dismantling and transportation process.
- 4.19.3 The Bidder shall capture all decommissioned Plant and Material and associated information on the standard PRASA Asset Disposal form.
- 4.19.4 Decommissioned Plant and Material shall be grouped into 4 groups as per instruction of PRASA:
- a) Plant and Material useful to the KZN PRASA region.
  - b) Plant and Material useful to another PRASA region.
  - c) Plant and Material useful to TFR.
  - d) Scrap Plant and Material to be disposed of.
- 4.19.5 The Bidder shall deliver all Plant and Material, deemed useful to the KZN PRASA region, to a PRASA storage facility within 100 km of the Site(s) as instructed by PRASA.
- 4.19.6 The Bidder shall deliver all Plant and Material, deemed useful to any other PRASA region, either to a PRASA storage facility within 100 km of the Site(s) or to a PRASA facility in either Pretoria, Johannesburg or Cape Town as instructed by PRASA.

- 4.19.7 The Bidder shall deliver all Plant and Material, deemed useful to TFR to either a PRASA storage facility within 100 km of the Site(s) or a TFR storage facility within 100 km of the Site(s) as instructed by PRASA.
- 4.19.8 The Bidder shall either deliver all scrap Plant and Material to a PRASA storage facility within 100 km of the Site(s) or dispose of all scrap Material in an environmentally friendly way as per instruction of PRASA. The Bidder shall submit a method statement for the disposal of Material to PRASA for acceptance prior to starting the disposal process.

#### **4.20 Spares, Maintenance and Life Cycle Cost (“LCC”) Replacement Plan and Financial Model**

- 4.20.1 The Bidder shall prepare and submit the estimated detailed, all-inclusive; Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model for the whole of the Works and the PTCS including all requirements for Spares for approval by PRASA.
- 4.20.2 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.
- 4.20.3 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.
- 4.20.4 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.
- 4.20.5 The strategy shall include resource, Plant and Material 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.
- 4.20.6 The Bidder shall include the following minimum provision for Plant and Material Spares, subject to final approval from PRASA:
- a) Item 1 – Replacement due to Theft and Vandalism for each year up to a maximum of 730 calendar days from the Completion Date for the whole of the Works.
  - b) Item 2 – Indoor and outdoor most likely to be required for each year up to a maximum of 730 calendar days from the Completion Date for the whole of the Works.
  - c) Item 3 – 5% of the total value of Plant and Equipment for each year up to a maximum of 730 calendar days from the Completion Date for the whole of the Works.

- 4.20.7 The Bidder shall implement the PRASA approved Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model which shall include, but not be limited to, provision of all maintenance Systems, Plant and Materials and Tools required to maintain the PTCS.
- 4.20.8 The Bidder shall provide PRASA with all maintenance Systems, Plant and Materials and Tools 6 calendar months prior to the end of the Maintenance, Warranty and Defects Liability period (for the whole of the Works) and ensure PRASA can take over Maintenance of the PTCS upon expiry of the Bidder's Maintenance, Warranty and Defects Liability period.
- 4.20.9 The Bidder shall for each Commercial Off the Shelf ("COTS") product, indicate the lifecycle management including:
- a) Procurement process.
  - b) Quality Management.
  - c) Obsolescence monitoring.
  - d) RAMSS aspects of COTS in the proposed architecture.

#### **4.21 Maintenance, Warranty and Defects Liability period**

- 4.21.1 The Bidder will maintain the PTCS as per the Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model developed by the Bidder and approved by PRASA.
- 4.21.2 All maintenance work will, at a minimum, comply with all standards, specifications, regulations and procedures as defined throughout the RFP.
- 4.21.3 The Bidder's duties will, at a minimum, be to perform:
- a) Routine preventive maintenance.
  - b) Corrective preventive maintenance.
  - c) System breakdown repairs.
  - d) Any other works, activities and resources required to maintain the PTCS and meet any other requirements and specifications as requested throughout the RFP or as otherwise instructed in writing by PRASA.
- 4.21.4 The Bidder will submit to PRASA for approval, a detailed process for the initiation, execution, capturing and reporting of System maintenance.
- 4.21.5 The Bidder will not sign out the System or any subsystem thereof without the permission of PRASA.
- 4.21.6 The Bidder will not change any password without the approval of PRASA.
- 4.21.7 When necessary to perform work under total occupation conditions the Bidder will apply for and take occupation on the System or any subsystem thereof before work execution start.

- 4.21.8 The Bidder will be subpoenaed to testify as a witness at inquiries should the need arise.
- 4.21.9 The Bidder will be requested to attend Regional safety meetings and production meetings.
- 4.21.10 Under no circumstances will any alteration(s) to the System be allowed without the necessary approval to do so.
- 4.21.11 The Bidder will fully comply with the maintenance requirements as described in the Maintenance procedure. The Bidder shall submit an annual routine maintenance strategy.
- 4.21.12 The Bidder shall keep record of all maintenance performed and shall submit such records to PRASA monthly.
- 4.21.13 The Bidder will at all-time work safe and ensure that a safe System is available for train operations during the execution of the work.
- 4.21.14 The Bidder will perform all the necessary functional tests on completion of the work. On completion of such a task, a test certificate will be submitted to PRASA.
- 4.21.15 Corrective maintenance will be initiated by the possibility of a potential failure or damage to the assets. The desired function of the Equipment is not yet affected, and corrective actions will be prioritised and scheduled accordingly.
- 4.21.16 The Bidder shall report any potential failures and damage(s) to PRASA with a schedule for the corrective maintenance to be completed.
- 4.21.17 The Bidder shall provide a monthly report regarding corrective maintenance cost.
- 4.21.18 The Bidder shall provide a yearly accumulative report regarding corrective maintenance cost.
- 4.21.19 With a functional failure, the desired function of the Equipment is affected. The Equipment might still be available but at a lower performance standard or, it might have suffered a total loss of function and is no longer available for use.
- 4.21.20 All functional System breakdowns will be repaired within 2 hours.
- 4.21.21 Repairing of functional System breakdowns take preference over construction activities. PRASA will not be held liable for any Project delays caused by System breakdown repairs.
- 4.21.22 Failures that cannot be corrected in the time specified must be escalated to the PRASA Signal Manager.
- 4.21.23 The Bidder will provide the Signal Manager with a weekly standby list
- 4.21.24 The Bidder will provide the Signal Manager with a 24-hour report for incidents that had an impact on the train service (Delays and Cancellations) as and when requested by the Signal Manager. A template for the format of the 24-hour report should be obtained from the Signal Manager

- 4.21.25 The Bidder will provide a weekly report to PRASA indicating the root cause of all failures, the failure mode that occurred as a result, repair action and replacement part(s) to rectify.
- 4.21.26 The Bidder will provide a monthly report containing the following information:
- a) Reliability for the month and year to date.
  - b) Availability for the month and year to date.
  - c) The Mean Time to Repair ("MTTR") for the month and year to date.
  - d) The Mean Time Between Failures ("MTBF") for the month and year to date.
  - e) Average Response Time for the month and year to date.
- 4.21.27 These activities are time based and include for example the replacement of sleepers, tamping of ballast, replacement of rails or switchblades, ballast screening, etc.
- 4.21.28 The Bidder will attend routine maintenance activities performed by other disciplines, for example replacement of sleepers, tamping of ballast, etc., should it be required. The Bidder's function will be to remove and/or safeguard the System and rail side Equipment whilst the other discipline is performing its work. These activities are time based and include for example the replacement of sleepers, tamping of ballast, replacement of rails or switchblades, ballast screening, etc.
- 4.21.29 Incidents/ Accidents caused by rail vehicles.
- 4.21.30 A PRASA representative shall attend to all incidents or accidents.
- 4.21.31 The Bidder will execute the necessary repair work to restore the Site to its full operation after Incidents/Accidents caused by rail vehicles. The Bidder will test and sign off the System for safe passage of trains.
- 4.21.32 The Bidder will guarantee an availability of 98% of the overall System, at each individual crossing place.
- 4.21.33 The penalty will be levied on a quarterly basis average over 3 months, not on an annual, or contract basis.
- 4.21.34 The onus shall rest on the Bidder to submit the necessary motivation to PRASA for its consideration and decision for downtime periods, which the Bidder considers to have been caused by factors outside his control, and which should not be included in the calculations.
- 4.21.35 Actual damaged or faulty Equipment shall be presented by the Bidder as proof to PRASA.
- 4.21.36 Should emergency repairs have to be made out of normal working hours, the Bidder will remove or repair the Equipment and submit the faulty Equipment, to PRASA.
- 4.21.37 Where breakages or faults are caused by factors outside the Bidder's control, he will immediately report the incident to PRASA in writing, giving a full list of the details/persons involved.
- 4.21.38 The Bidder will not commission a new section if the previous section(s) are not stable and performing according to the specified requirements.

## **4.22 Project Exit Strategy**

- 4.22.1 The Bidder shall, as part of the Bid, provide a comprehensive and transparent Project Exit Strategy including all indicators and how the indicators shall be measured.