

**Annexure 1.3:**

**General Technical Requirements**

**Centralised Train Control Centre (“CTCC”)**

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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 Centralised Train Control Centre (“CTCC”) related Works that form part of the planning, design, supply, construction, installation, testing, commissioning and maintenance of a new fully integrated, functional, complete and future-proofed PRASA Train Control System (“PTCS”) in PRASA’s KwaZulu-Natal (“KZN”) service region (“the Project”) that the Bidder shall meet and deliver at the Bidder’s cost therefore within the Bid Price.

### 1.2 Executive Overview

- 1.2.1 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.
- 1.2.2 The CTCC Component of the Works is, at a minimum, summarised as follows:
- a) The Design, Supply and implementation of refurbishments of the building and the terrain
  - b) The Design, Supply and implementation of required Systems for Traffic Control and associated support functions in the new CTCC building
  - c) Migration of Traffic Control and associated support functions to the new CTCC building
  - d) Any other CTCC 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.

### 1.3 Location and Extent of the Works

- a) The CTCC shall be in the old Rossburgh Equipment building which is near Rossburgh station unless otherwise instructed by PRASA.
- b) The boundaries of the sites shall be the PRASA land as indicated in Figure 1.3.1 to follow:



**Figure 1.3.1: Rossburgh CTCC site**

## 2 MINIMUM REQUIREMENTS

### 2.1 General

2.1.1 The CTCC shall, at a minimum:

- a) Be Designed to world-class standards.
- b) The building, Systems and Works shall comply with all relevant Standards, Specifications, Regulations and Procedures as specified throughout the RFP.
- c) The Bidder shall implement all measures to protect the CTCC, all System, sub-Systems, Furniture and Equipment against at least the following threats:
  - Physical Security threats
  - Cyber Security threats
  - Theft and vandalism
- d) All workstations, work areas and rooms shall be Designed to the highest ergonomic standards available at the time of fit out.
- e) Any other CTCC 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.

### 2.2 The Building and Systems

2.2.1 Fencing:

- a) The CTCC terrain shall be completely fenced off to protect the CTCC against unauthorised entry, physical security threats, theft and vandalism.
- b) All boundary fences shall:
  - Consist of a concrete wall that shall be at least 4m high
  - The wall shall have electric fence on top
- c) All internal fences shall:
  - Consist of see-through structures such as palisade, welded mesh or other similar fencing that shall be at least 2.5m high
- d) The Bidder shall Design, Supply and construct a concrete wall around the CTCC site boundary.
- e) The Bidder shall Design, Supply and construct internal fencing to fence off different operational and technical areas.
- f) The Bidder shall dismantle the current installed fence where required and dispose of it according to the procedure described throughout the RFP.

- g) The Bidder may re-use the newly installed fence for internal fencing after dismantling, provided the complete offered solution is still compliant the RFP.

2.2.2 Access Road:

- a) The Bidder shall reconstruct and widen the access road from Sarnia Road to the new security gatehouse on the boundary of the CTCC area.

2.2.3 Access:

- a) The Bidder shall review and update the Design for access to the premises to ensure compliance the RFP.
- b) The Bidder shall provide for emergency exits as mandated by regulations.
- c) The Bidder shall construct the access gates and associated buildings and Systems according to the updated Design.
- d) The Main Access Gate shall have at least:
- A security gate house
  - Entry and exit booms
  - Entry and exit gates
  - Electronic security System and access control

2.2.4 Security Gate House:

- a) The Bidder shall review and update the Design for the Security Gate House to ensure compliance with the RFP.
- b) The Bidder shall construct the Security Gate House according to the updated Design.

2.2.5 Parking:

- a) The Bidder shall calculate the required number of parking bays at the CTCC.
- b) The Bidder shall design and construct the parking bays according to best practices, providing protection against sun, hail and other environmental factors.

2.2.6 Outdoor walkways:

- a) The Bidder shall design and construct the walkways for according to best practices, providing protection against rain and other environmental factors.

2.2.7 External Building Treatment:

- a) The Bidder shall inspect and repair the CTCC building roof. Repairs include, but are not limited to:
- Replacing of hip/ridge flashings which were blown off
  - Waterproofing of the entire roof

b) The Bidder shall clad the outside of the building to:

- Present an aesthetically pleasing exterior
- Ensure durability
- Insulate the building

2.2.8 Main Entrance Patio:

- a) There shall be a patio leading to the main entrance to the CTCC building.
- b) The main entrance patio to the CTCC building shall be covered with a roofing structure, creating a protected area over the main entrance, to make entering of the building during inclement weather more practical.

2.2.9 Main Entrance:

- a) The CTCC shall have 1 main entrance leading into the reception area.
- b) The main entrance shall be equipped with a fully functioning security checkpoint, including at least the following:
  - A purpose-built counter with security computer Equipment
  - A walk-through metal detector
  - An X-Ray baggage scanner

2.2.10 Reception:

- a) The CTCC shall have a reception area.
- b) The reception area shall have a purpose-built reception counter Designed to house:
  - The telephone exchange
  - The front entrance access control panels
- c) The reception shall also serve as a small waiting area for visitors to the Centre and shall include:
  - At least one couch, conforming to PRASA standards
  - At least one coffee table, conforming to PRASA standards
- a) Access from the reception area into the building shall be through a security operated and biometrically opened full height class double turnstile with a disabled access door.

2.2.11 Head of CTCC:

- a) The CTCC shall have an office for the Head of CTCC.
- b) The Head of CTCC office shall be a fully functioning office space.

- c) The office shall be furnished with at least:
  - A desk and office chair
  - A meeting table with 4 seats
  - Filing and storage cabinets
- d) The office shall be equipped with at least:
  - 3 Strategically place Electrical outlets
  - 1 Strategically place Network point
  - A telephone
- e) The Bidder shall recommend a detailed job specification for the Head of CTCC to ensure optimal efficiency within the new Rosburgh CTCC operating model.

2.2.12 Head of CTCC Administration:

- a) The CTCC shall have an office for the Head of CTCC Administration, adjacent to the Head of CTCC office.
- b) The Head of CTCC Administration office shall be a fully functioning office space.
- c) The office shall be furnished with at least:
  - A desk and office chair
  - Filing and storage cabinets
- d) The office shall be equipped with at least:
  - 3 Strategically place Electrical outlets
  - 1 Strategically place Network point
  - A telephone
- e) The office shall be connected via a private door to the Head of CTCC office
- f) The Bidder shall recommend a detailed job specification for the Head of CTCC Administration to ensure optimal efficiency within the new Rosburgh CTCC operating model.

2.2.13 Duty Manager:

- a) The CTCC shall have an office for the Duty Manager on the same floor as the Train Control function.
- b) The Duty Manager office shall be a fully functioning office space.
- c) The office shall be furnished with at least:
  - A desk and office chair
  - A meeting table with 4 seats
  - Filing and storage cabinets

- d) The office shall be equipped with at least:
  - 3 Strategically place Electrical outlets
  - 1 Strategically place Network point
  - A telephone
- e) The Bidder shall review the current Duty Manager job description and processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.

2.2.14 Traffic Control:

- a) The CTCC shall host the Traffic Control function.
- b) The Traffic Control System shall function according to the requirements given throughout the RFP.
- c) There shall be Traffic Control Room Designated to this function.
- d) There shall be eleven 11 TCOs and one 1 Section Manager on duty per shift.
- e) The Train Control Room shall be furnished with at least:
  - 13 TCO workstations, each with at least:
    - A Desk
    - An Office chair
    - A Network point
    - 2 Power outlets
    - A telephone
    - Train Control VDU as per the RFP
    - Telecommunication Equipment as per the RFP
- f) 1 Section Manager workstation, with at least:
  - A Desk
  - An Office chair
  - A Network point
  - 2 Power outlets
  - A telephone
  - CTCC VDU
- g) The Traffic Control Room shall have a Video Wall displaying the entire KZN Rail Network status, including areas controlled by TFR where PRASA trains run.
- h) The Traffic Control Room shall have a raised floor Designated to house cable routes.

- i) The Traffic Control Room shall be tiered to facilitate viewing of the Traffic Control Video Wall.
- j) The Bidder shall transfer all relevant Traffic Control documentation, Tools and Equipment from Durban CTCC to Rossburgh CTCC
- k) The Bidder shall install all the transferred Traffic Control Equipment in the Traffic Control Room in Rossburgh CTCC
- l) The Train Control migration from Durban CTCC to Rossburgh CTCC shall be planned to minimise disruption to the PRASA service, people and processes.
- m) The Bidder shall review the current Train Control processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.
- n) The Bidder shall do an operational readiness assessment for the migration to Rossburgh CTCC and implement any required actions.
- o) The Bidder shall provide PRASA with a method statement for the migration for review and acceptance before the migration shall take place.

2.2.15 Announcers:

- a) The CTCC shall host the Platform Announcers function.
- b) There shall be an Announcers Cubicle Designated to this function.
- c) There shall be 4 Announcers and 1 Supervisor on duty per shift.
- d) The Cubicle shall be glazed to provide the Announcers with a view of the Traffic Control Video Wall.
- e) The Announcers Cubicle shall be furnished with at least:
  - 5 Workstations, each with at least:
    - A Desk
    - An Office chair
    - A Network point
    - 2 Power outlets
    - A telephone
    - A CTCC Viewer as per the RFP
    - 2 Office cabinets
- f) The Bidder shall transfer all Announcer documentation, Tools and Equipment from Durban CTCC to Rossburgh CTCC
- g) The Bidder shall install all transferred Announcer Equipment in the Announcers cubicle in Rossburgh CTCC
- h) The Announcer migration from Durban CTCC to Rossburgh CTCC shall be planned to minimise disruption to the PRASA service, people and processes.

- i) The Bidder shall review the current Announcer processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.
- j) The Bidder shall do an operational readiness assessment for the migration to Rossburgh CTCC and implement any required actions.
- k) The Bidder shall provide PRASA with a method statement for the migration for review and acceptance before the migration shall take place.

2.2.16 Durban Metrorail Operations Centre (“DMOC”)

- a) The CTCC shall host the DMOC function.
- b) There shall be a DMOC Room Designated to this function.
- c) The DMOC shall include at least the following workstations for the following functions:
  - 1 Signalling
  - 1 Electrical
  - 1 Rolling Stock
  - 1 Perway
  - 1 Telecommunications
  - 3 Service co-ordinators
  - 1 SET Clerk
  - 1 Security
  - 1 Customer Services
- d) The DMOC Room shall be glazed to provide a full view of the Traffic Control Video Wall
- e) The DMOC Room shall be furnished with at least:
  - 11 Workstations, each with at least:
    - A Desk
    - An Office chair
    - A Network point
    - 2 Power outlets
    - A telephone
    - Discipline specific System(s)
    - 5 Office cabinets

- f) The DMOC shall be equipped with:
  - 1 Video Wall for General viewing, visible by the entire DMOC
  - 1 Video Wall for displaying CCTV footage, visible by the entire DMOC
  - 1 Touch screen Video Wall for displaying SET information
- g) The SET Video Wall should be mounted at a suitable height to allow for ease of use by the SET Clerk.
- h) The DMOC Room shall have raised floor Designated to house cable routes.
- i) The DMOC Workstations shall be Tiered to facilitate viewing of the Video Walls.
- j) The Bidder shall transfer all DMOC documentation, Tools and Equipment from Durban CTCC to Rossburgh CTCC
- k) The Bidder shall install all transferred DMOC Equipment in the DMOC Room in Rossburgh CTCC
- l) The DMOC migration from Durban CTCC to Rossburgh CTCC shall be planned to minimise disruption to the PRASA service, people and processes.
- m) The Bidder shall review the current DMOC processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.
- n) The Bidder shall do an operational readiness assessment for the migration to Rossburgh CTCC and implement any required actions.
- o) The Bidder shall provide PRASA with a method statement for the migration for review and acceptance before the migration shall take place.

#### 2.2.17 DMOC Section Manager

- a) The CTCC shall have an office for the DMOC Section Manager on the same floor as the DMOC function.
- b) The DMOC Section Manager office shall be a fully functioning office space.
- c) The office shall be furnished with at least:
  - A desk and office chair
  - A meeting table with four (4) seats
  - Filing and storage cabinets
- d) The office shall be equipped with at least:
  - 3 Strategically place Electrical outlets
  - 1 Strategically place Network point
  - A telephone

- e) The Bidder shall review the current DMOC Section Manager job description and processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.

2.2.18 Signal Control:

- a) The CTCC shall host the Signal Control function.
- b) There shall be a Signal Control Room Designated to this function.
- c) There shall be 2 Signal Controllers on duty per shift.
- d) The Signal Control Room shall be furnished with at least:
  - 2 Workstations, each with at least:
    - A Desk
    - An Office chair
    - A Network point
    - 2 Power outlets
    - A telephone
    - 2 Office cabinets
- e) The Bidder shall transfer all Signal Control documentation, Tools and Equipment from Durban CTCC to Rossburgh CTCC.
- f) The Bidder shall install all transferred Signal Control Equipment in the Signal Control Room in Rossburgh CTCC.
- g) The Signal Control migration from Durban CTCC to Rossburgh CTCC shall be planned to minimise disruption to the PRASA service, people and processes.
- h) The Bidder shall review the current Signal Control processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.
- i) The Bidder shall do an operational readiness assessment for the migration to Rossburgh CTCC and implement any required actions.
- j) The Bidder shall provide PRASA with a method statement for the migration for review and acceptance before the migration shall take place.

2.2.19 Protection Services:

- a) The CTCC shall host Protection Services and the SAPS interface.
- b) There shall be a Protection Services Room dedicated to this function.
- c) There shall be 2 protection services employees and 2 SAPS employees on duty per shift.

- d) The Protection Services room shall be furnished with at least:
- 4 Workstations, each with at least:
    - A Desk
    - An Office chair
    - A Network point
    - 2 Power outlets
    - A telephone
    - 4 Office cabinets
- e) The Bidder shall transfer all Protection Services documentation, Tools and Equipment from Durban CTCC to Rossburgh CTCC
- f) The Bidder shall install all transferred Protection Service Equipment in the Protection Service Room in Rossburgh CTCC
- g) The Service migration from Durban CTCC to Rossburgh CTCC shall be planned to minimise disruption to the PRASA service, people and processes.
- h) The Bidder shall review the current Protection Service processes and recommend required changes to be made to ensure optimal security, safety and efficiency within the new Rossburgh CTCC operating model.
- i) The Bidder shall do an operational readiness assessment for the migration to Rossburgh CTCC and implement any required actions.
- j) The Bidder shall provide PRASA with a method statement for the migration for review and acceptance before the migration shall take place.

2.2.20 Power Supply:

- a) The Bidder shall conduct a load analysis to establish the required power Supply capacity for the Rossburgh CTCC terrain, including all buildings and Systems.
- b) The Bidder review and update the current power Supply Design against the capacity requirements.
- c) The Power Supply System ("PSS") shall be connected to at least 2 independent power sources.
- d) The PSS shall be Designed to make the CTCC as self-sufficient as possible and shall therefore include a solar energy System.
- e) The PSS shall be an Uninterrupted Power Supply ("UPS") based System, with adequate battery backup to power all critical CTCC Equipment and services for at least 8 hours should all the incoming Power Supply be lost.
- f) The PSS shall be in a Designated Power Room inside the CTCC.
- g) The Bidder shall Design the Power Room as per the specific requirements of the solution provided by the Bidder.

- h) The PSS shall include a Diesel Generator as backup when none of the power sources is available.
- i) The Diesel Generator shall be in separate Generator building outside the CTCC building.
- j) The Bidder shall Design the Generator building as per the specific requirements of the solution provided by the Bidder.
- k) There shall be easy access to the Generator building for small trucks delivering Diesel.
- l) The Bidder shall Supply, install, Test and Commission the new PSS according to the updated Design.

2.2.21 Electrical Control:

- a) The CTCC shall host the Electrical Control function.
- b) There shall be an Electrical Control Room Designated to this function.
- c) There shall be 1 Electrical Control Administrator on duty per shift.
- d) The Electrical Control Room shall be furnished with at least:
  - 1 Workstation, with at least:
    - A Desk
    - An Office chair
    - A Network point
    - 2 Power outlets
    - A Telephone
    - 1 Office cabinet
- e) The Electrical Control Room shall be equipped with a CTCC Viewer.
- f) The Electrical Control room shall be equipped with a Video Wall, displaying the Network status.
- g) The Bidder shall transfer all Electrical Control documentation, Tools and Equipment from Durban CTCC to Rossburgh CTCC
- h) The Bidder shall install all transferred Electrical Control Equipment in the Electrical Control Room in Rossburgh CTCC
- i) The Electrical Control migration from Durban CTCC to Rossburgh CTCC shall be planned to minimise disruption to the PRASA service, people and processes.
- j) The Bidder shall review the current Electrical Control processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.
- k) The Bidder shall do an operational readiness assessment for the migration to Rossburgh CTCC and implement any required actions.

- l) The Bidder shall provide PRASA with a method statement for the migration for review and acceptance before the migration shall take place.

2.2.22 Telecontrol:

- a) The CTCC shall host the Electrical Remote Monitoring and Control System (“Telecontrol”) function.
- b) There shall be a Telecontrol Staff Room Designated to this function.
- c) There shall be 2 Telecontrol Employees on duty per shift.
- d) The Telecontrol Staff Room shall be furnished with at least:
- 2 Workstations, with at least:
    - A Desk
    - An Office chair
    - A Network point
    - 2 Power outlets
    - A telephone
    - Telecontrol Workstation as specified throughout the RFP
    - 2 Office cabinets
- e) There shall be a Designated Telecontrol Equipment Room in the CTCC.
- f) The Telecontrol Equipment Room shall host all the Telecontrol System Equipment as specified throughout the RFP.
- g) The Bidder shall Design the Telecontrol Equipment room as per the specific requirements for the solution provided by the Bidder.
- h) There shall be a Designated Telecontrol Workshop and Storeroom of at least 8m<sup>2</sup> in the CTCC, with interleading access to the Telecontrol Staff Room.
- i) The Telecontrol Workshop and Storeroom shall be equipped with:
- A Workbench as specified throughout the RFP
  - Shelving for storing of substation Spares as specified throughout the RFP
- j) There shall be a Designated Telecontrol Battery Room in the CTCC.
- k) The Telecontrol Battery Room shall host the Battery Backup and associated Equipment for the Telecontrol System.
- l) The Bidder shall Design the Telecontrol Battery Room as per the specific requirements for the solution provided by the Bidder.
- m) The Telecontrol Battery Rooms shall have a double door for outside access.
- n) The Bidder shall transfer all Telecontrol documentation, Tools and Equipment from Durban CTCC to Rossburgh CTCC

- o) The Bidder shall install all transferred Telecontrol Equipment in the Telecontrol Room in Rossburgh CTCC
- p) The Telecontrol migration from Durban CTCC to Rossburgh CTCC shall be planned to minimise disruption to the PRASA service, people and processes.
- q) The Bidder shall review the current Telecontrol processes and recommend required changes to be made to ensure optimal safety and efficiency within the new Rossburgh CTCC operating model.
- r) The Bidder shall do an operational readiness assessment for the migration to Rossburgh CTCC and implement any required actions.
- s) The Bidder shall provide PRASA with a method statement for the migration for review and acceptance before the migration shall take place.

2.2.23 Telecommunication System:

- a) The Bidder shall Design, Supply, install, Test and Commission the telecommunication communication System according to requirements in the GTR.
- b) The CTCC Telecommunication System shall include at least the following:
  - Fibre optic communication links (TCP/IP based) with fibre and/or GSM-R back-up links and/or links to complete the fibre optic ring.
  - The fibre optic transmission System for the remote-control functions between the CTCC and the interlockings and for the FSDT block working between stations.
  - VoIP telephones
  - Office Network facilities
  - Voice recording facilities
- c) There shall be a Designated Telecommunication Server Room in the CTCC.
- d) The Telecommunication Server Room shall host all the Telecommunication System Equipment.
- e) The Telecommunication Rooms shall have a double door for outside access.
- f) The room shall be equipped with one 1 fully equipped Maintenance workstation, with at least:
  - A Desk
  - An Office chair
  - A Telecommunication Maintenance terminal as per GTR
  - A Network point
  - 2 Power outlets
  - A telephone

- g) The Bidder shall Design the Telecommunications room as per the specific requirements for the solution provided by the Bidder.

2.2.24 Signalling System:

- a) There shall be a Designated Signals Equipment Room in the CTCC.
- b) The Signals Equipment Room shall host all the RSS and ETCS Level 2 CTCC Equipment.
- c) The Signals Equipment Rooms shall have a double door for outside access.
- d) The room shall be equipped with 1 fully equipped Maintenance workstation, with at least:
- A Desk and office chair
  - An RSS Maintenance terminal as per GTR
  - An ETCS Maintenance terminal as per GTR
  - A Network point
  - 2 Power outlets
  - A telephone
- e) The Bidder shall Design the Signals Equipment room as per the specific requirements for the solution provided by the Bidder.

2.2.25 Cafeteria:

- a) The CTCC shall have an aesthetically pleasant Cafeteria for employees to relax during coffee or lunch breaks.
- b) The Cafeteria shall have internal tables and seating for a minimum of 24 people
- c) The Cafeteria shall have external tables and seating for a minimum of 12 people
- d) The Cafeteria shall have large shop fronts to make it possible for the users to view the outside.

2.2.26 Kitchen:

- a) The CTCC shall have a fully equipped Kitchen adjacent to the Cafeteria.
- b) The Kitchen shall be equipped with at least:
- A sink
  - A hob
  - An oven
  - Kitchen Cabinets
  - A fridge
  - A microwave

- Wall mounted water boiler

2.2.27 Kitchenette(s):

- a) The CTCC shall have a Kitchenette to be used as a Coffee Station on each floor not fitted with a Cafeteria and Kitchen.
- b) The Kitchenette shall be equipped with at least:
  - A sink
  - Kitchen Cabinets
  - A fridge
  - A microwave
  - Wall mounted water boiler

2.2.28 Boardrooms:

- a) The CTCC shall have at least 2 fully functional boardrooms

2.2.29 Boardroom 1:

- a) Boardroom 1 shall be able to accommodate a minimum of 30 people.
- b) The boardroom shall be furnished with:
  - A boardroom table (minimum 30-seater)
  - At least 30 boardroom chairs
- c) The boardroom shall be equipped with:
  - 2 Ultra-high definition projectors, 2 ultra-high definition projector screens and associated connections and power outlets to display a dual view
  - At least 15 additional strategically placed power outlets on top of the table
  - Teleconference facilities including all accessories
  - Ultra-high definition Video conference facilities including all accessories

2.2.30 Boardroom 2 (War Room):

- a) The War Room shall be able to accommodate a minimum of 10 people.
  - The War room shall be furnished with:
  - A boardroom table (minimum 10-seater)
  - At least 10 boardroom chairs
- b) The boardroom shall be equipped with:
  - Wall-mounted ultra-high definition video screens to display information during crisis management

- A glass wall facing the Control Room to facilitate viewing of activities there.
- A CTCC Viewer as specified throughout the RFP
- 1 Ultra-high definition projectors, 1 ultra-high definition projector screens and associated connections and power outlets
- At least 5 additional strategically placed power outlets on top of the table
- Teleconference facilities including all accessories
- Ultra-high definition Video conference facilities including all accessories

2.2.31 First Aid Room:

- a) The CTCC shall have a fully functional First Aid Room
- b) The First Aid room shall be furnished with at least:
  - A bed
  - A chair
  - Cabinet(s)
- c) The Bidder shall equip the First Aid Room with a first aid kit to enable treatment of minor injuries.

2.2.32 Bulk Storage:

- a) The CTCC shall have a Designated Bulk Storage Room of at least 14m<sup>2</sup>.
- b) The Bulk Storage Room shall be fitted with retractable shelving for storing and archiving of documents.

2.2.33 Maintenance Store:

- a) The CTCC shall have a Designated Maintenance Storeroom of at least 8m<sup>2</sup>.
- b) The Maintenance Storeroom shall be furnished with at least 2 storing cabinets adequate to store general Maintenance Material.

2.2.34 Cleaners Store:

- a) The CTCC shall have a Designated Cleaners Store of at least 8m<sup>2</sup>.
- b) The Cleaners Storeroom shall be furnished with at least 2 storing cabinets adequate to store cleaning Equipment and products.

2.2.35 Ablutions:

- a) The CTCC shall have ablution facilities suitable for Male, Female and Disabled employees and visitors in accordance with the legislative and gender requirements.
- b) There shall be Male, Female and Disabled toilets available on each floor.

2.2.36 Male Ablutions:

a) The male ablutions shall be equipped with at least:

- 3 Toilets
- 3 Urinals
- 2 Wash Hand Basins
- 2 Showers
- 32 Lockers

2.2.37 Female Ablutions:

a) The female ablutions shall be equipped with at least:

- 6 Toilets
- 2 Wash Hand Basins
- 2 Showers
- 32 Lockers

2.2.38 Additional Toilets:

a) Additional male and female toilets shall be provided on each floor other than the floor with the Ablution facilities.

b) The additional male toilets shall include at least (per floor):

- 2 Toilets
- 2 Urinals
- 2 Wash Hand Basins

a) The additional female toilets shall include at least (per floor):

- 4 Toilets
- 2 Wash Hand Basins

b) Should the male and/or female toilets not be disabled friendly, a minimum of 1 additional disabled toilet with hand basin shall be provided per floor.

2.2.39 Access between Floors:

a) There shall be a disabled friendly lift to provide access between floors.

b) There shall also be stairs to provide access between floors.

### 3 ENGINEERING

#### 3.1 Design

- 3.1.1 The Bidder may use CTCC Designs and associated documents done by a Third Party as shall be provided by PRASA.
- 3.1.2 The Bidder shall review and update these Designs to ensure compliance with specifications throughout the RFP and to incorporate any possible improvements that the Bidder has identified.
- 3.1.3 The Bidder shall submit all Designs to PRASA for acceptance prior to Construction and/or installation.
- 3.1.4 The Bidder shall ensure that the CTCC is a Green Building that achieves a Certification of 5 Stars from the Green Building Council of South Africa (“GBCSA”).
- 3.1.5 The Bidder shall ensure that the ongoing requirements to retain the Certification of 5 Stars are included in the Planned and Preventative Maintenance and LCC Replacement Plan and Financial Model and that the Bidder adheres to these requirements for the periods within which the Bidder is responsible for Maintenance.

## **4 DECOMMISSIONING, DISMANTLING AND REMOVAL**

### **4.1 General**

4.1.1 The Bidder shall, at a minimum, ensure that:

- a) The Decommissioning, dismantling and removal shall comply with all relevant Standards, Specifications, Regulations and Procedures as specified throughout the RFP (including, but not limited to, all old CTCC Furniture and Equipment in Durban CTCC).
- b) The Bidder shall submit a Method Statement for the Decommissioning, dismantling and removal of all Furniture and Equipment to the PRASA approval before commencing any work.
- c) The Bidder shall dispose of the Furniture and Equipment according to the process described the RFP.
- d) The Bidder shall complete the Decommissioning, dismantling and removal of Furniture and Equipment no later than 30 calendar days after the migration to the Rossburgh CTCC.

## 5 TRAINING AND TECHNOLOGY TRANSFER

- 5.1.1 The Bidder shall, at a minimum, provide User Training for all CTCC personnel as follows:
- a) Training on all CTCC Systems, sub-Systems, Equipment and facilities that the individual will utilize.
  - b) Various Training sessions conducted to accommodate shift working.
  - c) Personnel are not trained more than 2 months prior migration to the CTCC.
  - d) The Training includes a theoretical session as well as a practical session on simulation Equipment or on the actual installation.
  - e) Any other Training as instructed in writing by PRASA.
- 5.1.2 The Bidder shall, at a minimum, provide Technical Training for all PRASA CTCC 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 responsible for specific CTCC Systems and Equipment are not trained more than 2 months prior to the Installation work of the specific System or Equipment commences.
  - c) Training is provided for all Systems and Equipment installed in the CTCC.
  - 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) The Training includes a theoretical session, a practical session on a Training simulator or an actual Installation, as well as on the job Training during Construction, Testing and Commissioning.
  - g) Courses include practical exposure to the actual Installations involved as well as the use of any Test Equipment supplied.
  - h) Any other Training as instructed in writing by PRASA.
- 5.1.3 The Bidder shall, at a minimum, provide Technical Refresher Training for all PRASA CTCC 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 Systems and Equipment installed in the CTCC.
- 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) The Training includes a theoretical session, a practical session on a 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.
- g) Courses include practical exposure to the actual Installations involved as well as the use of any Test Equipment supplied.
- h) Any other Training as instructed in writing by PRASA.

- 5.1.4 All Training and courses shall be presented in English. Comprehensive student notes are prepared in English and issued to all course attendants.
- 5.1.5 The Bidder shall submit the Training concept, Training plan and Training Material to PRASA for approval before the commencement of Training.
- 5.1.6 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 project and maintenance.
- 5.1.7 The Bidder shall submit at least 5 copies of complete sets of draft manuals in English to PRASA for approval.
- 5.1.8 The Bidder shall submit at least 20 copies of complete sets of manuals in English to PRASA in compliance with the approved Project Programme.
- 5.1.9 In addition, the Bidder shall submit at least 20 copies stored on DVD's for all approved Manuals.
- 5.1.10 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.
- 5.1.11 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.

## 6 MAINTENANCE

### 6.1 Overview

- 6.1.1 The Bidder shall Design and construct the CTCC in such a manner to minimize Maintenance requirements and ensure overall maintainability.
- 6.1.2 The Bidder shall develop a Maintenance strategy for the CTCC.
- 6.1.3 Any CTCC failure shall be self-announcing and shall incorporate a remotely accessible fault logging and analysis ability, to allow a fast and appropriate response to any normal, or abnormal, situation.
- 6.1.4 It shall be possible to mend CTCC breakdowns in a very short time and with a minimum impact on operations.
- 6.1.5 The CTCC shall be fully equipped with a latest Technology, fully integrated and fully operational Building Management System (“BMS”) as at the time of Design and installation of the System.

### 6.2 First Level Maintenance

- 6.2.1 The Bidder shall perform First Level Maintenance for each Section that has been tested, commissioned and handed over to PRASA from the date of interim hand over to the Completion Date thereafter for 730 calendar days commencing on the Completion Date for the whole of the Works until PRASA issuance of the Performance Certificate thereafter PRASA shall take over Maintenance.
- 6.2.2 First Level Maintenance shall, at a minimum consist of:
  - a) A detailed Maintenance and lifecycle financial model.
  - b) Pre-defined preventative Maintenance.
  - c) Pre-defined corrective Maintenance based on visual inspection of faulty Furniture and Equipment.
  - d) Modular replacement of faulty Furniture and Equipment, without the need for any Software or hardware configuration.
  - e) Visual condition assessment.
- 6.2.3 It shall be possible to replace faulty Furniture and Equipment without the need to stop CTCC operation or turn the power off.
- 6.2.4 The Bidder shall ensure that the transition of Maintenance responsibilities from the Bidder to PRASA (commencing 90 working days prior to the expiry of the Bidder’s total Maintenance period) shall be effortless, that there shall be enough training of PRASA personnel. The Bidder shall further ensure that all documentation, policies, procedures and the like relating to the successful continuation of Maintenance, by PRASA, is transparently and effectively handed over to PRASA.

### 6.3 Second Level Maintenance

6.3.1 The Bidder shall perform Second Level Maintenance for each Section that has been tested, commissioned and handed over to PRASA from the date of interim hand over to the Completion Date thereafter for 730 calendar days commencing on the Completion Date for the whole of the Works until PRASA issuance of the Performance Certificate thereafter PRASA shall take over Maintenance.

6.3.2 Second Level Maintenance shall, at a minimum, consist of:

- a) A detailed Maintenance and lifecycle financial model.
- b) Pre-defined corrective Maintenance based on System diagnostics.
- c) Modular replacement of Furniture and Equipment, with the need for basic Software or hardware configuration.
- d) Condition assessment by means of diagnostic Tools and Equipment.

6.3.3 The Bidder shall ensure that the transition of Maintenance responsibilities from the Bidder to PRASA (commencing 90 working days prior to the expiry of the Bidder's total Maintenance period) shall be effortless, that there shall be enough training of PRASA personnel. The Bidder shall further ensure that all documentation, policies, procedures and the like relating to the successful continuation of Maintenance, by PRASA, is transparently and effectively handed over to PRASA.

### 6.4 Third Level Maintenance

6.4.1 The Bidder (with assistance from PRASA) and the Original Equipment Manufacturer ("OEM") (under management of the Bidder and for whom the Bidder shall ensure availability and compliance), shall perform Third Level Maintenance for each Section that has been tested, commissioned and handed over to PRASA from the date of interim hand over to the Completion Date thereafter for 730 calendar days commencing on the Completion Date for the whole of the Works until PRASA issuance of the Performance Certificate thereafter PRASA shall take over Maintenance.

6.4.2 Third Level Maintenance shall, at a minimum, consist of:

- a) A detailed Maintenance and lifecycle financial model.
- b) Undefined and irregular corrective Maintenance based on advanced System diagnostics.
- c) Modular replacement, with the need for advanced Software or hardware configuration.
- d) System configuration changes to accommodate infrastructure upgrades and layout changes.

6.4.3 The Bidder shall do local Supplier Development, training and certifying local Suppliers to perform third level Maintenance on the System further ensuring comprehensive inclusion of the OEM throughout the process.

- 6.4.4 The Bidder shall train and develop a minimum of 5 local suppliers further ensuring comprehensive inclusion of the OEM throughout the process.
- 6.4.5 The Bidder (with direct support from the OEM) shall ensure that the transition of Maintenance responsibilities from the Bidder and the OEM to PRASA (commencing 90 working days prior to the expiry of the Bidder's total Maintenance period) shall be effortless, that there shall be sufficient training of PRASA personnel. The Bidder shall further ensure that all documentation, policies, procedures and the like relating to the successful continuation of Maintenance, by PRASA, is transparently and effectively handed over to PRASA.

## **6.5 Fourth Level Maintenance**

- 6.5.1 The Bidder and the OEM (under management of the Bidder and for whom the Bidder shall ensure availability and compliance), shall perform Fourth Level Maintenance for each Section that has been tested, commissioned and handed over to PRASA from the date of interim hand over to the Completion Date thereafter for 730 calendar days commencing on the Completion Date for the whole of the Works until PRASA issuance of the Performance Certificate thereafter the OEM shall take over Maintenance (under supervision from PRASA).
- 6.5.2 Fourth Level Maintenance shall, at a minimum, consist of:
- a) System upgrades including Software
  - b) Furniture and Equipment upgrades
  - c) Changes to the System's core Software
- 6.5.3 The Bidder shall ensure that the OEM contractually commits to having representation, and providing all necessary Maintenance and/or support, in South Africa for a minimum period of at 240 calendar months post the Bidder's Maintenance, Warranty and Defects Liability period.

## 7 WARRANTIES

### 7.1 General

- 7.1.1 The Bidder shall, take interim Warranty responsibility and liability for each Section of that has been tested, commissioned and handed over to PRASA from the date of interim hand over to the Completion Date.
- 7.1.2 The Bidder's full Warranty responsibility and liability period shall be 730 calendar days commencing on the Completion Date for the whole of the Works until PRASA issuance of the Performance Certificate.
- a) Warranties shall, for all Signalling related Works (including, but not limited to, the PTCS and EI) at a minimum, be valid and cover:
    - Replacement of all faulty Plant and Materials, Components and labour for all Maintenance Levels described elsewhere in this document
    - Tracking and tracing and correcting of any Software faults
  - b) Failures caused by the environmental and infrastructure conditions as specified throughout the RFP including, but not limited to:
    - Any Plant and Materials or Components damaged due to exposure to extreme direct sunlight and elevated temperatures
    - Any Plant and Materials or Components damaged due to continues exposure to high humidity
    - Any Plant and Materials or Components failure due to corrosion