



RFQ / TENDER

Tender No: CRAC 12240

Vendor No: 11001386

BOARD LIST
BOARD LIST
TRANSNET FREIGHT RAIL
PROCUREMENT DEPARTMENT
2000

Purchaser : Samantha Mgwatyu
Telephone : 011 584 0738
Fax Number: 011 7749129

Please quote reference:
DD6/6000597430

Deliver to:
TFR Head Office
Supply Chain Services
2000 Johannesburg

Closing Date :21.11.2013
Validity Date :20.02.2014
RFQ No :6000597430

1. RETURN OF QUOTATION/S: CRAC-EFQ-12240

SUPPLY OF 3X KOPANO RADIOS (NOT COMPLETE BASESTATION) 3X KOPANO REMOTE UNIT (WITH CABLE) 5 X KOPANO HANDSET (SEE SPECIFICATION ATTACHED)

THE RFQ DOCUMENTS ARE OBTAINABLE FROM THE OFFICE OF TRANSNET FREIGHT RAIL, TENDER ADVISE CENTRE, GROUND FLOOR, INYANDA HOUSE 1, WELLINGTON ROAD, PARKTOWN, DURING OFFICE HOURS 08:00 TO 15:00 TRANSNET FREIGHT RAIL, STANDARD BANK ACCOUNT NUMBER : 203158598, BRANCH CODE : 004805 THE DEPOSIT SLIP MUST REFLECT THE RFQ NUMBER AND THE COMPANY NAME. RECEIPT TO BE PRESENTED AT COLLECTION OF THE RFQ DOCUMENT.

QUOTATIONS MAYBE EMAILED OR FAXED TO : Thuli.mathebula@transnet.net / (011) 774-9129

1.1 QUOTATION/S MUST BE SUBMITTED PUNCTUALLY AT 10:00 ON OR BEFORE CLOSING DATE AND LATE QUOTATIONS WILL NOT BE CONSIDERED.

1.2 IF POSTED:

21 WELLINGTON ROAD
INYANDA HOUSE 1
PARKTOWN
2193

1.3 ,IF DELIVERED BY HAND:

TRANSNET FREIGHT RAIL-SUPPLY CHAIN SERVICES
21 WELLINGTON ROAD
INYANDA HOUSE 1
PARKTOWN

DATE: SIGNATURE OF TENDERER(S):
CONTACT PERSON: TEL No:

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2. CONDITIONS:

2.2 ANY PURCHASE ORDER PLACED AS A RESULT OF YOUR QUOTATION WILL BE SUBJECT TO THE STANDARD TERMS AND CONDITIONS OF CONTRACT, FORM US7, (LATEST), GENERAL TENDER CONDITIONS, FORM CSS5 (LATEST) AND CONDITIONS MENTIONED HEREIN.

2.3 TENDERERS MAY OFFER AN EARLIER VALIDITY DATE, BUT THEIR QUOTATION MAY, IN THAT EVENT, BE DISREGARDED FOR THIS REASON.

2.4 TENDERERS ARE REQUIRED TO OFFER ONLY FIRM PRICES. PRICES SUBJECT TO REVIEW IN TERMS OF CLAUSE 32 OF FORM US7 WILL ONLY BE CONSIDERED SHOULD THE DELIVERY PERIOD REQUIRED EXCEED 6 MONTHS.

2.5 BEST DELIVERY TIME MUST BE OFFERED.

2.6 DISCOUNT (TRADE DISCOUNT) CASH DISCOUNT (CONDITONAL DISCOUNT) VALUE VALUE ADDED TAX (VAT) MUST BE SHOWN SEPARATELY.

2.7 TRANSNET RESERVES THE RIGHT TO NEGOTIATE PRICES AND COMMERCIAL ASPECTS AFTER THE CLOSING DATE OF THE QUOTATION.

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2.8 DIRECT DELIVERY INTIMATES DELIVERY BEING EFFECTED INTO THE WAREHOUSE OR THE ACTUAL POINT OF SUPPLY AND SHOULD THEREFORE INCLUDE ANY TRANSPORTATION MODE DEEMED NECESSARY IN EXECUTING THIS METHOD OF DELIVERY BASIS IN ORDER TO MEET THE REQUIRED DELIVERY DATE.

TAX CLEARANCE CERTIFICATES:

The Regulations in terms of the Public Finance Management Act, 1999: Framework for Supply Chain Management as published in Government Gazette No. 25767 dated 5 December 2003, Clause 9 (1) (d), stipulates that the accounting officer or accounting authority of an institution to which these regulations apply must reject any bid from a supplier who fails to provide written proof from the South African Revenue that the supplier either has no outstanding tax obligations or has made arrangements to meet outstanding tax obligations. Tenderers will be disqualified if a valid tax clearance certificate or written proof from the South African Revenue Service that supplier has made arrangements to meet outstanding tax obligations is not submitted with the tender.

COMPANY DETAILS:

NAME OF COMPANY: _____
CONTACT PERSON: _____
TEL. NO. _____ FAX NO: _____
REG. NO. _____

BROAD BASED BLACK ECONOMIC EMPOWERMENT (BBBEE)

Transnet fully endorses and supports the Government's Broad-based Black Economic Empowerment Programme and it is strongly of the opinion that all South African Business Enterprises have an equal obligation to redress the imbalances of the past. Transnet will therefore prefer to do business with local business enterprises who share these same values. Transnet will endeavour to do business with local business enterprises that possess a BBBEE "recognition level" of at least a level 5. Transnet urges Tenderers (large enterprises and QSE's - see below) to have themselves accredited by any one of the various Accreditation Agencies available, who do their BBBEE ratings in accordance with the latest Codes (i.e. those promulgated on 9 February 2007) and whose names appear on the present ABVA (Association of BEE Verification Agencies) - "List of Full Members" as displayed on the ABVA website (www.abva.co.za). Although no agencies have, as yet, been accredited by SANAS (SA National Accreditation System), Transnet will, in the interim, accept rating certificates of tenderers who have been verified by any of the listed agencies.

Enterprises will be rated by such agency based on the following:

1. Large Enterprises (i.e. annual turnover >R35million:
" Rating level based on all seven elements of the BBBEE scorecard.
2. Qualifying Small Enterprises - (QSE) (i.e. annual turnover >R5million but <R35million:
" Rating based on any four elements of the BBBEE scorecard.

NB:

3. Emerging Micro Enterprises - (EME) (i.e. annual turnover <R5m) are exempted from being rated/verified:
" Automatic rating of Level 4 BBBEE irrespective of race of ownership, i.e. 100% BBBEE recognition
" Black ownership >50% or Black Women ownership >30% automatically qualifies as Level 3 BBBEE, i.e. 110% BBBEE recognition
" EME's should provide certified documentary proof of annual turnover (i.e. audited financials) plus proof of Black ownership if Black ownership >50% or Black Women ownership >30% from the EME's Auditor/Accounting Officer.
4. In addition to the above, Tenderers who wish to enter into a Joint Venture or subcontract portions of the contract to BBBEE companies, must state in their tenders the percentage of the total contract value that will be allocated to such BBBEE companies, should they be successful in being awarded any business. A rating certificate in respect of such BBBEE JV-partners and / or sub-contractor/s, as well as a breakdown of

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the distribution of the aforementioned percentage must also be furnished

In view of the high emphasis which Transnet places on Broad-based Black Economic Empowerment, Transnet will allow certain preference points for BBBEE in the evaluation of all responses. Depending upon the value of the ensuing business award (i.e. below or in excess of R2m), the 80/20 or 90/10 point preference systems will be utilized where BBBEE will count out of 20 or 10 respectively in the evaluation process.

EACH RESPONDENT IS REQUIRED TO FURNISH PROOF OF THE ABOVE TO TRANSNET. FAILURE TO DO SO WILL RESULT IN A SCORE OF ZERO BEING ALLOCATED FOR BBBEE.

Turnover: Kindly indicate your company's annual turnover for the past year R_____

- " If annual turnover <R5m, please attach certified confirmation from your Auditor/Accounting Officer
- " If annual turnover >R5m please attach original or certified copy of accreditation certificate and detailed scorecard by an ABVA accreditation agency (registered as a "Full Member")

PAYMENT TERMS

The following payment terms will apply as from 1 October 2008.

- " All suppliers will be paid 30 days from receipt of month end statement, i.e. payment term F055.

CONDITIONS:

This quotation is subject to the provisions of the Standard Terms and Conditions of Contract, Form US7, (Latest) and the General Tender Conditions, Form CSS5 (Latest) and any other standard or special conditions mentioned and/or embodied in the quotation request.

SCHEDULE OF REQUIREMENTS

PRICES TENDERED ARE TO BE "DIRECT" AND EXCLUDE VAT.

IN THIS REGARD THE TENDERER'S ATTENTION IS DIRECTED TO PARAGRAPH 16 OF FORM CSS5 (LATEST).

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TRANSNET INSISTS ON HONESTY AND INTEGRITY BEYOND REPROACH AT ALL TIMES AND WILL NOT TOLERATE ANY FORM OF IMPROPER INFLUENCING, BRIBERY, CORRUPTION, FRAUD, OR ANY OTHER UNETHICAL CONDUCT ON THE PART OF BIDDERS/ TRANSNET EMPLOYEES. IF, IN THE OPINION OF TRANSNET'S CHIEF OPERATING OFFICER, A TENDERER / CONTRACTOR / SUPPLIER HAS OR HAS CAUSED TO BE PROMISED, OFFERED OR GIVEN TO ANY TRANSNET EMPLOYEE, ANY BRIBE, COMMISSION, GIFT, LOAN, ADVANTAGE OR OTHER COSIDERATION, TRANSNET SHALL BE ENTITLED TO REVOKE THE TENDER / CONTRACT BY FOLLOWING ITS INTERNAL POLICIES THAT GOVERN THE ECLUSION PROCESS. IN SUCH AN EVENT TRANSNET WILL BE ENTITLED TO PLACE ANY TENDERER / CONTRACTOR / SUPPLIER WHO HAS CONTRAVENED THE PROVISIONS OF TRANSNET'S BUSINESS ETHICS ON ITS LIST OF EXCLUDED TENDERERS. THIS LIST WILL ALSO BE DISTRIBUTED TO ALL OTHER STATE OWNED ENTERPRISES AND GOVERNMENT DEPARTMENTS.

TRANSNET INVITES ITS VALUED SUPPLIERS TO REPORT ANY ALLEGATIONS OF FRAUDCORRUPTION OR OTHER UNETHICAL ACTIVITIES TO TRANSNET TIP-OFFS ANONYMOUS,AT ANY OF THE FOLLOWING ADDRESSES / CONTACT NUMBERS:-

TOLL-FREE ANONYMOUS HOTLINE - 0800 003 056
EMAIL - Transnet@tip-offs.com
FAX NUMBER - 0800 007 788
FREEPOST DN 298, UMHLANGA ROCKS, 4320

CONFIDENTIALITY IS QUARANTEED

Item	Qty	Material	Description
00010	1	3xkopano radios/remotes,cable & handsets	R..... Each

Delivery Date: 01.12.2013

FULL DETAILS OF DESCRIPTION

3x Kopano radios ,3x kopano remote control with cables)5 x Kopano handset

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3. ADDITIONAL INFORMATION REQUIRED: (WHERE APPLICABLE)

3.1 THE FOLLOWING ADDITIONAL INFORMATION IS REQUIRED:

- (A) DISCOUNT:
- (B) SETTLEMENT DISCOUNT:.....
- (C) PRICE/S FIRM:
- (D) PRICE/S FIRM UNTIL THEREAFTER SUBJECT TO REVIEW.
- (E) PRICE/S NOT FIRM:
- (F) SABS MARK:
- (G) SABS PERMIT NO:
- (H) BRAND/MAKE/TYPER:
- (I) FULL NAME AND ADDRESS OF MANUFACTURER.:
.....
.....
.....
- (J) FULL NAME AND ADDRESS OF INSPECTION POINT:
.....
.....
.....
- (K) COUNTRY OF ORIGIN:

Comply : _____ Does not Comply : _____ Not applicable : _____

Justification :

(L) SURPLUS MATERIAL:

TENDERERS MUST INDICATE IF THEY WILL BE PREPARED TO PURCHASE BACK FROM TRANSNET ANY SURPLUS MATERIAL WHICH MAY BECOME AVAILABLE FROM ANY RESULTING PURCHASE ORDER/CONTRACT ORIGINATED FROM THE QUOTATION SUBMITTED:
.....

(M) PAYMENT OVERSEAS:

ONLY IF TRANSNET LIMITED IS REQUESTED BY THE TENDERER TO EFFECT PAYMENT OVERSEAS DIRECT TO THE TENDERER'S PRINCIPAL/SUPPLIER THE FOLLOWING INFORMATION IS REQUIRED:

* EXCHANGE RATE ON WHICH THE QUOTATION PRICE IS BASED: R1,00 (S.A. CURRENCY) BEING EQUAL TO (FOREIGN CURRENCY)

* PERCENTAGE IN RELATION TO THE QUOTATION PRICE TO BE REMITTED OVERSEAS:
.....

* NAME OF COUNTRY TO WHICH PAYMENT IS TO BE MADE:
.....
.....

* APPLICABLE DATE OF EXCHANGE RATE:
.....

* BENEFICIARY'S NAME AND FULL ADDRESS:
.....
.....
.....

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.....
* BENEFICIARY'S BANKERS AND FULL ADDRESS:

.....
.....

* APPLICABLE ACCOUNT NUMBER:

.....

(N) DELIVERY DATE:

TENDERERS MUST FURNISH THEIR ACTUAL DELIVERY AND MANUFACTURING PERIOD HEREUNDER NOTWITHSTANDING THE DELIVERY DATES SPECIFIED BY TRANSNET.

THE FOLLOWING MUST ALSO BE FURNISHED IN REGARD TO THE ABOVE:

1. PERIOD REQUIRED TO OBTAIN RAW MATERIAL.(DAYS)
2. MANUFACTURING PERIOD.(DAYS)
3. PERIOD TO TRANSPORT MATERIAL TO DESTINATION.(DAYS)

MATERIAL NO.	1.(PERIOD)	2.(PERIOD)	3.(PERIOD)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

INDICATE THE PERCENTAGE (%OF THE PRICE THAT IS SUBJECT TO THE VARIABLE COPPER FEE: -----%.

DATE:

SIGNATURE OF TENDERER(S):



TRANSNET
freight rail

CAPITAL PROGRAM (TELECOMMUNICATIONS)

SPECIFICATION

KOPANO RADIO BASE STATION

Author: Technologist: Project Manager Phehello Makoa
Capital Program (Telecoms)

Authorised: Senior Technologist Nick Breytenbach
Capital Program (Telecoms)

Date: 04 May 2009

Circulation Restricted To:

Transnet Freight Rail
Transnet and Relevant Third Parties
Unrestricted

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I Document Authorisation

FUNCTION	NAME	TITLE & DIVISION	SIGNATURE	DATE
Compiled By:	<i>Phehello Makoa</i>	Technologist Capital Program	<i>Signed</i>	11/05/2009
Reviewed By:	<i>Nick Breytenbach</i>	Senior Technologist Capital Program	<i>Signed</i>	12/05/2009
Reviewed By:	<i>Michael Nuttall</i>	Manager Engineering Transport Telecoms		
Reviewed By:	<i>Graeme Daly</i>	Manager Access Transport Telecoms		
Reviewed By:	<i>Anton Dreyer</i>	Manager Projects Transport Telecoms	<i>Signed</i>	12/05/2009
Reviewed By:	<i>Freddie Visser</i>	Frequency Management Transport Telecoms		
Reviewed By:	<i>Pierre du Plessis</i>	Manager Quality Assurance Transport Telecoms		
Authorised By:	<i>Nick Breytenbach</i>	Senior Technologist Capital Program	<i>Signed</i>	12/05/2009

II Distribution

Once updated, a copy of the latest revision will be published on the document management system, "Project Wise".

III Document Change History

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	May 2009	Phehello Makoa	New Document

IV Changes Since Last Revision

CLAUSES	DESCRIPTION

V List of Abbreviations

ABBREVIATIONS	DESCRIPTION
AC	Alternating Current
Ah	Ampere hour
dBm	Decibel relative to 1 milliwatt
LED	Light Emitting Diode
m	Metre
mm	Millimetre
PTT	Press-to-Talk
RBHU	Radio Base Housing Unit
RCU	Remote Control Unit
RF	Radio Frequency
RTO	Radio Train Order
Rx	Receive
TCO	Train Control Officer
TFR	Transnet Freight Rail
THD	Total Harmonic Distortion
Tx	Transmit
UHF	Ultra High Frequency
V	Volt
W	Watt

DEFINITIONS	DESCRIPTION
Works	A desktop radio base station with power supply, metal housing, handset, footswitch, gooseneck and headset, which is remotely controlled and can operate a 4 wire E&M line.

1. Introduction

- 1.1 This specification covers the supply of a desktop radio base station that is remotely controlled and that can operate 4 wire E&M line. The radio base station must operate in the Transnet Freight Rail (TFR) Ultra High Frequency (UHF) band, both in Open Channel and Trunk mode.
- 1.2 The radio base station, power supply, metal housing and the remote control unit are herein referred to as the "Works", and any other related work arising out of or incidental to the above, or required of the Contractor for proper completion of the "Works" in accordance with the true meaning and intent of the contract.

2. Background Information

- 2.1 Transnet Freight Rail (TFR) is a business unit of Transnet Limited, and it has a broad range of telecommunications services. These services include amongst others, radio communications for the safe operation of trains.
- 2.2 The Tender calls for the supply of a desktop radio base station described herein, as the "Works".
- 2.3 The radio base station will be used by the Train Control Officer (TCO) for communication with the train driver, the crew and the maintenance personnel.
- 2.4 The "Works" called for in this document have an impact on the safe operations of trains by TFR. The level of workmanship, the quality and durability of the equipment and adherence to safety rules and regulations is of the utmost importance.
- 2.5 Tenderers should be prepared to demonstrate the functionality of the radio base station set at no cost to TFR.
- 2.6 TFR reserves the right to modify or request any alteration to the supplied radio base station set before issuing the final approval.

2.7 The successful Tenderer will be required to supply one complete set to TFR as a prototype for approval. Once approval has been granted, the Tenderer shall be authorised to start with the production for the entire order. No production shall commence prior to the sign-off of the prototype.

2.8 TFR representatives may conduct site visits on the premises of the prospective Tenderers for inspection of the equipment concerned.

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3. Scope of Work

- 3.1 This specification covers the supply of a desktop radio base station that is remotely controlled and that can operate 4 wire E&M line. The radio base station must operate in the TFR, UHF band, both in Open Channel and Trunk mode.
- 3.2 The Schedule of Requirements and Tender Pricing (Appendix B) contains the quantities of the equipment to be supplied.

4. Compliance

- 4.1 The radio offer submitted by the Tenderers shall comply to the "Specification for Combined Trunked and Open Channel UHF Mobile Radio with Data Capability", SPC-01321, May 2008 Revision 1.00 (Appendix A).
- 4.2 Tenderers can use a TFR type approved radio, the "Tait TM 8255 mobile radio" or any other radio that complies with the specification referred to in clause 4.1. The Tait handset "TM 8200" was also approved together with the radio. The supplier for the radio and the handset is Emcom Africa.
- 4.3 The Tenders shall also read the entire Clause 8 "Base Stations" of Appendix A in conjunction with the RADIO BASE STATION REQUIREMENTS in this specification.

5. Radio Base Station Requirements

The radio base station set, shall comprise of the Radio Base Housing Unit (RBHU) and the Remote Control Unit (RCU).

5.1 Radio Base Housing Unit (RBHU)

- 5.1.1 The RBHU shall be used in conjunction with the RCU. All the functionality of the RBHU shall be available on the RCU.
- 5.1.2 The RBHU shall be supplied with a standard black screened multi-core cable (2.5m or 20m) terminated with a 15 pin D-type male connector. Only one cable shall be used at a time to connect the RBHU to the RCU.
- 5.1.3 There shall be a RS232, 9-pin D-type female connector on the rear panel for programming the radio.
- 5.1.4 The metal casing shall be powder coated in hamertone black and must be mountable in a 19" (Inch) rack. The rack mounting plates must be removable. The casing shall have rubber feet underneath.
- 5.1.5 The RBHU shall contain a forward facing speaker and shall contain a two way switch for enabling or muting the speaker. This functionality shall not affect the volume operation of the RCU when it is connected.
- 5.1.6 The volume for the speaker shall be controlled via the handset.
- 5.1.7 There shall be a 3-pin XLR socket mounted on the front side of the RBHU for the headset.
- 5.1.8 The RBHU shall have a 2-pin male connector mounted on the rear panel for the Press-to-Talk (PTT) footswitch.
- 5.1.9 The RBHU shall have a 4-pin XLR socket mounted on the rear panel for the gooseneck desktop microphone.
- 5.1.10 The RBHU shall operate normally while the mains continuously charge the battery. When the mains fail, the RBHU shall operate from the battery without a noticeable mains failure.

- 5.1.11 The RBHU shall have a robust connector or the RJ45 mounted at the back for the handset.
- 5.1.12 The RBHU shall include a 600 ohm balanced audio line output via a 2-pin (RJ9) connector for voice logging. Both Transmit (Tx) and Receive (Rx) audio shall be available.
- 5.1.13 The RBHU shall have a 9-pin D-type male connector data port for Tx and Rx purposes.
- 5.1.14 The RBHU shall have Light Emitting Diode (LED) indications. The indications will show Green for the charging condition and Red for charger failure.
- 5.1.15 The RBHU shall have a battery backup of a 7.5 Ah sealed lead acid battery with a 1.0 Ampere (A) charger having an over voltage protection circuitry.
- 5.1.16 The unit shall incorporate a load shedding circuitry that operates when the battery voltage reaches 11.0 Volt (V), for a 12 V system.
- 5.1.17 The RBHU shall be mounted with a 3-pin mains connector for Alternating Current (AC) power on the rear panel.
- 5.1.18 The RBHU shall be supplied with a 1.5m black cord for 220 V mains AC. The cord must be supplied with a matching plug (refer to clause 5.1.17) and a standard 15 A, 3-pin mains plug.
- 5.1.19 The RBHU shall have a facility that will switch the battery supply circuit off for storage purposes.
- 5.1.20 The RBHU shall have a metal hook mounted on the front side of the unit, for the handset to clip onto.
- 5.1.21 The RBHU shall have the Transnet Freight Rail Logo on the front panel, in colour (45mmx45mm), and shall be inscribed with the following words underneath the logo "Kopano Radio Base Station".

5.2 Remote Control Unit (RCU)

- 5.2.1 The RCU shall have a rugged metal casing which is aesthetically pleasing to be placed on top of the desk. The casing shall be powder coated in hamertone black and shall have rubber feet underneath.
- 5.2.2 There shall be a 15 pin D-type female connector on the rear panel for connecting the RCU to the RBHU.
- 5.2.3 The RCU shall contain a forward facing speaker.
- 5.2.4 The volume for the speaker shall be controlled via the handset.
- 5.2.5 The RCU shall have a 2 way "HI/ Low"-speaker switch in front. Position 1 for normal operation (high volume, depending on the handset setting) and position 2 for low volume operation. The low volume for position 2 must be soft but not completely muted.
- 5.2.6 The power for the RCU shall be supplied from the RBHU power supply unit. When the cable is connected (refer to clause 5.1.2), the RCU shall be powered up.
- 5.2.7 There shall be two LED's in front. The Green LED for "POWER ON", showing that the RCU is in a ready and functional state. The Red LED for "Tx", and will become active when the PTT is pressed.
- 5.2.8 There shall be a 3-pin XLR socket mounted on the front of the RCU for the headset.
- 5.2.9 The RCU shall have a 2-pin male connector mounted at the back for the PTT footswitch.
- 5.2.10 The RCU shall have a 4-pin XLR socket mounted at the back for the gooseneck desktop microphone.

5.2.11 The RCU shall have a robust connector or the RJ45 mounted at the back for the handset.

5.2.12 The RCU shall have a metal hook mounted on the front side of the unit, for the handset to clip onto.

5.2.13 The RCU shall have the Transnet Freight Rail Logo on the front, in colour (25mmx25mm), and shall be inscribed with the following words underneath the logo "Kopano Radio Base Station".

5.3 Handset

5.3.1 The handset shall have a keypad, microphone, PTT and a volume control.

5.3.2 The handset shall have a 2m fully stretched black curly cord and shall work up to 5m via a black extension cable.

5.3.3 The handset shall be terminated with a robust connector or the RJ45.

5.3.4 The handset shall be able to connect directly to the RBHU and the RCU.

5.4 Desktop Microphone

5.4.1 A rugged high quality flexible goose neck desktop microphone with a PTT shall be supplied.

5.4.2 The desktop microphone shall be supplied with a 2m fully stretched black curly cord cable.

5.4.3 The desktop microphone shall be terminated with a 4-pin XLR connector.

5.4.4 The desktop-microphone shall have an internal amplifier to provide the necessary gain.

5.4.5 The desktop microphone shall be able to connect directly to the RBHU and the RCU.

5.5 Headset

- 5.5.1 A rugged single ear headset with a PTT and a flexible boom microphone shall be supplied (black colour).
- 5.5.2 The headset shall either be wireless or supplied with a black 3m cable.
- 5.5.3 The wireless headset shall operate in a 10m radius and shall operate seamlessly without any interference where other wireless headsets have been deployed or in operation in the same radius.
- 5.5.4 The headset shall be terminated with a 3-pin XLR connector.
- 5.5.5 When the headset is plugged in, it shall default the external speaker to the low volume operation.
- 5.5.6 The headset microphone shall have an internal amplifier to provide the necessary gain.
- 5.5.7 The headset shall be able to connect directly to the RBHU and the RCU.

5.6 PTT Footswitch

- 5.6.1 A rugged PTT footswitch shall be supplied.
- 5.6.2 The footswitch shall come with a 3m black cable.
- 5.6.3 The footswitch shall be terminated to a 2-pin female connector.
- 5.6.4 The PTT footswitch shall be a common PTT for the headset and the gooseneck desktop microphones.
- 5.6.5 The footswitch shall be able to connect directly to the RBHU and the RCU.

5.7 E & M Signalling (4 wire)

- 5.7.1 Inputs "E" Lead: 12 to 50 V DC not exceeding 10 A
(Isolated contacts - Two wire & polarity free).
- 5.7.2 Output "M" Lead: Voltage free contact - 50 Vdc 1 A
(Isolated contacts - Two wire)

5.8 Audio

- 5.8.1 The voice logging audio output level shall be 0 dBm, adjustable ± 3 dB, with a Radio Frequency (RF) signal modulation of 1.5 kHz, and a modulating signal of 1.0 kHz. The Tx and Rx audio levels shall be equal.
- 5.8.2 An audio mixer circuitry with level adjustments shall be provided to ensure an equal level from all the different microphones.
- 5.8.3 The audio lines between the RBHU and RCU shall be 600 ohm balanced lines. The return loss shall be ≤ -25 dB.
- 5.8.4 The audio output levels between the RBHU and RCU shall be -10 dBm adjustable ± 3 dB.
- 5.8.5 The audio frequency response 300 Hz to 3000 Hz shall be ± 0.5 dB with reference to 1.0 kHz.
- 5.8.6 The THD shall be ≤ 0.5 %
- 5.8.7 The signal to hum and noise ratio shall be ≥ 40 dB.
- 5.8.8 The audio power to the loudspeaker shall not be less than 2.0 W at a THD of ≤ 2.0 %.
- 5.8.9 All the audio lines shall be protected against induced power surges.