TRANSNET FREIGHT RAIL

an Operating Division of **TRANSNET SOC LTD**

[Registration No. 1990/000900/30]

REQUEST FOR PROPOSAL [RFP]

FOR THE SUPPLY, INSTALLATION, COMMISSIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIRED BASIS"

RFP NUMBER	**HOAC-VAR-9481**
ISSUE DATE:	**10 MARCH 2013**
CLOSING DATE:	**09 APRIL 2013**
CLOSING TIME:	**10:00**
BID VALIDITY PERIOD:	**90 days from Closing Date**

COMPULSORY BRIEFING SESSION:

A compulsory briefing session will be held at the following venue:

Time	:	10:00 am
Date	:	19 March 2013
Venue	:	Transnet Freight Rail Inyanda House 2 15 Girton Road Umjantshi A Boardroom Parktown Johannesburg

SCHEDULE OF BID DOCUMENTS

Section No **Page**

RFP APPENDICES:

APPENDIX (i) GENERAL BID CONDITIONS

APPENDIX (ii) TERMS AND CONDITIONS OF CONTRACT FOR THE SUPPLY OF GOODS TO TRANSNET

APPENDIX (iii) TECHNICAL SPECIFICATIONS SECTION 16, (SPC01275, SPC0012, SPC00583, SPC00027, SPCTFRT0002, & BBF1026)

REFERENCE TO TECHNICAL SPECIFICATION CLAUSE BY CLAUSE COMPLIANCE STATEMENTS

- SPC01275
- SPC0012
- SPC0583
- SPC00027
- SPCTFRT0002
- BBF1026

APPENDIX (iv) SAFETY QUESTIONNAIRE SHEET

APPENDIX (v) TESTING EQUIPMENT PROCUDURE

APPENDIX (vi) ADDITIONAL TECHNICAL REQUIREMENTS

LIST OF ACRONYMS

B-BBEE	Broad-Based Black Economic Empowerment
CD	Compact/computer disc
DAC	Divisional Acquisition Council
EME	Exempted Micro Enterprise
GBC	General Bid Conditions
ID	Identity Document
JV	Joint Venture
LOI	Letter of Intent
NDA	Non-Disclosure Agreement
OD	Transnet Operating Division
PPPFA	Preferential Procurement Policy Framework Act
PTN	Post-Tender Negotiations
QSE	Qualifying Small Enterprise
RFP	Request for Proposal
SME	Small Medium Enterprise
SOC	State Owned Company
TAC	Transnet Acquisition Council
TCO	Total Cost of Ownership
VAT	Value-Added Tax
ZAR	South African Rand

RFP FOR THE SUPPLY, INSTALLATION, COMMISSING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIRED BASIS"

Section 1: NOTICE TO BIDDERS

1 PROPOSAL REQUEST

Responses to this RFP [hereinafter referred to as a **Bid** or a **Proposal**] are requested from persons, companies, close corporations or enterprises [hereinafter referred to as an **entity**, **Respondent** or **Bidder**] for the supply of aforementioned requirement(s) to Transnet.

On or after 13 March 2013, the RFP documents may be inspected at, and are obtainable from the office of secretariat, Ground Floor, Inyanda House 1, 21 Wellington Road Parktown, Johannesburg on payment of an amount of R5000,00 [inclusive of VAT] per set. Payment is to be made as follows:

Bank:	Standard Bank
Account Number:	20 315 8598
Branch code:	004805
Account Name:	Transnet Freight Rail
Reference:	HOAC-VAR-9481

NOTES –

a) This amount is not refundable.

b) A receipt for such payment made must be presented when collecting the RFP documents and submitted thereafter with your Proposal.

RFP documents will only be available for collection from **13 March 2013** until **18 March 2013** till **15H00**. Therefore payment must be effected prior to the deadline for collection.

N.B: Pursuant to note (b) above, should a third party [such as a courier] be instructed to collect RFP documents on behalf of a Respondent, please ensure that this person [the third party] has a "proof of payment" receipt for presentation to Transnet when collecting the RFP documents.

Any additional information or clarification will be faxed or emailed to all Respondents, if necessary.

2 FORMAL COMPULSORY BRIEFING

A formal compulsory RFP briefing will be conducted at **Transnet Freight Rail, Inyanda House 2, 15 Girton Road, Umjantshi A, Parktown, Johannesburg** on the **19 March 2013** at 10H00 for a period of ± 2hours. (Respondents to provide own transportation and accommodation).

2.1 *A Certificate of Attendance in the form set out in Section 15 hereto must be completed and submitted with your Proposal as proof of attendance is required for a compulsory RFP briefing.*

2.2 *Transnet will not be held responsible if any Bidder who did not attend the compulsory session subsequently feels disadvantaged as a result thereof.*

2.3 Respondents failing to attend the compulsory RFP briefing will be disqualified.

2.3 Respondents failing to attend the compulsory RFP briefing will be disqualified.

2.4 Respondents without a valid RFP document in their possession will not be allowed to attend the RFP briefing.

2.5 The briefing session will start punctually at 10H00 am and information will not be repeated for the benefit of Respondents arriving late.

3 PROPOSAL SUBMISSION

Proposals **in duplicate [1 original and 1 copy] plus a CD copy** must reach the Secretariat, Transnet Acquisition Council before the closing hour on the date shown below, and must be enclosed in a sealed envelope which must have inscribed on the outside:

RFP No:	HOAC-VAR -9481
Description:	SUPPLY, INSTALLATION, COMMISSIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN AS "AN WHEN REQUIRED BASIS"
Closing date and time:	09 APRIL 2013, 10H00 am
Closing address	*[Refer to options in paragraph 4 below]*

All envelopes must reflect the return address of the Respondent on the reverse side.

4 DELIVERY INSTRUCTIONS FOR RFP

4.1 Delivery by hand

If delivered by hand, the envelope is to be deposited in the Transnet tender box which is located at Inyanda House 1, Ground Floor, 21 Wellington Road, Parktown, as, and should be addressed as follows:

THE SECRETARIAT
TRANSNET FREIGHT RAIL
ACQUISITION COUNCIL
GROUND FLOOR
TENDER BOX
INYANDA HOUSE 1
21 WELLINGTON ROAD
PARKTOWN

a) The measurements of the "tender slot" are 400mm wide x 100mm high, and Respondents must please ensure that response documents or files are no larger than the above dimensions. Responses which are too bulky [i.e. more than 100mm thick] must be split into two or more files, and placed in separate envelopes, each such envelope to be addressed as required in paragraph 3 above.

b) It should be noted that the above tender box is located at Inyanda No1, Ground Floor, 21 Wellington Road, Parktown and is accessible to the public 24 hours a day, 7 days a week.

4.2 **Dispatch by courier**

If dispatched by courier, the envelope must be addressed as follows and delivered to the Office of The Secretariat, Transnet Acquisition Council and a signature obtained from that Office:

THE SECRETARIAT
TRANSNET ACQUISITION COUNCIL
GROUND FLOOR
TENDER BOX
INYANDA HOUSE 1
21 WELLINGTON ROAD
PARKTOWN

4.3 Please note that this RFP closes punctually at **10H00 on Tuesday, 09 April 2013.**

4.4 If responses are not delivered as stipulated herein, such responses will not be considered and will be treated as "NON-RESPONSIVE" and will be disqualified.

4.5 No email or facsimile responses will be considered, unless otherwise stated herein.

4.6 The responses to this RFP will be opened as soon as practicable after the expiry of the time advertised for receiving them.

4.7 Transnet shall not, at the opening of responses, disclose to any other company any confidential details pertaining to the Proposals / information received, i.e. pricing, delivery, etc. The names and locations of the Respondents will be divulged to other Respondents upon request.

4.8 Envelopes must not contain documents relating to any RFP other than that shown on the envelope.

4.9 No slips are to be attached to the response documents. Any additional conditions must be embodied in an accompanying letter. Subject only to clause 15 *[Alterations made by the Respondent to Bid Prices]* of the General Bid Conditions, alterations, additions or deletions must not be made by the Respondent to the actual RFP documents.

4.10 Proposal to this must be submitted in clearly demarcated files (Referenced accordingly) in terms of the following:

- Returnable checklist
- B-BBEE Scorecard
- Technical proposal
- Financial proposal
- Annexures

5 BROAD-BASED BLACK ECONOMIC EMPOWERMENT AND SOCIO-ECONOMIC OBLIGATIONS

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 would therefore prefer to do business with enterprises who share these same values and who are prepared to contribute to meaningful B-BBEE initiatives [including, but not limited to subcontracting and Joint Ventures] as part of their tendered responses. All procurement transactions will be evaluated accordingly.

The Department of Trade and Industry [**DTI**] is currently in the process of reviewing the B-BBEE Codes of Good Practice [Code Series 000]. Transnet reserves the right to amend this RFP in line with such reviews and/or amendments once they have come into effect. Transnet furthermore reserves the right to adjust the thresholds and evaluation processes to be aligned with such changes which may be issued by the DTI after the issue date of this RFP.

5.1 B-BBEE Scorecard and Rating

As prescribed in terms of the Preferential Procurement Policy Framework Act (PPPFA), Act 5 of 2000 and its Regulations, Respondents are to note the following:

- Functionality is included at a pre-qualification stage with a prescribed percentage threshold of 80%.
- Proposals will be evaluated on price which will be allocated 90 points and preference which will be allocated 10 points, dependent on the value of the Goods.
- The 90/10 preference point system applies where acquisition of the Goods will exceed R1 000 000.00.
- If the 90/10 preference point system is stipulated and all Bids received are equal to or below R1 000 000.00, the RFP will be cancelled.

The **90/10** preference point system is applicable to this RFP.

When Transnet invites prospective suppliers to submit Proposals for its various expenditure programmes, it requires Respondents *[Large Enterprises and QSE's - see below]* to have their B-BBEE status verified in compliance with the Government Gazette No 34612, Notice No. 754 dated 23 September 2011. Valid B-BBEE Verification Certificates must be issued by:

a) Verification Agencies accredited by the South African National Accreditation System [**SANAS**]; or

b) Registered Auditors approved by the Independent Regulatory Board of Auditors [**IRBA**], in accordance with the approval granted by the Department of Trade and Industry.

A Verification Certificate issued must reflect the weighted points attained by the measured entity for each element of the scorecard as well as the overall B-BBEE rating.

Enterprises will be rated by Verification Agencies or Registered Auditors based on the following:

a) **Large Enterprises** [i.e. annual turnover greater than R35 million]:

- Rating level based on all seven elements of the B-BBEE scorecard

b) **Qualifying Small Enterprises – QSE** [i.e. annual turnover between R5 million and R35 million]:

- Rating based on any four of the elements of the B-BBEE scorecard

c) **Exempted Micro Enterprises – EME** [i.e. annual turnover less than R5 million]:

In accordance with B-BBEE Codes of Good Practice [Statement 000, Section 4], any enterprise with annual total revenue of R 5 million or less qualifies as an EME.

- Automatic rating of B-BBEE Level 4 irrespective of race or ownership
- Black[1] ownership greater than 50% or Black Women ownership greater than 50% automatically qualify as B-BBEE Level 3

Sufficient evidence to qualify as an EME would be a certificate [which may be in the form of a letter] from an auditor, accounting officer or a Verification Agency accredited by SANAS. The certificate must confirm the company's turnover, Black ownership / Black female ownership and B-BBEE status level.

Respondents are required to furnish proof of the above to Transnet. [i.e. a detailed scorecard as stipulated above in respect of Large Enterprises and QSEs, or a certificate in respect of EMEs].

In this tender, Transnet will accordingly allocate a maximum of **10 points** in accordance with the **90/10** preference point system prescribed in the Preferential Procurement Policy Framework Act (PPPFA), Act 5 of 2000 and its Regulations to the Respondent's final score based on an entity's B-BBEE scorecard rating. *[Refer **Section 14** for further details].*

N.B. Failure to submit a B-BBEE certificate, which is valid as at the Closing Date of this RFP, will result in a score of zero being allocated for B-BBEE.

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

R_____

*All Respondents must complete and return the B-BBEE Preference Points Claim Form attached hereto as **Section 14**.*

5.2 **B-BBEE Joint Ventures, Consortiums and/or Subcontractors**

In addition to the above, Respondents who would wish to enter into a Joint Venture [**JV**] or consortium with, or subcontract portions of the contract to, B-BBEE entities, must state in their RFPs the percentage of the total contract value that would be allocated to such B-BBEE entities, should they be successful in being awarded any business. A valid B-BBEE Verification Certificate in respect of such B-BBEE JV or consortium partners and/or subcontractor(s), as well as a breakdown of the distribution of the aforementioned percentage must also be furnished with the RFP Bid to enable Transnet to evaluate in accordance with the processes outlined in the B-BBEE Preference Points Claim Form appended hereto as Section 14.

a) **JVs or Consortiums**

If contemplating a JV or consortium, Respondents should also submit a signed JV or consortium agreement between the parties clearly stating the percentage [%] split of business and the associated responsibilities of each party. If such a JV or consortium agreement is unavailable, the partners must submit confirmation in writing of their intention to enter into a

[1] ***Black** means South African Blacks , Coloureds and Indians, as defined in the B-BBEE Act, 53 of 2003*

JV or consortium agreement should they be awarded business by Transnet through this RFP process. This written confirmation must clearly indicate the percentage [%] split of business and the responsibilities of each party. In such cases, award of business will only take place once a signed copy of a JV or consortium agreement is submitted to Transnet.

(i) Incorporated JVs/Consortiums

As part of an incorporated JV/consortium's Bid response, the incorporated JV/consortium must submit a valid B-BBEE Verification Certificate in its registered name.

(ii) Unincorporated JVs/Consortiums

As part of an unincorporated JV/consortium's tendered response, the unincorporated JV/consortium must submit a consolidated B-BBEE certificate as if it was a group structure and such scorecard must have been prepared for this RFP in particular.

b) **Subcontracting**

If contemplating subcontracting, please note that a Respondent will not be awarded points for B-BBEE if it is indicated in its Proposal that such Respondent intends subcontracting more than 25% [twenty-five per cent] of the value of the contract to an entity that does not qualify for at least the same points that the Respondent qualifies for, unless the intended subcontractor is an EME with the capability to execute the contract.

5.3 **B-BBEE Registration**

In addition to the Verification Certificate, Transnet recommends that Respondents register their B-BBEE compliance and supporting documentation on the Department of Trade and Industry's [**DTI**] National B-BBEE IT Portal and Opportunities Network and provide Transnet with proof of registration in the form of an official B-BBEE Profile issued by the DTI.

Transnet would wish to use the DTI B-BBEE IT Portal as a data source for tracking B-BBEE compliance.

For instructions to register and obtain a DTI B-BBEE Profile go to http://bee.thedti.gov.za

6 COMMUNICATION

Respondents are warned that a Proposal will be liable to disqualification should any attempt be made by a Respondent either directly or indirectly to canvass any officer or employee of Transnet in respect of this RFP between the closing date and the date of the award of the business.

6.1 For specific queries relating to this RFP, an RFP Clarification Request Form should be submitted before **12:00 on 03 April 2013**, substantially in the form set out in Section 12 hereto. In the interest of fairness and transparency Transnet's response to such a query will then be made available to the other Respondents who have collected RFP documents. For this purpose all Respondents are required to indicate by email their intention to respond to this RFP by informing Transnet of their contact details as soon as possible but on or before **12H00 on 03 April 2013** to Julias.moeti@transnet.net.

6.2 After the closing date of the RFP, a Respondent may only communicate with the Secretariat of the Transnet Acquisition Council, at telephone number 011 584 9486, email facsimile number 011 774 9760 on any matter relating to its RFP Proposal.

Respondents found to be in collusion with one another will be automatically disqualified and restricted from doing business with Transnet in the future.

7 INSTRUCTIONS FOR COMPLETING THE RFP

7.1 Sign one set of original documents [sign, stamp and date the bottom of each page]. This set will serve as the legal and binding copy. A duplicate set of documents is required. This second set must be a copy of the original signed Proposal.

7.2 Both sets of documents are to be submitted to the address specified in paragraph 4 above.

7.3 A CD copy of the RFP Proposal must be submitted. Please provide files in MS Word / Excel format, not PDF versions, noting that the signed original set will be legally binding.

7.4 *All returnable documents tabled in the Proposal Form [Section 4] must be returned with your Proposal.*

7.5 Proposal to this RFP must be submitted in clearly demarcated files (Reference accordingly) in terms of the following:

- Returnable Checklist
- B-BBEE Scorecard
- Technical Proposal
- Financial proposal
- Appendices

8 COMPLIANCE

The successful Respondent [hereinafter referred to as the **Supplier**] shall be in full and complete compliance with any and all applicable laws and regulations.

9 ADDITIONAL NOTES

9.1 Changes by the Respondent to its submission will not be considered after the closing date.

9.2 The person or persons signing the Proposal must be legally authorised by the Respondent to do so *[Refer Section 6 – Signing Power, Resolution of the Board of Directors].* A list of those person(s) authorised to negotiate on behalf of the Respondent [if not the authorised signatories] must also be submitted along with the Proposal together with their contact details.

9.3 Bidders who fail to submit a duly completed and signed RFP Declaration Form *[Section 10]* will not be considered.

9.4 Transnet will not do business with companies involved in B-BBEE fronting practices.

9.5 Transnet may wish to visit the Respondent's place of manufacture and/or workshop and/or office premises during this RFP process.

9.6 Transnet reserves the right to undertake post-tender negotiations [**PTN**] with selected Respondents or any number of short-listed Respondents, such PTN to include, at Transnet's option, any evaluation criteria listed in this RFP document.

9.7 Unless otherwise expressly stated, all Proposals furnished pursuant to this RFP shall be deemed to be offers. Any exceptions to this statement must be clearly and specifically indicated.

FAILURE TO OBSERVE ANY OF THE AFOREMENTIONED REQUIREMENTS MAY RESULT IN A PROPOSAL BEING REJECTED

10 DISCLAIMERS

Respondents are hereby advised that Transnet is not committed to any course of action as a result of its issuance of this RFP and/or its receipt of Proposals. In particular, please note that Transnet reserves the right to:

10.1 modify the RFP's Goods and request Respondents to re-bid on any such changes;

10.2 reject any Proposal which does not conform to instructions and specifications which are detailed herein;

10.3 disqualify Proposals submitted after the stated submission deadline [closing date];

10.4 not necessarily accept the lowest priced Proposal;

10.5 reject all Proposals, if it so decides;

10.6 withdraw the RFP on good cause shown;

10.7 award a contract in connection with this Proposal at any time after the RFP's closing date;

10.8 award a contract for only a portion of the proposed Goods which are reflected in the scope of this RFP;

10.9 split the award of the contract between more than one Supplier; or

10.10 make no award of a contract.

In addition, Transnet reserves the right to exclude any Respondent from the bidding process who has been convicted of a serious breach of law during the preceding 5 [five] years, including but not limited to breaches of the Competition Act 89 of 1998. Respondents are required to indicate in Section 11 *[Breach of Law]* whether or not they have been found guilty of a serious breach of law during the past 5 [five] years.

Transnet reserves the right to award the business to the highest scoring bidder/s unless objective criteria justify the award to another bidder.

Kindly note that Transnet will not reimburse any Respondent for any preparatory costs or other work performed in connection with its Proposal, whether or not the Respondent is awarded a contract.

11 LEGAL REVIEW

A Proposal submitted by a Respondent will be subjected to review and acceptance or rejection of its proposed contractual terms and conditions by Transnet's Legal Counsel, prior to consideration for an award of business.

Transnet urges its clients, suppliers and the general public

to report any fraud or corruption to

TIP-OFFS ANONYMOUS : 0800 003 056

RFP FOR THE SUPPLY, INSTALLATION, COMMISSIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIRED BASIS"

Section 2: BACKGROUND, OVERVIEW AND SCOPE OF REQUIREMENTS

1 BACKGROUND

Transnet seek to enter into a long term contact for the supply, installation, commissioning and support of access multiplexers and microwave radios nationally for a period of seven years on an "as and when required basis". This will take place nationally.

The contract must provide for Transnet's need for the next seven years. It must be flexible so that various permutations of the interfaces can be supplied with each multiplexer to suit different distance and bandwidth requirements. The contract must include repairs to all components of the network after the warranty period.

The contract must include a network management system that fully monitors and manages all the network elements required. A software support agreement for the management and network element must be included.

2 EXECUTIVE OVERVIEW

Most Transnet Operating Divisions currently procure their Access Multiplexers and Microwave Radio requirements though a number of suppliers. Our objective is to source all activity through a Preferred Supplier(s) capable of servicing all Transnet Operating Divisions in locations around the country.

Whereas Transnet is seeking a partner(s) to provide solutions for Supply, Installation, Commissioning and Support of Access Multiplexers and Microwave Radios nationally, it also seeks to improve its current processes for providing these Goods to its end user community throughout its locations.

The selected Supplier(s) will share in the mission and business objectives of Transnet. These mutual goals will be met by meeting contractual requirements and new challenges in an environment of teamwork, joint participation, flexibility, innovation and open communications. In this spirit of partnership, Transnet and its Supplier(s) will study the current ways they do business to enhance current practices and support processes and systems. Such a partnership will allow Transnet to reach higher levels of quality, service and profitability.

Specifically, Transnet seeks to benefit from this partnership in the following ways:

2.1 Transnet must receive reduced cost of acquisition and improved service benefits resulting from the Supplier's economies of scale and streamlined service processes.

2.2 Transnet must achieve appropriate availability that meets user needs while reducing costs for both Transnet and the chosen Supplier(s).

2.3 Transnet must receive proactive improvements from the Supplier with respect to supply of Goods and related processes.

2.4 Transnet's overall competitive advantage must be strengthened by the chosen Supplier's leading edge technology and service delivery systems.

2.5 Transnet end users must be able to rely on the chosen Supplier's personnel for service enquiries, recommendations and substitutions.

2.6 Transnet must reduce costs by streamlining its acquisition of Goods, including managed service processes on a Group basis.

3 SCOPE OF REQUIREMENTS

The preferred bidder will be required to provide the following scope of work for this project;

- Access multiplexers with various line interfaces, suitable for interconnectivity by electrical, optical or microwave radio media.
- Various microwave radios that will be managed by the same network management platform as the access multiplexers.
- A network management system, including hardware, software and licences, which will monitor and manage all the above elements
- Installations of the above at all main TFR equipment rooms and peripheral sites at interim relay rooms, electrical substations and radio high sites. Refer also to the draft installation programme as per table below.

TABLE : DRAFT INDICATIVE 7 YEAR PROGRAMME OF INSTALLATIONS

Commodity Breakdown	13/14	14/15	15/16	16/17	17/18	18/19	19/20	Total
Access Multiplexers	600	350	200	150	150	100	50	1 600
Microwave Radios	660	300	40					1000
Network Management	1				1			2

- NB: Quantities shown are indicative and Transnet reserves the right to adjust the quantities according to business demand changes during the lifecycle of the contract period.

The Technical Requirements

The equipment offered must comply with the following specifications. Telecommunications equipment must conform to international standards (ITU, ETSI, ISO), and TFR specifications Appendices (iii).

- SPC01275 Version 4.00: Network Management System
- SPC0012 Version 3.00: Access Multiplexer Equipment
- SPC00583 Version 2.00: Optical Fibre Accessories
- SPC00027 Version 3.10: Microwave Radio Equipment
- SPCTFRT00025 Version 2.0: Training On Telecommunication Equipment
- BBF1026 Version 2.00: Generic Equipment Cabinet

Functional Requirements

The access multiplexers, microwave radios and network management system must enable TFR to provision services across multiple elements and to monitor their performance. There are currently over 950 access

multiplexers and 350 microwave radios in the network, and this is expected to grow to 1600 multiplexers and 900 microwave radios in the 7 year programme.

Performance Requirements

- The equipment must comply with the ITU performance criteria listed in the technical specifications.
- Management information must be carried from the management network, through multiple elements, to every element in the network.

Training Requirements

The following training is required.

a) Administrator level training for the NMS – 4 people, Parktown. This will include setting up new users and passwords, scheduling backups and reports, provisioning new services and establishing protection paths.

b) NMS network operator level – 8 people in Parktown and 4 people in Durban. This includes navigation between various views of the network, acknowledging alarms, analysing fault conditions and performing loop-back tests.

c) Access multiplexer's technician level – 10 people each in Johannesburg, Pretoria, Durban, Bloemfontein, Port Elizabeth and Cape Town. This includes LCT level site commissioning, adding and replacing interface cards, fault analysis and rectification.

d) Microwave radios technician level – 10 people each in Johannesburg, Pretoria, Ermelo, Durban, Bloemfontein, Port Elizabeth and Cape Town. This includes site installation and commissioning, adding and replacing cables and antennae, fault analysis and rectification.

Other Requirements

Local support

- The contractor must ensure that there is adequate local support for the systems supplied. A contract of this size warrants at least one full time employee dedicated to servicing TFR's requirements.
- Since this is specialised equipment, the contractor must have at least one employee who is accredited and certified by the manufacturer(s) of the products offered, to install, commission and service these.
- The contractor must have suitable premises in South Africa to warehouse equipment components, assemble them as per order, test them and pre-commission them, and then ship them out to site.
- The contractor must appoint local installation teams, training them and up-skilling them as necessary, to support TFR in metropolitan and rural areas.
- Deliveries and Installations will take place all over South Africa. The Tenderer's prices in the BoQ must take this into account.

4 GENERAL SUPPLIER OBLIGATIONS

4.1 The Supplier(s) shall be fully responsible to Transnet for the acts and omissions of persons directly or indirectly employed by them.

4.2 The Supplier(s) must comply with the requirements stated in this RFP.

5 "AS AND WHEN REQUIRED" CONTRACTS

5.1 Purchase orders will be placed on the Supplier(s) from time to time as and when Goods are required.

5.2 Transnet reserves the right to place purchase orders until the last day of the contract for deliveries to be effected, within the delivery period / lead time specified, beyond the expiry date of the contract under the same terms and conditions as agreed upon.

5.3 Delivery requirements may be stipulated in purchase orders and scheduled deliveries may be called for. However, delivery periods and maximum monthly rates of delivery offered by the Respondents will be used as guidelines in establishing lead times and monthly delivery requirements with the Supplier.

5.4 Where scheduled deliveries are required, the delivery period(s) specified must be strictly complied with, unless otherwise requested by Transnet. Material supplied earlier than specified may not be paid for or may be returned by Transnet, with the Supplier being held liable for all expenses so incurred, e.g. handling and transport charges.

5.5 If the delivery period offered by the Respondents is subject to a maximum monthly production capacity, full particulars must be indicated in Section 3 *[Pricing and Delivery Schedule]*

5.6 The Respondent must state hereunder its annual holiday closedown period [if applicable] and whether this period has been included in the delivery lead time offered:

_____

_____

5.7 Respondents are required to indicate below the action that the Respondent proposes to take to ensure continuity of supply during non-working days or holidays and periods occupied in stocktaking or in effecting repairs to plant or in overhaul of plant which would ordinarily occur within the stated delivery lead time/s:

_____

_____

6 RESPONDENT'S TESTING EQUIPMENTS

6.1 As part of the evaluation process, the bidder will have a one week notice to make arrangements to come and install its testing equipment's. Transnet intends to sets aside a full day for the bidder to set up its testing equipment. NB: Transnet will not be liable the respondents for any loss or damage incurred during this testing period.

The equipment for testing to be submitted to the aforementioned address hereunder;

155 Pretoria Road, Isando, Kempton Park

Contact: Eric van der Merwe

Contact details: 083 286 5031

Eric.vanderMerwe@transnet.net

The testing equipment must be clearly marked with the reference number of this RFP and the names and addresses of both the Respondent and the manufacturer. Respondents are to ensure that equipment is shipped and delivered in working condition for testing.

6.2 Respondents are to refer to Section 17 Appendix (v) for details on testing procedure and certificate of acquaintance on testing procedure.

7 MANUFACTURERS

The Respondents must state hereunder the actual manufacturer(s) of the Goods tendered for:

7.1 Local Manufacturer(s):

RFP ITEM NO.	NAME	BUSINESS ADDRESS

7.2 Foreign Manufacturer(s):

RFP ITEM NO.	NAME	BUSINESS ADDRESS

8 INSPECTION DETAILS

The Respondents must state the actual name(s) and address/addresses of the suppliers of the Goods for inspection purposes only:

8.1 Local Manufacturer(s)

RFP ITEM NO.	NAME	BUSINESS ADDRESS

8.2 Foreign Manufacturer(s):

RFP ITEM NO.	NAME	BUSINESS ADDRESS

9 IMPORTED CONTENT

The Respondents must state hereunder the value and percentage of the imported content as well as the country of origin in respect of each item tendered for:

RFP ITEM NO / DESCRIPTION.	VALUE	% COST	COUNTRY OF ORIGIN

Note: Where more than one country is applicable to one item, the Respondents must furnish this information separately as per the list of items provided in the Pricing Schedule of Section 3.

10 EXCHANGE AND REMITTANCE

The attention of the Respondents is directed to clause 16 *[Exchange and Remittance]* of the General Bid Conditions appended hereto. If Transnet is requested by the Respondent to effect payment overseas direct to the Respondent's principal or supplier, which is not a registered South African Company please complete the details below, using the rate of exchange published by the South African Reserve Bank 7 [seven] calendar days before the closing date of this RFP:

10.1 ZAR 1.00 [South African currency] being equal to _____ *[foreign currency]*

10.2 _____ % in relation to tendered price(s) to be remitted overseas by Transnet

10.3 _____ *[Name of country to which payment is to be made]*

10.4 Beneficiary details:

Name *[Account holder]* _____

Bank *[Name and branch code]* _____

Swift code _____

Country _____

10.5 _____ *[Applicable base date of Exchange Rate used]*

Respondents are advised that should a contract be awarded for deliveries on an "as and when required" basis, any future remittance(s) to overseas principals/suppliers, as instructed above, will be based on the currency rate of exchange related to the contractual price of the Goods at that time.

Respondents should note that Transnet would prefer to receive fixed price offers expressed in South African Rand [ZAR].

11 NATIONAL RAILWAY SAFETY REGULATOR ACT

In compliance with the National Railway Safety Regulator Act, 16 of 2002, the successful Respondent [**the Supplier**] shall ensure that the Goods to be supplied to Transnet, under the terms and conditions of a contract between the parties, comply fully with the specifications as set out in Annexure (iii) *[Specifications and Testing equipment's]* of this RFP, and shall also adhere to railway safety requirements and/or regulations [as applicable]. Permission for the engagement of a subcontractor by the Supplier, as applicable, both initially and during the course of a contract, shall be subject to a review of the capability of the proposed subcontractor to comply with

the specified railway safety requirements and/or regulations. The Supplier and/or its subcontractor shall grant Transnet access, during the term of the contract, to review any safety-related activities, including the coordination of such activities across all parts of the organisation.

Accepted:

YES		NO	

12 SERVICE LEVELS

12.1 An experienced national account representative(s) is required to work with Transnet's procurement department. [No sales representatives are needed for individual department or locations]. Additionally, there shall be a minimal number of people, fully informed and accountable for this agreement.

12.2 Transnet will have quarterly reviews with the Supplier's account representative on an on-going basis.

12.3 Transnet reserves the right to request that any member of the Supplier's team involved on the Transnet account be replaced if deemed not to be adding value for Transnet.

12.4 The Supplier guarantees that it will achieve a 95% [ninety-five per cent] service level on the following measures:

12.4.1 Random checks on compliance with quality/quantity/specifications

12.4.2 On-time delivery

If the Supplier does not achieve this level as an average over each quarter, Transnet will receive a1.5%[one and a half per cent] rebate on quarterly sales payable in the next quarter

12.5 The Supplier must provide a telephone number for customer service calls.

12.6 Failure of the Supplier to comply with stated service level requirements will give Transnet the right to cancel the contract in whole, without penalty to Transnet, giving 30 [thirty] days' notice to the Supplier of its intention to do so.

Acceptance of Service Levels:

YES		NO	

13 TOTAL COST OF OWNERSHIP AND CONTINUOUS IMPROVEMENT INITIATIVES

13.1 Respondents shall indicate whether they would be committed, for the duration of any contract which may be awarded through this RFP process, to participate with Transnet in its continuous improvement initiatives to reduce the total cost of ownership [**TCO**], which will reduce the overall cost of transportation services and related logistics provided by Transnet's operating divisions within South Africa to the ultimate benefit of all end-users.

Accepted:

YES		NO	

If "yes", please specify details in paragraph 13.2 below.

13.2 Respondents must briefly describe their commitment to TCO and continuous improvement initiatives and give examples of specific areas and strategies where cost reduction initiatives can be introduced. Specific areas and

proposed potential savings percentages should be included. Additional information can be appended to the Respondent's Proposal if there is insufficient space available below.

14 RISK

Respondents must elaborate on the control measures put in place by their entity, which would mitigate the risk to Transnet pertaining to potential non-performance by a Supplier, in relation to:

14.1 **Quality and specification of Goods delivered:**

14.2 **Continuity of supply**:

14.3 **Compliance with the Occupational Health and Safety Act, 85 of 1993:**

14.4 **Compliance with the National Railway Safety Regulator Act, 16 of 2002:**

15 REFERENCES

Please indicate below the company names and contact details of existing customers whom Transnet may contact to seek third party evaluations of your current service levels:

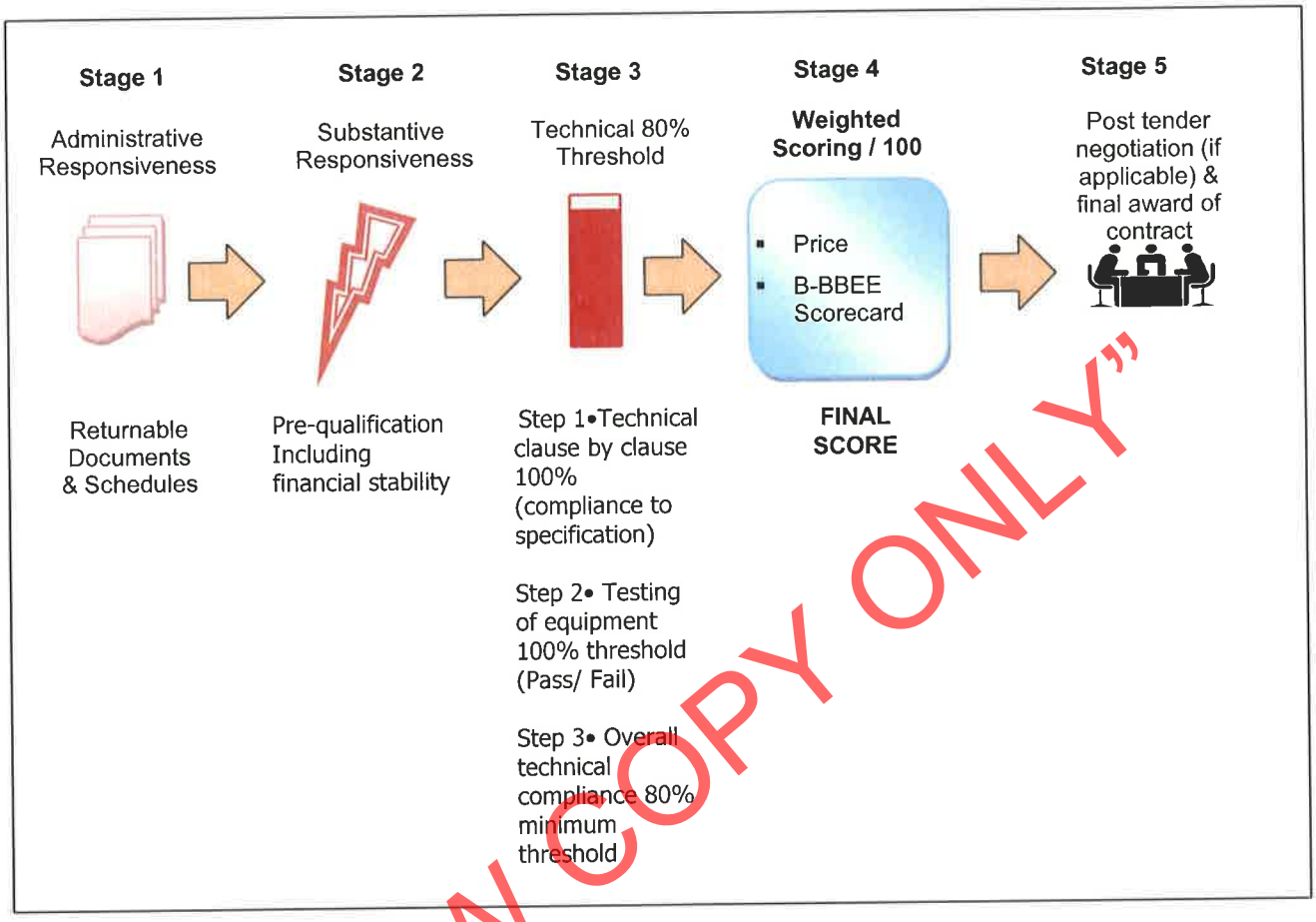
NAME OF COMPANY	CONTACT PERSON	TELEPHONE

16 FINANCIAL STABILITY

Respondents are required to submit their audited financial statements for the past 3 years with their Proposal in order to enable Transnet to establish financial stability.

17 PRE-QUALIFICATION AND EVALUATION METHODOLOGY AND CRITERIA

Transnet will utilise the following methodology and criteria in selecting a preferred Supplier, if so required:



17.1 STAGE ONE: Test for Administrative Responsiveness

The test for administrative responsiveness will include the following:

Administrative responsiveness check	RFP Reference
• Whether the Bid has been lodged on time	*Section 1 paragraph 3*
• Whether all Returnable Documents and/or schedules [where applicable] were completed and returned by the closing date and time	*Section 4*
• Verify the validity of all returnable documents	*Section 4, page 34 to 38*

The test for administrative responsiveness [Stage One] must be passed for a Respondent's Proposal to progress to Stage Two for further pre-qualification

17.2 **STAGE TWO: Test for Substantive Responsiveness to RFP**

The test for substantive responsiveness to this RFP will include the following:

Pre-Qualification Criteria	RFP Reference
• Whether any pre-qualification criteria set by Transnet, have been met	*Section 1 paragraphs 2.2, 6, 10.3* *Section 4 – validity period* *Section 8, General Bid Conditions clause 19* *Sections 10, 11*
• Whether the Bid contains a priced offer	*Section 3*
• Whether the Bid materially complies with the scope and/or specification given	*All Sections*
• Entity's financial stability	*Section 2 paragraph 16*

17.3 **STAGE THREE: Overall Test Minimum Threshold of 80% for Technical Criteria**

The test for the Technical and Functional threshold will include the following:

Pre-Qualification Criteria	% Weightings	RFP Reference
STEP ONE		
• Compliance To Specification Clause by clause evaluation 100% compliance to mandatory requirements. Only bidders with 100% compliance will make to step 2	100	*Section 2, scope of requirements and Appendix (iii)*
STEP TWO		
• Testing Testing of the product according to the predefined procedure (pass or fail)	100	*Testing procedure, Appendix (v)*
STEP THREE		
• Risk and environmental Management	5	*Additional Technical requirements, Appendix (vi)*
• Safety	5	*Safety Questionnaire, Appendix (iv)*
• Repairs and Swop out of faulty modules	20	*Additional Technical requirements, Appendix (vi)*

• Technical Capacity /Resources	20	*Additional Technical requirements, Appendix (vi)*
• References / Proof of similar work	30	*Additional Technical requirements, Appendix (vi)*
• Delivery Schedule	20	*Additional Technical requirements, Appendix (vi)*
Total Weighting:	**100%**	
Minimum qualifying score required:	**80%**	

The minimum threshold of 80% for Stage Three pre-qualification criteria must be met or exceeded for a Respondent's Proposal to progress to Stage Four for final evaluation

17.4 STAGE FOUR: Evaluation and Final Weighted Scoring

a) **Price** [Weighted score *90%*]:

Evaluation Criteria	RFP Reference
Commercial offer (Price)	*Section 3*

b) **Broad-Based Black Economic Empowerment criteria**

- B-BBEE - current scorecard / B-BBEE Preference Points Claims Form *[Section14]*

- Preference points will be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-compliant contributor	0

17.5 SUMMARY: Pre-Qualification Threshold and Final Evaluated Weightings

Pre-Qualification Criteria	Minimum Threshold [%]
Overall Technical evaluation	80%

Evaluation Criteria	Final Weighted Scores
Price	90
B-BBEE - Scorecard	10
TOTAL SCORE:	**100**

Note: Transnet reserves the right to conduct post-tender negotiations with the preferred Respondent(s)

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 3: PRICING AND DELIVERY SCHEDULE

			Quantity	Price
Network Management System	a	Primary server(s) hardware and software, installed and commissioned (Isando)	2	
	b	Backup server(s) hardware and software, installed and commissioned (Bayhead)	2	
	c	Client stations desktop PCs with operating system and client software installed and tested, 24" flat screen and dual monitor outputs (Parktown, Isando and Bayhead)	3	
	d	DCN routers with STM-1 and E1 WAN ports and 100 bT LAN ports, 48V	26	
Access multiplexers	a	Type A: Ports - 4 x STM-1 (optical, long haul), 8 x E1(e), 8 x 100bT, 8 x RS232, 8 x 4W E&M	800	
	b	Type B: Ports - 1 x STM-1 (optical, short haul), 2 x E1(e), 4 x 10/100bT, 4 x RS232, 4 x 2W Sub	800	
Microwave Radios	a	15 GHz (7 MHz channel): 4 x E1	300	
	b	15 GHz (7 MHz channel): 10 Mbit/s Ethernet	50	
	c	7 GHz (7 MHz channel): 4 x E1	200	
	d	7 GHz (7 MHz channel): 10 Mbit/s Ethernet	50	
	e	7 GHz (28 MHz channel): 16 x E1	150	
	f	7 GHz (29.6 MHz channel): STM-1	200	
	g	7 GHz (29.6 MHz channel): 100 Mbit/s Ethernet	50	
Microwave Radio dishes	a	15 GHz 600 mm	100	
	b	15 GHz 1200 mm	50	
	c	7/8 GHz 600 mm	100	
	d	7/8 GHz 1200 mm	100	
	e	7/8 GHz 1800 mm	50	
Installation of access multiplexer	a	Total price to install all of the above muxes anywhere in South Africa	1600	
	b	Transfer of services from old multiplexer to new	1600	

Installation of microwave radio and dish	a	Total price to install all of the above microwave radios, dishes, etc. anywhere in South Africa	1000	
Training	a	NMS administrator training - JHB	1	
	b	NMS network operator training - JHB	2	
	c	NMS network operator training - DBN	2	
	d	Access multiplexer technician training - various	6	
	e	Microwave radio technician training - various	6	
			Total	
OPERATIONAL ITEMS				
NMS Support Agreement		Annual rate	7	
Access multiplexer support		Annual rate	7	
Microwave radio support		Annual rate	7	
DCN Router Support		Annual rate	7	
			Total	
UNIT RATES				
Multiplexer interface cards	a	STM-1 card (electrical)		
	b	STM-1 card (optical) (LC)		
	c	Ethernet 100 bT (electrical) (RJ45)		
	d	Ethernet 100 bT (optical) (LC)		
	e	Ethernet 10 bT (electrical) (RJ45)		
	f	Ethernet 10 bT (optical) (LC)		
	g	E1 multiport (electrical) (RJ45)		
	h	E1 multiport (optical) (LC)		
	i	V.24 / RS232 multiport (electrical) (DB25)		
	j	4W E&M multiport (electrical) (RJ45)		
	k	2W subscriber multiport (electrical) (RJ45)		
	l	2W exchange multiport (electrical) (RJ45)		
SFP Modules	a	STM-1 Short haul 1550 nm (LC)		
	b	STM-1 Medium haul 1550 nm (LC)		
	c	STM-1 Long haul 1550 nm (LC)		

	d	10/100 Ethernet Short haul 1550 nm (LC)	
	e	10/100 Thernet Medium haul 1550 nm (LC)	
	f	10/100 Ethernet Long haul 1550 nm (LC)	
Installation of access mux	a	1 multiplexer per site	
	b	2 multiplexers per site	
Installation of a microwave radio, dish and all cabling	a	1 microwave radio per site	
	b	2 microwave radios per site	
	c	4 microwave radios per site	
	d	6 microwave radios per site	
Travel of technicians		Rate per km **(Travel of technician for over and above)**	
		Rate per hour	
		Rate per overnight accommodation	
Transport of equipment		Rate per km	
Additional licences per element			
Ruggedised Patchcords (dual fibre, 5m) (E2000 to LC)			
Cabinets (38U)			
Sub-components (list)			
IF cable (50m)			
RF cable (50m)			

Notes to Pricing:

3.1 All Prices must be quoted in South African Rand, exclusive of VAT

To facilitate like-for-like comparison bidders must submit pricing strictly in accordance with this pricing schedule and not utilise a different format. Deviation from this pricing schedule could result in a bid being declared non responsive.

3.1.1 Quantities given are estimates only. Any orders resulting from this RFP will be on an "as and when required" basis

3.1.2 Prices are to be quoted on a delivered basis.

3.1.3 Please note that should you have offered a discounted price(s), Transnet will only consider such price discount(s) in the final evaluation stage if offered on an unconditional basis.

3.1.4 Prices quoted must be held valid for a period of 90 days from closing date of this RFP

3.1.5 Where a Respondent's price(s) includes imported content, the rate of exchange to be used must be the currency's rate published by the South African Reserve Bank 7 [seven] calendar days prior to the closing date of this RFP:

Currency rate of exchange utilised: _____

3.1.6 Manufacturing and delivery lead time calculated from date of receipt of purchase order: _____ weeks

3.1.7 Respondents are to indicate whether prices quoted would be subject to adjustment after a period of 12 months, and if so which proposed adjustment formula would be utilised

Delivery / schedule

- Respondents are to indicate the lead times by completing the below table;

Delivery of Multiplexers after placement of order

Respondents to clearly stipulate lead times from placement order in table below	
Delivery of order > 16 weeks after placement	
Delivery of order within 16 weeks of placement	
Delivery of order within 12 weeks of placement	
Delivery of order within 8 weeks of placement	

Delivery of Microwave Radios after placement of order

Respondents to clearly stipulate lead times from placement order in table below	
Delivery of order > 16 weeks after placement	
Delivery of order within 16 weeks of placement	
Delivery of order within 12 weeks of placement	
Delivery of order within 8 weeks of placement	

Escalation

- Respondents must indicate, against each item in the pricing schedule, what the percentage local content is.
- ***The specifications call for the cost of licenses to be included in the price. The contract must include annual software support and maintenance / repairs to electronic cards must be provided over the 7 years of the contract***

Delivery and Penalties

- Delivery of the components of the network elements must take place to the contractor's assembly premises. There, they must be available to TFR for inspection.
- The equipment must be assembled as per order and tested prior to shipping to site.
- If the order forms part of the forecast programme, as per Table in Section 2, then delivery to site must take place within 8 weeks.

- If not part of the forecast, then delivery must take place within 12 weeks.
- Penalties of 1 % of the order material value per week late will be invoked.
- Commissioning must take place within 4 weeks of delivery to site.
- Penalties of 1 % of the installation value per week late will be invoked.

Product life cycle

- The contractor must indicate for how long the products offered have been in the market, and how long it will take before they are superceded. TFR will not accept Beta versions or end-of-life products.
- The contractor must provide full technical documentation and a network design philosophy with examples.

Warranty

- A warranty of a minimum of 1 year after successful acceptance testing is required.
- Warranties with regard to key components will be required for 24 months period.

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 4: PROPOSAL FORM

I/We_____

[name of entity, company, close corporation or partnership]

of *[full address]*

_____

_____

carrying on business trading/operating as _____

represented by_____

in my capacity as _____

being duly authorised thereto by a Resolution of the Board of Directors or Members or Certificate of Partners, as the case may be, dated _____ a certified copy of which is annexed hereto, hereby offer to supply the above-mentioned Goods at the prices quoted in the schedule of prices in accordance with the terms set forth in the accompanying letter(s) reference _____ _____ and dated _____ *[if any]* and the documents listed in the accompanying schedule of RFP documents.

I/We agree to be bound by those conditions in Transnet's:

(i) Terms and Conditions of Contract - Goods;

(ii) General Bid Conditions – Goods; and

(ii) any other standard or special conditions mentioned and/or embodied in this Request for Proposal.

I/We accept that unless Transnet should otherwise decide and so inform me/us in the letter of award/intent, this Proposal [and, if any, its covering letter and any subsequent exchange of correspondence], together with Transnet's acceptance thereof shall constitute a binding contract between Transnet and me/us.

Should Transnet decide that a formal contract should be signed and so inform me/us in a letter of intent [the **Letter of Intent**], this Proposal [and, if any, its covering letter and any subsequent exchange of correspondence] together with Transnet's Letter of Intent, shall constitute a binding contract between Transnet and me/us until the formal contract is signed.

I/We further agree that if, after I/we have been notified of the acceptance of my/our Proposal, I/we fail to enter into a formal contract if called upon to do so, or fail to commence the supply of Goods within 4 [four] weeks thereafter, Transnet may, without prejudice to any other legal remedy which it may have, recover from me/us any expense to which it may have been put in calling for Proposals afresh and/or having to accept any less favourable Proposal.

I/We accept that any contract resulting from this offer will be for a period of ..... only; and agree to a penalty clause to be negotiated with Transnet, which will allow Transnet to invoke a penalty against us should the delivery of the Goods be delayed due to non-performance by ourselves.

ADDRESS FOR NOTICES

The law of the Republic of South Africa shall govern any contract created by the acceptance of this RFP. The *domicilium citandi et executandi* shall be a place in the Republic of South Africa to be specified by the Respondent hereunder, at which all legal documents may be served on the Respondent who shall agree to submit to the jurisdiction of the courts of the Republic of South Africa. Foreign Respondents shall, therefore, state hereunder the name of their authorised representative in the Republic of South Africa who has the power of attorney to sign any contract which may have to be entered into in the event of their Proposal being accepted and to act on their behalf in all matters relating to such contract.

Respondent to indicate the details of its *domicilium citandi et executandi* hereunder:

Name of Entity: _____

Facsimile: _____

Address: _____

_____

_____

NOTIFICATION OF AWARD OF RFP

As soon as possible after approval to award the contract(s), the successful Respondent [**the Supplier**] will be informed of the acceptance of its Proposal. Unsuccessful Respondents will be advised in writing of the name of the successful Supplier and the reason as to why their Proposals have been unsuccessful, for example, in the category of price, delivery period, quality, B-BBEE status or for any other reason.

VALIDITY PERIOD

Transnet requires a validity period of 90 [ninety] days [from closing date] against this RFP.

NAME(S) AND ADDRESS / ADDRESSES OF DIRECTOR(S) OR MEMBER(S)

The Respondent must disclose hereunder the full name(s) and address(s) of the director(s) or members of the company or close corporation [**C.C.**] on whose behalf the RFP is submitted.

(i) Registration number of company / C.C. _____

(ii) Registered name of company / C.C. _____

(iii) Full name(s) of director/member(s) Address/Addresses ID Number(s)

_____

_____

_____

_____

_____

CONFIDENTIALITY

All information related to this RFP is to be treated with strict confidence. In this regard Respondents are required to complete and return a signed copy of the Non-Disclosure Agreement appended hereto as ***Section 17***. All information related to a subsequent contract, both during and after completion thereof, will be treated with strict confidence. Should the need however arise to divulge any information gleaned from provision of the Goods, which is

either directly or indirectly related to Transnet's business, written approval to divulge such information must be obtained from Transnet.

DISCLOSURE OF PRICES TENDERED

Respondents must indicate below whether Transnet may disclose their tendered prices and conditions to other Respondents:

YES		NO	

PRICE REVIEW

The successful Respondent(s) [the Supplier] will be obliged to submit to an annual price review. Transnet will be benchmarking this price offering(s) against the lowest price received as per a benchmarking exercise. If the Supplier's price(s) is/are found to be higher than the benchmarked price(s), then the Supplier shall match or better such price(s) within 30 [thirty] days, failing which the contract may be terminated at Transnet's discretion or the particular item(s) or service(s) purchased outside the contract.

RETURNABLE DOCUMENTS

All Sections, as indicated in the footer of each page, must be signed, stamped and dated by the Respondent. **Returnable Documents** means all the documents, Sections and Annexures, as listed in the tables below.

a) Respondents are required to submit with their Proposals the **mandatory Returnable Documents**, as detailed below.

Failure to provide all mandatory Returnable Documents at the closing date and time of this tender will result in a Respondent's disqualification. Bidders are therefore urged to ensure that all these Documents are returned with their Proposals.

Please confirm submission of these mandatory Returnable Documents by so indicating [Yes or No] in the table below:

Returnable Documents	Submitted [Yes/No]
SECTION 2 : Background, Overview and Scope of Requirements	
Audited Financial Statements for previous 3 years [Large Enterprises and QSEs]	
SECTION 3 : Pricing and Delivery Schedule	
SECTION 5 : Original valid Tax Clearance Certificate [Consortia / Joint Ventures / Sub-contractors must submit a separate Tax Clearance Certificate for each party]	
APPENDIX (iii) : Technical Clause by Clause compliance statements	
APPENDIX (iv) : Safety Questionnaire Sheet	
APPENDIX (vi) : Additional Technical Requirements	

b) In addition to the requirements of section (a) above, Respondents are further required to submit with their Proposals the following **essential Returnable Documents** as detailed below.

Failure to provide all essential Returnable Documents may result in a Respondent's disqualification at Transnet's sole discretion. Bidders are therefore urged to ensure that all these documents are returned with their Proposals.

All Sections, as indicated in the footer of each page, must be signed, stamped and dated by the Respondent. Please confirm submission of these essential Returnable Documents by so indicating [Yes or No] in the table below:

ESSENTIAL RETURNABLE DOCUMENTS & SCHEDULES	SUBMITTED [Yes or No]
SECTION 1 : Notice to Bidders	
Receipt for payment of RFP documents [paragraph 1]	
SECTION 4 : Proposal Form	
SECTION 5 : Vendor Application Form	
- Original cancelled cheque or bank verification of banking details	
- Certified copies of IDs of shareholder/directors/members [as applicable]	
- Certified copy of Certificate of Incorporation [CM29/CM9 name change]	
- Certified copy of share certificates [CK1/CK2 if CC]	
- Entity's letterhead	
- Certified copy of valid VAT Registration Certificate	
- Valid B-BBEE Verification Certificate [Large Enterprises and QSEs] Note: failure to provide a valid B-BBEE Verification Certificate at the closing date and time of the tender will result in an automatic score of zero being allocated for B-BBEE scorecard	
- Valid B-BBEE certificate from auditor, accounting officer or SANAS accredited Verification Agency [EMEs] Note: failure to provide a valid B-BBEE Verification Certificate at the closing date and time of the tender will result in an automatic score of zero being allocated for B-BBEE scorecard	
- In the case of Joint Ventures, a copy of the Joint Venture Agreement or written confirmation of the intention to enter into a Joint Venture Agreement	
- Certified copy of valid VAT Registration Certificate	
SECTION 6 : Signing Power - Resolution of Board of Directors	
SECTION 7 : Certificate of Acquaintance with RFP Documents	
SECTION 8 : Certificate of Acquaintance with General Bid Conditions – Goods	
SECTION 9 : Certificate of Acquaintance with Terms and Conditions of Contract	
SECTION 10 : RFP Declaration Form	
SECTION 11 : Breach of Law Form	
SECTION 13 : Supplier Code of Conduct	
SECTION 14 : B-BBEE Preference Points Claim Form	
SECTION 15 : Certificate of attendance of compulsory RFP Briefing	

SECTION 16 : Certificate of Acquaintance with Specifications and Drawings	
SECTION 17 : Certificate of Acquaintance with Equipment Testing Procedure	
SECTION 18 : Non-Disclosure Agreement	

CONTINUED VALIDITY OF RETURNABLE DOCUMENTS

The successful Respondent will be required to ensure the validity of all returnable documents, including but not limited to its Tax Clearance Certificate and valid B-BBEE Verification Certificate, for the duration of any contract emanating from this RFP. Should the Respondent be awarded the contract [**the Agreement**] and fail to present Transnet with such renewals as and when they become due, Transnet shall be entitled, in addition to any other rights and remedies that it may have in terms of the eventual Agreement, to terminate such Agreement forthwith without any liability and without prejudice to any claims which Transnet may have for damages against the Respondent.

By signing these RFP documents, the Respondent is deemed to acknowledge that he/she has made himself/herself thoroughly familiar with all the conditions governing this RFP, including those contained in any printed form stated to form part hereof, and Transnet SOC Ltd will recognise no claim for relief based on an allegation that the Respondent overlooked any such condition or failed properly to take it into account for the purpose of calculating tendered prices or otherwise.

SIGNED at _____ on this _____ day of _____ 2013

SIGNATURE OF WITNESSES ADDRESS OF WITNESSES

1 _____

Name _____ _____

2 _____

Name _____ _____

SIGNATURE OF RESPONDENT'S AUTHORISED REPRESENTATIVE:

_____

NAME: _____

DESIGNATION: _____

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 5: VENDOR APPLICATION FORM

Respondents are to furnish the following documentation and complete the Vendor Application Form below:

1. **Original** cancelled cheque **OR** letter from the Respondent's bank verifying banking details [**with bank stamp]**
2. **Certified copy** of Identity Document(s) of Shareholders/Directors/Members *[where applicable]*
3. **Certified copy** of Certificate of Incorporation, CM29 / CM9 *[name change]*
4. **Certified copy** of Share Certificates [CK1/CK2 if CC]
5. **Original** letterhead confirm physical and postal addresses
6. **Original** valid SARS Tax Clearance Certificate [RSA entities only]
7. **Certified copy** of VAT Registration Certificate [RSA entities only]
8. A signed letter from your entity's auditor or accountant confirming most recent annual turnover figures
9. **Certified copy** of valid Company Registration Certificate *[if applicable]*

Note: ***No contract shall be awarded to any South African Respondent whose tax matters have not been declared by SARS to be in order.***

Vendor Application Form

Entity's trading name						
Entity's registered name						
Entity's Registration Number or ID Number if a Sole Proprietor						
Form of entity [√]	CC	Trust	Pty Ltd	Limited	Partnership	Sole Proprietor
How many years has your entity been in business?						
VAT number [if registered]						
Entity's telephone number						
Entity's fax number						
Entity's email address						
Entity's website address						
Bank name		Branch & Branch code				
Account holder		Bank account number				
Postal address		Code				
Physical address		Code				
Contact person						
Designation						
Telephone						
Email						
Annual turnover range [last financial year]	< R5 m		R5 - 35 m		> R35 m	
Does your entity provide	Products		Services		Both	
Area of delivery	National		Provincial		Local	
Is your entity a public or private entity			Public		Private	
Does your entity have a Tax Directive or IRP30 Certificate			Yes		No	
Main product or services [e.g. Stationery/Consulting]						

Complete B-BBEE Ownership Details:

% Black ownership		% Black women ownership		% Disabled Black ownership	
Does your entity have a B-BBEE certificate	Yes			No	
What is your B-BBEE status [Level 1 to 9 / Unknown]					
How many personnel does the entity employ	Permanent			Part time	

Respondent's Signature

Date & Company Stamp

If you are an existing Vendor with Transnet please complete the following:

Transnet contact person	
Contact number	
Transnet Operating Division	

Duly authorised to sign for and on behalf of Entity / Organisation:

Name		Designation	
Signature		Date	

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 6: SIGNING POWER – RESOLUTION OF BOARD OF DIRECTORS

NAME OF ENTITY: _____

It was resolved at a meeting of the Board of Directors held on _____ that

FULL NAME(S)	CAPACITY	SIGNATURE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

in his/her capacity as indicated above is/are hereby authorised to enter into, sign, execute and complete any documents relating to this Proposal and any subsequent Agreement for the supply of Goods.

FULL NAME _____ _____
SIGNATURE CHAIRMAN

FULL NAME _____ _____
SIGNATURE SECRETARY

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 7: CERTIFICATE OF ACQUAINTANCE WITH RFP DOCUMENTS

NAME OF ENTITY: _____

1. I/we _____

do hereby certify that i/we acquainted myself/ourselves with all the documentation comprising this RFP and all conditions contained therein, as laid down by Transnet SOC Ltd for the carrying out of the proposed supply/service/works for which I/we submitted my/our Proposal.

2. I/we furthermore agree that Transnet SOC Ltd shall recognise no claim from me/us for relief based on an allegation that I/we overlooked any RFP/contract condition or failed to take it into account for the purpose of calculating my/our offered prices or otherwise.

3. I/we understand that the accompanying Bid will be disqualified if this Certificate is found not to be true and complete in every respect.

4. For the purposes of this Certificate and the accompanying Bid, I/we understand that the word "competitor" shall include any individual or organisation, other than the Bidder, whether or not affiliated with the Bidder, who:
   a) has been requested to submit a Bid in response to this Bid invitation;
   b) could potentially submit a Bid in response to this Bid invitation, based on their qualifications, abilities or experience; and
   c) provides the same Goods and Services as the Bidder and/or is in the same line of business as the Bidder

5. The Bidder has arrived at the accompanying Bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium will not be construed as collusive bidding.

6. In particular, without limiting the generality of paragraph 5 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   a) prices;
   b) geographical area where Goods or Services will be rendered [market allocation]
   c) methods, factors or formulas used to calculate prices;
   d) the intention or decision to submit or not to submit, a Bid;
   e) the submission of a Bid which does not meet the specifications and conditions of the RFP; or

f) bidding with the intention not winning the Bid.

7. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the Goods or Services to which this RFP relates.

8. The terms of the accompanying Bid have not been, and will not be, disclosed by the Bidder, directly or indirectly, to any competitor, prior to the date and time of the official Bid opening or of the awarding of the contract.

9. I/We am/are aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, Bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and/or may be reported to the National Prosecuting Authority [**NPA**] for criminal investigation and/or may be restricted from conducting business with the public sector for a period not exceeding 10 [ten] years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

SIGNED at _____ on this _____ day of _____ 2013

_____ _____

SIGNATURE OF WITNESS SIGNATURE OF RESPONDENT

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 8: CERTIFICATE OF ACQUAINTANCE WITH THE GENERAL BID CONDITIONS - GOODS

[appended hereto as Appendix (i)]

NAME OF ENTITY:

_____

I/We _____ do hereby certify that I/we acquainted myself/ourselves with all the documentation comprising the General Bid Conditions - Goods as received on _____ *[insert date]* from Transnet SOC Ltd for the carrying out of the proposed supply for which I/we submitted my/our Proposal.

I/We furthermore agree that Transnet SOC Ltd shall recognise no claim from me/us for relief based on an allegation that I/we overlooked any terms and conditions of the General Bid Conditions or failed to take it into account for the purpose of calculating my/our offered prices or otherwise.

I/We confirm having been advised that a signed copy of this Schedule can be submitted in lieu of the entire General Bid Conditions as confirmation in terms of the Returnable Schedule.

SIGNED at _____ on this _____ day of _____ 2013

_____ _____

SIGNATURE OF WITNESS SIGNATURE OF RESPONDENT

TRANSNET

Appendix (i)

GENERAL BID CONDITIONS - GOODS

[February 2013]

TABLE OF CONTENTS

1 DEFINITIONS

Where the following words or phrases are used in this Agreement, such words or phrases shall have the meaning assigned thereto in this clause, except where the context clearly requires otherwise:

1.1 **Bid** or **Bid Document(s)** shall mean a reference to a Request for Proposal or Request for Quotation;

1.2 **Goods** shall mean the goods required by Transnet as specified in its Bid Document;

1.3 **Respondent(s)** shall mean a respondent/bidder to a Transnet Bid;

1.4 **RFP** shall mean Request for Proposal;

1.5 **RFQ** shall mean Request for Quotation;

1.6 **RFX** shall mean RFP and/or RFQ, as the case may be;

1.7 **Supplier** shall mean the successful Respondent;

1.8 **Tax Invoice** shall mean the document as required by Section 20 of the Value-Added Tax Act, 89 of 1991, as may be amended from time to time;

1.9 **Transnet** shall mean Transnet SOC Ltd, a State Owned Company; and

1.10 **VAT** shall mean Value-Added Tax chargeable in terms of the Value-Added Tax Act, 89 of 1991, as may be amended from time to time.

1.11 **Day** shall mean any day other than a Saturday, Sunday or public holiday

2 GENERAL

All Bid Documents and subsequent contracts and orders shall be subject to the following general conditions as laid down by Transnet and are to be strictly adhered to by any Respondent to this RFX.

3 SUBMITTING OF BID DOCUMENTS

3.1 A Bid, which shall hereinafter include reference to an RFP or RFQ, shall be submitted to Transnet no later than the closing date and time specified in accordance with the directions issued in the Bid Documents. Late Bids will not be considered.

3.2 Bids shall be delivered in a sealed envelope in accordance with the instructions indicated in the Bid Documents with the Bid number and subject marked on the front of the envelope.

3.3 The Respondent's return address must be stated on the reverse side of the sealed envelope.

4 USE OF BID FORMS

4.1 Where special forms and/or formats are issued by Transnet for the submission of Bids, Respondents are required to submit their Bids by completion of the appropriate sections on such official forms and/or formats and not in other forms and/or formats or documents bearing their own terms and conditions of contract. Non-compliance with this condition may result in the rejection of a Bid.

4.2 Respondents must note that the original Bid forms and/or formats must be completed for submission and not a reprocessed copy or other format thereof.

4.3 Only if insufficient space has been allocated to a particular response may a Respondent submit additional information under separate cover using the Company's letterhead. This must be duly cross-referenced in the RFX.

5 BID FEES

5.1 A non-refundable fee may be charged for Bid Documents, depending on the administrative cost of preparing and issuing the Bid Document.

5.2 Where necessary, only Respondents that have paid the Bid fee and provided proof of payment when submitting their proposal will be considered.

6 VALIDITY PERIOD

6.1 The Respondents must hold their Bid valid for acceptance by Transnet at any time within the requested validity period after the closing date of the bid.

6.2 Respondents may be requested to extend their validity period for a specified additional period. In such instances, Respondents will not be allowed to change any aspect of their Bid, unless they are able to demonstrate that the proposed change/s is as a direct and unavoidable consequence of Transnet's extension of the validity period.

7 SITE VISITS / BRIEFING SESSIONS

Respondents may be requested to attend a site visit or briefing session where it is necessary to view the site in order to prepare their Bids, or where Transnet deems it necessary to provide Respondents with further information to allow them to complete their Bids properly. Where such visits or sessions are indicated as compulsory in the RFX Document, Respondents are obliged to attend these meetings as failure to do so will result in their disqualification.

8 CLARIFICATION BEFORE THE CLOSING DATE

Should clarification be required on any aspect of the Bid before the closing date, the Respondent must direct such queries to the contact person listed in the RFX Document in the stipulated manner.

9 COMMUNICATION AFTER THE CLOSING DATE

After the closing date of a Bid (i.e. during the evaluation period) the Respondent may only communicate with the Chairperson or the Secretary of the relevant Acquisition Council.

10 UNAUTHORISED COMMUNICATION ABOUT BIDS

After Bids are submitted, Respondents may at any time communicate with the Secretary on any matter relating to its Bid but, in the absence of written authority from the Secretary, no communication on a question affecting the subject of a Bid shall take place between Respondents or other potential suppliers or any member of the Acquisition Council or official of Transnet during the period between the closing date for the receipt of the Bid and the date of the notification of the successful Respondent(s). A Bid, in respect of which any such unauthorised communication has occurred, may be disqualified.

11 RETURNABLE DOCUMENTS

All returnable documents listed in the RFX Documents must be submitted with Respondent's Bid. Failure to submit mandatory returnable schedules / documents will result in disqualification. Failure to submit other schedules / documents may result in disqualification.

12 DEFAULTS BY RESPONDENTS

12.1 If the Respondent, after it has been notified of the acceptance of its Bid fails to:

a) enter into a formal contract when called upon to do so within such period as Transnet may specify; or

b) accept an order in terms of the Bid;

c) when called upon to do so, furnish satisfactory security for the fulfilment of the contract; or

d) comply with any condition imposed by Transnet.

Transnet may, in any such case, without prejudice to any other legal remedy which it may have, proceed to accept any other Bid or, if it is necessary to do so, call for Bids afresh, and may recover from the defaulting Respondent any additional expense incurred by it in calling for new offers or in accepting a higher offer.

12.2 If any Respondent, who has submitted a Bid and/or concluded a contract with Transnet [hereinafter referred to as **the Supplier**], or in the capacity of agent or subcontractor who has been associated with such Bid or contract:

a) has withdrawn such Bid after the advertised date and hour for the receipt of Bids; or

b) has, after having been notified of the acceptance of its Bid, failed or refused to sign a contract when called upon to do so in terms of any condition forming part of the Bid Documents; or

c) has carried out any contract resulting from such Bid in an unsatisfactory manner or has breached any condition of such contract; or

d) has offered, promised or given a bribe in relation to the obtaining or the execution of such contract; or

e) has acted in a fraudulent or improper manner or in bad faith towards Transnet or any government department or towards any public body, company or person; or

f) has made any misleading or incorrect statement either:

(i) in the affidavit or certificate referred to in clause 18 [Notice to Unsuccessful Respondents]; or

(ii) in any other document submitted as part of its bid submission

and is unable to prove to the satisfaction of Transnet that:

- it made the statement in good faith, honestly believing it to be correct; and
- before making such statement, it took all reasonable steps to satisfy itself of its correctness.

g) caused Transnet damage, or to incur costs in order to meet the Supplier's requirements which could not be recovered from the Supplier;

h) has litigated against Transnet in bad faith;

i) has been found guilty by a court of law, tribunal or other administrative body of a serious breach of any law, during the preceding 5 [five] years;

j) has been included as a company or person prohibited from doing business with the public sector on National Treasury's database of Restricted Suppliers or Register of Bid Defaulters;

then a Bid from any such Respondent shall be disqualified and the person, enterprise or company [including any directors] shall, subject to clause 12.3 below, be disqualified from bidding for any Transnet business through its "blacklisting" process.

12.3 Any person or enterprise or company against whom a decision to blacklist has been taken, may make representations to the person with delegated authority within Transnet SOC Ltd Group, whose decision shall be final.

12.4 Any disqualification [**Blacklisting**] imposed upon any person or enterprise or company, may also apply to any other enterprise under the same or different names of disqualified persons or enterprise or company [or associates thereof] and may also be applied to any agent or employee of the person or enterprise or company concerned.

13 CURRENCY

All monetary amounts referred to in a Bid response must be in Rand, the currency of the Republic of South Africa [**ZAR**], save to the extent specifically permitted in the RFP.

14 PRICES SUBJECT TO CONFIRMATION

14.1 Prices which are quoted subject to confirmation will not be considered.

14.2 Firm prices quoted for the duration of any resulting order and/or contract will receive precedence over prices which are subject to fluctuation if this is in Transnet's best interests.

15 ALTERATIONS MADE BY THE RESPONDENT TO BID PRICES

All alterations made by the Respondent to its Bid price(s) prior to the submission of its Bid Documents must be done by deleting the incorrect figures and words where required and by inserting the correct figures and words against the items concerned. All such alterations must be initialled by the person who signs the Bid Documents. Failure to observe this requirement may result in the particular item(s) concerned being excluded in the matter of the award of the business.

16 EXCHANGE AND REMITTANCE

16.1 The Respondent should note that where the whole or a portion of the contract or order value is to be remitted overseas, Transnet shall, if requested to do so by the Supplier, effect payment overseas directly to the foreign principal or manufacturer of such percentage of the contract or order value as may be stipulated by the Respondent in its Bid Documents.

16.2 It is Transnet's preference to enter into Rand-based agreements. Transnet would request, therefore, that the Respondent give favourable consideration to obtaining forward exchange cover on the foreign currency portion of the Agreement at a cost that is acceptable to Transnet to protect itself against any currency rate fluctuation risks for the duration of any resulting contract or order.

16.3 The Respondent who desires to avail itself of the aforementioned facility must at the time of bidding furnish the information called for in the *Exchange and Remittance* section of the Bid Documents and also furnish full details of the principals or manufacturer to whom payment is to be made.

16.4 The South African Reserve Bank's approval is required before any foreign currency payments can be made to or on behalf of Respondents.

16.5 Transnet will not recognise any claim for adjustment of the order and/or contract price if the increase in price arises after the date on which the Goods were to be delivered, as set out in the order and/or contract, or any subsequent agreement between the parties.

16.6 Transnet reserves the right to request a pro-forma invoice/tax invoice in order to ensure compliance with the contract and Value-Added Tax Act no. 89 of 1991 [**VAT Act**].

17 ACCEPTANCE OF BID

17.1 Transnet does not bind itself to accept the lowest priced or any Bid.

17.2 Transnet reserves the right to accept any Bid in whole or in part.

17.3 Upon the acceptance of a Bid by Transnet, the parties shall be bound by these General Bid Conditions and any contractual terms and/or any schedule of "Special Conditions" or otherwise which form part of the Bid Documents.

17.4 Where the Respondent has been informed by Transnet of the acceptance of its Bid, the acknowledgement of receipt transmitted shall be regarded as proof of delivery to the Respondent.

18 NOTICE TO UNSUCCESSFUL RESPONDENTS

Unsuccessful Respondents shall be advised in writing that their Bids have not been accepted as soon as possible after the closing date of the Bid. On award of business to the successful Respondent all unsuccessful Respondents must be informed of the name of the successful Respondent and of the reason as to why their Bids had been unsuccessful.

19 TERMS AND CONDITIONS OF CONTRACT

19.1 The Supplier shall adhere to the Terms and Conditions of Contract issued with the Bid Documents, together with any schedule of "Special Conditions" or otherwise which form part of the Bid Documents.

19.2 Should the Respondent find any conditions unacceptable, it should indicate which conditions are unacceptable and offer amendments/ alternatives by written submission on a company letterhead. Any such submission shall be subject to review by Transnet's Legal Counsel who shall determine whether the proposed amendments /alternative(s) are acceptable or otherwise, as the case may be.

20 CONTRACT DOCUMENTS

20.1 The contract documents will comprise these General Bid Conditions, the Terms and Conditions of Contract and any schedule of "Special Conditions" which form part of the Bid Documents.

20.2 The abovementioned documents together with the Respondent's Bid response will constitute the contract between the parties upon receipt by the Respondent of Transnet's letter of acceptance / intent, subject to all additional amendments and/or special conditions thereto as agreed to by the parties.

20.3 Should Transnet inform the Respondent that a formal contract will be signed, the abovementioned documents together with the Respondent's Bid response [and, if any, its covering letter and any subsequent exchange of correspondence] as well as Transnet's Letter of Intent, shall constitute a binding contract until the final contract is signed.

21 LAW GOVERNING CONTRACT

The law of the Republic of South Africa shall govern the contract created by the acceptance of a Bid. The *domicilium citandi et executandi* shall be a place in the Republic of South Africa to be specified by the Respondent in its Bid at which all legal documents may be served on the Respondent who shall agree to submit to the jurisdiction of the courts of the Republic of South Africa. A foreign Respondent shall, therefore, state in its Bid the name of its authorised representative in the Republic of South Africa who is empowered to sign any contract which may be entered into in the event of its Bid being accepted and to act on its behalf in all matters relating to the contract.

22 IDENTIFICATION

If the Respondent is a company, the full names of the directors shall be stated in the Bid. If the Respondent is a close corporation, the full names of the members shall be stated in the Bid. If the Respondent is a partnership or an individual trading under a trade name, the full names of the partners or of such individual, as the case may be, shall be furnished.

23 RESPONDENT'S SAMPLES

23.1 If samples are required from Respondents, such samples shall be suitably marked with the Respondent's name and address, the Bid number and the Bid item number and must be despatched in time to reach the addressee as stipulated in the Bid Documents on or before the closing date of the Bid. Failure to submit samples by the due date may result in the rejection of a Bid.

23.2 Transnet reserves the right to retain samples furnished by Respondents in compliance with Bid conditions.

23.3 Payment will not be made for a successful Respondent's samples that may be retained by Transnet for the purpose of checking the quality and workmanship of Goods delivered in execution of a contract.

23.4 If Transnet does not wish to retain unsuccessful Respondents' samples and the Respondents require their return, such samples may be collected by the Respondents at their own risk and cost.

24 SECURITIES

24.1 The successful Respondent, when called upon to do so, shall provide security to the satisfaction of Transnet for the due fulfilment of a contract or order. Such security shall be in the form of a Deed of Suretyship [**Deed of Suretyship**] furnished by an approved bank, building society, insurance or guarantee corporation carrying on business in South Africa.

24.2 The security may be applied in whole or part at the discretion of Transnet to make good any loss or damage which Transnet may incur in consequence of a breach of the contract or any part thereof.

24.3 Such security, if required, shall be an amount which will be stipulated in the Bid Documents.

24.4 For the purpose of clause 24.1 above, Transnet will supply a Deed of Suretyship form to the successful Respondent for completion and no guarantee in any other form will be accepted. A copy of such form will be supplied to Respondents on request. For this purpose a Deed of Suretyship form will be provided which shall be completed and returned to Transnet or a designated official by the successful Respondent within 30 [thirty] days from the date of the letter of acceptance. No payment will be made until the form, duly completed, is delivered to Transnet. Failure to return the Deed of

Suretyship within the prescribed time shall, save where prior extension has been granted, entitle Transnet without notice to the Supplier to cancel the contract with immediate effect.

24.5 Additional costs incurred by Transnet necessitated by reason of default on the part of the Supplier in relation to the conditions of this clause 24 will be for the account of the Supplier.

25 PRICE AND DELIVERY BASIS FOR GOODS

25.1 Unless otherwise specified in the Bid Documents, the prices quoted for Goods must be on a Delivered Duty Paid [ICC Incoterms 2010] price basis in accordance with the terms and at the delivery point or points specified in Transnet's Bid Documents. Bids for supply on any other basis of delivery are liable to disqualification. The lead time for delivery stated by the Respondent must be inclusive of all non-working days or holidays, and of periods occupied in stocktaking or in effecting repairs to or overhauling plant, which would ordinarily occur within the delivery period given by the Respondent.

25.2 Respondents must furnish their Bid prices in the Price Schedule of the Bid Documents on the following basis:

a) Local Supplies - Prices for Goods to be manufactured, produced or assembled in the Republic of South Africa, or imported supplies held in South Africa, to be quoted on a Delivered RSA named destination basis.

b) Imported Supplies - Prices for Goods to be imported from all sources to be quoted on a Delivered Duty Paid [ICC Incoterms 2010] basis, to end destination in South Africa, unless otherwise specified in the Bid Price Schedule.

26 EXPORT LICENCE

The award of a Bid for Goods to be imported may be subject to the issue of an export licence in the country of origin or supply. If required, the Supplier's manufacturer or forwarding agent shall be required to apply for such licence.

27 QUALITY OF MATERIAL

Unless otherwise stipulated, the Goods offered shall be NEW i.e. in unused condition, neither second-hand nor reconditioned.

28 DELETION OF ITEMS EXCLUDED FROM BID

The Respondent must delete items for which it has not tendered or for which the price has been included elsewhere in its Bid.

29 VALUE-ADDED TAX

In respect of local supplies, i.e. Goods to be manufactured, produced or assembled in the Republic of South Africa, or imported supplies held or already in transit to South Africa, the prices quoted by the Respondent are to be exclusive of VAT which must be shown separately at the standard rate on the Tax Invoice.

30 IMPORTANT NOTICE TO RESPONDENTS REGARDING PAYMENT

30.1 **Method of Payment**

a) The attention of the Respondent is directed to the Terms and Conditions of Contract which set out the conditions of payment on which Bid price(s) shall be based.

b) However, in addition to the aforegoing the Respondent is invited to submit offers based on alternative methods of payment and/or financing proposals.

c) The Respondent is required to give full particulars of the terms that will be applicable to its alternative offer(s) and the financial merits thereof will be evaluated and taken into consideration when the Bid is adjudicated.

d) The Respondent must, therefore, in the first instance, tender strictly in accordance with clause 30.1a) above. Failure to comply with clause 30.1a) above may preclude a Bid from further consideration.

NOTE: The successful Respondent [the **Supplier**] shall, where applicable, be required to furnish a guarantee covering any advance payments.

30.2 **Conditional Discount**

Respondents offering prices which are subject to a conditional discount applicable for payment within a specific period are to note that the conditional period will be calculated as from the date of receipt by Transnet of the Supplier's month-end statement reflecting the relevant Tax Invoice(s) for payment purposes, provided the conditions of the order or contract have been fulfilled and the Tax Invoice is correct in all respects as referred to in the contract or order. Incomplete and/or incorrect Tax Invoices shall be returned and the conditional period will be recalculated from the date of receipt of the correct documentation.

31 CONTRACT QUANTITIES AND DELIVERY REQUIREMENTS

31.1 **Contract Quantities**

a) It must be clearly understood that although Transnet does not bind itself to purchase a definitive quantity under any contract which may be entered into pursuant to this Bid, the successful Respondent nevertheless undertakes to supply against the contract such quantities as may be ordered against the contract, which orders are posted or delivered by hand or transmitted electronically on or before the expiry date of such contract.

b) It is furthermore a condition that Transnet will not accept liability for any material/stocks specially ordered or carried by the Respondent with a view to meeting the requirements under any such contract.

c) The estimated planned quantities likely to be ordered by Transnet per annum are furnished in relevant section of the Bid Documents. For avoidance of doubt the estimated quantities are estimates and Transnet reserves the right to order only those quantities sufficient for its operational requirements.

31.2 **Delivery Period**

a) **Period Contracts and Fixed Quantity Requirements**

It will be a condition of any resulting contract/order that the delivery period embodied therein will be governed by the provisions of the Terms and Conditions of Contract.

b) **Progress Reports**

The Supplier may be required to submit periodical progress reports with regard to the delivery of the Goods.

c) **Emergency Demands as and when required**

If, due to unforeseen circumstances, supplies of the Goods covered by the Bid are required at short notice for immediate delivery, the Supplier will be given first right of refusal for such business. If it is unable to meet the desired critical delivery period, Transnet reserves the right to purchase such supplies as may be required to meet the emergency outside the contract if immediate delivery can be offered from any other source. The *Total or Partial Failure to Perform the Scope of Supply* section in the Terms and Conditions of Contract will not be applicable in these circumstances.

32 PLANS, DRAWINGS, DIAGRAMS, SPECIFICATIONS AND DOCUMENTS

32.1 Copyright

Copyright in plans, drawings, diagrams, specifications and documents compiled by the Supplier for the purpose of contract work shall be governed by the *Intellectual Property Rights* section in the Terms and Conditions of Contract.

32.2 Drawings and specifications

In addition to what may be stated in any Bid Document, the Respondent should note that, unless notified to the contrary by Transnet or a designated official by means of an official amendment to the Bid Documents, it is required to tender for Goods strictly in accordance with the drawings and/or specifications supplied by Transnet, notwithstanding that it may be aware that alterations or amendments to such drawings or specifications are contemplated by Transnet.

32.3 Respondent's drawings

Drawings required to be submitted by the Respondent must be furnished before the closing time and date of the Bid. The non-receipt of such drawings by the appointed time may disqualify the Bid.

32.4 Foreign specifications

The Respondent quoting for Goods in accordance with foreign specifications, other than British and American standards, is to submit translated copies of such specifications with the Bid. In the event of any departures or variations between the foreign specification(s) quoted in the Bid Documents, full details regarding such departures or variations must be furnished by the Respondent in a covering letter attached to the Bid. Non-compliance with this condition may result in disqualification.

33 BIDS BY OR ON BEHALF OF FOREIGN RESPONDENTS

33.1 Bids submitted by foreign principals may be forwarded directly by the principals or by its South African representative or agent to the Secretary of the Acquisition Council or to a designated official of Transnet according to whichever officer is specified in the Bid Documents.

33.2 In the case of a representative or agent, written proof must be submitted to the effect that such representative or agent has been duly authorised to act in that capacity by the principal. Failure to submit such authorisation by the representative or agent shall disqualify the Bid.

33.3 When legally authorised to prepare and submit Bids on behalf of their principals not domiciled in the Republic of South Africa, representatives or agents must compile the Bids in the names of such principals and sign them on behalf of the latter.

33.4 South African representatives or agents of a successful foreign Respondent must when so required enter into a formal contract in the name of their principals and must sign such contract on behalf of

the latter. In every such case a legal Power of Attorney from their principals must be furnished to Transnet by the South African representative or agents authorising them to enter into and sign such contract.

a) Such Power of Attorney must comply with Rule 63 (Authentication of documents executed outside the Republic for use within the Republic) of the Uniform Rules of Court: Rules regulating the conduct of the proceedings of the several provincial and local divisions of the Supreme Court of South Africa.

b) The Power of Attorney must be signed by the principal under the same title as used in the Bid Documents.

c) If a Power of Attorney held by the South African representative or agent includes matters of a general nature besides provision for the entering into and signing of a contract with Transnet, a certified copy thereof should be furnished.

d) The Power of Attorney must authorise the South African representative or agent to choose the *domicilium citandi et executandi.*

33.5 If payment is to be made in South Africa, the foreign Supplier [i.e. the principal, or its South African agent or representative], must notify Transnet in writing whether, for payment by electronic funds transfer [**EFT**]:

a) funds are to be transferred to the credit of the foreign Supplier's account at a bank in South Africa, in which case the name and branch of such bank shall be furnished; or

b) funds are to be transferred to the credit of its South African agent or representative, in which case the name and branch of such bank shall be furnished.

33.6 The attention of the Respondent is directed to clause 24 above *[Securities]* regarding the provision of security for the fulfilment of contracts and orders and the manner and form in which such security is to be furnished.

34 CONFLICT WITH ISSUED RFX DOCUMENT

Should a conflict arise between these General Bid Conditions and the issued RFX document, the conditions stated in the RFX document shall prevail.

oooOOOooo

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 9: CERTIFICATE OF ACQUAINTANCE WITH THE TERMS AND CONDITIONS OF CONTRACT FOR THE SUPPLY OF GOODS TO TRANSNET

[appended hereto as Appendix (ii)]

NAME OF ENTITY:

_____

I/We

_____ do

hereby certify that I/we acquainted myself/ourselves with all the documentation comprising the Terms and Conditions of Contract as received on _____ *[insert date]* from Transnet SOC Ltd for the carrying out of the proposed supply for which I/we submitted my/our Proposal.

I/We furthermore agree that Transnet SOC Ltd shall recognise no claim from me/us for relief based on an allegation that I/we overlooked any Terms and Conditions of Contract or failed to take it into account for the purpose of calculating my/our offered prices or otherwise.

I/We confirm having been advised that a signed copy of this Schedule can be submitted in lieu of the entire Terms and Conditions of Contract as confirmation in terms of the Returnable Schedule.

SIGNED at _____ on this _____ day of _____ 2013

_____ _____

SIGNATURE OF WITNESS SIGNATURE OF RESPONDENT

Respondents should also note the obligations as set out in clause 19 *[Terms and Conditions of Contract]* of the General Bid Conditions *[Appendix (i)]* which reads as follows:

19.1 The Supplier shall adhere to the Terms and Conditions of Contract issued with the Bid Documents, together with any schedule of "Special Conditions" or otherwise which form part of the Bid Documents.

19.2 Should the Respondent find any conditions unacceptable, it should indicate which conditions are unacceptable and offer alternatives by written submission on its company letterhead. Any such submission shall be subject to review by Transnet's Legal Counsel who shall determine whether the proposed alternative(s) are acceptable or otherwise, as the case may be.

TRANSNET

Appendix (ii)

TERMS AND CONDITIONS OF CONTRACT
FOR THE SUPPLY OF GOODS TO TRANSNET
[February 2013]

TABLE OF CONTENTS

1 INTRODUCTION

When an Agreement is entered into between Transnet SOC Ltd [**Transnet]** and the appointed supplier of Goods to Transnet [**the Supplier]**, these Standard Terms and Conditions of Contract, the technical specifications for the Goods, a Schedule of Requirements including such special conditions as may be applicable, and any terms in the associated Bid Documents, exclusively govern the supply of Goods and provision of ancillary Services by the Supplier to Transnet

2 DEFINITIONS

Where the following words or phrases are used in the Agreement, such words or phrases shall have the meaning assigned thereto in this clause, except where the context clearly requires otherwise:

2.1 **AFSA** means the Arbitration Foundation of South Africa;

2.2 **Agreement** means the Agreement and its associated schedules and/or annexures and/or appendices, and/or schedules, including the Schedule of Requirements, the technical specifications for the Goods and such special conditions as shall apply to the Agreement, together with the General Tender Conditions and any additional provisions in the associated bid documents tendered by the Supplier [as agreed, in writing, between the Parties], which collectively and exclusively govern the supply of Goods and provision of ancillary Services by the Supplier to Transnet;

2.3 **Background Intellectual Property** means all Intellectual Property introduced and required by either Party to give effect to their obligations under the Agreement owned in whole or in part by or licensed to either Party or their affiliates prior to the Commencement Date or developed after the Commencement Date otherwise pursuant to the Agreement;

2.4 **Business Day(s)** means Mondays to Fridays between 07:30 and 16:00, excluding public holidays as proclaimed in South Africa;

2.5 **Commencement Date** means [●], notwithstanding the signature date of the Agreement;

2.6 **Confidential Information** means any information or other data, whether in written, oral, graphic or in any other form such as in documents, papers, memoranda, correspondence, notebooks, reports, drawings, diagrams, discs, articles, samples, test results, prototypes, designs, plans, formulae, patents, or inventor's certificates, which a Party discloses or provides to the other Party [intentionally or unintentionally, or as a result of one Party permitting the representative of the other Party to visit any of its premises], or which otherwise becomes known to a Party, and which is not in the public domain and includes, without limiting the generality of the term:

a) information relating to methods of operation, data and plans of the disclosing Party;

b) the contents of the Agreement;

c) private and personal details of employees or clients of the disclosing Party or any other person where an onus rests on the disclosing Party to maintain the confidentiality of such information;

d) any information disclosed by either Party and which is clearly marked as being confidential or secret;

e) information relating to the strategic objectives and planning of the disclosing Party relating to its existing and planned future business activities;

f) information relating to the past, present and future research and development of the disclosing Party;

g) information relating to the business activities, business relationships, products, services, customers, clients and Subcontractors of the disclosing Party where an onus rests on the disclosing Party to maintain the confidentiality of such information;

h) information contained in the software and associated material and documentation belonging to the disclosing Party;

i) technical and scientific information, Know-How and trade secrets of a disclosing Party including inventions, applications and processes;

j) Copyright works;

k) commercial, financial and marketing information;

l) data concerning architecture, demonstrations, tools and techniques, processes, machinery and equipment of the disclosing Party;

m) plans, designs, concepts, drawings, functional and technical requirements and specifications of the disclosing Party;

n) information concerning faults or defects in Goods, equipment, hardware or software or the incidence of such faults or defects; and

o) information concerning the charges, fees and/or costs of the disclosing Party or its authorised Subcontractors, or their methods, practices or service performance levels actually achieved;

2.7 **Copyright** means the right in expressions, procedures, methods of operations or mathematical concepts, computer program codes, compilations of data or other material, literary works, musical works, artistic works, sound recordings, broadcasts, program carrying signals, published editions, photographic works, or cinematographic works of the copyright owner to do or to authorise the doing of certain acts specified in respect of the different categories of works;

2.8 **Designs** mean registered Designs and/or Design applications and will include the monopoly right granted for the protection of an independently created industrial design including designs dictated essentially by technical or functional considerations as well as topographies of integrated circuits and integrated circuits;

2.9 **Expiry Date** means [●];

2.10 **Foreground Intellectual Property** means all Intellectual Property developed by either Party pursuant to the Agreement;

2.11 **Goods** means [●], the material / products specified in the Schedule of Requirements appended as Schedule 1 hereto;

2.12 **ICC Incoterms 2010** means the set of commercial trade terms as published by the International Chamber of Commerce, Paris [ICC], which are otherwise referred to as purchase terms and which define precisely the responsibilities, costs and risks of the buyer [**Transnet**] and the seller [**the Supplier**]. Incoterms are only applicable to contracts involving the import or export of Goods from one country to another and for the purpose of the Agreement, if applicable, shall mean the designated Incoterm as stipulated in Schedule 1 hereto. Further details of the Incoterm [purchase

terms] for the Agreement, if applicable, can be viewed at the International Business Training website - http://www.i-b-t.net/incoterms.html;

2.13 **Intellectual Property** means Patents, Designs, Know-How, Copyright and Trade Marks and all rights having equivalent or similar effect which may exist anywhere in the world and includes all future additions and improvements to the Intellectual Property;

2.14 **Know-How** means all Confidential Information of whatever nature relating to the Intellectual Property and its exploitation as well as all other Confidential Information generally relating to Transnet's field of technology, including technical information, processing or manufacturing techniques, Designs, specifications, formulae, systems, processes, information concerning materials and marketing and business information in general;

2.15 **Parties** mean the Parties to the Agreement together with their subsidiaries, divisions, business units, successors-in-title and assigns;

2.16 **Party** means either one of these Parties;

2.17 **Patents** mean registered Patents and Patent applications, once the latter have proceeded to grant, and includes a right granted for any inventions, products or processes in all fields of technology;

2.18 **Permitted Purpose** means any activity or process to be undertaken or supervised by a Staff member of one Party during the term of the Agreement, for which purpose authorised disclosure of the other Party's Confidential Information or Intellectual Property is a prerequisite in order to enable such activity or process to be accomplished;

2.19 **Price(s)** means the agreed Price(s) for the Goods to be purchased from the Supplier by Transnet, as detailed in the Schedule of Requirements, issued in accordance with the Agreement, as amended by mutual agreement between the Parties and in accordance with the terms and conditions in the Agreement from time to time;

2.20 **Purchase Order(s)** means official orders issued by an operating division of Transnet to the Supplier for the supply of Goods or ancillary Services;

2.21 **Services** means Services provided to Transnet including activities such as consultation, advisory services, implementation services and day-to-day assistance provided by the Supplier, pursuant to the Schedule of Requirements in terms of the Agreement;

2.22 **Staff** means any partner, employee, agent, consultant, independent associate or contractor, Subcontractor and the staff of such Subcontractor, or other authorised representative of either Party;

2.23 **Schedule of Requirements** means Schedule 1 hereto;

2.24 **Subcontract** means any contract or agreement or proposed contract or agreement between the Supplier and any third party whereby that third party agrees to provide to the Supplier the Goods or related Services or any part thereof or material used in the manufacture of the Goods or any part thereof;

2.25 **Subcontractor** means the third party with whom the Supplier enters into a Subcontract;

2.26 **Tax Invoice** means the document as required by Section 20 of the Value-Added Tax Act, 89 of 1991, as may be amended from time to time;

2.27 **Trade Marks** mean registered Trade Marks and Trade Mark applications and include any sign or logo, or combination of signs and/or logos capable of distinguishing the goods or services of one undertaking from those of another undertaking; and

2.28 **VAT** means Value-Added Tax chargeable in terms of the Value-Added Tax Act, 89 of 1991, as may be amended from time to time.

3 INTERPRETATION

3.1 Clause headings in the Agreement are included for ease of reference only and do not form part of the Agreement for the purposes of interpretation or for any other purpose. No provision shall be construed against or interpreted to the disadvantage of either Party hereto by reason of such Party having or being deemed to have structured or drafted such provision.

3.2 Any term, word or phrase used in the Agreement, other than those defined under the clause heading *"Definitions"* shall be given its plain English meaning, and those terms, words, acronyms, and phrases used in the Agreement will be interpreted in accordance with the generally accepted meanings accorded thereto.

3.3 A reference to the singular incorporates a reference to the plural and *vice versa*.

3.4 A reference to natural persons incorporates a reference to legal persons and *vice versa*.

3.5 A reference to a particular gender incorporates a reference to the other gender.

4 NATURE AND SCOPE

4.1 The Agreement is an agreement under the terms and conditions of which the Supplier will arrange for the supply to Transnet of the Goods which meet the requirements and specifications of Transnet, the delivery of which is controlled by means of Purchase Orders to be issued by Transnet and executed by the Supplier in accordance with the Agreement.

4.2 Such Purchase Orders and deliveries to Transnet shall be agreed between the Parties from time to time, subject to the terms of the Schedule of Requirements.

4.3 Each properly executed Purchase Order forms an inseparable part of the Agreement as if it were fully incorporated into the body of the Agreement.

4.4 During the period of the Agreement, both Parties can make written suggestions for amendments to the Schedule of Requirements in accordance with procedures set out in clause 28 *[Amendment and Change Control]*. A Party will advise the other Party within 14 [fourteen] Business Days, or such other period as mutually agreed, whether the amendment is acceptable.

4.5 Insofar as any term, provision or condition in the Schedule of Requirements conflicts with a like term, provision or condition in the Agreement and/or a Purchase Order, the term or provision or condition in this Master Agreement shall prevail, unless such term or provision or condition in this Master Agreement has been specifically revoked or amended by mutual written agreement between the Parties.

5 AUTHORITY OF PARTIES

5.1 Nothing in the Agreement will constitute or be deemed to constitute a partnership between the Parties, or constitute or be deemed to constitute the Parties as agents or employees of one another for any purpose or in any form whatsoever.

5.2 Neither Party shall be entitled to, or have the power or authority to:

a) enter into an agreement in the name of the other; or

b) give any warranty, representation or undertaking on the other's behalf; or

c) create any liability against the other or bind the other's credit in any way or for any purpose whatsoever.

6 DURATION AND CANCELLATION

6.1 Notwithstanding the date of signature hereof, the Commencement Date if the Agreement is [●] and the duration shall be for a [●] [[●]] year period, expiring on [●], unless:

a) the Agreement is terminated by either Party in accordance with the provisions incorporated herein or in any schedules or annexures appended hereto, or otherwise in accordance with law or equity; or

b) the Agreement is extended at Transnet's option for a further period to be agreed by the Parties.

6.2 Notwithstanding clause 16 *[Breach and Termination]*, either Party may cancel the Agreement without cause by giving 30 [thirty] days prior written notice thereof to the other Party, provided that in such instance, the Agreement will nevertheless be applicable in respect of all Purchase Orders which have been placed prior to the date of such cancellation.

7 GENERAL OBLIGATIONS OF THE SUPPLIER

7.1 The Supplier shall:

a) respond promptly to all complaints and enquiries from Transnet;

b) inform Transnet immediately of any dispute or complaint arising in relation to the storage or delivery of the Goods;

c) conduct its business in a professional manner which will reflect positively upon the Supplier and the Supplier's products;

d) keep full records clearly indicating all transactions concluded by the Supplier relating to the delivery of the Goods and keep such records for at least 5 [five] years from the date of each such transaction;

e) obtain, and at all times maintain in full force and effect, any and all licences, permits and the like required under applicable laws for the provision of the Goods and ancillary Services and the conduct of the business and activities of the Supplier;

f) observe and ensure compliance with all requirements and obligations as set out in the labour and related legislation of South Africa, including the Occupational Health and Safety Act, 85 of 1993, as may be amended from time to time;

g) comply with all applicable environmental legislation and regulations, demonstrate sound environmental performance and have an environmental management policy which ensures that its products, including the Goods or ancillary Services are procured, produced, packaged, delivered and are capable of being used and ultimately disposed of in a way that is environmentally appropriate; and

h) ensure the validity of all renewable certifications, including but not limited to its Tax Clearance Certificate and B-BBEE Verification Certificate, throughout the entire term of the Agreement. Should the Supplier fail to present Transnet with such renewals as they become due, Transnet shall be entitled, in addition to any other rights and remedies that it may have in terms of the Agreement, to terminate the Agreement forthwith without any liability and without prejudice to any claims which Transnet may have for damages against the Supplier.

7.2 The Supplier acknowledges and agrees that it shall at all times:

a) render the supply of the Goods and ancillary Services and perform all its duties with honesty and integrity;

b) communicate openly and honestly with Transnet regarding the supply and performance of the Goods and demonstrate a commitment to effecting the supply and performing ancillary Services timeously, efficiently and at least to the required standards;

c) endeavour to provide the highest possible standards of service and workmanship, with a reasonable degree of care and diligence;

d) use its best endeavours and make every diligent effort to meet agreed deadlines;

e) treat its own Staff, as well as all Transnet's Staff, with fairness and courtesy and respect for their human rights;

f) practice and promote its own internal policies aimed at prohibiting and preventing unfair discrimination;

g) treat all enquiries from Transnet in connection with the supply of the Goods and/or ancillary Services with courtesy and respond to all enquiries promptly and efficiently. Where the Supplier is unable to comply with the provisions of this clause, the Supplier will advise Transnet of the delay and the reasons therefor and will keep Transnet informed of progress made regarding the enquiry;

h) when requested by Transnet, provide clear and accurate information regarding the Supplier's own policies and procedures, excluding Know-How and other Confidential Information, except where a non-disclosure undertaking has been entered into between the Parties;

i) not allow a conflict of interest to develop between its own interests [or the interests of any of its other customers] and the interests of Transnet;

j) not accept or offer, nor allow, induce or promote the acceptance or offering of any gratuity, enticement, incentive or gift that could reasonably be regarded as bribery or an attempt to otherwise exert undue influence over the recipient;

k) not mislead Transnet or its officers, employees and stakeholders, whether by act or omission;

l) not otherwise act in an unethical manner or do anything which could reasonably be expected to damage or tarnish Transnet's reputation or business image; and

m) immediately report to Transnet any unethical, fraudulent or otherwise unlawful conduct of which it becomes aware in connection with Transnet or the supply of Goods or ancillary Services to Transnet.

7.3 In compliance with the National Railway Safety Regulator Act, 16 of 2002, as may be amended from time to time, the Supplier shall ensure that the Goods and ancillary Services, to be supplied to Transnet under the terms and conditions of the Agreement, comply fully with the Specifications as set forth in Schedule 1 hereto, and shall thereby adhere [as applicable] to railway safety requirements and/or regulations. Permission for the engagement of a Subcontractor by the Supplier, as applicable, shall be subject to a review of the capability of the proposed Subcontractor to comply with the specified railway safety requirements and/or regulations. The Supplier and/or its Subcontractor shall grant Transnet access, during the term of the Agreement, to review any safety-related activities, including the coordination of such activities across all parts of its organisation.

8 INVOICES AND PAYMENT

8.1 Transnet shall pay the Supplier the amounts stipulated in each Purchase Order, subject to the terms and conditions of the Agreement.

8.2 Transnet shall pay such amounts to the Supplier upon receipt of a valid and undisputed Tax Invoice together with the supporting documentation, as specified in the Schedule of Requirements appended hereto, once the undisputed Tax Invoices or such portions of the Tax Invoices which are undisputed become due and payable to the Supplier for the delivery of the Goods ordered, in terms of clause 8.4 below.

8.3 All Prices set out in the Agreement and the Schedule of Requirements hereto are exclusive of VAT.

8.4 Unless otherwise provided for in the Schedule of Requirements appended to the Agreement, Tax Invoices shall be submitted together with a month-end statement. Payment against such month-end statement shall be made by Transnet within 30 [thirty] days after date of receipt by Transnet of the Supplier's statement together with the relevant undisputed Tax Invoice(s) and supporting documentation.

8.5 Where the payment of any Tax Invoice, or any part of a Tax Invoice which is not in dispute, is not made in accordance with this clause 8, the Supplier shall be entitled to charge interest on the outstanding amount, at The Standard Bank of South Africa's prime rate of interest in force, for the period from the due date of payment until the outstanding amount is paid.

8.6 The Supplier shall remain the owner of all plant, material, machinery, equipment and the like [collectively, **the Supplier's Goods**] provided to Transnet until Transnet has paid in full for the Supplier's Goods, it being specifically agreed that Transnet shall acquire no rights [including liens] of whatsoever nature in such Supplier's Goods until date of final payment by Transnet. Subject to the aforegoing, all risk and benefit to the Supplier's Goods shall pass from the Supplier to Transnet on delivery of the Supplier's Goods by the Supplier to Transnet.

9 PRICE ADJUSTMENTS

9.1 Prices for Goods supplied in terms of the Agreement shall be subject to review as indicated in the Schedule of Requirements annexed hereto.

9.2 No less than 2 [two] months prior to any proposed Price adjustment, the Parties shall commence negotiations for Prices for the next period or as otherwise indicated in Schedule 1 hereto. The Parties shall have regard for market-related pricing of equivalent goods, continuous improvement

initiatives, costs [including labour, raw materials and transport/delivery], order size and frequency and changes to the specification of the Goods.

9.3 Pursuant to clause 9.2 above, the Supplier shall keep full and accurate records of all costs associated with the supply of the Goods to Transnet, in a form to be approved in writing by Transnet. The Supplier shall produce such records to Transnet for inspection at all reasonable times on request and such records may, at Transnet's option, be audited by Transnet or its designated representatives.

9.4 Should Transnet and the Supplier fail to reach an agreement on Price for the successive period, either Party shall be entitled to submit this matter to dispute resolution in accordance with clause 25 of the Master Agreement *[Dispute Resolution]*.

9.5 If during the period of the Agreement Transnet can purchase similar Goods of a like quality from another supplier at a total delivered cost to a Transnet facility that is lower than the total delivered cost of the Goods purchased hereunder from the Supplier, Transnet may notify the Supplier of such total delivered cost and the Supplier shall have an opportunity to adjust the Price of the Goods purchased hereunder, on such a basis as to result in the same total delivered cost to Transnet, within 30 [thirty] calendar days of such notice. If the Supplier fails to do so or cannot legally do so, Transnet may (i) purchase the Goods from such other supplier in which case the obligations, including, but not limited to, any purchase and sale requirements and/or commitments, if any, of Transnet and the Supplier hereunder shall be reduced accordingly; (ii) terminate the Agreement without any penalty, liability or further obligation; or (iii) continue purchases under the Agreement.

9.6 If during the period of the Agreement the Supplier sells any materials which are the same as, equivalent to, or substantially similar to the Goods herein, at a total delivered cost to a third party lower than the total delivered cost to a Transnet facility, then the Supplier has an opportunity to adjust its Price for the Goods purchased hereunder within 30 [thirty] calendar days so that the Price is the same or lower than the total delivered cost of such third party. If the Supplier fails to do so or cannot legally do so, Transnet may (i) purchase the Goods from any other such supplier, in which case the obligations, including, but not limited to, any purchase and sale requirements and/or commitments, if any, of Transnet and the Supplier hereunder shall be reduced accordingly; or (ii) terminate the Agreement without any penalty, liability or further obligation. Within 30 [thirty] calendar days of the Commencement Date of the Agreement or at any time Transnet so requests, the Supplier shall certify in writing to Transnet that it is in compliance with this clause and shall provide all information that Transnet reasonably requests in order to verify such compliance.

10 WARRANTIES

The Supplier warrants that:

10.1 pursuant to clause 7.3 *[General Obligations of the Supplier]*, the Goods will be manufactured in accordance with the specifications appended hereto at Schedule 1, or the manufacturer's specifications, as agreed in writing by both Parties;

10.2 the execution and performance of the Agreement by the Supplier does not infringe any rights of a third party or breach any obligation of the Supplier to any third party; and

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 10: RFP DECLARATION FORM

NAME OF ENTITY: _____

We _____ do hereby certify that:

1. Transnet has supplied and we have received appropriate responses to any/all questions [as applicable] which were submitted by ourselves for RFP Clarification purposes;
2. we have received all information we deemed necessary for the completion of this Request for Proposal [**RFP**];
3. at no stage have we received additional information relating to the subject matter of this RFP from Transnet sources, other than information formally received from the designated Transnet contact(s) as nominated in the RFP documents;
4. we are satisfied, insofar as our entity is concerned, that the processes and procedures adopted by Transnet in issuing this RFP and the requirements requested from Bidders in responding to this RFP have been conducted in a fair and transparent manner; and
5. furthermore, we declare that a family, business and/or social relationship exists / does not exist [delete as applicable] between an owner / member / director / partner / shareholder of our entity and an employee or board member of the Transnet Group.
6. If such a relationship exists, Respondent is to complete the following section:

FULL NAME OF OWNER/MEMBER/DIRECTOR/ PARTNER/SHAREHOLDER: ADDRESS:

_____

_____

_____

Indicate nature of relationship with Transnet:

_____

_____

[Failure to furnish complete and accurate information in this regard will lead to the disqualification of a response and may preclude a Respondent from doing future business with Transnet]

7. We declare, to the extent that we are aware or become aware of any relationship between ourselves and Transnet [other than any existing and appropriate business relationship with Transnet] which could unfairly advantage our entity in the forthcoming adjudication process, we shall notify Transnet immediately in writing of such circumstances.

8. We accept that any dispute pertaining to this Bid will be resolved through the Ombudsman process and will be subject to the Terms of Reference of the Ombudsman. The Ombudsman process must first be exhausted before judicial review of a decision is sought. [Refer "Important Notice to Respondents" overleaf].

9. We further accept that Transnet reserves the right to reverse an award of business or decision based on the recommendations of the Ombudsman without having to follow a formal court process to have such award or decision set aside.

SIGNED at _____ on this _____ day of _____ 2013

For and on behalf of _____ duly authorised hereto	AS WITNESS:
Name:	Name:
Position:	Position:
Signature:	Signature:
Date:	
Place:	

IMPORTANT NOTICE TO RESPONDENTS

- **Transnet has appointed a Procurement Ombudsman to investigate any material complaint in respect of RFPs exceeding R5,000,000.00 [five million S.A. Rand] in value. Should a Respondent have any material concern regarding an RFP process which meets this value threshold, a complaint may be lodged with Transnet's Procurement Ombudsman for further investigation.**
- **It is incumbent on the Respondent to familiarise himself/herself with the Terms of Reference for the Transnet Procurement Ombudsman, details of which are available for review at Transnet's website www.transnet.net.**
- **An official complaint form may be downloaded from this website and submitted, together with any supporting documentation, within the prescribed period, to procurement.ombud@transnet.net**
- **For transactions below the R5,000,000.00 [five million S.A. Rand] threshold, a complaint may be lodged with the Chief Procurement Officer of the relevant Transnet Operating Division.**
- **All Respondents should note that a complaint must be made in good faith. If a complaint is made in bad faith, Transnet reserves the right to place such a Bidder on its List of Excluded Bidders.**

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 11: BREACH OF LAW FORM

NAME OF ENTITY: _____

I/We_____

do hereby certify that *I/we* ***have/have not been*** found guilty during the preceding 5 [five] years of a serious breach of law, including but not limited to a breach of the Competition Act, 89 of 1998, by a court of law, tribunal or other administrative body. The type of breach that the Respondent is required to disclose excludes relatively minor offences or misdemeanours, e.g. traffic offences.

Where found guilty of such a serious breach, please disclose:

NATURE OF BREACH:

_____

_____

_____

DATE OF BREACH: _____

Furthermore, I/we acknowledge that Transnet SOC Ltd reserves the right to exclude any Respondent from the bidding process, should that person or entity have been found guilty of a serious breach of law, tribunal or regulatory obligation.

SIGNED at _____ on this _____ day of _____ 2013

_____ _____

SIGNATURE OF WITNESS SIGNATURE OF RESPONDENT

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 12: RFP CLARIFICATION REQUEST FORM

RFP No: HOAC-VAR-9481

RFP deadline for questions / RFP Clarifications: Before **12:00 on 03 April 2013**

TO: Transnet SOC Ltd

ATTENTION: Julias Moeti

EMAIL Julias.moeti@transnet.net

DATE: _____

FROM: _____

RFP Clarification No *[to be inserted by Transnet]* .....

REQUEST FOR RFP CLARIFICATION

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 13: SUPPLIER CODE OF CONDUCT

Transnet aims to achieve the best value for money when buying or selling goods and obtaining services. This however must be done in an open and fair manner that supports and drives a competitive economy. Underpinning our process are several acts and policies that any supplier dealing with Transnet must understand and support. These are:

- The Transnet Supply Chain Policy
- Section 217 of the Constitution - the five pillars of Public PSCM [Procurement and Supply Chain Management]: fairness, equity, transparency, competitiveness and cost effectiveness;
- The Public Finance Management Act [**PFMA**];
- The Broad-Based Black Economic Empowerment Act [**B-BBEE**]; and
- The Prevention and Combating of Corrupt Activities Act.

This Code of Conduct has been included in this RFP to formally apprise prospective Transnet Suppliers of Transnet's expectations regarding the behaviour and conduct of its Suppliers.

Prohibition of bribes, kickbacks, unlawful payments, and other corrupt practices

Transnet is in the process of transforming itself into a self-sustaining State Owned Company [**SOC**], actively competing in the logistics industry. Our aim is to become a world class, profitable, logistics organisation. As such, our transformation is focused on adopting a performance culture and to adopt behaviours that will enable this transformation.

a) *Transnet will not participate in corrupt practices and therefore expects its Suppliers to act in a similar manner.*

- Transnet and its employees will follow the laws of this country and keep accurate business records that reflect actual transactions and payments to our Suppliers.
- Employees must not accept or request money or anything of value, directly or indirectly, to:
  - illegally influence their judgement or conduct or to ensure the desired outcome of a sourcing activity;
  - win or retain business or to influence any act or decision of any decision stakeholders involved in sourcing decisions; or
  - gain an improper advantage.
- There may be an occasion when a Supplier is confronted with fraudulent or corrupt behaviour by a Transnet employee. We expect our Suppliers to use our "Tip-offs Anonymous" Hot line to report these acts [0800 003 056].

b) *Transnet is firmly committed to the ideas of free and competitive enterprise.*

- Suppliers are expected to comply with all applicable laws and regulations regarding fair competition and antitrust.
- Transnet does not engage with non-value adding agents or representatives solely for the purpose of increasing B-BBEE spend [fronting].

c) *Transnet's relationship with Suppliers requires us to clearly define requirements, exchange information and share mutual benefits.*

- Generally, Suppliers have their own business standards and regulations. Although Transnet cannot control the actions of our Suppliers, we will not tolerate any illegal activities. These include, but are not limited to:
  - misrepresentation of their product [e.g. origin of manufacture, specifications, intellectual property rights];
  - collusion;
  - failure to disclose accurate information required during the sourcing activity [e.g. ownership, financial situation, B-BBEE status];
  - corrupt activities listed above; and
  - harassment, intimidation or other aggressive actions towards Transnet employees.
- Suppliers must be evaluated and approved before any materials, components, products or services are purchased from them. Rigorous due diligence is conducted and the Supplier is expected to participate in an honest and straight forward manner.
- Suppliers must record and report facts accurately, honestly and objectively. Financial records must be accurate in all material respects.

Conflicts of interest

A conflict of interest arises when personal interests or activities influence [or appear to influence] the ability to act in the best interests of Transnet. Examples include, but are not limited to:

- Transnet employees awarding business to entities in which their family members or business associates have an interest
- Transnet employees having a financial interest in a bidding entity

Bidding entities are required to disclose any interest/s which exist between themselves and any employee and/or Transnet Board member.

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 14: B-BBEE PREFERENCE POINTS CLAIM FORM

This preference form contains general information and serves as a claim for preference points for Broad-Based Black Economic Empowerment [**B-BBEE**] Status Level of Contribution.

1.INTRODUCTION

1.1 A total of 10 preference points shall be awarded for B-BBEE Status Level of Contribution.

1.2 Failure on the part of a Bidder to fill in and/or to sign this form and submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System [**SANAS**] or a Registered Auditor approved by the Independent Regulatory Board of Auditors [**IRBA**] or an Accounting Officer as contemplated in the Close Corporation Act [**CCA**] together with the bid will be interpreted to mean that preference points for B-BBEE Status Level of Contribution are not claimed.

1.3 Transnet reserves the right to require of a Bidder, either before a Bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by Transnet.

2. GENERAL DEFINITIONS

2.1 **"all applicable taxes"** include value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;

2.2 **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;

2.3 **"B-BBEE status of contributor"** means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

2.4 **"Bid"** means a written offer in a prescribed or stipulated form in response to an invitation by Transnet for the provision of goods, works or services;

2.5 **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 [Act No. 53 of 2003];

2.6 **"comparative price"** means the price after the factors of a non-firm price and all unconditional discounts that can utilised have been taken into consideration;

2.7 **"consortium or joint venture"** means an association of persons for the purpose of combining their expertise, property, capital, efforts, skills and knowledge in an activity for the execution of a contract;

2.8 **"contract"** means the agreement that results from the acceptance of a bid by Transnet;

2.9 **"EME"** means any enterprise with an annual total revenue of R5 [five] million or less;

2.10 **"firm price"** means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs and excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;

2.11 **"functionality"** means the measurement according to predetermined norms, as set out in the bid documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a bidder;

2.12 **"non-firm prices"** means all prices other than "firm" prices;

2.13 **"person"** includes reference to a juristic person;

2.14 "**rand value**" means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties;

2.15 **"subcontract"** means the primary contractor's assigning or leasing or making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract;

2.16 **"total revenue"** bears the same meaning assigned to this expression in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Empowerment Act and promulgated in the Government Gazette on 9 February 2007;

2.17 **"trust"** means the arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person; and

2.18 **"trustee"** means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

3. ADJUDICATION USING A POINT SYSTEM

3.1 The Bidder obtaining the highest number of total points for the evaluation criteria as enumerated in Section 2 of the RFP will be awarded the contract, unless objective criteria justifies the award to another bidder.

3.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts.

3.3 Points scored will be rounded off to 2 [two] decimal places.

3.4 In the event of equal points scored, the Bid will be awarded to the Bidder scoring the highest number of preference points for B-BBEE.

3.5 However, when functionality is part of the evaluation process and two or more Bids have scored equal points including equal preference points for B-BBEE, the successful Bid will be the one scoring the highest score for functionality.

3.6 Should two or more Bids be equal in all respect, the award shall be decided by the drawing of lots.

4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTION

4.1 In terms of Regulation 5(2) and 6(2) of the Preferential Procurement Regulations, 2011, preference points shall be awarded to a Bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of Points [Maximum 10]
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-compliant contributor	0

Note: Refer to Section 1 of the RFP document for further information in terms of B-BBEE ratings.

4.2 Bidders who qualify as EMEs in terms of the B-BBEE Act must submit a certificate issued by an Accounting Officer as contemplated in the CCA or a Verification Agency accredited by SANAS or a Registered Auditor. Registered auditors do not need to meet the prerequisite for IRBA's approval for the purpose of conducting verification and issuing EME's with B-BBEE Status Level Certificates.

4.3 Bidders other than EMEs must submit their original and valid B-BBEE status level verification certificate or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA or a Verification Agency accredited by SANAS.

4.4 A trust, consortium or joint venture will qualify for points for its B-BBEE status level as a legal entity, provided that the entity submits its B-BBEE status level certificate.

4.5 A trust, consortium or joint venture will qualify for points for their B-BBEE status level as an unincorporated entity, provided that the entity submits their consolidated B-BBEE scorecard as if they were a group structure and that such a consolidated B-BBEE scorecard is prepared for every separate bid.

4.6 Tertiary institutions and public entities will be required to submit their B-BBEE status level certificates in terms of the specialised scorecard contained in the B-BBEE Codes of Good Practice.

4.7 A person will not be awarded points for B-BBEE status level if it is indicated in the Bid documents that such a Bidder intends subcontracting more than 25% [twenty-five per cent] of the value of the contract to any other enterprise that does not qualify for at least the same number of points that such a Bidder qualifies for, unless the intended subcontractor is an EME that has the capability and ability to execute the subcontract.

4.8 A person awarded a contract may not subcontract more than 25% [twenty-five per cent] of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is subcontracted to an EME that has the

capability and ability to execute the subcontract.

5. B-BBEE STATUS AND SUBCONTRACTING

5.1 **Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:**

B-BBEE Status Level of Contributor _____ = _____ [maximum of 10 points]

Note: Points claimed in respect of this paragraph 5.1 must be in accordance with the table reflected in paragraph 4.1 above and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or a Registered Auditor approved by IRBA or an Accounting Officer as contemplated in the Close Corporation Act.

5.2 **Subcontracting:**

Will any portion of the contract be subcontracted? YES/NO [delete which is not applicable]

If YES, indicate:

(i) What percentage of the contract will be subcontracted? .....%

(ii) The name of the subcontractor .....

(iii) The B-BBEE status level of the subcontractor .....

(iv) Is the subcontractor an EME? YES/NO

5.3 Declaration with regard to Company/Firm

(i) Name of Company/Firm.....

(ii) VAT registration number.....

(iii) Company registration number.....

(iv) Type of Company / Firm

□Partnership/Joint Venture/Consortium

□One person business/sole propriety

□Close Corporations

□Company (Pty) Ltd

[TICK APPLICABLE BOX]

(v) Describe Principal Business Activities

.....

.....

.....

.....

(vi) Company Classification

□Manufacturer

□Supplier

□Professional Service Provider

□Other Service Providers, e.g Transporter, etc

[TICK APPLICABLE BOX]

(vii) Total number of years the company/firm has been in business.....

BID DECLARATION

I/we, the undersigned, who warrants that he/she is duly authorised to do so on behalf of the company/firm, certify that points claimed, based on the B-BBEE status level of contribution indicated in paragraph 4 above, qualifies the company/firm for the preference(s) shown and I / we acknowledge that:

(i) The information furnished is true and correct.

(ii) In the event of a contract being awarded as a result of points claimed as shown in paragraph 6 above, the contractor may be required to furnish documentary proof to the satisfaction of Transnet that the claims are correct.

(iii) If the B-BBEE status level of contribution has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, Transnet may, in addition to any other remedy it may have:

(a) disqualify the person from the bidding process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) restrict the Bidder or contractor, its shareholders and directors, and/or associated entities, or only the shareholders and directors who acted in a fraudulent manner, from obtaining business from Transnet for a period not exceeding 10 years, after the *audi alteram partem* [hear the other side] rule has been applied; and/or

(e) forward the matter for criminal prosecution.

WITNESSES:

1. .....

SIGNATURE OF BIDDER

2. .....

DATE:

.....

COMPANY NAME: .....

ADDRESS:.....

.....

.....

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 15: CERTIFICATE OF ATTENDANCE OF RFP BRIEFING SESSION

It is hereby certified that –

1. _____

2. _____

Representative(s) of _____ *[name of entity]* attended the RFP briefing in respect of the proposed Goods to be supplied in terms of this RFP on **19TH March 2013.**

_____ _____

TRANSNET'S REPRESENTATIVE RESPONDENT'S REPRESENTATIVE

DATE _____ DATE _____

EMAIL _____

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 16: CERTIFICATE OF ACQUAINTANCE WITH TECHNICAL SPECIFICATIONS

[appended hereto as Appendix (iii)]

I/We

_____ do hereby certify that I/we acquainted myself/ourselves with all the documentation comprising the Specifications and testing equipment's for the carrying out of the proposed supply for which I/we submitted my/our Proposal.

I/We furthermore agree that Transnet SOC Ltd shall recognise no claim from me/us for relief based on an allegation that I/we overlooked any provisions of the Specifications and testing equipment's or failed to take it into account for the purpose of calculating my/our offered prices or otherwise.

I/We confirm having been advised that a signed copy of this Schedule can be submitted in lieu of the Specifications and testing equipment's as confirmation in terms of the Returnable Schedule.

SIGNED at _____ on this _____ day of _____ 2013

_____ _____

SIGNATURE OF WITNESS SIGNATURE OF RESPONDENT

TECHNICAL SPECIFICATIONS

TRANSNET
freight rail

A Division of Transnet SOC Limited

RAIL NETWORK

TECHNICAL SPECIFICATION

TELECOMMUNICATIONS NETWORK MANAGEMENT SYSTEM

Author:	Chief Engineering Technician Transmission	R Louw	*R Louw*
Reviewed:	Senior Technologist Transmission Operations	E van der Merwe	
Authorised:	Divisional Manager Transmission	ML Nuttall	
		Date:	15 January 2013

Circulation Restricted To:

Transnet Freight Rail

Transnet and Relevant Third Parties

I TABLE OF CONTENTS

II DOCUMENT CHANGE HISTORY

ISSUE NUMBER	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	2006	Transtel	This is the original version
2.00	2012-07-03	TFR Transmission	Updated to be generic
3.00	2012-09-06	TFR Transmission	Further refinements added
4.00	2013-01-15	TFR Transmission	DCN router specs added

III ABBREVIATIONS, ACRONYMS AND DEFINITIONS

	DESCRIPTION
BER	Bit Error Rate
DCN	Data Communication Network
LAN	Local Area Network
LCT	Local craft terminal
NMS	Network Management System
PDH	Plesiochronous Digital Hierarchy
QoS	Quality of Service
RIP	Routing information protocol
SDH	Synchronous Digital Hierarchy
TFR	Transnet Freight Rail

	DESCRIPTION
BER	Bit Error Rate
DCN	Data Communication Network
LAN	Local Area Network
LCT	Local craft terminal
TMN	Telecommunications Management Network

1. INTRODUCTION

1.1 This specification covers the Network Management Systems (NMS) for monitoring and managing telecommunications network elements in the TFR Transmission Network.

1.2 Tenderers must fully describe their offer and its full set of capabilities, and ensure that it is fully priced.

2. ARCHITECTURE

2.1 A Data Communication Network (DCN) currently connects all the transmission network elements to the central servers of the various network management systems.

2.2 The DCN consists of 22 Cisco 2811 routers connected to each other via E1 WAN links and D bytes in the SDH frame of the SDH network. This network is illustrated in the annexure.

2.3 The new NMS must manage its specific network elements through a new DCN that must be installed in parallel to the existing one in the same sites.

2.4 The new DCN routers must have STM-1 and E1 WAN ports as described below. Where STM-1 is available, this will be the preferred interface.

2.5 Once the new DCN is in place, the LAN connections at each site will be moved from the existing routers to the new DCN routers.

2.6 The NMS must be able to communicate to any element via more than one gateway.

2.7 The NMS must not be dependent on restrictive protocols such as RIP due to the size of TFR's network. It must support the latest protocols.

2.8 The NMS must be accommodated on main and standby servers. Tenderers must provide detail specifications of the servers and three client stations including operating platform.

2.9 Back-up of database and configuration to be "hot-standby" (continuous updating)

2.10 Costing for all software licences and licence period must be supplied

2.11 The NMS shall allow remote location of I/O devices / software modules belonging to the NMS.

2.12 Management functions shall be separated from the telecommunication equipment and traffic functions to achieve flexibility, maintainability, independence and stability.

2.13 The NMS shall provide access to any controlled network element from any terminal or workstation (including remote terminals and workstations), provided that such access is authorised.

2.14 The NMS must support secure remote access via 3G radio connection.

2.15 The NMS shall provide a Web view of the network, elements, configuration and performance. This access must be configurable between read only and secure full control.

3. DCN ROUTERS

3.1 Operating environment

3.1.1 The router must be able to function in harsh and rugged environments like the railway trackside where high voltage distribution can be present.

3.1.2 The routing and switching equipment must be reliable and scalable with modules that can be added in the same frame.

3.1.3 The equipment must have a robust operating system that has a proven record as an industry standard.

3.1.4 The equipment must be able to function in a telecommunication environment with -48 volt DC as the supply voltage.

3.1.5 A rugged industrial design with no moving parts (like fans or hard disc drives) is essential for maximum reliability. It must make use of convection cooling or similar method.

3.2 Interfaces

3.2.1 The unit must accommodate standard telecommunications interfaces 2 Mbit/s (E1) and 155 Mbit/s (STM-1) on the Wide Area Network (WAN) side.

3.2.2 The WAN interfaces must be available as separate modules that can be equipped as needed.

3.2.3 The router must have at least four slots available for WAN interface modules. The total number of WAN ports must be at least 8.

3.2.4 Optical fibre and copper interfaces must be supported at the relevant rates.

3.2.5 The router must include a switch module. The preferred size of the switch unit must be 16 10/100 Mbit/s Ethernet ports.

3.3 Features

3.3.1 The routing and switching equipment must be able to be controlled by remote management software. This software must be quoted for as an option.

3.3.2 The operator must be able to access and configure the equipment using a command line interface (CLI).

3.3.3 The device must have network security features which are based on open standards.

3.3.4 The unit must offer integrated services like advanced routing, firewall, traffic shaping, quality of service and network segmentation.

3.3.5 The router must be able to support routing protocols like Routing Information Protocol (RIP), Intermediate System to Intermediate System (IS-IS), Open shortest Path First (OSPF), Border Gateway Routing Protocol (BGP) and IPv4.

3.3.6 The memory capability to support the requested protocols must be included in the router.

3.3.7 The router must have modular power supplies in a redundant mode. These power supply modules must be hot swappable.

3.3.8 All software licenses needed to operate in the routing and switching environment should be included.

4. COMMAND HANDLING

4.1 The NMS shall provide the operator a generic user interface, which automatically translates the commands into the man-machine-language of the network elements.

4.2 Tools to administer and modify the generic interface and the command conversion tables shall be provided.

4.3 All commands in the controlled network elements shall be available to the operator. The NMS shall check the syntax of commands passed to the network element.

4.4 The NMS shall provide functions to route all responses, both responses to commands and unsolicited (spontaneous) reports, from the network elements to the NMS.

4.5 The NMS shall provide functions to route the responses to any I/O device connected to the NMS.

4.6 The NMS shall provide functions to store sequences of commands as command files. It shall be possible to activate these files according to a predefined schedule, and to set a time limit for execution of the command file.

4.7 It shall be possible for the NMS operator to query the system on the status of any queued command files, and to edit and cancel any of the queued command files.

4.8 If failure of any network element or link occurs, the NMS shall be able to store all commands until the failure is repaired.

4.9 The NMS shall store all commands issued to the network element in a command log. The first lines of the response shall also be stored in the log.

4.10 The operator shall have the possibility to search in the log to extract individual commands and associated responses. The searching criteria shall include:

4.10.1 Date and time interval.

4.10.2 Command type.

4.10.3 The operator and terminal who issued the command.

4.10.4 Network element identity.

4.10.5 Character strings

5. OPERATOR SUPPORT

5.1 All functions and facilities in the NMS shall be available from terminals or workstations - with graphical user interfaces. In addition, a subset of the functions and facilities shall be available from character oriented terminals.

5.2 The NMS shall provide facilities to equip the terminals and workstations with slave printers to allow for printing of screen outputs.

5.3 Operator commands applied to the NMS shall be checked for correct syntax and authority.

5.4 The interaction between the operator and the NMS shall be menu driven with self explanatory (including Help facilities) and easy to traverse menus.

5.5 The method of deleting old and entering new data into the NMS shall be simple. Prompts shall be placed in appropriate places to ensure that no deletions go unchecked.

5.6 For authorised personnel all information contained in the NMS shall be displayed and printed on demand.

5.7 The NMS shall provide presentation tools to display alarms, network status, reports and network maps on graphical workstations. Zooming and paging techniques to display status down to individual network elements shall also be provided.

5.8 The NMS shall provide multi-level system support allowing some operators to use low level tools and other operators to use high level diagnostic tools.

6. PERFORMANCE MANAGEMENT

6.1 The NMS shall provide performance-monitoring functions to collect traffic data, Quality of Service (QoS) data and performance data from the network elements. The NMS shall handle both raw data and processed reports.

6.2 The request of data collection shall be both on demand, and automatically on a schedule or threshold basis. The NMS shall provide functions to modify the current schedule and/or threshold.

6.3 It must also be possible to monitor the performance of any number of links via software and must be in accordance with ITU-T Recommendation G821, G826, G828, G829, M2100, M2101, and Ethernet and must be available in Microsoft Office formats.

6.4 The NMS shall provide statistical functions to analyse the collected data and present network status and network performance reports on a per equipment basis and as network-wide reports.

6.5 All types of reports shall be presented in a uniform and standard manner.

6.6 Specific reports must be automatically generated monthly

6.7 The NMS shall provide functions to correlate information between different types of network elements and services.

6.8 The network status and network performance reports shall highlight any abnormal and threatening condition.

6.9 The NMS shall provide functions to enable highlighting of network elements, designated with high operation and maintenance priority, in the network status and network performance reports.

6.10 In the reports, degraded performance shall be analysed and localised to a specific network element - or to a specific part of the network.

6.11 The NMS shall have built-in intelligence to aid the operators with information and actions to be taken during traffic and network management.

6.12 The NMS shall provide functions to archive reports and data in a history database.

6.13 The NMS shall provide functions to retrieve and present long-term reports based on the archived data. The logic of the NMS shall allow long term reports to span over one year.

6.14 In the reports, transmission systems with high operation and maintenance priority shall be highlighted.

6.15 In the reports, degraded performance shall be analysed and localised to specific equipment or to a specific part of the network. The NMS shall have built-in intelligence to aid the operators with information and actions to be taken during traffic and network management.

6.16 Presentation of collected data and performance reports shall be made both as text and graphics, including network maps.

7. DIGITAL FACILITIES SPECIFIC FUNCTIONS

7.1 The NMS shall provide functions for continuous performance monitoring for all bit rates proposed for this network.

7.2 Performance monitoring of the network shall be conducted at both the inputs and outputs of the streams.

7.3 When monitoring a stream, which is associated with higher order systems, the operator shall be able to select between the following report options:

7.3.1 Monitor only that stream.

7.3.2 Monitor only the worst case stream – of the higher order system.

7.4 The NMS shall be able to provide, for a defined time interval, the total time that any digital data stream has been in the degraded, severely error seconds or unavailable condition.

8. FAULT MANAGEMENT

8.1 The NMS shall provide supervision functions to check that the network elements are operating according to the requirements set forth in the particular specifications.

8.2 The NMS shall provide alarm surveillance functions to monitor and interrogate the network elements about alarms.

8.3 The alarm records shall include the following information:

8.3.1 Network element identity.

8.3.2 Network/service that the network element belongs to.

8.3.3 Date and time of alarm event.

8.3.4 Alarm severity (alarm class).

8.3.5 Problem type.

8.3.6 Problem data.

8.3.7 Acknowledgement data (date, time and operator identity).

8.3.8 Date and time of clearing.

8.3.9 A comments field where the operator can add any additional information or comments.

8.4 The alarms shall be divided into classes according to severity. It shall be possible to define at least three classes.

8.5 The NMS shall provide functions to route the textual alarms to any I/O device connected to the NMS.

8.6 The NMS shall provide options to use the alarm record data to route the alarms to a specific I/O device.

8.7 The NMS shall provide functions to acknowledge received alarms from the network elements. When an alarm has been acknowledged, the state of the alarm symbol shall change and the alarm shall be removed from the active alarm list.

8.8 The NMS shall indicate to the operator any incoming change in alarm status where the alarm type is one of the highest severity classes.

8.9 The NMS shall provide functions to retrieve all types of alarm records active or historical from the alarm log. The NMS system shall be equipped with tools for generation of different types of reports and statistics from the alarm log. Search criteria for retrieval shall include:

8.9.1 Location (site).

8.9.2 Equipment (Element) identity.

8.9.3 Time and date.

8.9.4 Alarm class.

8.9.5 Character string.

8.10 The NMS shall support facilities to present spontaneous alarm reports by means of text, graphics and acoustics. It shall be possible to highlight alarms of high severity class and suppress less severe alarms.

8.11 The NMS shall provide access to analysis functions in the controlled network elements to identify and locate the failures in the network elements, down to functional unit level.

8.12 The NMS shall provide operator access to test functions in the controlled network elements, for failure diagnostics and failure location.

9. FAULT LOCALISATION FUNCTIONS

9.1 The NMS shall provide operator access to test functions in the controlled transmission facilities for failure diagnostics and failure location.

9.2 In order to isolate the source of a fault condition, events that occur at various points on a transmission route shall be recorded and analysed.

9.3 The NMS shall be able to identify failures caused by events producing multiple alarms such as cable breaks or microwave channel interruptions. The NMS shall be able to suppress the redundant alarms in order to ease the fault location.

9.4 The NMS shall be able to display the whole transmission route and standby protection bearers, and indicate the faulty equipment entity - when the failure is localised.

9.5 The NMS shall provide functions to produce fault tickets including the following information:

9.5.1 Fault ticket number.

9.5.2 Priority.

9.5.3 Type of failure.

9.5.4 Site and route at which a failure has occurred.

9.5.5 Probable cause of the failure.

9.5.6 Recommended plug-in units to take to site.

9.5.7 The date and time at which the fault first appeared.

9.5.8 The date and time at which the fault was repaired.

9.5.9 Current fault status.

9.5.10 Actual cause of failure (entered by the operator).

9.6 It must be possible to categorise faults according to the information in the fault tickets.

9.7 The NMS shall enable the operators to enter status information about a particular fault, recording progress in fault restoration.

9.8 The reception of a change of the fault status, "failure" or "corrected failure", shall be indicated at the terminal by means of a flashing display and an audible alarm.

10. CONFIGURATION MANAGEMENT

10.1 The NMS shall provide remote control and full configuration of all network elements.

10.2 The NMS shall configure the software and hardware of the controlled network elements.

10.3 The NMS shall bring network elements into operation and to change its service state; e.g. out of service and in service.

10.4 The NMS shall be able to download the following types of software to network elements:

10.4.1 Software corrections.

10.4.2 Function modules.

10.4.3 Software to refresh reloaded devices.

10.5 The NMS shall store the total network configuration in an on-line database, available to the operator. Configuration changes as described above shall result in updates of the database.

10.6 The NMS shall provide functions to maintain consistency between the actual configuration of the network elements and the configuration stored in the NMS database.

10.7 It shall be possible for the NMS operator to query the NMS database of the actual configuration of any network element in operation.

10.8 The NMS shall be able to initiate a back up, total or partial, of network element data, and transfer the data to a back-up media connected to the NMS.

10.9 The NMS shall provide the facility to do complete end-to-end configuration of specific traffic streams, via intermediate network element nodes.

10.10 When the configuration of the NMS Network Manager is downloaded to the Network Elements, it must take preference over any other configuration in a Network Element.

11. SECURITY

11.1 Access to the different functions in the NMS shall be restricted by any combination of the parameters "time-of-day", "user-ID", "physical terminal line" and allocated user privileges.

11.2 The NMS shall provide password mechanisms to restrict system access. The passwords shall have a limited lifetime so that they must be changed after a predefined time.

11.3 The NMS shall provide functions to log and retrieve unsuccessful log-on attempts. Search criteria for the retrieval shall include:

11.3.1 Date and time, including periods.

11.3.2 User identity.

11.3.3 Physical terminal line.

11.4 After a number of unsuccessful log-on attempts an alarm shall to be generated in addition to blocking of the device used.

11.5 Terminals and workstations shall have automatic log-off when not being active for a predefined time.

11.6 The security system shall provide a number of authorisation levels, controlling allowed commands and user privileges.

11.7 The system shall be extendable and configurable regarding new security functions.

11.8 The NMS shall control remote access for the LCT connection to an element.

12. INTERNATIONAL STANDARDS

12.1 Tenderers must indicate which of the following specific international standards are complied to, as well as the degree of compliance :

12.1.1 ITU-T: International Telecommunications Union –Telecommunications

12.1.2 NMF: Network Management Forum

12.1.3 ETSI: European Telecommunications standardisation Institute

12.1.4 ISO: International Standards Organisation

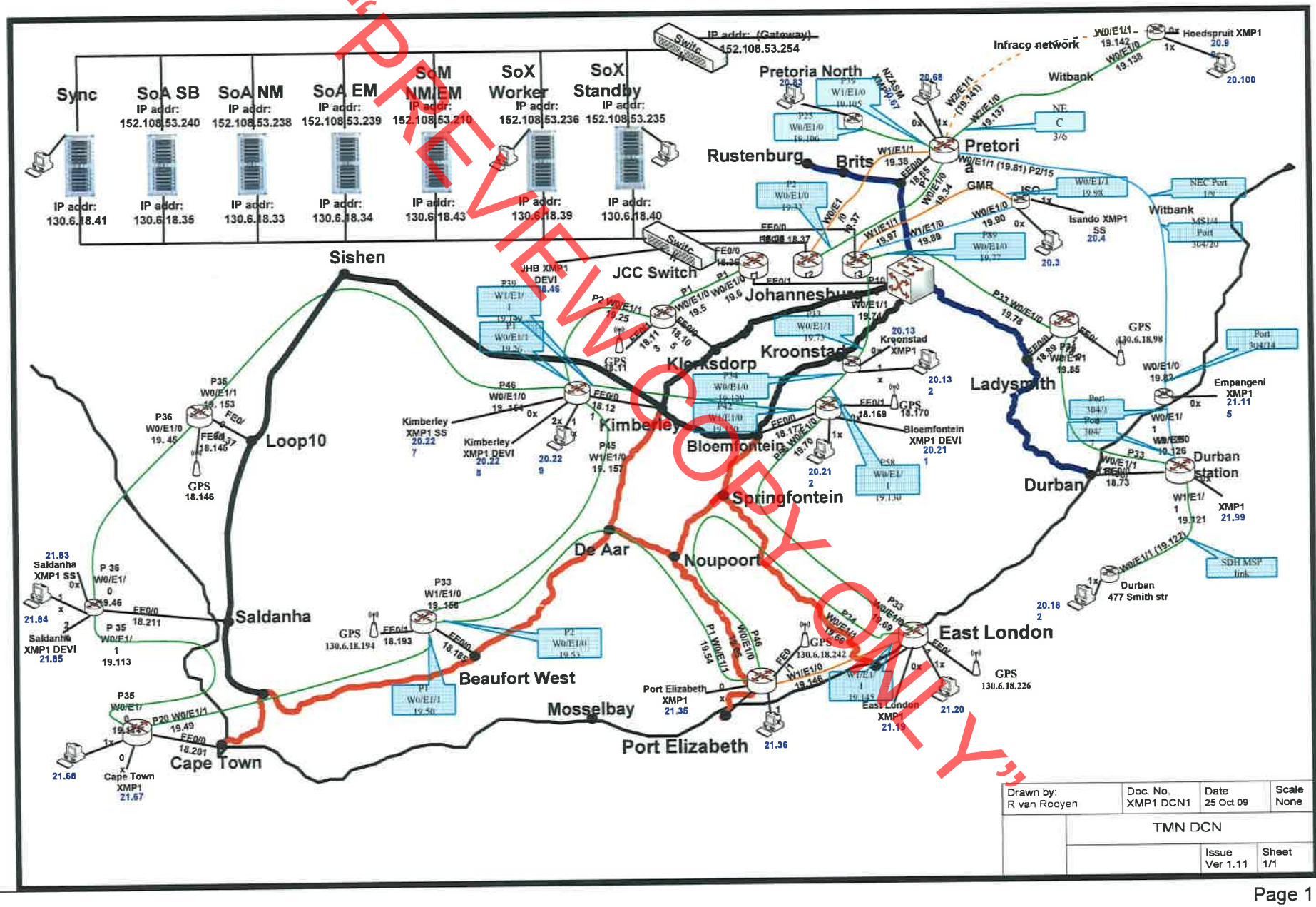
12.1.5 IEEE: Institute of Electrical and Electronic Engineers

12.1.6 TMF: Telecommunications Management Forum

12.2 The NMS system offered must comply with ITU M3010

END OF SPECIFICATION

ANNEXURE: TFR TMN DCN



TRANSNET
freight rail

A Division of Transnet SOC Limited

RAIL NETWORK

TECHNICAL SPECIFICATION

ACCESS MULTIPLEXER EQUIPMENT

Author:	Senior Technologist Transmission Operations	E van der Merwe	
Reviewed:	Chief Engineering Technician Quality Assurance	J Loretz	
Authorised:	Divisional Manager Transmission	ML Nuttall	

Date: 6 September 2012

Circulation Restricted To:

Transnet Freight Rail

Transnet and Relevant Third Parties

I TABLE OF CONTENTS

II DOCUMENT CHANGE HISTORY

ISSUE NUMBER	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	2009	TFR Transmission	This is the original version
2.00	2012-07-03	TFR Transmission	Updated and reformatted
3.00	2012-09-06	TFR Transmission	Further refinements added

III ABBREVIATIONS, ACRONYMS AND DEFINITIONS

	DESCRIPTION
AIS	Alarm Indication Signal
BER	Bit Error Rate
FERF	Far End Receive Failure
IEC	International Electro-technical Commission
ITU-T	International Telecommunications Union
LCT	Local Craft Terminal
MSP	Multiplex Section Protection
NMS	Network Management System
OLTE	Optical Line Terminal Equipment
PCM	Pulse Code Modulation
SCADA	Supervisory Control and Data Acquisition
SFP	Small Form-format Pluggable (transceivers)

1. GENERAL

1.1 This specification covers the supply of access multiplexers for telecommunication transmission.

1.2 The PDH interfaces are based on the European hierarchy and voice frequency encoding is by means of PCM and based on A-law.

1.3 The Access Multiplexer equipment must be able to operate from a 50V DC supply, with either the negative or the positive tied to the earth, without any loss in the functionality of any of the Access Multiplexer equipment cards.

1.4 Sub rack. Two options must be offered

- Types A: 19 inch wide, Maximum 9 U height
- Types B: 19 inch wide, Maximum 4 U height

1.5 Slots available for interface cards in the sub rack, excluding the common cards

- Type A: 19 inch wide, Maximum 9 U height sub rack

  Minimum slots 5 maximum 10

- Type B: 19 inch, Maximum 4 U height

  Minimum 2 slots

1.6 Interfaces to be accommodated in the various sub racks

- Type A: Any combination of interfaces as below
- Type B: A combination of STM1 optical module, E1 ports, V.24 (IEC232) module, 4 wire plus E&M module and 2 x 10/100 bT ports

1.7 The backplane switching matrix must run at a rate of at least 500 Mbit/s and be able to connect from any one port to any other.

1.8 Tenderers must specify the size of the TDM and packet switching matrices offered, which must be non-blocking and allow mapping between them.

1.9 All equipment supplied must be designed to operate without degradation under the following conditions:

- Temperatures: from –10 to +50 Degrees Celsius
- Relative Humidity from 0% to 95%
- Air Pollution: dust and heavily laden saline and industrial pollutants

1.10 The tenderer must state his equipment's performance with respect to the following:

- Resistibility of equipment to over voltages and over currents including surges due to lightning in accordance with ITU-T Recommendation K.20.
- Immunity against RF radiation from external sources.
- The equipment's radiation level and subsequent effect on other electronic equipment in close proximity.

2. STANDARDS

2.1 Except where otherwise stated in this specification, all equipment must conform to the latest recommendations of the ITU-T Standards: G703, G704, G707, G708, G709, G711, G712, G713, G737, G784, G792, G793, G751, G803, G813, G821, G823, G826, G828, G829, G956, G958, M1040, M1020 and V.110.

2.2 Tenderers must certify that they are familiar with these recommendations and must state all instances where their equipment offered is unable to comply.

3. OPTICAL INTERFACES

3.1 This specification covers the requirements of optical line equipment for digital transmission on two G.652.D optic fibres, operating in the 1550 nm window, and line transmission rates of 155 Mbit/s, 10/100 Mbit/s or 2 Mbit/s

3.2 Optical distances to be achieved for STM-1 or less, based on SFP technology.

- 0 to 25 km (short haul)
- 25 to 40 km (medium haul)
- 40 to 80 km (long haul)

3.3 Optical distances greater than this must be provided on separate cards. 2 Mbit/s interfaces may also be provided on-board the card.

3.4 The SDH frame structure must conform to G.709

3.5 The following protection schemes must be available

- SNCP
- MSP

3.6 Should the optical receiver detect no signal for a period greater than 600 ms, the laser transmitter must shut down.

3.7 Should the optical path be restored, transmission must proceed. In order to achieve this, the laser source must be activated cyclically for 1 s every 60 s, and when a valid signal is detected then normal transmission must be restored.

3.8 The minimum alarm conditions that the equipment must detect and accurately display on LCT and NMS are:

- AIS;
- FERF;
- BER > 10-3;
- BER > 10-6;

3.9 Fault management for SDH to conform to ITU.T G784

4. LAN INTERFACES

4.1 Data Rates n x 64 kbit/s s and 10/100 Mbit/s

4.2 IEEE 802.3 Frame structure.

4.3 Interfaces required is 10/100 Base-T and optical

4.4 Minimum of 2 ports per card

4.5 LED indicating the following must be on the card or visible at the NMS

- Power on
- Transmit
- Receive

- Error (Buffer overflow)

5. 6-WIRE VOICE FREQUENCY CIRCUIT

5.1 These circuits are used for exchange junctions and the physical connection of radio repeaters and occupies a 64 kbit/s timeslot

5.2 This circuit must consist of two voice frequency pairs (for transmit and receive paths), and two wires for a simple on-off type of signalling. This signalling will also be used to carry the PTT function for radio repeaters.

5.3 Two or more of these ports must be able to be connected together to simulate a conference with PTT.

6. ANALOGUE SUBSCRIBER AND EXCHANGE INTERFACE

6.1 This is the conventional circuit, which connects an automatic telephone instrument to an automatic exchange and occupies a 64 kbit/s timeslot.

6.2 To simulate this circuit over transmission equipment requires a different interface at either end; a SUBSCRIBER interface at the instrument end, and an EXCHANGE interface.

6.3 All 2-wire interfaces must incorporate inductive hybrids, hybrid loss 4 dB or 4,5 dB, the nominal impedance of the 2-wire circuit must be 600 ohms balanced and 900 ohms complex. Trans-hybrid losses must be -18 dB at 1 kHz

6.4 Under no circumstances may any of the lines be unbalanced. A noise limiter must be installed when the line impedance, unbalanced, exceeds 1 %.

6.5 Speech current must simulate a battery supply of 50 volts. However, the speech current must not exceed 90 mA, and the minimum current provided must be 20 mA. (The line resistance, including instrument, may vary from 0 to 1500 ohms).

6.6 Ring current must produce a voltage of 60 to 80 volts over the two wires, in the frequency range 15 to 25 Hz

6.7 Ring detectors must interpret a voltage between 20 and 120 volts, in the frequency range 15 to 25 Hz, as a signal.

6.8 When an interface is required to produce a loop, this must be by means of placing a resistance of 0 to 1 000 ohms across the line.

6.9 Loop detectors must interpret a line resistance less than 1500 ohms as a loop.

6.10 The method of signalling between the interfaces (e.g. DTMF, tone, timeslot 16, etc.) must be compatible.

6.11 Input attenuation must be provided with a minimum dynamic range of 16 dB in 0,5 dB steps.

6.12 The output level must be adjustable between 0 and 8 dB in 0,5 dB steps.

6.13 The equipment must be protected against line surges of 2,5 kV with a rise/decay time of 10/800 microseconds. If this protection can only be provided externally, i.e. on the distribution frame, then it must be offered as such. (Tenderers may quote an optional reduction should this protection not be required.)

6.14 The equipment must be immune to transverse potentials of 300 volts (RMS) and longitudinal potentials of 150 volts (RMS), which may exist on cables and lines for any length of time. Tenderers must specify their equipment limitations

7. DATA INTERFACES

The typical configuration must contain at least four interfaces .

7.1 V.24

7.1.1 The interface must be configurable for full- or half-duplex operation.

7.1.2 It must be possible to give local and remote loops on the analogue or digital side of the interface.

7.1.3 The interface must be capable of internal or external clock operation.

7.1.4 The interface must be selectable as a DTE or DCE

7.1.5 Point-to-multipoint operation must be possible (conferencing)

7.1.6 Asynchronous transmission with oversampling (transparent)

7.1.7 Transmission of data signals with frame structure in compliance with ITU-T V.110, synchronous (full-duplex) or asynchronous (transparent) with oversampling.

7.1.8 Data rates

- Synchronous 600 to 19,2 kbit/s
- Asynchronous 600 to 38,4 kbit/s

7.1.9 Alarms and indication

- Loss of Signal in
- Loss of Signal out
- Loss of Sync of data channel

7.1.10 The following line statuses must be available on the LCT and NMS

ITU.T V24	DIN 66020	Meaning
102	E2	Signal ground
103	D1	Transmit data
104	D2	Receive data
108	S1	DEE operational
107	M1	Ready for operation
105	S2	Activation and checking for link
106	M2	Ready to Send
109	M5	Receive signal level

7.2 V11

7.2.1 Data rates 48, 56, 64kbit/s and n x 64kbit/s in compliance with the ITU V.110

7.2.2 Alarms and indications

- Loss of signal in
- Loss of signal out
- Loss of sync of data channel

7.2.3 The following line statuses must be available on the LCT and NMS

- Transmit (T)

- Receive (R)
- Control (C)
- Signalling (I)
- Timing signal (S)

7.3 2Mbit/s (E1 using HDB3) equipment interface

7.3.1 The port interface must be 120 ohm balanced.

7.3.2 Remote looping of individual ports must be possible

7.3.3 The LCT and NMS must indicate that the relevant E1 port has been looped

7.3.4 High impedance test sockets must be provided on the module for measurements

7.4 Auxilary / Alarm interface

7.4.1 Typical configuration must include this module, it should contain a minimum of:

7.4.1.1 Eight Digital contacts

7.4.1.1.1 Closed contact

- Minimum current 0.1 mA
- Maximum current 1 A
- Impedance < 0.1 Ohms

7.4.1.1.2 Open contact

- Maximum DC voltage >60 V
- Maximum residual current < 1µA

7.4.1.2 Eight Sensors

- Polarity any
- Typically used for temperature and battery level measurements

8. NETWORK MANAGEMENT

8.1 General software conditions

8.1.1 The network control software must be such that it allows the user to control, configure and monitor the system in an intuitive and user-friendly way.

8.1.2 A centralized server type management platform is required.

8.1.3 All relevant licenses must be included

8.1.4 The software must run with a multitasking operating system. The software must preferably be in a Windows type set-up. The operating systems must be Windows Server or Linux.

8.1.5 Network data must be kept at the central server.

8.1.6 The software must be such that it will prompt the user if an alarm condition occurs, irrespective of the level in which the user is busy in

8.1.7 The alarm must be in a different colour to the rest of the display and must give an audible indication.

8.1.8 The network layout must be graphically displayed and it must be possible for the user to zoom into the detail of each network element up to card/module level where the fault occurred.

8.1.9 It must be possible to freely assign channels to timeslots with software in through, drop/insert, conference, point to multipoint or terminal mode without affecting other channels.

8.1.10 It must be possible to change the attenuation levels of individual channels through the NMS.

8.1.11 It must be possible to specify the required clock synchronisation source and a list of priorities in the event of clock source failing.

8.1.12 It must also be possible to monitor network performance via software and must be in accordance with ITU-T Recommendation G821, G826, G828, G829, M2100, M2101, and must be available in Microsoft Office.

8.1.13 It must be possible to conduct loop-back tests to all network elements.

8.1.14 It must be possible to provide real time printouts of alarm conditions at one or more locations.

8.1.15 Performance measurements a minimum of 1 E1 per link must be possible and in accordance to G.826 The storage and format must be on Microsoft Office. Monthly management performance reports must be self generating.

8.1.16 Access to individual nodes for fault diagnostics must be possible via a LCT and access to the LCT must be given by the NMS. Any changes made via the LCT must be overwritten by the main server when access is given back to the NMS

8.2 The Web Client Station

8.2.1 Web access to the system shall be provided, with no extra software to be installed, on any web browser (recent enough) and on any machine, whatever the operating system is. This access to be password protected.

8.2.2 It must be possible to view status of the alarms on any node.

8.2.3 For security reasons, the following functions shall not be available by any means (even using user/password protection).

- Resource administration.
- Physical network documentation.
- Deletion of circuits and nodes.

8.2.4 At least 5 simultaneous accesses to the server via the Web shall be possible.

END OF SPECIFICATION

A Division of Transnet Limited
Registration Number 1990/000900/06

SPECIFICATION FOR OPTICAL FIBRE ACCESSORIES

SPC-00583
MAY 2007

Revision 2.00

TABLE OF CONTENTS

I DOCUMENT AUTHORISATION

FUNCTION	NAME	TITLE & DIVISION	SIGNATURE	DATE
COMPILED BY:	FJ Nel	Programme Manager Project Services	*Signed* *FJ Nel*	25/06/2007
REVIEWED BY:	BG Nel	Technologist Quality Assurance	*Signed* *BG Nel*	25/06/2007
AUTHORISED BY:	M Nuttall	Head Of Department Transmission	*Signed* *M Nuttall*	25/06/2007

II DISTRIBUTION

Once updated, a copy of the latest revision will be published in the document management system in use. E-mail to this effect will be sent to the relevant personnel or heads of department.

III DOCUMENT CHANGE HISTORY

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	October 2004	Project Services	New document
2.00	May 2007	Project Services	Minor changes

IV CHANGES SINCE LAST REVISION

CLAUSE	DESCRIPTION
Various	Minor changes

V ABBREVIATIONS, ACRONYMS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
PVC	Polyvinyl Chloride
ODF	Optical Distribution Frame.
LSZH	Low Smoke Zero Halogen.
PABX	Private Automatic Branch Exchange

DEFINITIONS	DESCRIPTION
Assembly	Consist of a terminated cable in a pigtail or patch-lead configuration.
Pigtail - Unruggedised	Secondary coated fibre connectorised at one end *(of specified length).*
Pigtail – Ruggedised	Secondary coated fibre with aramid polymer fibres in a 1,6 mm PVC sheath connectorised at one end *(of specified length).*
Patch-lead - Ruggedised	Secondary coated fibre with aramid polymer fibres in a 1,6 mm sheath connectorised at both ends *(of specified length).*
Duplex Patch-lead–Ruggedised	Two of secondary coated fibres with aramid polymer fibres in a figure 8 PVC sheath with a nominal thickness of 1,6 mm each *(of specified length).*
Overall Ruggedised	Two of secondary coated fibres with aramid polymer fibres in a figure 8 (zip cord) PVC sheath with a nominal thickness of 1,6 mm each *(of specified length)* with an additional overall protective sleeve.
Connector	Coupling device attached to pigtail or patch-lead *(of specified type).*
Mid-Coupler	Receptacle to fit in a cabinet to join two connectors together, also known as a middle alignment sleeve.
Flat twin cable	Two simplex cables (see Duplex Patch-Lead-Ruggedised) with a PVC outer protective sheath.
Strain relief boot	Mechanical device that ensures that additional strain on the cable will not be transferred to the ferrule or fibre.
Organiser:	A unit that can accommodate fibre slack coils and splice protectors.

1. SCOPE

1.1 This specification covers the supply of optical fibre accessories to supplement single mode optical fibre cables.

1.2 A separate projection of requirements for the various types of optical fibre accessories will accompany this specification.

2. INTRODUCTION

2.1 This specification cover the requirements for the supply of the following optical fibre accessories and services:

2.1.1 Pigtails (ruggedised and unruggedised).

2.1.2 Mid-Coupler (Mid alignment sleeves).

2.1.3 Patch cords with Connectors.

2.1.4 ODF's (Optical distribution subracks)

2.1.5 ODF's (Optical distribution Main Frames)

2.1.6 Splice protectors.

2.1.7 Joint closures with splice organisers.

2.1.8 Training on installation practices.

2.2 This specification also covers the quality requirements and testing of the completed patch-leads and pigtails as per Appendixes A, B and C.

2.3 The tenderer must indicate, clause-by-clause, in a separate statement of compliance whether optical fibre accessories offered comply or do not comply with this specification.

2.4 If the tenderer submit alternative offer, all deviations from this specification must be clearly stated and explained.

2.5 Tenderer must note that the standard connector requirement is the E-2000 APC type. Various combinations of connectors may be a requirement in specific cases.

2.6 All units must be able to accommodate and organise cable, fibre and patch-lead slack.

2.7 Tenderers will be required to demonstrate all units offered when requested.

2.8 All ODF's must be manufactured from durable materials suitable for use in coastal areas.

2.9 All units must be completely dust proof. Tenderers are requested to specifically comment on this requirement.

3. OPTICAL FIBRES

3.1 Only 9/125/250 µm coated optical fibres must be used to ITU G.652.D recommendations.

3.2 The fibre types used must be easily strippable and comply with customer specifications for single mode optical fibre.

4. RUGGEDIZING

4.1 When specified, aramid-polymer fibres must be stranded longitudinally around the buffered secondary coating.

4.2 The aramid-polymer fibre must be stranded with evenly thick bundles around the secondary sheath.

4.3 Duplex patch-leads must be offered.

4.4 All finished assemblies must be tested as specified in Appendix B of this specification.

4.5 The mechanical performance required from ruggedised assemblies is specified in Appendix C.

5. OUTER SHEATH

5.1 The outer jacket material must be uniformly sheathed with PVC Type TM1 or alternatively with LSZH (when specified).

5.2 The sheath must have a minimum thickness of 0,5 mm and the overall diameter must be 1,6 mm ±0,2 mm .

5.3 The sheath must be yellow for single mode (SM) and orange for multi-mode (MM).

5.4 The sheath must be easily strippable from the cable.

6. PIGTAIL AND PATCH-LEAD IDENTIFICATION

6.1 A unique serial number must be printed on a permanent affixed label and attached to each unit between10 – 20 cm from the boot of each connector. This label can also serve as proof of testing/QA.

6.2 Labelling must be done at both ends in the case of a duplex patch-lead.

6.3 The following information must accompany each assembly :

6.3.1 Insertion loss @ 1310 nm and 1550 nm (Single mode).

6.3.2 Return loss @ 1310 nm and 1550 nm (Single mode).

6.3.3 Unique serial number.

6.3.4 Product description.

6.3.5 Order number.

6.3.6 Date tested.

6.3.7 Length of tail or patch-lead.

6.3.8 Type of connector.

6.3.9 Type of fibre (e.g. 1310/1550 nm single mode).

6.4 The rubber boot of the connector can be blue for 0° flush-polished connectors and green for 8° angle polished connectors.

6.5 A unique identification mark (colour or number) must be applied to either end of patched-leads to assist with identification of patched-leads in densely populated ODF's or termination cabinets.

6.6 The A and B leg of Duplex Patch lead must be identified.

7. DUST CAPS

7.1 Each E-2000 (or otherwise specified) connector or mid-coupler supplied must be fitted with an integrated dust cap to protect the end face from dust and scratches.

7.2 The E-2000 (or otherwise specified) dust cap must be spring loaded to ensure positive closure when not mated and constructed of a material to protect users from laser radiation.

7.3 Dust caps for other connectors and mid-couplers must comply with the requirements of this specification.

7.4 Dust caps must be colour coded to differentiate between single mode and multi-mode units as well as angle and flush polished (refer to subclause 8.3).

8. MID-COUPLER (BULKHEAD)

8.1 Single mode mid-couplers must have a ceramic alignment sleeve with a yellow insert for identification purposes.

8.2 Mid-coupler offered must have a self-secured clip that can easily connect onto the coupling plate supplied by the optical distribution frame or rack.

8.3 The colour coding must be blue for 0° flush polished and green for 8° angle polished mid-couplers.

9. CONNECTORS

9.1 This specification generally specifies the (angle polished connector) APC E2000 connectors unless otherwise specified.

9.2 Other types of connectors, angle or flush polished, may be required and the minimum requirement is conformance to this specification.

9.3 All connectors must consist of a ceramic ferrule and strain relief boot. Other materials will be considered but comprehensive technical information will be required.

9.4 All connectors must withstand the mechanical tests covered in this specification.

9.5 A heat-cured epoxy must be used on all connectors.

9.6 Isopropyl alcohol together with lint free tissue will be used for cleaning connectors. Assemblies must be inert to cleaning with this fluid.

9.7 The customer reserves the right to request specialised connector materials.

9.8 The optical performance of the required connector is specified in Appendix A of this specification.

9.9 The colour coding must be in accordance with sub-clause 8.3.

10. OPTICAL DISTRIBUTION FRAMES AND RACKS

10.1 **ODF's must be available in three different types**

10.1.1 A wall mount unit for small communication or PABX rooms.

10.1.2 A 19-inch stackable ODF rack for terminating and patching fibres for small to large communication rooms.

10.1.3 Specialised ODF (Main frame) for large distribution site.

10.2 **Wall Mount Unit**

10.2.1 The wall mount unit must have a minimum capacity for the termination of 48 fibres.

10.2.2 The unit must be easily accessible and easy to terminate and patch fibres.

10.2.3 The unit must be supplied with a removable panel to accommodate different types of connectors and mid-couplers.

10.2.4 The unit must be tamper proof and lockable. Two separated areas will be required :

(i) Cable entry and termination of fibres; and

(ii) Distribution and patching of fibres.

10.2.5 The unit must provide cable entries for terminating and distribution to other equipment.

10.2.6 The unit must be supplied with all cable glands, screws, nuts and bolts to secure to a concrete or brick surface.

10.2.7 The unit must be supplied with standard accessories - splice organisers, connector plate, cable clamps, fan-out devices and transportation tubes.

10.3 19 inch stackable ODF sub rack

10.3.1 The 19-inch stackable ODF sub-rack must have a combined splicing, termination and storage function with a capacity for the termination, cross-connecting, store excess fibre and patching of minimum 24 fibres.

10.3.2 Each unit must be easily accessible and easy to terminate and patch fibres.

10.3.3 Each unit must have a maximum height of 3U and must include a patch-lead routing scheme.

10.3.4 The unit must be designed to optimise accessibility allowing minimum movement of pigtails and fibres when the unit is opened and closed while connected systems remain operational.

10.3.5 The unit must be designed with a front panel for the protection of optical fibre patch-leads.

10.3.6 The unit must be designed to organise excess patching cords with the option for distribution via the front or rear of the rack.

10.3.7 The unit must be supplied with standard accessories – splice organisers, connector plate, cable clamp, fan-out device and transportation tubes.

10.4 Specialised Main ODF Rack or Cabinet

10.4.1 The main ODF cabinet must have a maximum height of 47U, free standing and be able to accommodate standard 19-inch sub-racks.

10.4.2 Each cabinet must be designed to facilitate various configurations based on optimised modular units and to enable a variety of cabling requirements.

10.4.3 The cabinet must be designed to provide a complete management and storage system for the cabling of long optical patch-leads and pigtails.

11. SPLICE PROTECTORS

11.1 Heat Crimping Type

11.1.1 Splice protectors must be manufactured from a durable crimping material.

11.1.2 It must have a non-corrosive material insert for strengthening purposes.

11.1.3 The length of splice protectors offered must be 60 mm .

11.1.4 All splice protectors offered must have a crimping temperature range of 210 °C ± 10 °C.

11.2 **Mechanical Crimping Type**

Tenderers may offer mechanical splice protectors, which must comply with the requirements of this specification. Comprehensive technical application and testing information must be provided.

12. JOINT CLOSURE WITH SPLICE ORGANISER

12.1 All closures must be re-enterable designed to protect splices and bare fibre from environmental and mechanical damage.

12.2 Closures must be available in various sizes and designed to accommodate splice organisers for a minimum of 48, 96, 144 and 288 splices.

12.3 All closures must be designed with a minimum of 6 cable entry ports. At least one entry port must be oval or be able to do a "loop through" facility with minimal fibre splices.

12.4 All cable entry ports must normally be sealed off and will only be opened when required.

12.5 The closure must be suitable to simultaneously accommodate conventional cables as well as micro-tubes and micro cables. On the large type closures, multiple entry ports will be preferred as well as ports that can accommodate multiple micro tubes or micro cables.

12.6 Every component of the closure and organiser must be corrosion proof.

12.7 All closures must be UV stabilised for outdoor installation.

12.8 All closures must be water tight and suitable for direct buried applications suitable for any environment – aerial, pedestal, direct buried and underground applications.

12.9 All closures must be designed for numerous splice applications; expressed, tap-off, branch and repair.

12.10 All closures must accommodate a mounting bracket for wall or aerial mounting.

12.11 The mounting type will be specified during ordering for 6, 12, and multiple fibres per tube.

12.12 The Splice Closure Organiser must provide proper fibre management.

13. TRAINING

13.1 Training on all equipment may be required and may be ordered.

13.2 Should the Tenderer have training to offer, he/she is encouraged to do so.

13.3 Training when ordered must comply with the customer specifications.

14. MANUFACTURING

14.1 The customer reserves the right to inspect and approve the Contractors production facility.

14.2 The preferred requirements for such a production facility are :

14.2.1 A quality system based on the principles of ISO 9000.

14.2.2 A controlled environment for termination facilities according to international standards.

14.2.3 Approved termination, inspection and test equipment, which will guarantee a final product that will conform to customer specifications.

14.2.4 "On site" customer audits may be conducted prior and during tenders for new contracts.

15. EXTENT OF TESTING

15.1 Optical tests must be done on each assembly, and must comply with specification IEC 60874, as per Appendix A and B.

15.2 Mechanical tests required for ruggedised tails or patch leads only, must be considered type approval tests as per Appendix C, and may be at the discretion of the customer.

15.3 The tenderer must have equipment to do the tests called for in this specification.

16. INSPECTION

16.1 The customer reserves the right to call for the inspection of goods on any contract or order, at any stage before final acceptance. When such inspection is required, the relevant contracts and orders will be endorsed accordingly.

16.2 The Contractor must prepare, without charge to the customer, for testing of samples and specimens under supervision of the customer Quality Assurance Department.

17. SAMPLES

17.1 A sample of any item covered by this specification must be submitted within fourteen (14) days if called for. The sample will be regarded as being identical with the items for which this tenders are submitted.

17.2 The samples will be non-returnable unless specifically qualified by tenderers. Some items may be tested to destruction.

18. PACKAGING

18.1 Pigtails, patch-leads and components must be dispatched as per order. Each assembly must be individually coiled with a minimum diameter of 160 mm. Each item must be individually wrapped in suitable plastic packets.

18.2 All items must be dispatched in suitable packing boxes to prevent damage during normal handling. Rigid packing is required.

APPENDIX A : OPTICAL PERFORMANCE OF CONNECTORS

A1 OPTIMISATION

The positioning of the connector key-way must be as indicated in Appendix B, test method A.

A2. INSERTION LOSS

A2.1 The insertion loss throughout the range 1260 nm and 1558 nm must not be greater than :

Type connector	Specification
Single mode 0° PC	0,3 dB
Single mode 8° APC	0,3 dB

A2.2 The test method is shown in Appendix B test method B. Insertion loss is defined as :

$10\log^{10}$ (P1/P2) dB

Where P1 is referred optical power

P2 is transmitted optical power

A3 RETURN LOSS

A3.1 The return loss throughout the range 1260 nm and 1580 nm must not be greater than or equal to:

Type connector	Specification
Single mode 0° FC-PC	45 dB
Single mode 8° APC	70 dB

A3.2 The test method is shown in Appendix B test method C. Return loss is defined as :

$10\log^{10}$ (P1/P3) dB

Where P1 is reference optical power

P3 is reflected optical power

A4 E-2000 APC Specification

Item	Parameter
Strain Relief	100N
Operating temperature	- 25 to 70 degree Celsius conditioned by the cable
Durability	Min. 1000 cycles
Assembly procedure	Epoxy and polish
Connection	Physical contact
Lock mechanism	Snap-on
Standards	En 186-27 / CECC 86 275-801/802 / IEC 61 754-15
Ferrule Material	Full ceramic zirconia
Connector Material	UL 94-VO

END OF APPENDIX A

APPENDIX B : TESTING OF ASSEMBLIES

B1. GENERAL

B1.1 All tests must be conducted between 20 °C and 25 °C.

B1.2 For convenience, the optical measurements are performed on cable terminated at both ends. On completion of the measurements, the cable may be cut to provide two optical terminations (pigtail).

B1.3 If equipment or test methods used are other than those specified below, prior permission must be obtained from Customer

B1.4 Test methods must comply with specification IEC 60874.

B2. MEASUREMENT SYSTEM

The source and power meter combination must be stable to within ±0,05 dB over a period sufficiently long to enable to measurement to be completed. The source must consist of a 1310 nm and 1550 nm laser (±20 nm) for Single mode and at 850 nm and 1300 nm LED for Multi-mode testing.

B3. MASTER CORD

A master cord must be used specifically for the purpose of measuring insertion loss and return loss. It must employ the same connector as the one to be tested and must have a core eccentricity of less than 0,5 µm. The error vector must be within ±30 degrees from the alignment key vector. The ferrule end face must be of the APC/PC type. The master cord must effectively remove cladding modes within its length.

B4. TERMINATOR

An optical terminator must be employed such that the reflected power from the end of the fibre is reduced to a negligible value.

B5. TEST METHODS

B5.1 Optimisation

An example of the test configuration required is shown in Figure 2.

NOTE: Optimisation has to occur before angle polishing because the angle has a specific relation to the key which cannot be changed.

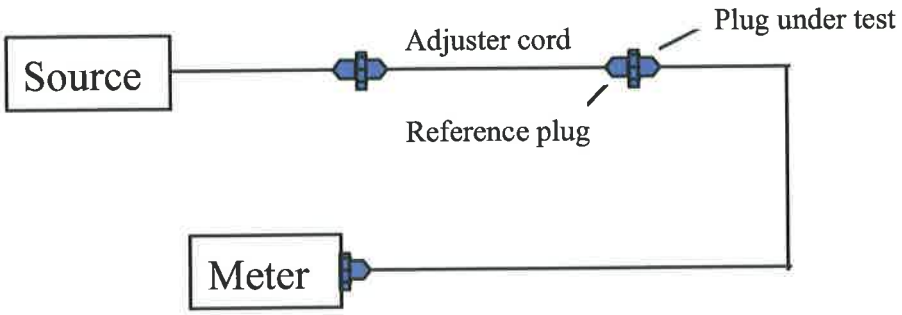


FIGURE 2

After the optical transmission of the connector is optimised, the key-way must be fitted.

B5.2 **Insertion Loss**

Using the configuration shown in Figure 3, the reference power P1 must be measured.

The connectorised cord under test must then be inserted into the system as shown in Figure 4, and the transmitted power P2 must be measured.

The insertion loss of the mated connector id defined as :

Insertion loss = $10\text{Log}_{10}(P1/P2)$ dB

FIGURE 3 (Reference Power, P1)

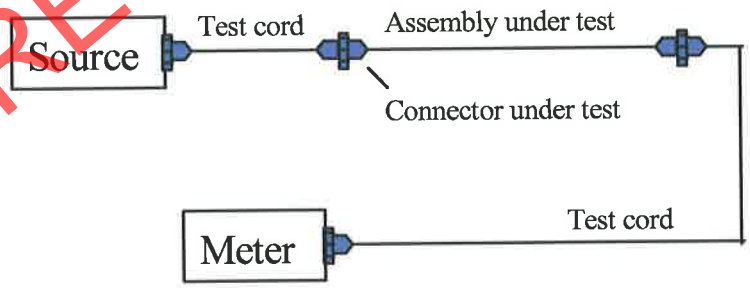


FIGURE 4 (Transmitted Power P2)

B5.3 Return Loss

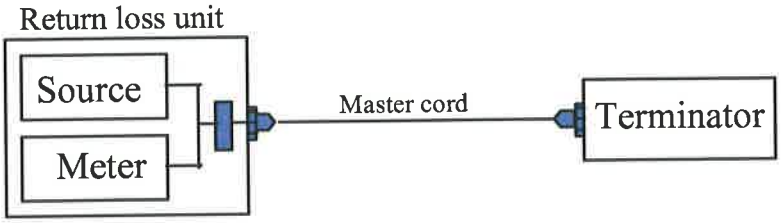


FIGURE 5 (Reference Power P1)

Using the configuration in Figure 5, the reference power P1 must be measured.

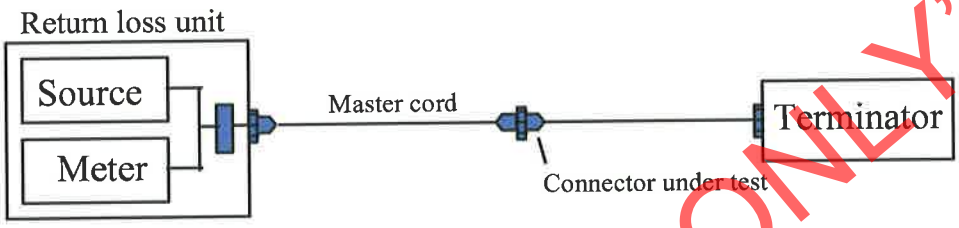


FIGURE 6 (Reflected Power, P3)

The cord under test is then inserted into the system, and a connectorised fibre tail is connected to the cord under test as shown in Figure 6. The fibre tail must be terminated in such a manner that the reflected power from the fibre end is negligible.

Using the configuration shown in Figure 6, the reflected power P3 must be measured.

The return loss of the two connectors under test is defined as:

Return loss = 10Log_{10} (P1/P3) - X dB

where X = insertion loss of the directional coupler from port C to port B.

Note: This method of measuring return loss ignores the fibre loss, and also the far end connector contributes to the reflected power measured.

B5.4 Quality of Polish

When the ferrule end face is examined with microscope at X 300 magnification, there must be no visible cracks, scratches or other marks over the surface of the end face.

B5.5 Interferometer testing

Interferometer testing is required to check radius of curvature, fibre height, apex offset, angle, fibre and ferrule roughness. Interferometer reports must be available when required by the customer.

END OF APPENDIX B

APPENDIX C : MECHANICAL PERFORMANCE OF RUGGEDIZED ASSEMBLIES
(Unruggedised pigtails are excluded from these tests)

C1. FLEXIBILITY

The fibre or any other component part of the cable must not suffer permanent damage when the cable is repeatedly wrapped and unwrapped 4 complete turns for 10 complete cycles around a mandrel 20 mm in diameter. The cable must be coiled with sufficient tension to maintain continuous contact with the mandrel.

C2. COMPRESSIVE STRESS

The fibre and component parts of the cable must not suffer damage when subjected to a compressive load of 1000 N applied between two rigid and parallel plates of dimensions 50 mm by 50 mm. The load must be applied for 60 seconds.

C3. Tensile Test

C3.1 The connector under test must be mated via a bulkhead to the optical test equipment. At a maximum point of 300 mm from the boot, the cable must be anchored on a mandrel, without detriment to its optical performance. The free end of the cable must be connected and routed via a bulkhead to the optical test equipment.

C3.2 A load of 100 N must be applied at a rate of 5 mm/min and held for 10 minutes. The load must then be increased to 150 N and held for 5 minutes.

C3.3 The insertion loss must be measured and recorded through the duration of the test.

C3.4 The test must then be repeated for return loss measurements.

C3.5 At the 100 N / 10 min stage the insertion loss must be less than 0,6 dB and the return loss as per Appendix A specification.

C3.6 At the 150 N / 5 min stage the insertion loss must be less than 0,7 dB and the return loss as per Appendix A specification.

C3.7 After the completion of the test the cable must be removed from the assembly and allowed to relax for 5 minutes. Insertion loss and return loss must be measured and recorded. The insertion loss must be as per Appendix A specification.

C4. TORSION TEST

C4.1 The connector under test must be mated via a bulkhead to the optical equipment. At a point 1000 mm from the rear of the boot, a force of 5 N must be applied. The weight must then be rotated through the range 0 ± 180° for a total of 10 cycles. See figure 1

C4.2 The insertion loss must be continuously, recorded throughout the duration of the test. The test must then be repeated while the return loss is measured.

C4.3 During the duration of the tests, insertion loss must be less than 0,6 dB and the return loss. The return loss must be as per Appendix A specification. There must be no failure of the boot bonding materials.

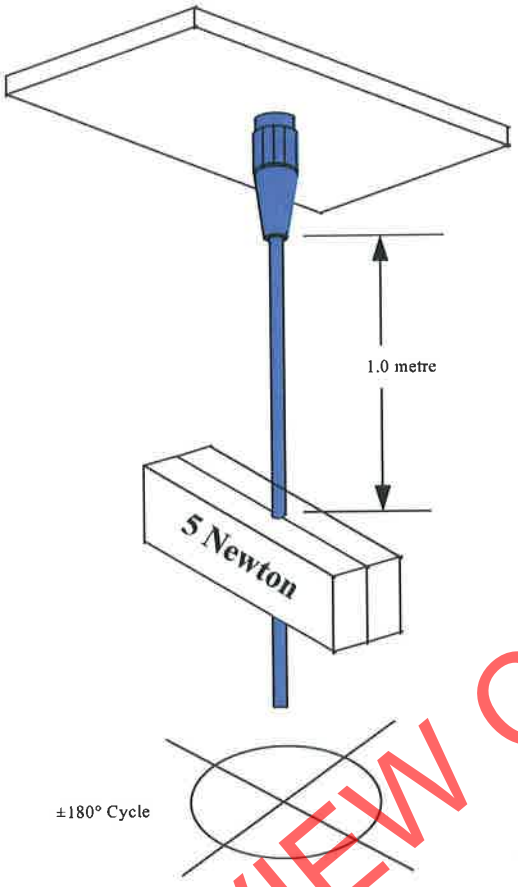


FIGURE 1

On completion of the test the insertion loss and return loss must be as per Appendix A specification.

C5. TEMPERATURE CYCLING

C5.1 The optical tails under test must be connected together using bulkheads and then be connected to the test equipment.

C5.2 The optical tails under test must then be subjected to ten complete cycles of four hour duration's each cycle commencing at 20 °C rising to 70 °C, falling to 15 °C and ending at 20 °C to permit a dwell time of 1 hour at both 70°C and a transition time between temperature extremes of one hour.

C5.3 For the duration of the test, the tails must be monitored for insertion loss. The insertion loss must be equal to or less than 0,4 dB.

C5.4 The test must be repeated while the return loss is monitored. The return loss must be as per Appendix A specification.

C6. REPEATABILITY

C6.1 Two pairs of connectors must be tested for endurance and repeatability of performance. A pair of connectors must be mated by hand via a bulkhead and the insertion loss and return loss be measured and recorded.

C6.2 The pair must be removed from the bulkhead and mated 1000 times with the insertion loss and return loss being measured after every 10 parting / mating cycles. The connector must be cleaned with Isopropyl alcohol after every 10 cycles and the relevant measurements have been completed.

C6.3 The insertion loss must not increase by more than 0,2 dB from start value or exceed 0,4 dB The return loss must be as per Appendix A specification.

END OF APPENDIX C

END OF DOCUMENT

TRANSNET
Freight Rail

A Division of Transnet SOC Limited

RAIL NETWORK

TECHNICAL SPECIFICATION

DIGITAL MICROWAVE RADIO EQUIPMENT

Author:	Senior Technologist Transmission Operations	E van der Merwe	
Reviewed:	Chief Engineering Technician Quality Assurance	J Loretz	
Authorised:	Divisional Manager Transmission	ML Nuttall	
		Date:	4 February 2013

Circulation Restricted To:

Transnet Freight Rail

Transnet and Relevant Third Parties

I TABLE OF CONTENTS

II DOCUMENT CHANGE HISTORY

ISSUE NUMBER	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.20	2003-10-20	Transmission	Converted Specification No. SCEL-46 October 2000 to ISO standard.
1.21	2004-01-23	Transmission	Change to 6.1; 6.2; 8.2.6 Add 8.4.7;8.5.2 & 8.6.3 & 9
2.00	2006-07-01	Transmission	Revised complete document
3.00	2012-07-04	TFR Transmission	Updated and reformatted
3.10	2013-02-04	TFR Transmission	Modernised and reformatted

III ABBREVIATIONS, ACRONYMS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
AC	Alternating Current
AGC	Automatic Gain Control
ATPC	Automatic Transmit Power Control
BER	Bit Error Ratio
DC	Direct Current
RTPC	Remote transmit power control
EMC	Electromagnetic compatibility
EOW	Engineering Order Wire
ERM	Radio Spectrum Matters
ACCP	Adjacent channel co- polarization
CCDP	Co-channel dual polarization
XPIC	Cross-polar interference canceller
FEC	Forward Error Correction
ICASA	Independent Communications Authority of SA
ITU-R	International Telecommunications Union – Radio communication Sector
ITU-T	International Telecommunication Union - Telecom. Standard. Sector
MHSB	Monitored Hot standby
ODU	Outdoor Unit
PDH	Plesiochronous Digital Hierarchy
PoE	Power over Ethernet
RSTP	Rapid Spanning Tree Protocol
SDH	Synchronous Digital Hierarchy

1. SCOPE AND PURPOSE

1.1. This specification covers the requirements of Transnet Freight Rail for the supply of digital microwave radio equipment operating all capacities, short and long haul in the 7 to 38 Gigahertz (GHz) frequency bands.

1.2. The material to be supplied must include microwave transceivers with associated alarm equipment, management system, service channels, power supply equipment, integral and/or separate antennas, spares, essential test cords, plugs and adapters.

2. DESCRIPTION

2.1 Microwave Equipment

2.1.1 The equipment shall deliver

- PDH capacities from 2 E1 and a maximum of 16 E1 plus 1 E1 wayside traffic,
- SDH capacities from 1 to 4 x STM-1.
- Ethernet (for a 28 MHz channel)

2.1.2 The equipment shall provide a single platform solution for PDH, and SDH, and Ethernet applications.

2.1.3 The equipment shall incorporate duplicated modem and PoE injector for maximum reliability

2.1.4 The equipment shall be capable of being deployed in split mount type of architecture.

2.1.5 The proposed equipment shall support configurations as follows:

- Non-Protected 1+0
- Monitored Hot Standby (MHSB) 1+1
- Space Diversity (SD)
- RSTP or equivalent for Gigabit Ethernet Ring support.

2.1.6 The radio equipment should have the capability to support mixed mode, i.e. Ethernet + TDM n x E1 traffic with bandwidth adjustment capability on the Ethernet throughput in 2 Mbit/s increments up to the maximum capacity of the link. Ethernet traffic interface options should include 10/100/1000 base-T, with Intelligent Layer 2 Ethernet QoS features.

2.1.7 The equipment shall support Power over Ethernet (PoE) with off-the-shelf weatherproof Cat 5e cable & accessories.

2.1.8 All split type outdoor radio units must be bit rate independent.

2.1.9 The operating frequency must comply to the following ITU-R specifications:

7,1	to	7,7 GHz	:	ITU-R Rec 385-6
7,7	to	8,5 GHz	:	ITU-R Rec 386-6
12,75	to	13,25 GHz	:	ITU-R Rec 497-6
14,40	to	15,35 GHz	:	ITU-R Rec 636-3
21,22	to	22,45 Ghz	:	ITU-R Rec 637-1
24,80	to	26,5 GHz	:	ITU-R Rec 748-3
37,00	to	39,5 GHz	:	ITU-R Rec 749-1

2.1.10 The minimum transmitter output power before any branching must be at least:

7,1	to	7,7 GHz	=	>+20 dBm
7,7	to	8,5 GHz	=	>+20 dBm
12,75	to	13,25 GHz	=	>+18 dBm
14,4	to	15,35 GHz	=	>+18 dBm
21,22	to	22,45 GHz	=	>+16 dBm
24,8	to	26,5 GHz	=	>+15 dBm
37,0	to	39,5 GHz	=	>+16 dBm

2.1.11 All transmitters within the indicated frequency bands must have an attenuation range of 20 dB added manually under software control, in 0.1dB increments..

2.1.12 The tenderer must state whether the required TX output power is achieved with normal or high output power transmitters.

2.1.13 The transmitter must support Automatic Transmitter Power Control (ATPC) over the full transmit manual attenuation range, with the operator able to select a not-to-exceed transmit power.

2.1.14The outdoor unit shall be of a fully environmentally sealed design, with no user access for repair or maintenance.

- The ODU shall weigh less than 7kg.
- The ODU shall incorporate a handle for easy handling.
- The ODU shall incorporate the same mechanical design and dimensions for all frequency bands from 7 to 38 GHz to ensure common handling and installation procedures.
- The ODU shall contain a connector for providing indicative AGC levels during antenna alignment.

2.1.15 The transmitter must use a modulation technique which will limit the RF channel bandwidth as per following table:

3,5 MHz	At	30 dB	below the unmodulated carrier for the digital signal of 2 × 2 Mbit/s, or
7 MHz	At	30 dB	below the unmodulated carrier for the digital signal of 4 × 2 Mbit/s, or
14 MHz	At	30 dB	below the unmodulated carrier for the digital signal of 8 × 2 Mbit/s, or
28 MHz	At	30 dB	below the unmodulated carrier for the digital signal of 16 × 2 Mbit/s or 34 Mbit/s, or
28 MHz	At	30 dB	below the unmodulated carrier for the digital signal of 155 Mbit/s

2.1.16 The frequency stability of the radio must be ≤ ±10 ppm over a temperature range of -30 ºC to + 55 ºC.

2.1.17 The modulator must make use of FEC (Forward Error Correction).

2.1.18 The receiver threshold (at Pe = 10-6) measured at the branching filter input must be at least:

2.1.19 For Frequencies of 7 to15 GHz:

- -86 dBm for a capacity of 2 x 2 Mbit/s;
- -83 dBm for a capacity of 4 x 2 Mbit/s;
- -80 dBm for a capacity of 8 x 2 Mbit/s;

- -77 dBm for a capacity of 16 x 2 Mbit/s
- -67 dBm for a capacity of 155 Mbit/s

2.1.20 For Frequencies of 23 to 26 GHz:

- -84 dBm for a capacity of 2 x 2 Mbit/s;
- -81 dBm for a capacity of 4 x 2 Mbit/s,
- -78 dBm for a capacity of 8 x 2 Mbit/s
- -75 dBm for a capacity of 16 x 2 Mbit/s
- -65 dBm for a capacity of 155 Mbit/s

2.1.21 For Frequencies of 38 GHz:

- -80 dBm for a capacity of 2 x 2 Mbit/s;
- -77 dBm for a capacity of 4 x 2 Mbit/s,
- -74 dBm for a capacity of 8 x 2 Mbit/s
- -71 dBm for a capacity of 16 x 2 Mbit/s
- -64 dBm for a capacity of 155 Mbit/s

2.1.22 Tributary and radio facing loopbacks, AIS insertion, and a PRBS generator and receiver for tributary BER measurement must be supported.

2.1 23 Line isolation and surge protection must be included.

2.1.24 All receivers must be able to operate with a BER better than 10^{-6} at an input level of – 20 dBm

2.1.25 All receiver baseband switching must be of the hitless type when used in a 1 + 1 radio system configuration.

2.1.26 Transmitter switching due to hardware failure must be less than 200 ms in duration.

2.1.27 All 2 Mbit/s tributaries offered must be 120 ohm balanced, using HDB3 code as per ITU-T Recommendation G703.

2.1.28 155 Mbit/s Traffic Interfaces must be available in

- Electrical 75 ohm to G.703 ,
- Optical to G.957 S.1.1
- LAN (10/100/1000 Base).

2.1.34 All split type indoor units must be frequency independent.

2.2 Long Haul transceivers

2.2.1 Dimensions of cabinet

- Height maximum 2200 mm
- Depth maximum 300 mm
- Width maximum 600 mm

2.2.1 Single DC power feed 48 VDC maximum 100 watts per transceiver.

2.2.2 Cover complete frequency band and the required channel must be adjustable via a synthesiser

2.2.3 Adaptive predistorter with digital adaptive linearization to reduce residual non linear distortion.

- Modulation scheme 128 MLQAM for channel widths 28 and 29,65 MHz

- Adaptive Modulation capable
- High Spectrum efficiency ACCP and CCDP

2.2.4 The XPIC (Cross-polar interference cancellation) must be an integral part of the equipment and must be software activated

2.2.5 Must support CCDP (Co-channel Dual Polarized). The use of same RF channel on both polarizations.

2.2.6 It must provide remote and automatic transmit power control RTCP and ATPC with a range of 20 db

2.2.7 It must support forward error correction (FEC)

2.2.8 It must support different RF modes of operation

- n+0, n = 1 to 5
- 1+1 hot standby
- Frequency diversity
- Space diversity

2.2.9 The transmit power must be a minimum of 30 dBm

2.2.10 The receive sensitivity must be better than -73 dBm BER 10^{-6}

2.2.11 The transmission capacity must be 4 x STM-1

2.2.12 Local maintenance terminal program to be supplied

2.3 Power Supply

2.3.1 The operating voltage must be wide-mouth -24 to -60 VDC input. Tenderers must state the power consumption of the equipment offered

2.3.2 When operating at 48 volts DC the equipment must operate from an external DC battery supply that has its positive terminal connected to earth.

2.3.3 The polarity of the power supply connections must be clearly indicated, and the equipment must be fully protected against reversed polarity connections.

2.3.4 Protection must be provided on the power supply against power/voltage surges from induced voltages and lightning. EMC and ERM to the following standards EN 301 489-4 and EN 300 386 V1

2.4 Antennas

2.4.1 It must be possible to change the outdoor radio unit without removing the antenna on split type equipment

2.4.2 Antennas must as a minimum cover the complete frequency range for each frequency band.

2.4.3 The minimum Cross Polar Discrimination for all size antennas in all frequency bands must be 30 dB or greater.

2.4.4 The minimum Front to Back ratio must be at least as per the following table (in dB):

Antenna	7/8 GHz	13 GHz	15 GHz	23 GHz	26 GHz	38 GHz
0,3 m	-	-	52	60	62	60
0,6 m	57	61	64	66	67	63
1,2 m	63	67	72	73	73	-
1,8 m	68	70	71	75	-	-

2,4 m	68	-	-	-	-	-
3,0 m	70	-	-	-	-	-

2.4.5 It must be possible to rotate either the complete antenna, or only the hornfeed to change the polarity of the radiated signal.

2.4.6 The full range of antenna sizes and prices to be included in the pricing schedule.

2.4.7 In case a splitter needs to be used in a 1+1 configuration, additional mechanical support must be given to the splitter if the splitter is not part of the integral antenna.

2.5 Alarms Monitoring

2.5.1 The following alarms must be displayed either on a Liquid Crystal Display or light emitting diode as a minimum:

- No input data.
- Low receive level.
- Transmitter failure.
- Receiver failure.

2.5.2 The indoor unit must have a minimum of eight potential free contacts for the purpose of monitoring external station alarms on the Microwave Network Management system.

2.6 General

2.6.1 Spares must be quoted for separately.

2.6.2 Tenderers must detail the spares offered.

2.6.3 Environmental Conditions Temperature range.

Outdoor unit:	-30 to +55 degrees C. (Full performance), -40 to +60 degrees C. (Full functionality).
Indoor unit:	-5 to +45 degrees C. (Full performance), -20 to +60 degrees C. (Full functionality).
Conditions:	All weather operation (passive cooling).

2.6.4 Indoor / Outdoor Interface.

- The minimum interface distance between the indoor and outdoor unit using the standard type interfacing cable must be at least 200 m .

2.6.5 Installation material

- All additional installation material specific to the configuration such as connectors, interface cables, grounding kits, etc. must be indicated
- No crimped type connectors on baseband cables preferred.

2.7 Craft Terminal Software

2.7.1 The microwave radio system offered must incorporate as a minimum, the following management facilities in the Local Craft Terminal software. Software must be Microsoft© Windows ©(2003, XP or newer) compatible

- Configuration of local and remote terminal set-up.
- Alarm monitoring of internal and external alarms.
- The monitoring of transmit and receive signal strength.

2.7.2 It must perform loopback tests at:

- Local and remote base band

- Local and remote IF
- Local RF

2.7.3 It must conduct performance monitoring according to ITU-T G.828 for SDH and G.826 for PDH.

2.7.4 It must perform the following functions

- Firmware download to local and remote sites.
- Adjustment of software controlled RF output power.

2.7.5 Both terminals of a microwave link must be visible on the same graphics screen.

2.7.6 Non intrusive testing and provisioning of new services compulsory.

3. COMPLIANCE

3.1 Unless otherwise specified, the equipment offered must comply with the recommendations of the ITU-R for the microwave equipment and ITU-T for the associated digital interfaces at 2 Mbit/s or multiples thereof.

3.2 Equipment must be type approved and certified by ICASA. ICASA issued type approval certificate for each frequency band must be included with tender submission.

END OF SPECIFICATION

SPECIFICATION FOR THE TRAINING OF TRANSNET FREIGHT RAIL PERSONNEL ON NEW TELECOMMUNICATIONS EQUIPMENT

SPC-TFRT0002
FEBRUARY 2013

Revision 2.00

TABLE OF CONTENTS

I DOCUMENT AUTHORISATION

FUNCTION	NAME	TITLE & DIVISION	SIGNATURE	DATE
Compiled by :	E van der Merwe	Operational Manager		2013/2/28
Authorised by :	M Nuttall	Divisional Manager		2013/2/28

II DOCUMENT CHANGE HISTORY

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	January 2008	Transmission	Converted to TFR format
1.10	March 2010	Transmission	Changes requested by School of Rail
2.00	February 2013	Transmission	Clarification of costs should courses be held on TFR premises

III ABBREVIATIONS, ACRONYMS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS	DESCRIPTION

1. SCOPE

1.1 A training course for Transnet freight rail personnel is required when new equipment is introduced which employs technology, which is unfamiliar, or more advance than that currently provided in-house.

1.2 Unless otherwise stipulated, the course will typically be for 10 students.

Since the content (quality) of the courses may vary considerably, certain essential items are specified and a flexible costing is called for.

2. LEVEL

2.1 The majority of students will have a minimum education of a National Diploma (light current) or equivalent.

2.2 At the end of the course, students must be well equipped with an understanding of basic principles and system configuration. Students must be familiar with the manuals, notation and equipment subsystems, reconfiguration techniques and troubleshooting. Students must be well trained on the physical equipment, use of relevant instrumentation, to solve simulated faults and to reconfigure the subsystems

3. SYLLABUS

3.1 A detailed syllabus must be submitted with this tender, which will list all the subjects to be covered in theory and practical, with an amount of time allocated for each subject.

3.2 Details of the courses notes must be submitted with the tender.

3.3 Lecturers must be fluent in English. The names and qualifications of the proposed lecturers must be provided.

4. DURATION

4.1 The total duration of the course is dependent on the quantity and complexity of the equipment, but should the time required exceed two weeks, then the course must be split into modules of two weeks (or less) separated by intervals of at least two weeks.

4.2 Unless special permission is obtained from Transnet freight rail, the course must be provide during normal working hours.

4.3 Should the tenderer wish to run the course into the evening and /or over the weekend, this must be quoted for as an option.

5. ROSTER

5.1 Normal starting time is 08h00, ending at 16h00. This, however, is flexible within reason.

5.2 The following breaks must be provided in the course:

5.2.1 10h00 – 10h15 Tea

5.2.2 12h00 – 12h30 Lunch

5.2.3 14h30 – 14h45 Tea

5.3 Theory lectures must be provided in the mornings. The afternoons must be devoted to demonstrations, use of test instruments, practical fault finding, reconfigurations and tests.

6. VENUE

6.1 The contractor will provide a suitable venue (in South Africa) inclusive of all lunches and teas.

6.2 The contractor must supply sufficient units of each type of equipment to be studied, for effective practical evaluation, and deliver to the specified venue. The contractor must deliver the equipment manuals and comprehensive course notes in English.

6.3 In the event that Transnet freight rail decides to have the course at their premises, the tenderer must stipulate his requirements for white board, flip charts and audio visual aids.

7. COSTS

7.1 The tenderer's quotation for training must include unit rates and provide details of the constituent components of the quotes, i.e.

7.1.1 Cost per set of course notes;

7.1.2 Overhead cost preparing course notes;

7.1.3 Cost per hour of each lecture or assistant;

7.1.4 Overhead cost of each lecturer (accommodation, transport);

7.1.5 Cost of hired equipment;

7.1.6 Cost of consumables;

7.1.7 Cost per additional student;

7.2 The following options must be quoted for –

7.2.1 The provision of a venue and accommodation;

7.2.2 The provision of teas and lunches;

7.2.3 The provision of all classroom accessories;

7.3 Should the quote and rates not be acceptable to Transnet freight rail, then Transnet freight rail reserves the right to either make alternative arrangements for training external to the conditions of the final contract, or disqualify the tenderer from further consideration.

7.4 Should the training be held on Transnet premises, or if any of the components of the training listed above be provided by Transnet, then the contractor's price for training will be reduced by the unit rates quoted for in clause 7.2.

7.5 Further training in the future may be required which will be costed at unit rates. Tenderers must state what escalation would be applicable.

8. FEEDBACK

8.1 The course must be followed by an examination to test the quality and effectiveness of the course. Should the course be 2 weeks or longer, an exam must take place at the end of each week. The exam should not be longer than 2 hours.

8.2 The result of the exam, together with an assessment of the student's practical competence, must be recorded in the examiner's report (Annexure A) These results are confidential and must be given to the Project Manager. Each student is entitled to know his own results.

8.3 A suitable certificate should be presented to each of the qualifying students. The exact marks should not be reflected, but rather:

- Passed with Distinction _____ 75% to 100%
- Passed with Higher Grade_____ 70% to 74%
- Fail _____ Below 70%

8.4 The student will be required to comment anonymously on the course, each student must be given a copy of Annexure B. These must be collected and submitted to the Project Manager, who will then comment and forward these to the contractor upon request.

END OF SPECIFICATION

Annexure A to specification SPC-TFRT0002

Examiner's report

CONTRACT NUMBER:	CONTRACTOR
Course Description:	
Names and Qualifications of Lecturer(s) / Examiner(s)	

Results

Student's Name	Theory %	Practical %	Comments

General Comments

Annexure B to Specification SPC-TFRT0002

STUDENT'S REPORT

Contract Number:	**Contractor**
Course Description:	
Name of Lecturer:	

9. Quality and Comprehensiveness

Please state your opinion on:

9.1	Theory Lectures		A= Excellent B = Very Good C= Satisfactory D= Inadequate
9.2	Theory Presentation		
9.3	Practical Demonstration		
9.4	Documentation and Notes		

10. Duration of Course

Please state your opinion on;

10.1	Time spent on basic principles		A = Too short B = Could be longer C = Just right D = Too long
10.2	Time spent on Practical Theory		
10.3	Time "Hands on		
10.4	Overall Course Duration		

11. Effectiveness

Please state how you feel about your ability, to maintain, fault-find or re-configure this equipment.

11.1	Confident with all aspects	
11.2	Should manage most Aspects OK	

11.3	Will require frequent reference to manuals	
11.4	May need to call for help occasionally	
11.5	Did not really understand the system	

TFR INFRASTRUCTURE

TELECOMMUNICATIONS SPECIFICATION

GENERIC EQUIPMENT CABINET

BBF1026

SEPTEMBER 2011

Table of Contents

I. Document Authorisation

Function	Name	Title and Division	Signature	Date
Compiled by:	ML Nuttall	Divisional Manager, Transmission		2013/01/28
Reviewed by:	J Loretz	CET, Quality Assurance		28/2/2013
Reviewed by:	E van der Merwe	Senior Technologist, Transmission		28/2/2013
Authorised by:	ML Nuttall	Divisional Manager, Transmission		2013/01/28

II. Distribution

To be registered in TFR's document management system – Projectwise

Emailed to all TFR Telecommunications specialists

Provided to relevant Project Managers, Tenderers and Contractors

III. Change History

Issue No.	Date	Issued by	Change Summary
1.00	2011-06-13	Transmission	Compilation from old RFPs
2.00	2011-09-20	Transmission	Typical layouts added

IV. Changes since Last Revision

Clause	Description

V. Abbreviations and Acronyms

Acronym	Description
TFR	Transnet Freight Rail

VI. Definitions

Term	Definition

VII. Relevant Documentation

Document	Description and Relevance

1. SCOPE

This specification covers the requirements of Transnet for the supply of cabinets. The quantities and the number of accessories will be provided in the Schedule of Requirements, or Bill of Quantities, or Design Document.

2. COMPLIANCE

2.1 Tenders must comply with all the specifications and requirements as indicated in this document. Any deviation from this specification must be indicated in the tenderer`s submission document.

2.2 Transnet will reserve the right to inspect cabinet samples before adjudication of contract.

3. SERVICE CONDITIONS

3.1 The equipment must be suitable for continuous operation under the following conditions:

3.1.1 Air pollution: Heavily saline laden industrial and locomotive fumes.

3.1.2 Relative humidity: As high as 95%.

3.2 All components and parts must be manufactured and installed to ensure reliable operation under these conditions.

4. CABINET COLOUR

The cabinet and all its components must be grey and must be Polyester Structured Powder coated.

5. CABINET SIZE

The cabinet height will be stated in the Schedule of Requirements. If not, then the default cabinet sizes must be as follows:

Height (equipment mounting space)	38U
Width	600 mm
Width of the equipment mounting area	482.6 mm (19")
Depth	600 mm

6. CABINET MAKE AND ASSEMBLY

6.1 Cabinet must be of an IP54 standard.

6.2 The cabinet must have a loading capacity of at least 400 kg.

6.3 The frame must be an extruded steel frame.

6.4 Must be fitted with 19" Rack Punch Profiles, 2 in the front and 2 in the back of the cabinet – punch profiles must be powder coated.

6.5 Must be fitted with a top and bottom cable entry and the entry must be fitted with a brush panel.

6.6 The front of the cabinet must be fitted with a lockable perforated steel door.

6.7 The sides of the cabinet must be fitted with removable doors.

6.8 The back door must also be lockable and removable.

6.9 All doors must be earthed to the bottom plate with a 6 mm^2 cable that can be removed / unplugged when removing the doors.

6.10 Must be fitted with four height adjustable feet. If specified, these should be replaced by wheels. Either must support a 400 kg load

6.11 Cabinet must be fitted with a fan tray with 2 x 220 VAC long-life roller bearing fans.

6.12 Must be fitted with a 1500 mm Earth Bar with at least 15 earth clamps. The earth bar must be insulated from the cabinet.

6.13 The cabinet must be fitted (top of the cabinet) with a 2U Trip Switch Panel with 6 x 48 Volt, 10 Amp trip switches, spare positions for 2 more switches and a common earth bar insulated from the cabinet. The trip switches must be bridged.

6.14 Must be fitted with a Mains Outlet Strip, 5-Way, 15 Amp, 220 VAC and it must be equipped with a 15 Amp trip switch.

7. ADDITIONAL EQUIPMENT THAT MUST BE SUPPLIED

7.1 The following equipment and material must be supplied with each cabinet:

7.2 Modem Trays, 330 mm deep

7.3 1U Brush Panels

7.4 1U Vent Plates

7.5 1U Blanking Plates

7.6 1U Drawer unit

7.7 10 x 2U Blanking Plates

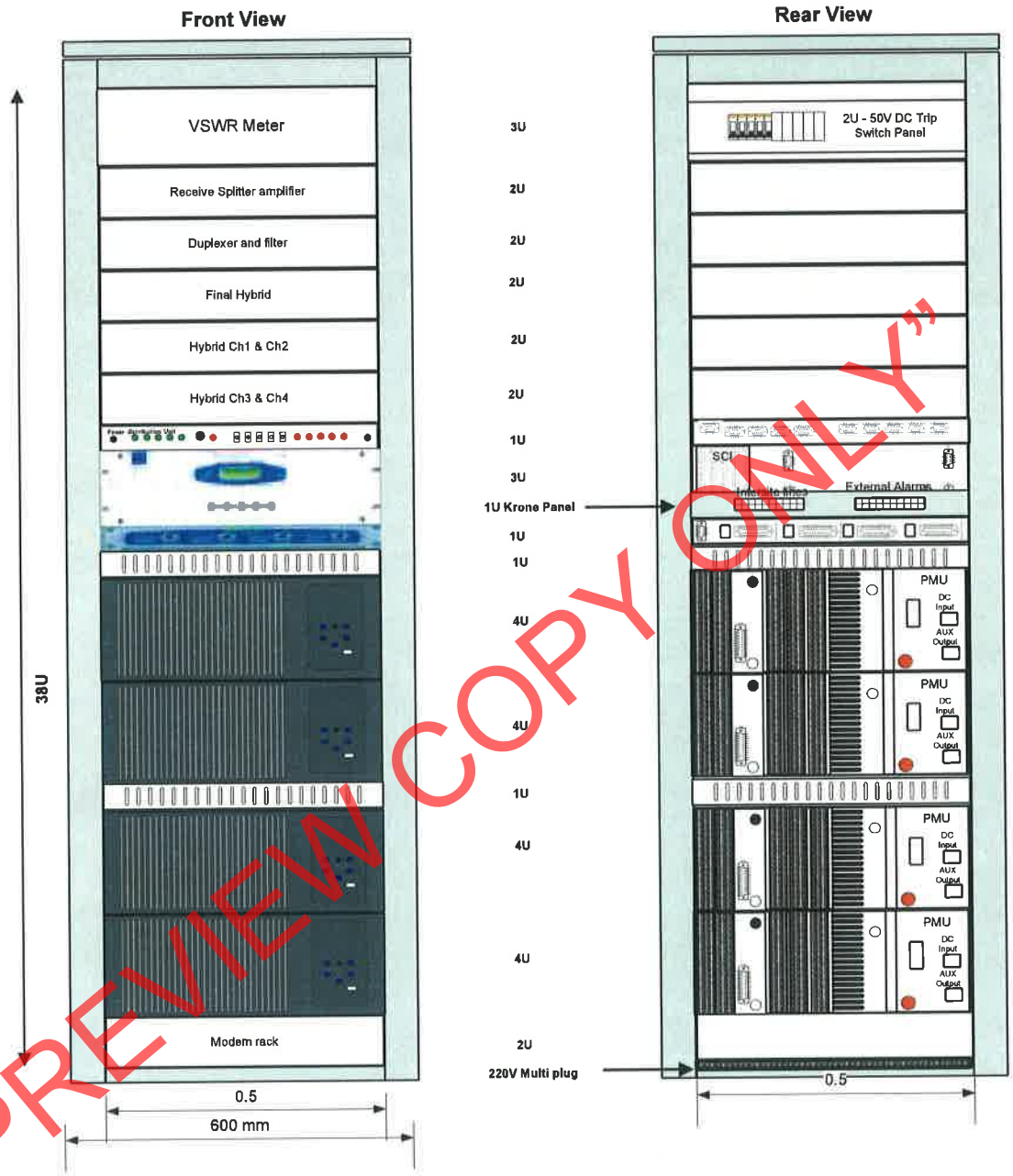
7.8 Cage Nuts, Screws, and Black washers, 100 of each.

7.9 PVC Finger Trunking (40 x 40 mm) – 2 meter lengths - must be of the Phoenix type and make

8. TYPICAL LAYOUTS

The following drawings illustrate typical layouts for trunking and RTO sites.

TRUNKING-TFR 38U



		TRUNKING-TFR Cabinet			
		Drawing Number	Drawn By	Date	Version 1
			Herman Coetzee	4-2-2011	

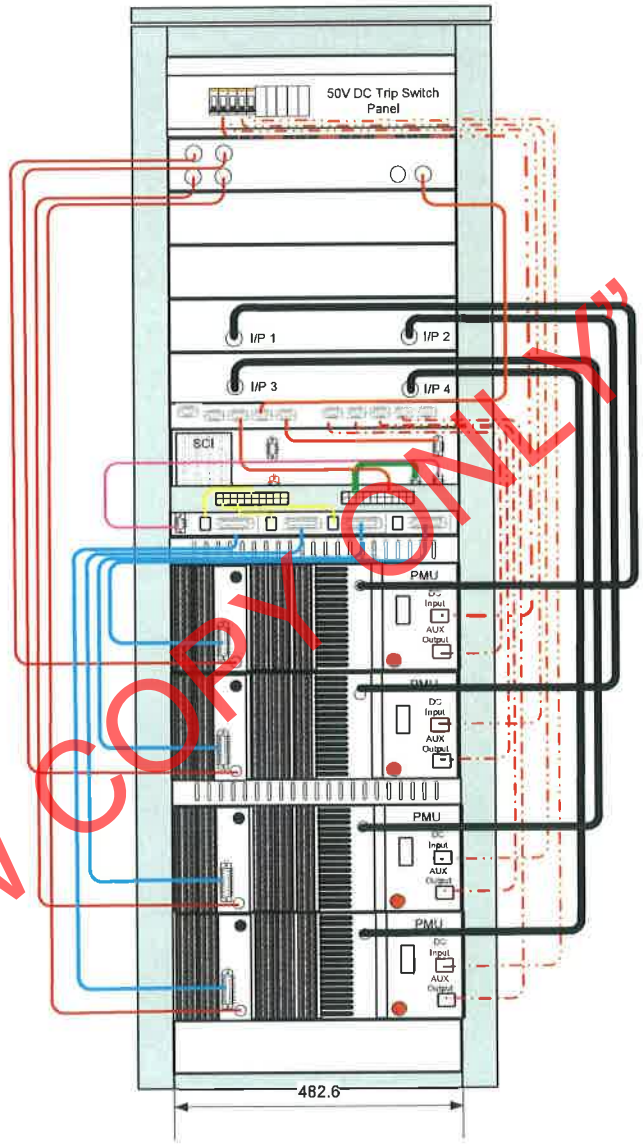
TRANSNET

TRUNKING-TFR 38U

Rear View and Wiring

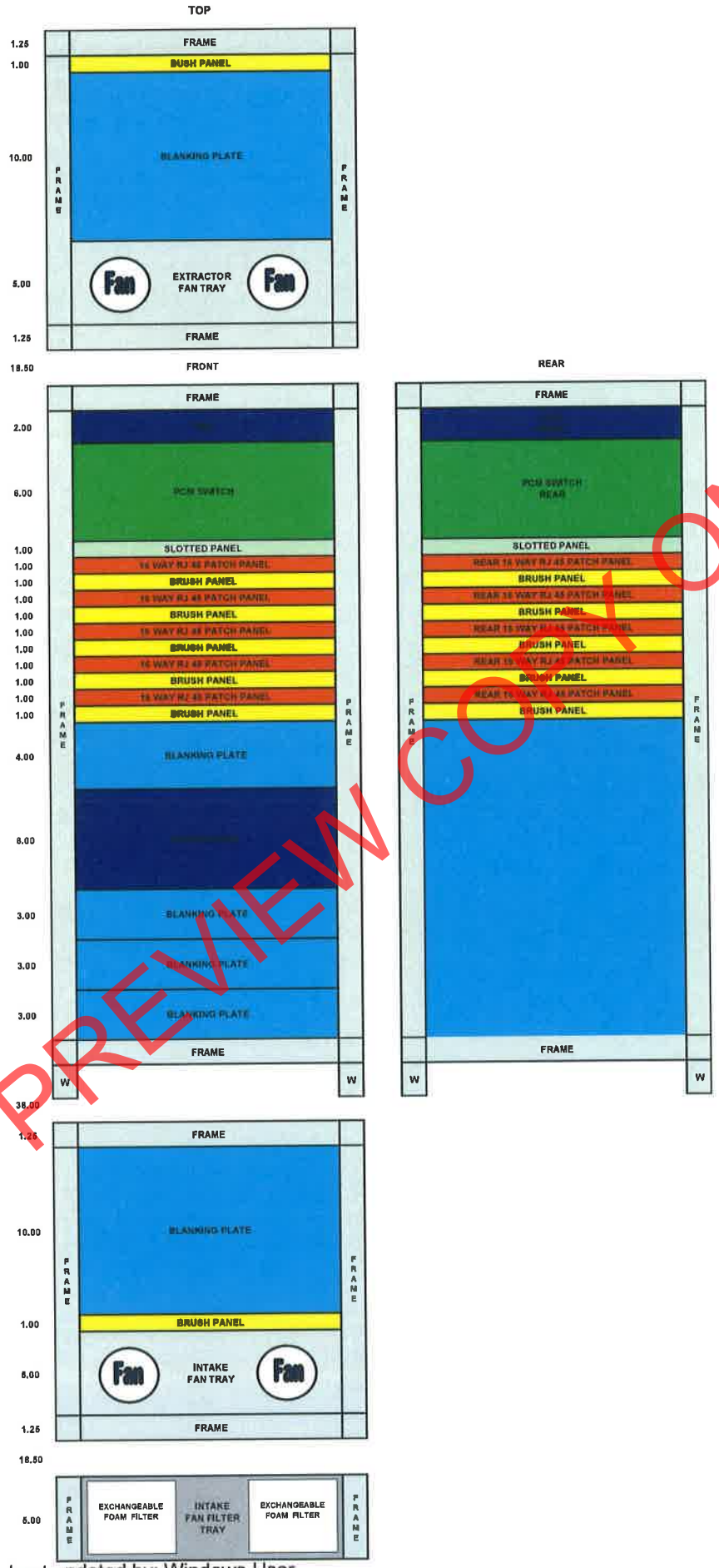
Legend

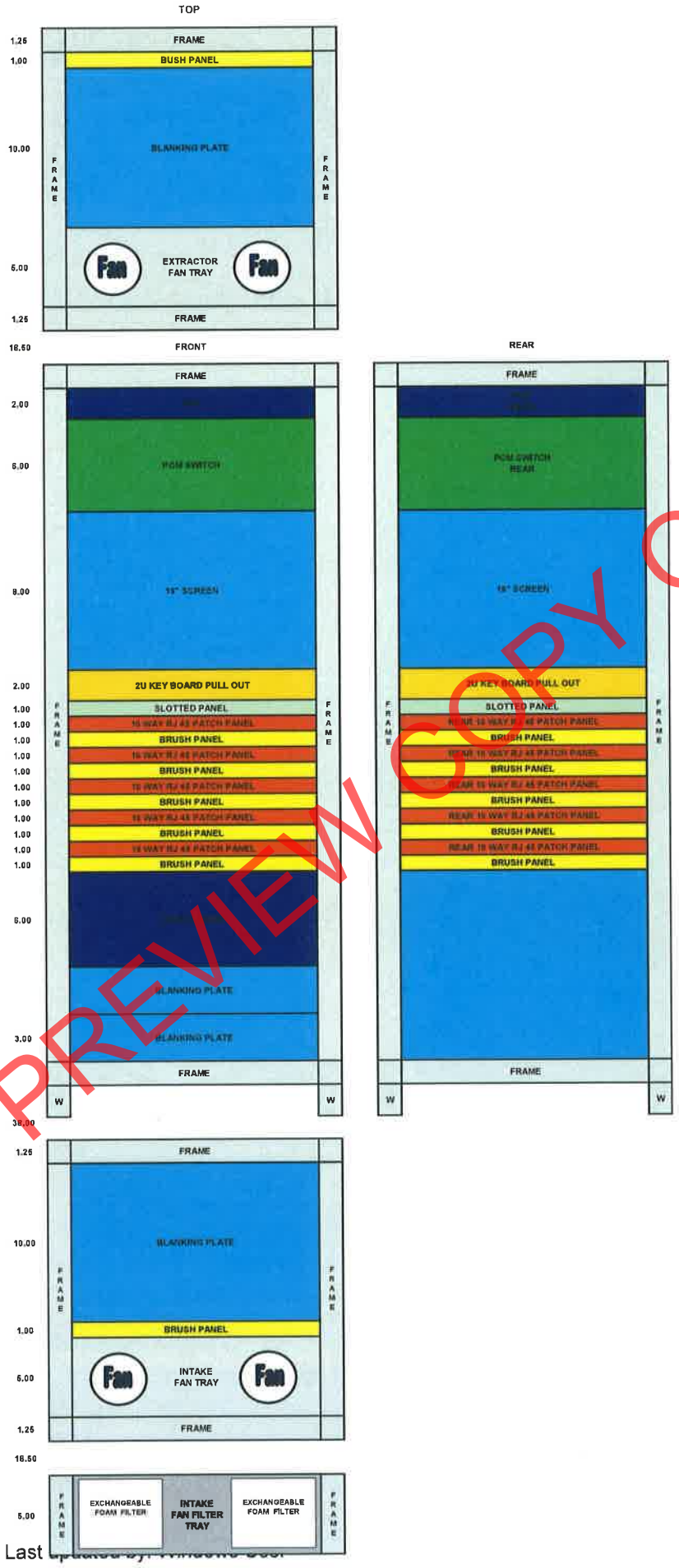
- PDU output – R/B Ripcord 0.55 mm
- PDU Input – R/B Ripcord 0.55 mm
- 50V DC input – R/B Ripcord 2.5mm
- SIO Bus-0.22 Belden 8761 - 1 pair
- TSC card to Repeater - 6pr 0.22 mm Mylar screened
- Intersite line – UTP stranded
- External alarms-10 pr indoor cable
- Rx Lines - LMR 195
- Tx Lines - LMR 400

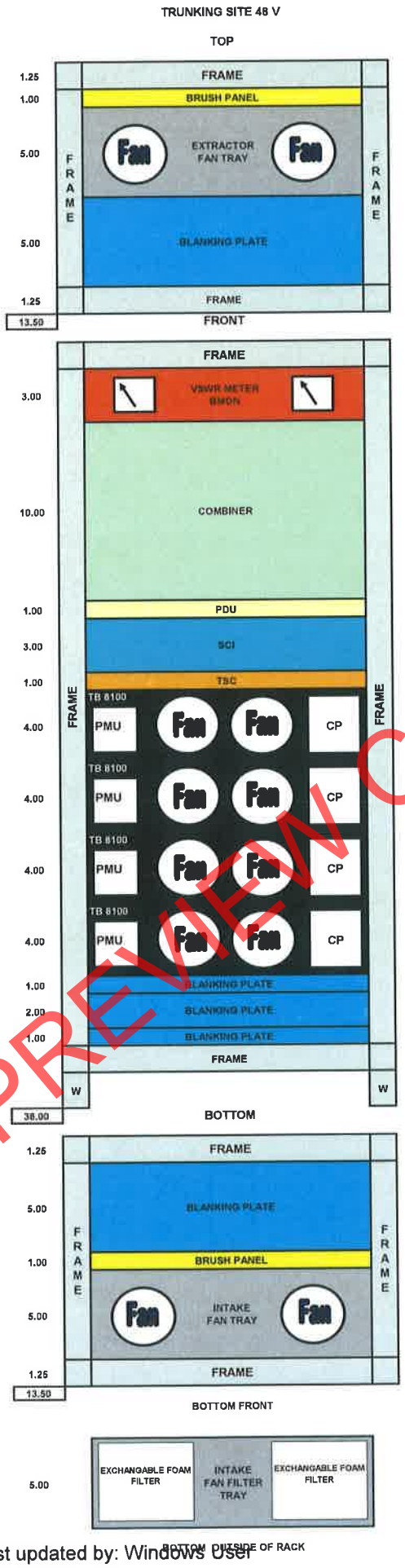


		TRUNKING-TFR Cabinet			
		Drawing Number	Drawn By	Date	Version 1
			Herman Coetzee	4-2-2011	

TRANSNET







CLAUSE BY CLAUSE COMPLIANCE SHEETS

SPECIFICATION SPC-01275 VERSION 4.00
TELECOMMUNICATIONS NETWORK MANAGEMENT SYSTEM
STATEMENT OF COMPLIANCE

Clause type:
M = Mandatory. Response must be "Yes"
I = Information. No response required
NA = Not applicable to this requirement
X = Explanation. Bidder must attach notes to this statement of compliance furnishing the additional information required
O = Optional. Details of the offer must be added to additional notes

	Type	Response
1. INTRODUCTION		
1.1 This specification covers the Network Management Systems (NMS) for monitoring and managing telecommunications network elements in the TFR Transmission Network.	I	
1.2 Tenderers must fully describe their offer and its full set of capabilities, and ensure that it is fully priced.	I	
2. ARCHITECTURE		
2.1 A Data Communication Network (DCN) currently connects all the transmission network elements to the central servers of the various network management systems.	I	
2.2 The DCN consists of 22 Cisco 2811 routers connected to each other via E1 WAN links and D bytes in the SDH frame of the SDH network. This network is illustrated in the annexure.	I	
2.3 The new NMS must manage its specific network elements through a new DCN that must be installed in parallel to the existing one in the same sites.	M	
2.4 The new DCN routers must have STM-1 and E1 WAN ports as described below. Where STM-1 is available, this will be the preferred interface.	M	
2.5 Once the new DCN is in place, the LAN connections at each site must be moved from the existing routers to the new DCN routers.	M	
2.6 The NMS must be able to communicate to any element via more than one gateway.	M	
2.7 The NMS must not be dependent on restrictive protocols such as RIP due to the size of TFR's network. It must support the latest protocols.	M	
2.8 The NMS must be accommodated on main and standby servers. Tenderers must provide detail specifications of the servers and three client stations including operating platform.	X	
2.9 Back-up of database and configuration to be "hot-standby" (continuous updating)	M	
2.10 Costing for all software licences and licence period must be supplied	M	
2.11 The NMS shall allow remote location of I/O devices / software modules belonging to the NMS.	M	
2.12 Management functions shall be separated from the telecommunication equipment and traffic functions to achieve flexibility, maintainability, independence and stability.	M	
2.13 The NMS shall provide access to any controlled network element from any terminal or workstation (including remote terminals and workstations), provided that such access is authorised.	M	

2.14 The NMS must support secure remote access via 3G radio connection.	NA	
2.15 The NMS shall provide a Web view of the network, elements, configuration and performance. This access must be configurable between read only and secure full control.	M	
3. DCN ROUTERS		
3.1 Operating environment		
3.1.1 The router must be able to function in harsh and rugged environments like the railway trackside where high voltage distribution can be present.	M	
3.1.2 The routing and switching equipment must be reliable and scalable with modules that can be added in the same frame.	M	
3.1.3 The equipment must have a robust operating system that has a proven record as an industry standard.	X	
3.1.4 The equipment must be able to function in a telecommunication environment with -48 volt DC as the supply voltage.	M	
3.1.5 A rugged industrial design with no moving parts (like fans or hard disc drives) is essential for maximum reliability. It must make use of convection cooling or similar method.	M	
3.2 Interfaces		
3.2.1 The unit must accommodate standard telecommunications interfaces 2 Mbit/s (E1) and 155 Mbit/s (STM-1) on the Wide Area Network (WAN) side.	M	
3.2.2 The WAN interfaces must be available as separate modules that can be equipped as needed.	M	
3.2.3 The router must have at least four slots available for WAN interface modules. The total number of WAN ports must be at least 8.	M	
3.2.4 Optical fibre and copper interfaces must be supported at the relevant rates.	M	
3.2.5 The router must include a switch module. The preferred size of the switch unit must be 16 10/100 Mbit/s Ethernet ports.	M	
3.3 Features		
3.3.1 The routing and switching equipment must be able to be controlled by remote management software. This software must be quoted for as an option.	M	
3.3.2 The operator must be able to access and configure the equipment using a command line interface (CLI).	M	
3.3.3 The device must have network security features which are based on open standards.	M	
3.3.4 The unit must offer integrated services like advanced routing, firewall, traffic shaping, quality of service and network segmentation.	M	
3.3.5 The router must be able to support routing protocols like Routing Information Protocol (RIP), Intermediate System to Intermediate System (IS-IS), Open shortest Path First (OSPF), Border Gateway Routing Protocol (BGP) and IPv4.	M	
3.3.6 The memory capability to support the requested protocols must be included in the router.	M	
3.3.7 The router must have modular power supplies in a redundant mode. These power supply modules must be hot swappable.	M	

3.3.8 All software licenses needed to operate in the routing and switching environment should be included.	M	
4. COMMAND HANDLING		
4.1 The NMS shall provide the operator a generic user interface, which automatically translates the commands into the man-machine-language of the network elements.	M	
4.2 Tools to administer and modify the generic interface and the command conversion tables shall be provided.	M	
4.3 All commands in the controlled network elements shall be available to the operator. The NMS shall check the syntax of commands passed to the network element.	M	
4.4 The NMS shall provide functions to route all responses, both responses to commands and unsolicited (spontaneous) reports, from the network elements to the NMS.	M	
4.5 The NMS shall provide functions to route the responses to any I/O device connected to the NMS.	M	
4.6 The NMS shall provide functions to store sequences of commands as command files. It shall be possible to activate these files according to a predefined schedule, and to set a time limit for execution of the command file.	M	
4.7 It shall be possible for the NMS operator to query the system on the status of any queued command files, and to edit and cancel any of the queued command files.	M	
4.8 If failure of any network element or link occurs, the NMS shall be able to store all commands until the failure is repaired.	M	
4.9 The NMS shall store all commands issued to the network element in a command log. The first lines of the response shall also be stored in the log.	M	
4.10 The operator shall have the possibility to search in the log to extract individual commands and associated responses. The searching criteria shall include:	M	
4.10.1 Date and time interval.	M	
4.10.2 Command type.	M	
4.10.3 The operator and terminal who issued the command.	M	
4.10.4 Network element identity.	M	
4.10.5 Character strings	M	
5. OPERATOR SUPPORT		
5.1 All functions and facilities in the NMS shall be available from terminals or workstations - with graphical user interfaces. In addition, a subset of the functions and facilities shall be available from character oriented terminals.	M	
5.2 The NMS shall provide facilities to equip the terminals and workstations with slave printers to allow for printing of screen outputs.	M	
5.3 Operator commands applied to the NMS shall be checked for correct syntax and authority.	M	
5.4 The interaction between the operator and the NMS shall be menu driven with self explanatory (including Help facilities) and easy to traverse menus.	M	
5.5 The method of deleting old and entering new data into the NMS shall be simple. Prompts shall be placed in appropriate places to ensure that no deletions go unchecked.	M	
5.6 For authorised personnel all information contained in the NMS shall be displayed and printed on demand.	M	

5.7 The NMS shall provide presentation tools to display alarms, network status, reports and network maps on graphical workstations. Zooming and paging techniques to display status down to individual network elements shall also be provided.	M	
5.8 The NMS shall provide multi-level system support allowing some operators to use low level tools and other operators to use high level diagnostic tools.	M	
6. PERFORMANCE MANAGEMENT		
6.1 The NMS shall provide performance-monitoring functions to collect traffic data, Quality of Service (QoS) data and performance data from the network elements. The NMS shall handle both raw data and processed reports.	M	
6.2 The request of data collection shall be both on demand, and automatically on a schedule or threshold basis. The NMS shall provide functions to modify the current schedule and/or threshold.	M	
6.3 It must also be possible to monitor the performance of any number of links via software and must be in accordance with ITU-T Recommendation G821, G826, G828, G829, M2100, M2101, and Ethernet and must be available in Microsoft Office formats.	M	
6.4 The NMS shall provide statistical functions to analyse the collected data and present network status and network performance reports on a per equipment basis and as network-wide reports.	M	
6.5 All types of reports shall be presented in a uniform and standard manner.	M	
6.6 Specific reports must be automatically generated monthly	M	
6.7 The NMS shall provide functions to correlate information between different types of network elements and services.	M	
6.8 The network status and network performance reports shall highlight any abnormal and threatening condition.	M	
6.9 The NMS shall provide functions to enable highlighting of network elements, designated with high operation and maintenance priority, in the network status and network performance reports.	M	
6.10 In the reports, degraded performance shall be analysed and localised to a specific network element - or to a specific part of the network.	M	
6.11 The NMS shall have built-in intelligence to aid the operators with information and actions to be taken during traffic and network management.	M	
6.12 The NMS shall provide functions to archive reports and data in a history database.	M	
6.13 The NMS shall provide functions to retrieve and present long-term reports based on the archived data. The logic of the NMS shall allow long term reports to span over one year.	M	
6.14 In the reports, transmission systems with high operation and maintenance priority shall be highlighted.	M	
6.15 In the reports, degraded performance shall be analysed and localised to specific equipment or to a specific part of the network. The NMS shall have built-in intelligence to aid the operators with information and actions to be taken during traffic and network management.	M	
6.16 Presentation of collected data and performance reports shall be made both as text and graphics, including network maps.	M	
7. DIGITAL FACILITIES SPECIFIC FUNCTIONS		
7.1 The NMS shall provide functions for continuous performance monitoring for all bit rates proposed for this network.	M	
7.2 Performance monitoring of the network shall be conducted at both the inputs and outputs of the streams.	M	

7.3 When monitoring a stream, which is associated with higher order systems, the operator shall be able to select between the following report options:	M	
7.3.1 Monitor only that stream.	M	
7.3.2 Monitor only the worst case stream – of the higher order system.	M	
7.4 The NMS shall be able to provide, for a defined time interval, the total time that any digital data stream has been in the degraded, severely error seconds or unavailable condition.	M	
8. FAULT MANAGEMENT		
8.1 The NMS shall provide supervision functions to check that the network elements are operating according to the requirements set forth in the particular specifications.	M	
8.2 The NMS shall provide alarm surveillance functions to monitor and interrogate the network elements about alarms.	M	
8.3 The alarm records shall include the following information:	M	
8.3.1 Network element identity.	M	
8.3.2 Network/service that the network element belongs to.	M	
8.3.3 Date and time of alarm event.	M	
8.3.4 Alarm severity (alarm class).	M	
8.3.5 Problem type.	M	
8.3.6 Problem data.	M	
8.3.7 Acknowledgement data (date, time and operator identity).	M	
8.3.8 Date and time of clearing.	M	
8.3.9 A comments field where the operator can add any additional information or comments.	M	
8.4 The alarms shall be divided into classes according to severity. It shall be possible to define at least three classes.	M	
8.5 The NMS shall provide functions to route the textual alarms to any I/O device connected to the NMS.	M	
8.6 The NMS shall provide options to use the alarm record data to route the alarms to a specific I/O device.	M	
8.7 The NMS shall provide functions to acknowledge received alarms from the network elements. When an alarm has been acknowledged, the state of the alarm symbol shall change and the alarm shall be removed from the active alarm list.	M	
8.8 The NMS shall indicate to the operator any incoming change in alarm status where the alarm type is one of the highest severity classes.	M	
8.9 The NMS shall provide functions to retrieve all types of alarm records active or historical from the alarm log. The NMS system shall be equipped with tools for generation of different types of reports and statistics from the alarm log. Search criteria for retrieval shall include:	M	
8.9.1 Location (site).	M	
8.9.2 Equipment (Element) identity.	M	
8.9.3 Time and date.	M	
8.9.4 Alarm class.	M	
8.9.5 Character string.	M	
8.10 The NMS shall support facilities to present spontaneous alarm reports by means of text, graphics and acoustics. It shall be possible to highlight alarms of high severity class and suppress less severe alarms.	M	
8.11 The NMS shall provide access to analysis functions in the controlled network elements to identify and locate the failures in the network elements, down to functional unit level.	M	

8.12 The NMS shall provide operator access to test functions in the controlled network elements, for failure diagnostics and failure location.	M	
9. FAULT LOCALISATION FUNCTIONS		
9.1 The NMS shall provide operator access to test functions in the controlled transmission facilities for failure diagnostics and failure location.	M	
9.2 In order to isolate the source of a fault condition, events that occur at various points on a transmission route shall be recorded and analysed.	M	
9.3 The NMS shall be able to identify failures caused by events producing multiple alarms such as cable breaks or microwave channel interruptions. The NMS shall be able to suppress the redundant alarms in order to ease the fault location.	M	
9.4 The NMS shall be able to display the whole transmission route and standby protection bearers, and indicate the faulty equipment entity - when the failure is localised.	M	
9.5 The NMS shall provide functions to produce fault tickets including the following information:	M	
9.5.1 Fault ticket number.	M	
9.5.2 Priority.	M	
9.5.3 Type of failure.	M	
9.5.4 Site and route at which a failure has occurred.	M	
9.5.5 Probable cause of the failure.	M	
9.5.6 Recommended plug-in units to take to site.	M	
9.5.7 The date and time at which the fault first appeared.	M	
9.5.8 The date and time at which the fault was repaired.	M	
9.5.9 Current fault status.	M	
9.5.10 Actual cause of failure (entered by the operator).	M	
9.6 It must be possible to categorise faults according to the information in the fault tickets.	M	
9.7 The NMS shall enable the operators to enter status information about a particular fault, recording progress in fault restoration.	M	
9.8 The reception of a change of the fault status, "failure" or "corrected failure", shall be indicated at the terminal by means of a flashing display and an audible alarm.	M	
10. CONFIGURATION MANAGEMENT		
10.1 The NMS shall provide remote control and full configuration of all network elements.	M	
10.2 The NMS shall configure the software and hardware of the controlled network elements.	M	
10.3 The NMS shall bring network elements into operation and to change its service state; e.g. out of service and in service.	M	
10.4 The NMS shall be able to download the following types of software to network elements:	M	
10.4.1 Software corrections.	M	
10.4.2 Function modules.	M	
10.4.3 Software to refresh reloaded devices.	M	
10.5 The NMS shall store the total network configuration in an on-line database, available to the operator. Configuration changes as described above shall result in updates of the database.	M	
10.6 The NMS shall provide functions to maintain consistency between the actual configuration of the network elements and the configuration stored in the NMS database.	M	

SPECIFICATION SPC-0012 VERSION 3.00
ACCESS MULTIPLEXER EQUIPMENT
STATEMENT OF COMPLIANCE

Clause type:
M = Mandatory. Response must be "Yes"
I = Information. No response required
NA = Not applicable to this requirement
X = Explanation. Bidder must attach notes to this statement of compliance furnishing the additional information required
O = Optional. Details of the offer must be added to additional notes

	Type	Response
1. GENERAL		
1.1 This specification covers the supply of access multiplexers for telecommunication transmission.	I	
1.2 The PDH interfaces are based on the European hierarchy and voice frequency encoding is by means of PCM and based on A-law.	M	
1.3 The Access Multiplexer equipment must be able to operate from a 50V DC supply, with either the negative or the positive tied to the earth, without any loss in the functionality of any of the Access Multiplexer equipment cards.	M	
1.4 Sub rack. Two options must be offered	M	
· Types A: 19 inch wide, Maximum 9 U height		
· Types B: 19 inch wide, Maximum 4 U height		
1.5 Slots available for interface cards in the sub rack, excluding the common cards	M	
· Type A: 19 inch wide, Maximum 9 U height sub rack		
Minimum slots 5 maximum 10		
· Type B: 19 inch, Maximum 4 U height		
Minimum 2 slots		
1.6 Interfaces to be accommodated in the various sub racks	M	
· Type A: Any combination of interfaces as below		
· Type B: A combination of STM1 optical module, E1 ports, V.24 (IEC232) module, 4 wire plus E&M module and 2 x 10/100 bT ports		
1.7 The backplane switching matrix must run at a rate of at least 500 Mbit/s and be able to connect from any one port to any other.	M	
1.8 Tenderers must specify the size of the TDM and packet switching matrices offered, which must be non-blocking and allow mapping between them.	X	
1.9 All equipment supplied must be designed to operate without degradation under the following conditions:	M	
· Temperatures: from –10 to +50 Degrees Celsius		
· Relative Humidity from 0% to 95%		
· Air Pollution: dust and heavily laden saline and industrial pollutants		
1.10 The tenderer must state his equipment's performance with respect to the following:	M	
· Resistibility of equipment to over voltages and over currents including surges due to lightning in accordance with ITU-T Recommendation K.20.		
· Immunity against RF radiation from external sources.		
· The equipment's radiation level and subsequent effect on other electronic equipment in close proximity.		
2. STANDARDS		

2.1 Except where otherwise stated in this specification, all equipment must conform to the latest recommendations of the ITU-T Standards: G703, G704, G707, G708, G709, G711, G712, G713, G737, G784, G792, G793, G751, G803, G813, G821, G823, G826, G828, G829, G956, G958, M1040, M1020 and V.110.	M	
2.2 Tenderers must certify that they are familiar with these recommendations and must state all instances where their equipment offered is unable to comply.	X	
3. OPTICAL INTERFACES		
3.1 This specification covers the requirements of optical line equipment for digital transmission on two G.652.D optic fibres, operating in the 1550 nm window, and line transmission rates of 155 Mbit/s, 10/100 Mbit/s or 2 Mbit/s	I	
3.2 Optical distances to be achieved for STM-1 or less, based on SFP technology.	M	
· 0 to 25 km (short haul)		
· 25 to 40 km (medium haul)		
· 40 to 80 km (long haul)		
3.3 Optical distances greater than this must be provided on separate cards. 2 Mbit/s interfaces may also be provided on-board the card.	M	
3.4 The SDH frame structure must conform to G.709	M	
3.5 The following protection schemes must be available	M	
· SNCP		
· MSP		
3.6 Should the optical receiver detect no signal for a period greater than 600 ms, the laser transmitter must shut down.	M	
3.7 Should the optical path be restored, transmission must proceed. In order to achieve this, the laser source must be activated cyclically for 1 s every 60 s, and when a valid signal is detected then normal transmission must be restored.	M	
3.8 The minimum alarm conditions that the equipment must detect and accurately display on LCT and NMS are:	M	
AIS;		
FERF;		
BER > 10-3;		
BER > 10-6;		
3.9 Fault management for SDH to conform to ITU.T G784	M	
4. LAN INTERFACES		
4.1 Data Rates n x 64 kbit/s s and 10/100 Mbit/s	M	
4.2 IEEE 802.3 Frame structure.	M	
4.3 Interfaces required is 10/100 Base-T and optical	M	
4.4 Minimum of 2 ports per card	M	
4.5 LED indicating the following must be on the card or visible at the NMS	M	
· Power on		
· Transmit		
· Receive		
· Error (Buffer overflow)		
5. 6-WIRE VOICE FREQUENCY CIRCUIT		
5.1 These circuits are used for exchange junctions and the physical connection of radio repeaters and occupies a 64 kbit/s timeslot	I	
5.2 This circuit must consist of two voice frequency pairs (for transmit and receive paths), and two wires for a simple on-off type of signalling. This signalling will also be used to carry the PTT function for radio repeaters.	M	

5.3 Two or more of these ports must be able to be connected together to simulate a conference with PTT.	M	
6. ANALOGUE SUBSCRIBER AND EXCHANGE INTERFACE		
6.1 This is the conventional circuit, which connects an automatic telephone instrument to an automatic exchange and occupies a 64 kbit/s timeslot.	I	
6.2 To simulate this circuit over transmission equipment requires a different interface at either end; a SUBSCRIBER interface at the instrument end, and an EXCHANGE interface.	I	
6.3 All 2-wire interfaces must incorporate inductive hybrids, hybrid loss 4 dB or 4,5 dB, the nominal impedance of the 2-wire circuit must be 600 ohms balanced and 900 ohms complex. Trans-hybrid losses must be -18 dB at 1 kHz	M	
6.4 Under no circumstances may any of the lines be unbalanced. A noise limiter must be installed when the line impedance, unbalanced, exceeds 1 %.	M	
6.5 Speech current must simulate a battery supply of 50 volts. However, the speech current must not exceed 90 mA, and the minimum current provided must be 20 mA. (The line resistance, including instrument, may vary from 0 to 1500 ohms).	M	
6.6 Ring current must produce a voltage of 60 to 80 volts over the two wires, in the frequency range 15 to 25 Hz	M	
6.7 Ring detectors must interpret a voltage between 20 and 120 volts, in the frequency range 15 to 25 Hz, as a signal.	M	
6.8 When an interface is required to produce a loop, this must be by means of placing a resistance of 0 to 1 000 ohms across the line.	M	
6.9 Loop detectors must interpret a line resistance less than 1500 ohms as a loop.	M	
6.10 The method of signalling between the interfaces (e.g. DTMF, tone, timeslot 16, etc.) must be compatible.	M	
6.11 Input attenuation must be provided with a minimum dynamic range of 16 dB in 0,5 dB steps.	M	
6.12 The output level must be adjustable between 0 and 8 dB in 0,5 dB steps.	M	
6.13 The equipment must be protected against line surges of 2,5 kV with a rise/decay time of 10/800 microseconds. If this protection can only be provided externally, i.e. on the distribution frame, then it must be offered as such. (Tenderers may quote an optional reduction should this protection not be required.)	M	
6.14 The equipment must be immune to transverse potentials of 300 volts (RMS) and longitudinal potentials of 150 volts (RMS), which may exist on cables and lines for any length of time. Tenderers must specify their equipment limitations	M	
7. DATA INTERFACES		
The typical configuration must contain at least four interfaces .		
7.1 V.24		
7.1.1 The interface must be configurable for full- or half-duplex operation.	M	
7.1.2 It must be possible to give local and remote loops on the analogue or digital side of the interface.	M	
7.1.3 The interface must be capable of internal or external clock operation.	M	
7.1.4 The interface must be selectable as a DTE or DCE	M	
7.1.5 Point-to-multipoint operation must be possible (conferencing)	M	
7.1.6 Asynchronous transmission with oversampling (transparent)	M	

7.1.7 Transmission of data signals with frame structure in compliance with ITU-T V.110, synchronous (full-duplex) or asynchronous (transparent) with oversampling.	M	
7.1.9 Data rates	M	
· Synchronous 600 to 19,2 kbit/s		
· Asynchronous 600 to 38,4 kbit/s		
7.1.10 Alarms and indication	M	
· Loss of Signal in		
· Loss of Signal out		
· Loss of Sync of data channel		
7.1.11 The following line statuses must be available on the LCT and NMS	M	
ITU.T V24		
102		
103		
104		
108		
107		
105		
106		
109		
7.2 V11	M	
7.2.1 Data rates 48, 56, 64kbit/s and n x 64kbit/s in compliance with the ITU V.110	M	
7.2.2 Alarms and indications	M	
· Loss of signal in		
· Loss of signal out		
· Loss of sync of data channel		
7.2.3 The following line statuses must be available on the LCT and NMS	M	
· Transmit (T)		
· Receive (R)		
· Control (C)		
· Signalling (I)		
· Timing signal (S)		
7.3 2Mbit/s (E1 using HDB3) equipment interface		
7.3.1 The port interface must be 120 ohm balanced.	M	
7.3.2 Remote looping of individual ports must be possible	M	
7.3.3 The LCT and NMS must indicate that the relevant E1 port has been looped	M	
7.3.4 High impedance test sockets must be provided on the module for measurements	M	
7.4 Auxilary / Alarm interface		
7.4.1 Typical configuration must include this module, it should contain a minimum of:		
7.4.1.1 Eight Digital contacts	M	
7.4.1.1.1 Closed contact	M	
· Minimum current 0.1 mA		
· Maximum current 1 A		
· Impedance < 0.1 Ohms		
7.4.1.1.2 Open contact	M	
· Maximum DC voltage >60 V		

· Maximum residual current < 1μA		
7.4.1.2 Eight Sensors	M	
· Polarity any		
· Typically used for temperature and battery level measurements		
8. NETWORK MANAGEMENT		
8.1 General software conditions		
8.1.1 The network control software must be such that it allows the user to control, configure and monitor the system in an intuitive and user-friendly way.	M	
8.1.2 A centralized server type management platform is required.	M	
8.1.3 All relevant licenses must be included	M	
8.1.4 The software must run with a multitasking operating system. The software must preferably be in a Windows type set-up. The operating systems must be Windows Server or Linux.	M	
8.1.5 Network data must be kept at the central server.	M	
8.1.6 The software must be such that it will prompt the user if an alarm condition occurs, irrespective of the level in which the user is busy in	M	
8.1.7 The alarm must be in a different colour to the rest of the display and must give an audible indication.	M	
8.1.8 The network layout must be graphically displayed and it must be possible for the user to zoom into the detail of each network element up to card/module level where the fault occurred.	M	
8.1.9 It must be possible to freely assign channels to timeslots with software in through, drop/insert, conference, point to multipoint or terminal mode without affecting other channels.	M	
8.1.10 It must be possible to change the attenuation levels of individual channels through the NMS.	M	
8.1.11 It must be possible to specify the required clock synchronisation source and a list of priorities in the event of clock source failing.	M	
8.1.12 It must also be possible to monitor network performance via software and must be in accordance with ITU-T Recommendation G821, G826, G828, G829, M2100, M2101, and must be available in Microsoft Office.	M	
8.1.13 It must be possible to conduct loop-back tests to all network elements.	M	
8.1.14 It must be possible to provide real time printouts of alarm conditions at one or more locations.	M	
8.1.15 Performance measurements a minimum of 1 E1 per link must be possible and in accordance to G.826 The storage and format must be on Microsoft Office. Monthly management performance reports must be self generating.	M	
8.1.16 Access to individual nodes for fault diagnostics must be possible via a LCT and access to the LCT must be given by the NMS. Any changes made via the LCT must be overwritten by the main server when access is given back to the NMS	M	
8.2 The Web Client Station		
8.2.1 Web access to the system shall be provided, with no extra software to be installed, on any web browser (recent enough) and on any machine, whatever the operating system is. This access to be password protected.	M	
8.2.2 It must be possible to view status of the alarms on any node.	M	
8.2.3 For security reasons, the following functions shall not be available by any means (even using user/password protection).	M	
· Resource administration.		
· Physical network documentation.		

· Deletion of circuits and nodes.		
8.2.4 At least 5 simultaneous accesses to the server via the Web shall be possible.	M	

END OF SPECIFICATION

SPECIFICATION SPC-0583 VERSION 2.00
OPTICAL FIBRE ACCESSORIES
STATEMENT OF COMPLIANCE

Clause type:
M = Mandatory. Response must be "Yes"
I = Information. No response required
NA = Not applicable to this requirement
X = Explanation. Bidder must attach notes to this statement of compliance furnishing the additional information required
O = Optional. Details of the offer must be added to additional notes

	Type	Response
1. SCOPE		
1.1 This specification covers the supply of optical fibre accessories to supplement single mode optical fibre cables.	I	
1.2 A separate projection of requirements for the various types of optical fibre accessories will accompany this specification.	I	
2. INTRODUCTION		
2.1 This specification cover the requirements for the supply of the following optical fibre accessories and services:		
2.1.1 Pigtails (ruggedised and unruggedised).	NA	
2.1.2 Mid-Coupler (Mid alignment sleeves).	NA	
2.1.3 Patch cords with Connectors.	M	
2.1.4 ODF's (Optical distribution subracks)	NA	
2.1.5 ODF's (Optical distribution Main Frames)	NA	
2.1.6 Splice protectors.	NA	
2.1.7 Joint closures with splice organisers.	NA	
2.1.8 Training on installation practices.	NA	
2.2 This specification also covers the quality requirements and testing of the completed patch-leads and pigtails as per Appendixes A, B and C.	NA	
2.3 The tenderer must indicate, clause-by-clause, in a separate statement of compliance whether optical fibre accessories offered comply or do not comply with this specification.	M	
2.4 If the tenderer submit alternative offer, all deviations from this specification must be clearly stated and explained.	I	
2.5 Tenderer must note that the standard connector requirement is the E-2000 APC type. Various combinations of connectors may be a requirement in specific cases.	M	
2.6 All units must be able to accommodate and organise cable, fibre and patch-lead slack.	I	
2.7 Tenderers will be required to demonstrate all units offered when requested.	I	
2.8 All ODF's must be manufactured from durable materials suitable for use in coastal areas.	NA	
2.9 All units must be completely dust proof. Tenderers are requested to specifically comment on this requirement.	NA	
3. OPTICAL FIBRES		
3.1 Only 9/125/250 µm coated optical fibres must be used to ITU G.652.D recommendations.	M	
3.2 The fibre types used must be easily strippable and comply with customer specifications for single mode optical fibre.	M	
4. RUGGEDIZING		

4.1 When specified, aramid-polymer fibres must be stranded longitudinally around the buffered secondary coating.	M	
4.2 The aramid-polymer fibre must be stranded with evenly thick bundles around the secondary sheath.	M	
4.3 Duplex patch-leads must be offered.	M	
4.4 All finished assemblies must be tested as specified in Appendix B of this specification.	NA	
4.5 The mechanical performance required from ruggedised assemblies is specified in Appendix C.	NA	
5. OUTER SHEATH		
5.1 The outer jacket material must be uniformly sheathed with PVC Type TM1 or alternatively with LSZH (when specified).	M	
5.2 The sheath must have a minimum thickness of 0,5 mm and the overall diameter must be 1,6 mm ±0,2 mm .	M	
5.3 The sheath must be yellow for single mode (SM) and orange for multi-mode (MM).	M	
5.4 The sheath must be easily strippable from the cable.	M	
6. PIGTAIL AND PATCH-LEAD IDENTIFICATION		
6.1 A unique serial number must be printed on a permanent affixed label and attached to each unit between10 – 20 cm from the boot of each connector. This label can also serve as proof of testing/QA.	M	
6.2 Labelling must be done at both ends in the case of a duplex patch-lead.	M	
6.3 The following information must accompany each assembly :	M	
6.3.1 Insertion loss @ 1310 nm and 1550 nm (Single mode).	M	
6.3.2 Return loss @ 1310 nm and 1550 nm (Single mode).	M	
6.3.3 Unique serial number.	M	
6.3.4 Product description.	M	
6.3.5 Order number.	M	
6.3.6 Date tested.	M	
6.3.7 Length of tail or patch-lead.	M	
6.3.8 Type of connector.	M	
6.3.9 Type of fibre (e.g. 1310/1550 nm single mode).	M	
6.4 The rubber boot of the connector can be blue for 0º flush-polished connectors and green for 8º angle polished connectors.	M	
6.5 A unique identification mark (colour or number) must be applied to either end of patched-leads to assist with identification of patched-leads in densely populated ODF's or termination cabinets.	M	
6.6 The A and B leg of Duplex Patch lead must be identified.	M	
7. DUST CAPS	M	
7.1 Each E-2000 (or otherwise specified) connector or mid-coupler supplied must be fitted with an integrated dust cap to protect the end face from dust and scratches.	M	
7.2 The E-2000 (or otherwise specified) dust cap must be spring loaded to ensure positive closure when not mated and constructed of a material to protect users from laser radiation.	M	
7.3 Dust caps for other connectors and mid-couplers must comply with the requirements of this specification.	M	
7.4 Dust caps must be colour coded to differentiate between single mode and multi-mode units as well as angle and flush polished (refer to subclause 8.3).	M	
8. MID-COUPLER (BULKHEAD)		

8.1 Single mode mid-couplers must have a ceramic alignment sleeve with a yellow insert for identification purposes.	M	
8.2 Mid-coupler offered must have a self-secured clip that can easily connect onto the coupling plate supplied by the optical distribution frame or rack.	M	
8.3 The colour coding must be blue for 0º flush polished and green for 8º angle polished mid-couplers.	M	
9. CONNECTORS		
9.1 This specification generally specifies the (angle polished connector) APC E2000 connectors unless otherwise specified.	M	
9.2 Other types of connectors, angle or flush polished, may be required and the minimum requirement is conformance to this specification.	I	
9.3 All connectors must consist of a ceramic ferrule and strain relief boot. Other materials will be considered but comprehensive technical information will be required.	M	
9.4 All connectors must withstand the mechanical tests covered in this specification.	M	
9.5 A heat-cured epoxy must be used on all connectors.	M	
9.6 Isopropyl alcohol together with lint free tissue will be used for cleaning connectors. Assemblies must be inert to cleaning with this fluid.	M	
9.7 The customer reserves the right to request specialised connector materials.	I	
9.8 The optical performance of the required connector is specified in Appendix A of this specification.	M	
9.9 The colour coding must be in accordance with sub-clause 8.3.		
10. OPTICAL DISTRIBUTION FRAMES AND RACKS	NA	
10.1 ODF's must be available in three different types		
10.1.1 A wall mount unit for small communication or PABX rooms.		
10.1.2 A 19-inch stackable ODF rack for terminating and patching fibres for small to large communication rooms.		
10.1.3 Specialised ODF (Main frame) for large distribution site.		
10.2 Wall Mount Unit		
10.2.1 The wall mount unit must have a minimum capacity for the termination of 48 fibres.		
10.2.2 The unit must be easily accessible and easy to terminate and patch fibres.		
10.2.3 The unit must be supplied with a removable panel to accommodate different types of connectors and mid-couplers.		
10.2.4 The unit must be tamper proof and lockable. Two separated areas will be required :		
(i) Cable entry and termination of fibres; and		
(ii) Distribution and patching of fibres.		
10.2.5 The unit must provide cable entries for terminating and distribution to other equipment.		
10.2.6 The unit must be supplied with all cable glands, screws, nuts and bolts to secure to a concrete or brick surface.		
10.2.7 The unit must be supplied with standard accessories - splice organisers, connector plate, cable clamps, fan-out devices and transportation tubes.		
10.3 19 inch stackable ODF sub rack		
10.3.1 The 19-inch stackable ODF sub-rack must have a combined splicing, termination and storage function with a capacity for the termination, cross-connecting, store excess fibre and patching of minimum 24 fibres.		

10.3.2 Each unit must be easily accessible and easy to terminate and patch fibres.		
10.3.3 Each unit must have a maximum height of 3U and must include a patch-lead routing scheme.		
10.3.4 The unit must be designed to optimise accessibility allowing minimum movement of pigtails and fibres when the unit is opened and closed while connected systems remain operational.		
10.3.5 The unit must be designed with a front panel for the protection of optical fibre patch-leads.		
10.3.6 The unit must be designed to organise excess patching cords with the option for distribution via the front or rear of the rack.		
10.3.7 The unit must be supplied with standard accessories – splice organisers, connector plate, cable clamp, fan-out device and transportation tubes.		
10.4 Specialised Main ODF Rack or Cabinet		
10.4.1 The main ODF cabinet must have a maximum height of 47U, free standing and be able to accommodate standard 19-inch sub-racks.		
10.4.2 Each cabinet must be designed to facilitate various configurations based on optimised modular units and to enable a variety of cabling requirements.		
10.4.3 The cabinet must be designed to provide a complete management and storage system for the cabling of long optical patch-leads and pigtails.		
11. SPLICE PROTECTORS	NA	
11.1 Heat Crimping Type		
11.1.1 Splice protectors must be manufactured from a durable crimping material.		
11.1.2 It must have a non-corrosive material insert for strengthening purposes.		
11.1.3 The length of splice protectors offered must be 60 mm .		
11.1.4 All splice protectors offered must have a crimping temperature range of 210 °C ± 10 °C.		
11.2 Mechanical Crimping Type		
Tenderers may offer mechanical splice protectors, which must comply with the requirements of this specification. Comprehensive technical application and testing information must be provided.		
12. JOINT CLOSURE WITH SPLICE ORGANISER	NA	
12.1 All closures must be re-enterable designed to protect splices and bare fibre from environmental and mechanical damage.		
12.2 Closures must be available in various sizes and designed to accommodate splice organisers for a minimum of 48, 96, 144 and 288 splices.		
12.3 All closures must be designed with a minimum of 6 cable entry ports. At least one entry port must be oval or be able to do a "loop through" facility with minimal fibre splices.		
12.4 All cable entry ports must normally be sealed off and will only be opened when required.		
12.5 The closure must be suitable to simultaneously accommodate conventional cables as well as micro-tubes and micro cables. On the large type closures, multiple entry ports will be preferred as well as ports that can accommodate multiple micro tubes or micro cables.		
12.6 Every component of the closure and organiser must be corrosion proof.		
12.7 All closures must be UV stabilised for outdoor installation.		

12.8 All closures must be water tight and suitable for direct buried applications suitable for any environment – aerial, pedestal, direct buried and underground applications.		
12.9 All closures must be designed for numerous splice applications; expressed, tap-off, branch and repair.		
12.10 All closures must accommodate a mounting bracket for wall or aerial mounting.		
12.11 The mounting type will be specified during ordering for 6, 12, and multiple fibres per tube.		
12.12 The Splice Closure Organiser must provide proper fibre management.		
13. TRAINING	NA	
13.1 Training on all equipment may be required and may be ordered.		
13.2 Should the Tenderer have training to offer, he/she is encouraged to do so.		
13.3 Training when ordered must comply with the customer specifications.		
14. MANUFACTURING	NA	
14.1 The customer reserves the right to inspect and approve the Contractors production facility.		
14.2 The preferred requirements for such a production facility are :		
14.2.1 A quality system based on the principles of ISO 9000.		
14.2.2 A controlled environment for termination facilities according to international standards.		
14.2.3 Approved termination, inspection and test equipment, which will guarantee a final product that will conform to customer specifications.		
14.2.4 "On site" customer audits may be conducted prior and during tenders for new contracts.		
15. EXTENT OF TESTING	NA	
15.1 Optical tests must be done on each assembly, and must comply with specification IEC 60874, as per Appendix A and B.		
15.2 Mechanical tests required for ruggedised tails or patch leads only, must be considered type approval tests as per Appendix C, and may be at the discretion of the customer.		
15.3 The tenderer must have equipment to do the tests called for in this specification.		
16. INSPECTION	NA	
16.1 The customer reserves the right to call for the inspection of goods on any contract or order, at any stage before final acceptance. When such inspection is required, the relevant contracts and orders will be endorsed accordingly.		
16.2 The Contractor must prepare, without charge to the customer, for testing of samples and specimens under supervision of the customer Quality Assurance Department.		
17. SAMPLES	NA	
17.1 A sample of any item covered by this specification must be submitted within fourteen (14) days if called for. The sample will be regarded as being identical with the items for which this tenders are submitted.		
17.2 The samples will be non-returnable unless specifically qualified by tenderers. Some items may be tested to destruction.		
18. PACKAGING		
18.1 Pigtails, patch-leads and components must be dispatched as per order. Each assembly must be individually coiled with a minimum diameter of 160 mm. Each item must be individually wrapped in suitable plastic packets.	M	

18.2 All items must be dispatched in suitable packing boxes to prevent damage during normal handling. Rigid packing is required.	M	

SPECIFICATION SPC-00027 VERSION 3.10
DIGITAL MICROWAVE RADIO EQUIPMENT
STATEMENT OF COMPLIANCE

Clause type:
M = Mandatory. Response must be "Yes"
I = Information. No response required
NA = Not applicable to this requirement
X = Explanation. Bidder must attach notes to this statement of compliance furnishing the additional information required
O = Optional. Details of the offer must be added to additional notes

	Type	Response
1. SCOPE AND PURPOSE		
1.1. This specification covers the requirements of Transnet Freight Rail for the supply of digital microwave radio equipment operating all capacities, short and long haul in the 7 to 38 Gigahertz (GHz) frequency bands.	I	
1.2. The material to be supplied must include microwave transceivers with associated alarm equipment, management system, service channels, power supply equipment, integral and/or separate antennas, spares, essential test cords, plugs and adapters.	M	
2. DESCRIPTION		
2.1 Microwave Equipment		
2.1.1 The equipment shall deliver	I	
· PDH capacities from 2 E1 and a maximum of 16 E1 plus 1 E1 wayside traffic,		
· SDH capacities from 1 to 4 x STM-1.		
· Ethernet (for a 28 MHz channel)		
2.1.2 The equipment shall provide a single platform solution for PDH, and SDH, and Ethernet applications.	M	
2.1.3 The equipment shall incorporate duplicated modem and PoE injector for maximum reliability	M	
2.1.4 The equipment shall be capable of being deployed in split mount type of architecture.	M	
2.1.5 The proposed equipment shall support configurations as follows:	M	
· Non-Protected 1+0		
· Monitored Hot Standby (MHSB) 1+1		
· Space Diversity (SD)		
· RSTP or equivalent for Gigabit Ethernet Ring support.		
2.1.6 The radio equipment should have the capability to support mixed mode, i.e. Ethernet + TDM n x E1 traffic with bandwidth adjustment capability on the Ethernet throughput in 2 Mbit/s increments up to the maximum capacity of the link. Ethernet traffic interface options should include 10/100/1000 base-T, with Intelligent Layer 2 Ethernet QoS features.	M	
2.1.7 The equipment shall support Power over Ethernet (PoE) with off-the-shelf weatherproof Cat 5e cable & accessories.	M	
2.1.8 All split type outdoor radio units must be bit rate independent.	M	
2.1.9 The operating frequency must comply to the following ITU-R specifications:	M	
7,1 (see spec for table)		
7,7		
12,75		
14,40		

21,22		
24,80		
37,00		
2.1.10 The minimum transmitter output power before any branching must be at least:	M	
7,1 (see spec for table)		
7,7		
12,75		
14,4		
21,22		
24,8		
37,0		
2.1.11 All transmitters within the indicated frequency bands must have an attenuation range of 20 dB added manually under software control, in 0.1dB increments..	M	
2.1.12 The tenderer must state whether the required TX output power is achieved with normal or high output power transmitters.	X	
2.1.13 The transmitter must support Automatic Transmitter Power Control (ATPC) over the full transmit manual attenuation range, with the operator able to select a not-to-exceed transmit power.	M	
2.1.14The outdoor unit shall be of a fully environmentally sealed design, with no user access for repair or maintenance.	M	
· The ODU shall weigh less than 7kg.	M	
· The ODU shall incorporate a handle for easy handling.	M	
· The ODU shall incorporate the same mechanical design and dimensions for all frequency bands from 7 to 38 GHz to ensure common handling and installation procedures.	M	
· The ODU shall contain a connector for providing indicative AGC levels during antenna alignment.	M	
2.1.15 The transmitter must use a modulation technique which will limit the RF channel bandwidth as per following table:	M	
3,5 MHz (see spec for table)		
7 MHz		
14 MHz		
28 MHz		
28 MHz		
2.1.16 The frequency stability of the radio must be £ ±10 ppm over a temperature range of -30 ºC to + 55 ºC.	M	
2.1.17 The modulator must make use of FEC (Forward Error Correction).	M	
2.1.18 The receiver threshold (at Pe = 10-6) measured at the branching filter input must be at least:	M	
2.1.19 For Frequencies of 7 to15 GHz:		
· -86 dBm for a capacity of 2 x 2 Mbit/s;		
· -83 dBm for a capacity of 4 x 2 Mbit/s;		
· -80 dBm for a capacity of 8 x 2 Mbit/s;		
· -77 dBm for a capacity of 16 x 2 Mbit/s		
· -67 dBm for a capacity of 155 Mbit/s		
2.1.20 For Frequencies of 23 to 26 GHz:	M	
· -84 dBm for a capacity of 2 x 2 Mbit/s;		
· -81 dBm for a capacity of 4 x 2 Mbit/s,		
· -78 dBm for a capacity of 8 x 2 Mbit/s		

· -75 dBm for a capacity of 16 x 2 Mbit/s		
· -65 dBm for a capacity of 155 Mbit/s		
2.1.21 For Frequencies of 38 GHz:	M	
· -80 dBm for a capacity of 2 x 2 Mbit/s;		
· -77 dBm for a capacity of 4 x 2 Mbit/s,		
· -74 dBm for a capacity of 8 x 2 Mbit/s		
· -71 dBm for a capacity of 16 x 2 Mbit/s		
· -64 dBm for a capacity of 155 Mbit/s		
2.1.22 Tributary and radio facing loopbacks, AIS insertion, and a PRBS generator and receiver for tributary BER measurement must be supported.	M	
2.1 23 Line isolation and surge protection must be included.	M	
2.1.24 All receivers must be able to operate with a BER better than 10-6 at an input level of –20 dBm	M	
2.1.25 All receiver baseband switching must be of the hitless type when used in a 1 + 1 radio system configuration.	M	
2.1.26 Transmitter switching due to hardware failure must be less than 200 ms in duration.	M	
2.1.27 All 2 Mbit/s tributaries offered must be 120 ohm balanced, using HDB3 code as per ITU-T Recommendation G703.	M	
2.1.28 155 Mbit/s Traffic Interfaces must be available in	M	
· Electrical 75 ohm to G.703 ,		
· Optical to G.957 S.1.1		
· LAN (10/100/1000 Base).		
2.1.34 All split type indoor units must be frequency independent.	M	
2.2 Long Haul transceivers		
2.2.1 Dimensions of cabinet	M	
· Height maximum 2200 mm		
· Depth maximum 300 mm		
· Width maximum 600 mm		
2.2.1 Single DC power feed 48 VDC maximum 100 watts per transceiver.	M	
2.2.2 Cover complete frequency band and the required channel must be adjustable via a synthesiser	M	
2.2.3 Adaptive predistorter with digital adaptive linearization to reduce residual non linear distortion.	M	
· Modulation scheme 128 MLQAM for channel widths 28 and 29,65 MHz		
· Adaptive Modulation capable		
· High Spectrum efficiency ACCP and CCDP		
2.2.4 The XPIC (Cross-polar interference cancellation) must be an integral part of the equipment and must be software activated	M	
2.2.5 Must support CCDP (Co-channel Dual Polarized). The use of same RF channel on both polarizations.	M	
2.2.6 It must provide remote and automatic transmit power control RTCP and ATPC with a range of 20 db	M	
2.2.7 It must support forward error correction (FEC)	M	
2.2.8 It must support different RF modes of operation	M	
· n+0, n = 1 to 5		
· 1+1 hot standby		
· Frequency diversity		
· Space diversity		
2.2.9 The transmit power must be a minimum of 30 dBm	M	
2.2.10 The receive sensitivity must be better than -73 dBm BER 10-6	M	
2.2.11 The transmission capacity must be 4 x STM-1	M	

2.2.12 Local maintenance terminal program to be supplied	M	
2.3 Power Supply		
2.3.1 The operating voltage must be wide-mouth -24 to -60 VDC input. Tenderers must state the power consumption of the equipment offered	X	
2.3.2 When operating at 48 volts DC the equipment must operate from an external DC battery supply that has its positive terminal connected to earth.	M	
2.3.3 The polarity of the power supply connections must be clearly indicated, and the equipment must be fully protected against reversed polarity connections.	M	
2.3.4 Protection must be provided on the power supply against power/voltage surges from induced voltages and lightning. EMC and ERM to the following standards EN 301 489-4 and EN 300 386 V1	M	
2.4 Antennas		
2.4.1 It must be possible to change the outdoor radio unit without removing the antenna on split type equipment	M	
2.4.2 Antennas must as a minimum cover the complete frequency range for each frequency band.	M	
2.4.3 The minimum Cross Polar Discrimination for all size antennas in all frequency bands must be 30 dB or greater.	M	
2.4.4 The minimum Front to Back ratio must be at least as per the following table (in dB):	M	
Antenna (see spec for table)		
0,3 m		
0,6 m		
1,2 m		
1,8 m		
2,4 m		
3,0 m		
2.4.5 It must be possible to rotate either the complete antenna, or only the hornfeed to change the polarity of the radiated signal.	M	
2.4.6 The full range of antenna sizes and prices to be included in the pricing schedule.	M	
2.4.7 In case a splitter needs to be used in a 1+1 configuration, additional mechanical support must be given to the splitter if the splitter is not part of the integral antenna.	M	
2.5 Alarms Monitoring		
2.5.1 The following alarms must be displayed either on a Liquid Crystal Display or light emitting diode as a minimum:	M	
· No input data.		
· Low receive level.		
· Transmitter failure.		
· Receiver failure.		
2.5.2 The indoor unit must have a minimum of eight potential free contacts for the purpose of monitoring external station alarms on the Microwave Network Management system.	M	
2.6 General		
2.6.1 Spares must be quoted for separately.	M	
2.6.2 Tenderers must detail the spares offered.	X	
2.6.3 Environmental Conditions Temperature range.	M	
Outdoor unit: (see spec for table)		
Indoor unit:		
Conditions:		
2.6.4 Indoor / Outdoor Interface.		

· The minimum interface distance between the indoor and outdoor unit using the standard type interfacing cable must be at least 200 m .	M	
2.6.5 Installation material		
· All additional installation material specific to the configuration such as connectors, interface cables, grounding kits, etc. must be indicated	M	
· No crimped type connectors on baseband cables preferred.		
2.7 Craft Terminal Software		
2.7.1 The microwave radio system offered must incorporate as a minimum, the following management facilities in the Local Craft Terminal software. Software must be Microsoft© Windows ©(2003, XP or newer) compatible	M	
· Configuration of local and remote terminal set-up.		
· Alarm monitoring of internal and external alarms.		
· The monitoring of transmit and receive signal strength.		
2.7.2 It must perform loopback tests at:	M	
· Local and remote base band		
· Local and remote IF		
· Local RF		
2.7.3 It must conduct performance monitoring according to ITU-T G.828 for SDH and G.826 for PDH.	M	
2.7.4 It must perform the following functions	M	
· Firmware download to local and remote sites.		
· Adjustment of software controlled RF output power.		
2.7.5 Both terminals of a microwave link must be visible on the same graphics screen.	M	
2.7.6 Non intrusive testing and provisioning of new services compulsory.	M	
3. COMPLIANCE		
3.1 Unless otherwise specified, the equipment offered must comply with the recommendations of the ITU-R for the microwave equipment and ITU-T for the associated digital interfaces at 2 Mbit/s or multiples thereof.	M	
3.2 Equipment must be type approved and certified by ICASA. ICASA issued type approval certificate for each frequency band must be included with tender submission.	X	

END OF SPECIFICATION

SPECIFICATION SPC TFRT 0002 Revision 1.10
TRAINING ON NEW TELECOMMUNICATIONS EQUIPMENT
STATEMENT OF COMPLIANCE

Clause type:
M = Mandatory. Response must be "Yes"
I = Information. No response required
NA = Not applicable to this requirement
X = Explanation. Bidder must attach notes to this statement of compliance furnishing the additional information required
O = Optional. Details of the offer must be added to additional notes

	Type	Response
1. SCOPE		
1.1 A training course for Transnet freight rail personnel is required when new equipment is introduced which employs technology, which is unfamiliar, or more advance than that currently provided in-house.	I	
1.2 Unless otherwise stipulated, the course will typically be for 10 students.	I	
Since the content (quality) of the courses may vary considerably, certain essential items are specified and a flexible costing is called for.	I	
2. LEVEL		
2.1 The majority of students will have a minimum education of a National Diploma (light current) or equivalent.	I	
2.2 At the end of the course, students must be well equipped with an understanding of basic principles and system configuration. Students must be familiar with the manuals, notation and equipment subsystems, reconfiguration techniques and troubleshooting. Students must be well trained on the physical equipment, use of relevant instrumentation, to solve simulated faults and to reconfigure the subsystems	M	
3. SYLLABUS		
3.1 A detailed syllabus must be submitted with this tender, which will list all the subjects to be covered in theory and practical, with an amount of time allocated for each subject.	X	
3.2 Details of the courses notes must be submitted with the tender.	X	
3.3 Lecturers must be fluent in English. The names and qualifications of the proposed lecturers must be provided.	X	
4. DURATION		
4.1 The total duration of the course is dependent on the quantity and complexity of the equipment, but should the time required exceed two weeks, then the course must be split into modules of two weeks (or less) separated by intervals of at least two weeks.	M	
4.2 Unless special permission is obtained from Transnet freight rail, the course must be provide during normal working hours.	M	
4.3 Should the tenderer wish to run the course into the evening and /or over the weekend, this must be quoted for as an option.	I	
5. ROSTER		
5.1 Normal starting time is 08h00, ending at 16h00. This, however, is flexible within reason.	I	
5.2 The following breaks must be provided in the course:	M	
5.2.1 10h00 – 10h15 Tea		
5.2.2 12h00 – 12h30 Lunch		
5.2.3 14h30 – 14h45 Tea		

5.3 Theory lectures must be provided in the mornings. The afternoons must be devoted to demonstrations, use of test instruments, practical fault finding, reconfigurations and tests.	M	
6. VENUE		
6.1 The contractor will provide a suitable venue (in South Africa) inclusive of all lunches and teas.	M	
6.2 The contractor must supply sufficient units of each type of equipment to be studied, for effective practical evaluation, and deliver to the specified venue. The contractor must deliver the equipment manuals and comprehensive course notes in English.	M	
6.3 In the event that Transnet freight rail decides to have the course at their premises, the tenderer must stipulate his requirements for white board, flip charts and audio visual aids.	M	
7. COSTS		
7.1 The tenderer's quotation for training must include unit rates and provide details of the constituent components of the quotes, i.e.	M	
7.1.1 Cost per set of course notes;	X	
7.1.2 Overhead cost preparing course notes;	X	
7.1.3 Cost per hour of each lecture or assistant;	X	
7.1.4 Overhead cost of each lecturer (accommodation, transport);	X	
7.1.5 Cost of hired equipment;	X	
7.1.6 Cost of consumables;	X	
7.1.7 Cost per additional student;	X	
7.2 The following options must be quoted for –		
7.2.1 The provision of a venue and accommodation;	X	
7.2.2 The provision of teas and lunches;	X	
7.2.3 The provision of all classroom accessories;	X	
7.3 Should the quote and rates not be acceptable to Transnet freight rail, then Transnet freight rail reserves the right to either make alternative arrangements for training external to the conditions of the final contract, or disqualify the tenderer from further consideration.	I	
7.4 Should the training be held on Transnet premises, or if any of the components of the training listed above be provided by Transnet, then the contractor's price for training will be reduced by the unit rates quoted for in clause 7.2.	M	
7.5 Further training in the future may be required which will be costed at unit rates. Tenderers must state what escalation would be applicable.	X	
8. FEEDBACK		
8.1 The course must be followed by an examination to test the quality and effectiveness of the course. Should the course be 2 weeks or longer, an exam must take place at the end of each week. The exam should not be longer than 2 hours.	M	
8.2 The result of the exam, together with an assessment of the student's practical competence, must be recorded in the examiner's report (Annexure A) These results are confidential and must be given to the Project Manager. Each student is entitled to know his own results.	M	
8.3 A suitable certificate should be presented to each of the qualifying students. The exact marks should not be reflected, but rather:	M	
· Passed with Distinction _____ 75% to 100%		
· Passed with Higher Grade_____ 70% to 74%		
· Fail _____ Below 70%		

8.4 The student will be required to comment anonymously on the course, each student must be given a copy of Annexure B. These must be collected and submitted to the Project Manager, who will then comment and forward these to the contractor upon request.	M	

SPECIFICATION BBF 1026
GENERIC EQUIPMENT CABINET
STATEMENT OF COMPLIANCE

Clause type:
M = Mandatory. Response must be "Yes"
I = Information. No response required
NA = Not applicable to this requirement
X = Explanation. Bidder must attach notes to this statement of compliance furnishing the additional information required
O = Optional. Details of the offer must be added to additional notes

	Type	Response
1. SCOPE		
This specification covers the requirements of Transnet for the supply of cabinets. The quantities and the number of accessories will be provided in the Schedule of Requirements, or Bill of Quantities, or Design Document.	I	
2. COMPLIANCE		
2.1 Tenders must comply with all the specifications and requirements as indicated in this document. Any deviation from this specification must be indicated in the tenderer`s submission document.	I	
2.2 Transnet will reserve the right to inspect cabinet samples before adjudication of contract.	I	
3. SERVICE CONDITIONS		
3.1 The equipment must be suitable for continuous operation under the following conditions:	M	
3.1.1 Air pollution: (see spec for details)		
3.1.2 Relative humidity:		
3.2 All components and parts must be manufactured and installed to ensure reliable operation under these conditions.	M	
4. CABINET COLOUR		
The cabinet and all its components must be grey and must be Polyester Structured Powder coated.	M	
5. CABINET SIZE		
The cabinet height will be stated in the Schedule of Requirements. If not, then the default cabinet sizes must be as follows:	M	
Height (equipment mounting space) (see spec for details)		
Width		
Width of the equipment mounting area		
Depth		
6. CABINET MAKE AND ASSEMBLY		
6.1 Cabinet must be of an IP54 standard.	M	
6.2 The cabinet must have a loading capacity of at least 400 kg.	M	
6.3 The frame must be an extruded steel frame.	M	
6.4 Must be fitted with 19" Rack Punch Profiles, 2 in the front and 2 in the back of the cabinet – punch profiles must be powder coated.	M	
6.5 Must be fitted with a top and bottom cable entry and the entry must be fitted with a brush panel.	M	
6.6 The front of the cabinet must be fitted with a lockable perforated steel door.	M	
6.7 The sides of the cabinet must be fitted with removable doors.	M	
6.8 The back door must also be lockable and removable.	M	

6.9 All doors must be earthed to the bottom plate with a 6 mm2 cable that can be removed / unplugged when removing the doors.	M	
6.10Must be fitted with four height adjustable feet. If specified, these should be replaced by wheels. Either must support a 400 kg load	M	
6.11Cabinet must be fitted with a fan tray with 2 x 220 VAC long-life roller bearing fans.	M	
6.12Must be fitted with a 1500 mm Earth Bar with at least 15 earth clamps. The earth bar must be insulated from the cabinet.	M	
6.13The cabinet must be fitted (top of the cabinet) with a 2U Trip Switch Panel with 6 x 48 Volt, 10 Amp trip switches, spare positions for 2 more switches and a common earth bar insulated from the cabinet. The trip switches must be bridged.	M	
6.14Must be fitted with a Mains Outlet Strip, 5-Way, 15 Amp, 220 VAC and it must be equipped with a 15 Amp trip switch.	M	
7. ADDITIONAL EQUIPMENT THAT MUST BE SUPPLIED		
7.1 The following equipment and material must be supplied with each cabinet:	M	
7.2 Modem Trays, 330 mm deep	M	
7.3 1U Brush Panels	M	
7.4 1U Vent Plates	M	
7.5 1U Blanking Plates	M	
7.6 1U Drawer unit	M	
7.7 10 x 2U Blanking Plates	M	
7.8 Cage Nuts, Screws, and Black washers, 100 of each.	M	
7.9 PVC Finger Trunking (40 x 40 mm) – 2 meter lengths - must be of the Phoenix type and make	M	

SAFTEY QUESTIONNAIRE SHEET

Tenderer SHE Management System Questionnaire

This questionnaire is part of the TFR tender evaluation process and is to be completed by all Tenderer's and submitted with their tender offer. The objective of the questionnaire is to provide an overview of the status of the Tenderer's SHE management system. Tenderer's will be required to verify their responses noted in their questionnaire by providing evidence of their ability and capacity in relevant matters. The tender warrants that the information provided below is accurate and correct. The tenderer shall advise TFR of any changes.

TFR may verify the accuracy of this information (where necessary) during the physical visit as part of the tender evaluation.

The information provided in this questionnaire is an accurate summary of the company's SHE management system.			
Company Name:			
Signed:	Name:		
Position:	Date:		
Tender Description:			
Tender Number:			
Tenderer SHE Management System Questionnaire		**Yes**	**No**
1. SHE Policy and Management			
- ***Is there a written company SHE policy?*** - If yes provide a copy of the policy (ANNEXURE #)			
- ***Does the company have an SHE Management system e.g NOSA, OHSAS, IRCA System etc*** - If yes provide details			
- ***Is there a company SHE Management System, procedures manual or plan?*** - If yes provide a copy of the content page(s)			
- ***Are the SHE responsibilities clearly identified for all levels of Management and employees?*** - If yes provide details			
2. Safe Work Practices and Procedures			
- **Are safe operating procedures or specific safety instructions relevant to its operations available?**			

- If yes provide a summary listing of procedures or instructions		
- **Is there a SHE incident register?** If yes provide a copy		
- **Are Risk Assessments conducted and appropriate techniques used?** - If yes provide details		
3. SHE Training		
Describe briefly how health and safety training is conducted in your company:		
- **Is a record maintained of all training and induction programs undertaken for employees in your company?** - If yes provide examples of safety training records		
4. SHE Workplace Inspection		
- **Are regular health and safety inspections at worksites undertaken?** -If yes provide details		
- **Is there a procedure by which employees can report hazards at workplaces?** - If yes provide details		
5. SHE Consultation		
- **Is there a workplace SHE committee?**		
- **Are employees involved in decision making over SHE matters?** - If yes provide details		
- **Are there appointed SHE representatives?** - Comments		
6. SHE Performance Monitoring		
- **Is there a system for recording and analysing health and safety performance statistics including injuries and**		

incidents? - If yes provide details		
- Are employees regularly provided with information on company health and safety performance? - If yes provide details		
Is company registered with workmen's compensation and up to date? - If yes provide proof of letter of good standing		
- Has the company been fined or convicted of an occupational health and safety offence? - If yes provide details		

Safety Performance Report

Monthly DIFR for previous months

Previous Year	No of Disabling Injuries	Total Number of employees	DIFR per month
Jan			
Feb			
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			

DIFR = Number of Disabling injuries x 200000 divided by number of manhours worked for the period

==========

Signed
(Tenderer)

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 17: CERTIFICATE OF ACQUAINTANCE WITH TESTING PROCEDURE

[appended hereto as Appendix (v)]

I/We _____ do hereby certify that I/we acquainted myself/ourselves with all the documentation comprising the testing equipment's for the carrying out of the proposed supply for which I/we submitted my/our Proposal.

I/We furthermore agree that Transnet SOC Ltd shall recognise no claim from me/us for relief based on an allegation that I/we overlooked any provisions of the Specifications and testing equipment's or failed to take it into account for the purpose of calculating my/our offered prices or otherwise.

I/We confirm having been advised that a signed copy of this Schedule can be submitted in lieu of the Specifications and testing equipment's as confirmation in terms of the Returnable Schedule.

SIGNED at _____ on this ____ day of _____ 2013

_____ _____

SIGNATURE OF WITNESS SIGNATURE OF RESPONDENT

Appendix (v): EQUIPMENT TESTING PROCEDURE

Supply and Install Multiplexers and Microwave Radios

Equipment and configurations required for technical evaluation of access multiplexers and microwave links

1. **MICROWAVE**
   - **1.1. Split type microwave links**
     - 1.1.1. One complete 1+1 Hot Standby link. 4 x E1 120 ohm. 15 GHz, frequency band 7 MHz band width. Two 600 mm antennas. All cables, connectors, 2 x waveguide to N-Type flanges.
   - **1.2. Long Haul microwave link**
     - 1.2.1.One complete 2+1 frequency diversity link including the RF branching. 2 x STM1 electrical. Lower 8 GHz frequency band. Bandwidth 29.650 MHz. Channel separation 311.320 MHz. No antennas to be supplied. All cables, connectors, 2 x waveguide to N-Type flanges.
2. **MULTIPLEXERS**
   - **2.1. Type A 19" maximum 9 U high**
     - 2.1.1.Three(3) x Type A sub-racks with common cards and all cables and connectors
     - 2.1.2. Three(3) V24 cards
     - 2.1.3. Three(3) 4 wire E&M cards
     - 2.1.4.Three(3) LAN cards
     - 2.1.5. Three(3) auxiliary alarm cards
     - 2.1.6.Two(2) E1 electrical cards
     - 2.1.7.Two(2) E1 optical cards
     - 2.1.8.Four(4) STM1 optical cards long haul
     - 2.1.9.Four(4) STM1 optical cards short haul
     - 2.1.10. Two (2) STM1 electrical cards
   - **2.2. Type B 19" Maximum 4 U high**
     - 2.2.1. Two (2) Type B sub-racks with common cards and all cables and connectors
     - 2.2.2.Two(2) V24 cards
     - 2.2.3.Two(2) 4 wire E&M cards
     - 2.2.4.Two (2) LAN cards
     - 2.2.5.Two (2) Auxiliary alarm cards
     - 2.2.6.Two (2) E1 optical cards
     - 2.2.7.Two)2) E1 electrical cards
3. **CONFIGURATIONS**
   - 3.1. V24 end to end between any 2 multiplexers
   - 3.2. V24 conferenced between any 4 multiplexers
   - 3.3. 4 wire and E&M between any 2 multiplexers
   - 3.4. 4 wire and E&M conferenced between any 4 multiplexers
   - 3.5. LAN 10/100 Base end to end between any 2 multiplexers
   - 3.6. Subscriber and Exchange between any 2 multiplexers
   - 3.7. E1 configured via network management.
   - 3.8. STM 1 configured via network management

3.9. Auxiliary alarms when switched must be visible on LCT and Network management

4. HARDWARE AND SOFTWARE

4.1. LCT software to be loaded on a TFR laptop

4.2. Server and software for network management can be preconfigured

4.3. Software for client to be loaded on a TFR PC. Indicate possible license implications.

4.4. Documents for network design to be supplied for each type of Network Element.

5. PROGRAM

5.1. Equipment will be tested over three days

5.1.1. Day 1

5.1.2. Vender to set-up equipment and do short presentation on equipment

5.1.3. Technical documentation on all equipment to be supplied in PDF format.

5.1.4. Vender to demonstrate LCT and Network management (Element manager and Network Manager)

5.1.5. Network management must be configured and connected as it would be used in the field.

5.1.6. Vender and TFR to configure different services from different terminations in test network.

5.1.7. Network management must be tested via TFR existing DCN network (Cisco)

5.1.8. Day 2

5.1.9. TFR to do verification tests on units specification

5.1.10. TFR to do performance tests on test network

5.1.11. TFR to test configured circuits

5.1.12. Day 3

5.1.13. TFR to do verification tests on units specification

5.1.14. TFR to do performance tests on test network

5.1.15. TFR to test configured circuits

5.1.16. Interoperability / compatibility tests between Venders equipment and the existing TFR access multiplexers

6. . MODULE TESTS

						Pass / Fail
POWER SUPPLY CARD	Slot No.		Voltage	Voltage	Voltage	
	Volts measured					

4-WIRE CARD + E&M	Card Slot No.		*ITU-T test: Audio 0 dB input 0 dB output @ 1 kHz. Signaling check Bits 5 9 1*			
	Sub address No.	1	2	3	4	
Audio wiring & voltage protection unit (dB)						
Signaling wiring & voltage protection (5,9,1)						
	Sub address No.	5	6	7	8	
Audio wiring & voltage protection unit (dB)						

Signaling wiring & voltage protection (5,9,1)					

2 WIRE SUBS and EXCH CARDS Slot No.		*ITU test: Terminate 600 ohms = 14V Trans hybrid = -18 dB @ 1 kHz*			
Sub address No.	1	2	3	4	
Wiring & voltage protection unit. (Volt)					
Trans Hybrid. (dB measured)					
Sub address No.	1	2	3	4	
Wiring & voltage protection unit. (Volt)					
Trans Hybrid. (dB measured)					

V.24 CARD Card Slot No.		ITU-T test: Loop error test			
Sub address No.	1	2	3	4	
Wiring & voltage protection unit. (Pass/Fail)					
Sub address No.	5	6	7	8	
Wiring & voltage protection unit. (Pass/Fail)					

2 Mbit/s optical port Card Slot No.				
Optical levels (dB	Tx -11 dB	Attenuator (dB)	Rx -49dBm	
Port 1 measured)				
Port 2 (dB measured)				
G703 mask for E1				

HDB3 PORT Card Slot No.		ITU-T test: Loop error test			
Ports:	1	2	3	4	
Bit error test:					
G703 Mask for E1					

CENTRAL UNIT		RS 232/Ethernet interface to Kraft Terminal:	
Card Slot No.			

CLOCK ACCURACY	Measured (kHz)	
2047.897 kHz to 2048.102 kHz		

SYNCHRONIZATION	When comparing clock frequency of all cabinets, the frequency variations are within 2 Hz.	

LAN CARD Card Slot No.		ITU-T test: Loop error test			
Ports:	1	2	3	4	
Bit error test:					
MTU 1500					

Auxiliary alarm board Card Slot No.		ITU-T test:			
Interface:	1	2	3	4	
NO and NC contacts					
Auxiliary alarm board Card Slot No.		ITU-T test:			
Interface:	5	6	7	8	
NO and NC contacts					

STM 1 optical Card Slot No.		ITU-T test:		
Interface:	TX	Attenuation	RX	
Input optical level				
Measured optical level				

STM 1 Electrical Card Slot No.		ITU-T test:		
Interface:	TX	Attenuation	RX	
Input optical level				
Measured optical level				
STM 1 FE Card Slot No.		ITU-T test:		
Interface:	TX	Attenuation	RX	
Input optical level				
Measured optical level				

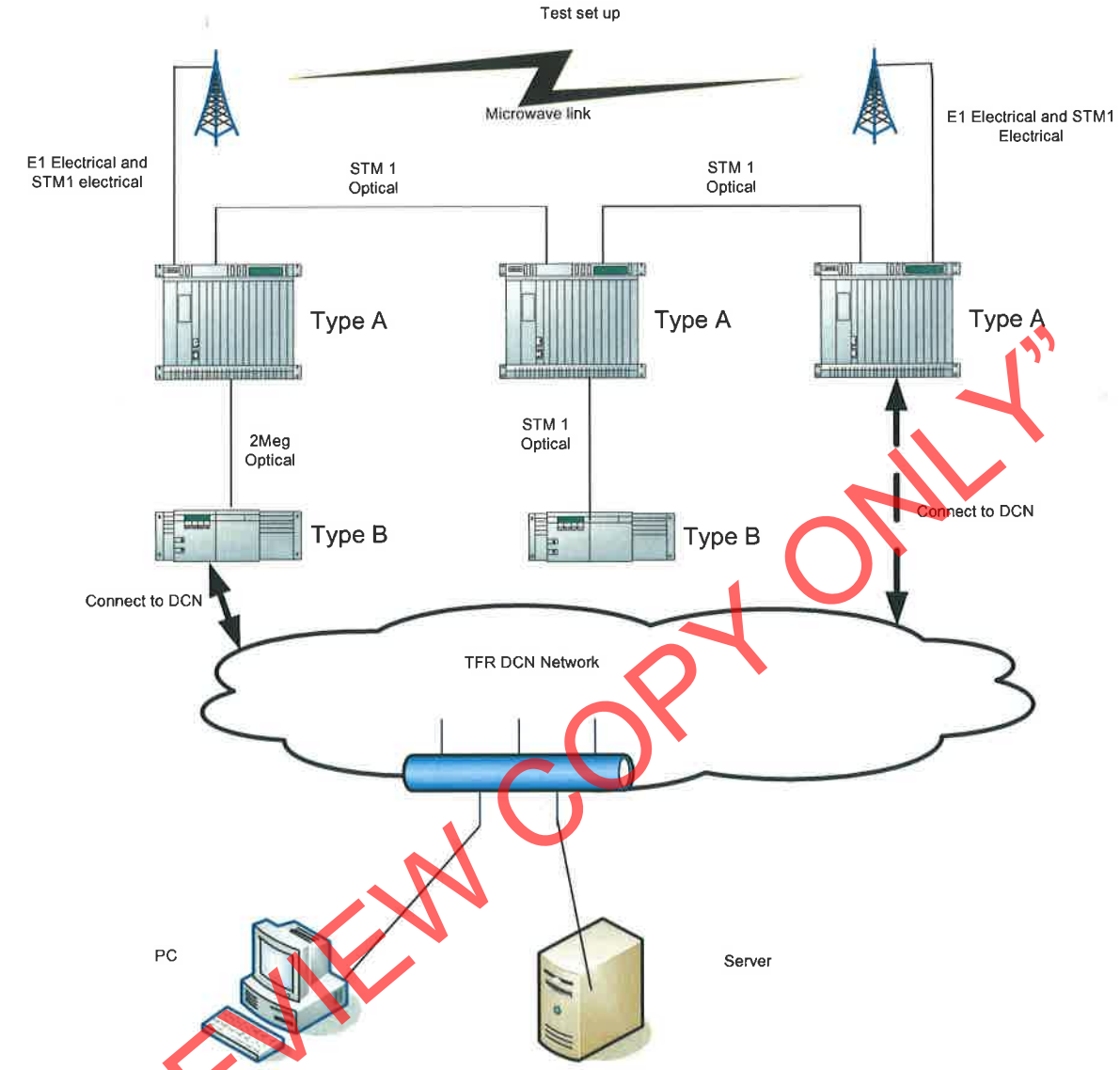
7. MICROWAVE RADIO TESTS FOR SPLIT TYPE EQUIPMENT

Test No:		**Unit**						
	Set up of Parameters		**LCT**	Pass	Fail	**Network Management**	Pass	Fail
			Radio 1	Radio 2		Radio 3	Radio 4	
1	DC Supply	V						
2	Transmitter Output power	dBm						
3	RF input level	dBm						
	Hot Standby switching							
	Hot Standby Splitter loss	dBm						
	Fade Margin	dBm						
	Near alarm check							
	Switch test							
	Performance test							
	Service channel							

8. MICROWAVE RADIO TESTS FOR LONG HAUL RADIO

Test No:		**Unit**						
	Set up of Parameters		**LCT**	Pass	Fail	**Network Management**	Pass	Fail
			Radio 1	**Radio 2**		**Radio 3**	**Radio 4**	
1	DC Supply	V						
2	Transmitter Output power	dBm						
3	RF input level	dBm						
	Branching filter losses	dBm						
	Fade Margin	dBm						
	Near end Alarm check							
	Far end Alarm check							
	Switch test							
	Performance test							
	Service channel							

9. EQUIPMENT CONFIGURATION



RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 18: NON DISCLOSURE AGREEMENT

Entered into by and between

TRANSNET SOC LTD

Registration Number 1990/000900/30

and

_____

Registration Number _____

RFP Number HOAC-VAR-9481

THIS AGREEMENT is made between

Transnet SOC Ltd [**Transnet**] [Registration No. 1990/000900/30]
whose registered office is at 49th Floor, Carlton Centre, 150 Commissioner Street, Johannesburg 2001,

and

_____ [**the Company**] [Registration No _____] whose registered office is at _____
_____

WHEREAS

Transnet and the Company wish to exchange Information [as defined below] and it is envisaged that each party may from time to time receive Information relating to the other in respect thereof. In consideration of each party making available to the other such Information, the parties jointly agree that any dealings between them shall be subject to the terms and conditions of this Agreement which themselves will be subject to the parameters of the Bid Document.

IT IS HEREBY AGREED

1. INTERPRETATION

In this Agreement:

1.1 **Agents** mean directors, officers, employees, agents, professional advisers, contractors or sub-contractors, or any Group member;

1.2 **Bid** or **Bid Document** means Transnet's Request for Information [**RFI**] Request for Proposal [**RFP**] or Request for Quotation [**RFQ**], as the case may be;

1.3 **Confidential Information** means any information or other data relating to one party [the **Disclosing Party**] and/or the business carried on or proposed or intended to be carried on by that party and which is made available for the purposes of the Bid to the other party [the **Receiving Party**] or its Agents by the Disclosing Party or its Agents or recorded in agreed minutes following oral disclosure and any other information otherwise made available by the Disclosing Party or its Agents to the Receiving Party or its Agents, whether before, on or after the date of this Agreement, and whether in writing or otherwise, including any information, analysis or specifications derived from, containing or reflecting such information but excluding information which:

1.3.1 is publicly available at the time of its disclosure or becomes publicly available [other than as a result of disclosure by the Receiving Party or any of its Agents contrary to the terms of this Agreement]; or

1.3.2 was lawfully in the possession of the Receiving Party or its Agents [as can be demonstrated by its written records or other reasonable evidence] free of any restriction as to its use or disclosure prior to its being so disclosed; or

1.3.3 following such disclosure, becomes available to the Receiving Party or its Agents [as can be demonstrated by its written records or other reasonable evidence] from a source other than the Disclosing Party or its Agents, which source is not bound by any duty of confidentiality owed, directly or indirectly, to the Disclosing Party in relation to such information;

1.4 **Group** means any subsidiary, any holding company and any subsidiary of any holding company of either party; and

1.5 **Information** means all information in whatever form including, without limitation, any information relating to systems, operations, plans, intentions, market opportunities, know-how, trade secrets and business affairs whether in writing, conveyed orally or by machine-readable medium.

2. CONFIDENTIAL INFORMATION

2.1 All Confidential Information given by one party to this Agreement [the **Disclosing Party**] to the other party [the **Receiving Party**] will be treated by the Receiving Party as secret and confidential and will not, without the Disclosing Party's written consent, directly or indirectly communicate or disclose [whether in writing or orally or in any other manner] Confidential Information to any other person other than in accordance with the terms of this Agreement.

2.2 The Receiving Party will only use the Confidential Information for the sole purpose of technical and commercial discussions between the parties in relation to the Bid or for the subsequent performance of any contract between the parties in relation to the Bid.

2.3 Notwithstanding clause 2.1 above, the Receiving Party may disclose Confidential Information:

2.3.1 to those of its Agents who strictly need to know the Confidential Information for the sole purpose set out in clause 2.2 above, provided that the Receiving Party shall ensure that such Agents are made aware prior to the disclosure of any part of the Confidential Information that the same is confidential and that they owe a duty of confidence to the Disclosing Party. The Receiving Party shall at all times remain liable for any actions of such Agents that would constitute a breach of this Agreement; or

2.3.2 to the extent required by law or the rules of any applicable regulatory authority, subject to clause 2.4 below.

2.4 In the event that the Receiving Party is required to disclose any Confidential Information in accordance with clause 2.3.2 above, it shall promptly notify the Disclosing Party and cooperate with the Disclosing Party regarding the form, nature, content and purpose of such disclosure or any action which the Disclosing Party may reasonably take to challenge the validity of such requirement.

2.5 In the event that any Confidential Information shall be copied, disclosed or used otherwise than as permitted under this Agreement then, upon becoming aware of the same, without prejudice to any rights or remedies of the Disclosing Party, the Receiving Party shall as soon as practicable notify the Disclosing Party of such event and if requested take such steps [including the institution of legal proceedings] as shall be necessary to remedy [if capable of remedy] the default and/or to prevent further unauthorised copying, disclosure or use.

2.6 All Confidential Information shall remain the property of the Disclosing Party and its disclosure shall not confer on the Receiving Party any rights, including intellectual property rights over the Confidential Information whatsoever, beyond those contained in this Agreement.

3. RECORDS AND RETURN OF INFORMATION

3.1 The Receiving Party agrees to ensure proper and secure storage of all Information and any copies thereof.

3.2 The Receiving Party shall keep a written record, to be supplied to the Disclosing Party upon request, of the Confidential Information provided and any copies made thereof and, so far as is reasonably practicable, of the location of such Confidential Information and any copies thereof.

3.3 The Company shall, within 7 [seven] days of receipt of a written demand from Transnet:

3.3.1 return all written Confidential Information [including all copies]; and

3.3.2 expunge or destroy any Confidential Information from any computer, word processor or other device whatsoever into which it was copied, read or programmed by the Company or on its behalf.

3.4 The Company shall on request supply a certificate signed by a director as to its full compliance with the requirements of clause 3.3.2 above.

4. ANNOUNCEMENTS

4.1 Neither party will make or permit to be made any announcement or disclosure of its prospective interest in the Bid without the prior written consent of the other party.

4.2 Neither party shall make use of the other party's name or any information acquired through its dealings with the other party for publicity or marketing purposes without the prior written consent of the other party.

5. DURATION

The obligations of each party and its Agents under this Agreement shall survive the termination of any discussions or negotiations between the parties regarding the Bid and continue thereafter for a period of 5 [five] years.

6. PRINCIPAL

Each party confirms that it is acting as principal and not as nominee, agent or broker for any other person and that it will be responsible for any costs incurred by it or its advisers in considering or pursuing the Bid and in complying with the terms of this Agreement.

7. ADEQUACY OF DAMAGES

Nothing contained in this Agreement shall be construed as prohibiting the Disclosing Party from pursuing any other remedies available to it, either at law or in equity, for any such threatened or actual breach of this Agreement, including specific performance, recovery of damages or otherwise.

8. PRIVACY AND DATA PROTECTION

8.1 The Receiving Party undertakes to comply with South Africa's general privacy protection in terms Section 14 of the Bill of Rights in connection with this Bid and shall procure that its personnel shall observe the provisions of such Act [as applicable] or any amendments and re-enactments thereof and any regulations made pursuant thereto.

8.2 The Receiving Party warrants that it and its Agents have the appropriate technical and organisational measures in place against unauthorised or unlawful processing of data relating to the Bid and against accidental loss or destruction of, or damage to such data held or processed by them.

9. GENERAL

9.1 Neither party may assign the benefit of this Agreement, or any interest hereunder, except with the prior written consent of the other, save that Transnet may assign this Agreement at any time to any member of the Transnet Group.

9.2 No failure or delay in exercising any right, power or privilege under this Agreement will operate as a waiver of it, nor will any single or partial exercise of it preclude any further exercise or the exercise of any right, power or privilege under this Agreement or otherwise.

9.3 The provisions of this Agreement shall be severable in the event that any of its provisions are held by a court of competent jurisdiction or other applicable authority to be invalid, void or otherwise unenforceable, and the remaining provisions shall remain enforceable to the fullest extent permitted by law.

9.4 This Agreement may only be modified by a written agreement duly signed by persons authorised on behalf of each party.

9.5 Nothing in this Agreement shall constitute the creation of a partnership, joint venture or agency between the parties.

9.6 This Agreement will be governed by and construed in accordance with South African law and the parties irrevocably submit to the exclusive jurisdiction of the South African courts.

oooOOOooo

RFP FOR THE SUPPLY, INSTALLATION, COMMISIONING AND SUPPORT OF ACCESS MULTIPLEXERS AND MICROWAVE RADIOS NATIONALLY FOR A PERIOD OF SEVEN YEARS ON AN "AS AND WHEN REQUIREMENTS BASIS"

Section 18: NON DISCLOSURE AGREEMENT

Entered into by and between

TRANSNET SOC LTD

Registration Number 1990/000900/30

and

_____

Registration Number _____

RFP Number HOAC-VAR-9481

THIS AGREEMENT is made between

Transnet SOC Ltd [Transnet] [Registration No. 1990/000900/30]
whose registered office is at 49th Floor, Carlton Centre, 150 Commissioner Street, Johannesburg 2001,

and

_____ **[the Company]** [Registration No _____] whose registered office is at _____
_____

WHEREAS

Transnet and the Company wish to exchange Information [as defined below] and it is envisaged that each party may from time to time receive Information relating to the other in respect thereof. In consideration of each party making available to the other such Information, the parties jointly agree that any dealings between them shall be subject to the terms and conditions of this Agreement which themselves will be subject to the parameters of the Bid Document.

IT IS HEREBY AGREED

1. INTERPRETATION

In this Agreement:

1.1 **Agents** mean directors, officers, employees, agents, professional advisers, contractors or sub-contractors, or any Group member;

1.2 **Bid** or **Bid Document** means Transnet's Request for Information [**RFI**] Request for Proposal [**RFP**] or Request for Quotation [**RFQ**], as the case may be;

1.3 **Confidential Information** means any information or other data relating to one party [the **Disclosing Party**] and/or the business carried on or proposed or intended to be carried on by that party and which is made available for the purposes of the Bid to the other party [the **Receiving Party**] or its Agents by the Disclosing Party or its Agents or recorded in agreed minutes following oral disclosure and any other information otherwise made available by the Disclosing Party or its Agents to the Receiving Party or its Agents, whether before, on or after the date of this Agreement, and whether in writing or otherwise, including any information, analysis or specifications derived from, containing or reflecting such information but excluding information which:

1.3.1 is publicly available at the time of its disclosure or becomes publicly available [other than as a result of disclosure by the Receiving Party or any of its Agents contrary to the terms of this Agreement]; or

1.3.2 was lawfully in the possession of the Receiving Party or its Agents [as can be demonstrated by its written records or other reasonable evidence] free of any restriction as to its use or disclosure prior to its being so disclosed; or

1.3.3 following such disclosure, becomes available to the Receiving Party or its Agents [as can be demonstrated by its written records or other reasonable evidence] from a source other than the Disclosing Party or its Agents, which source is not bound by any duty of confidentiality owed, directly or indirectly, to the Disclosing Party in relation to such information;

1.4 **Group** means any subsidiary, any holding company and any subsidiary of any holding company of either party; and

1.5 **Information** means all information in whatever form including, without limitation, any information relating to systems, operations, plans, intentions, market opportunities, know-how, trade secrets and business affairs whether in writing, conveyed orally or by machine-readable medium.

2. CONFIDENTIAL INFORMATION

2.1 All Confidential Information given by one party to this Agreement [the **Disclosing Party**] to the other party [the **Receiving Party**] will be treated by the Receiving Party as secret and confidential and will not, without the Disclosing Party's written consent, directly or indirectly communicate or disclose [whether in writing or orally or in any other manner] Confidential Information to any other person other than in accordance with the terms of this Agreement.

2.2 The Receiving Party will only use the Confidential Information for the sole purpose of technical and commercial discussions between the parties in relation to the Bid or for the subsequent performance of any contract between the parties in relation to the Bid.

2.3 Notwithstanding clause 2.1 above, the Receiving Party may disclose Confidential Information:

2.3.1 to those of its Agents who strictly need to know the Confidential Information for the sole purpose set out in clause 2.2 above, provided that the Receiving Party shall ensure that such Agents are made aware prior to the disclosure of any part of the Confidential Information that the same is confidential and that they owe a duty of confidence to the Disclosing Party. The Receiving Party shall at all times remain liable for any actions of such Agents that would constitute a breach of this Agreement; or

2.3.2 to the extent required by law or the rules of any applicable regulatory authority, subject to clause 2.4 below.

2.4 In the event that the Receiving Party is required to disclose any Confidential Information in accordance with clause 2.3.2 above, it shall promptly notify the Disclosing Party and cooperate with the Disclosing Party regarding the form, nature, content and purpose of such disclosure or any action which the Disclosing Party may reasonably take to challenge the validity of such requirement.

2.5 In the event that any Confidential Information shall be copied, disclosed or used otherwise than as permitted under this Agreement then, upon becoming aware of the same, without prejudice to any rights or remedies of the Disclosing Party, the Receiving Party shall as soon as practicable notify the Disclosing Party of such event and if requested take such steps [including the institution of legal proceedings] as shall be necessary to remedy [if capable of remedy] the default and/or to prevent further unauthorised copying, disclosure or use.

2.6 All Confidential Information shall remain the property of the Disclosing Party and its disclosure shall not confer on the Receiving Party any rights, including intellectual property rights over the Confidential Information whatsoever, beyond those contained in this Agreement.

3. RECORDS AND RETURN OF INFORMATION

3.1 The Receiving Party agrees to ensure proper and secure storage of all Information and any copies thereof.

3.2 The Receiving Party shall keep a written record, to be supplied to the Disclosing Party upon request, of the Confidential Information provided and any copies made thereof and, so far as is reasonably practicable, of the location of such Confidential Information and any copies thereof.

3.3 The Company shall, within 7 [seven] days of receipt of a written demand from Transnet:

3.3.1 return all written Confidential Information [including all copies]; and

3.3.2 expunge or destroy any Confidential Information from any computer, word processor or other device whatsoever into which it was copied, read or programmed by the Company or on its behalf.

3.4 The Company shall on request supply a certificate signed by a director as to its full compliance with the requirements of clause 3.3.2 above.

4. ANNOUNCEMENTS

4.1 Neither party will make or permit to be made any announcement or disclosure of its prospective interest in the Bid without the prior written consent of the other party.

4.2 Neither party shall make use of the other party's name or any information acquired through its dealings with the other party for publicity or marketing purposes without the prior written consent of the other party.

5. DURATION

The obligations of each party and its Agents under this Agreement shall survive the termination of any discussions or negotiations between the parties regarding the Bid and continue thereafter for a period of 5 [five] years.

6. PRINCIPAL

Each party confirms that it is acting as principal and not as nominee, agent or broker for any other person and that it will be responsible for any costs incurred by it or its advisers in considering or pursuing the Bid and in complying with the terms of this Agreement.

7. ADEQUACY OF DAMAGES

Nothing contained in this Agreement shall be construed as prohibiting the Disclosing Party from pursuing any other remedies available to it, either at law or in equity, for any such threatened or actual breach of this Agreement, including specific performance, recovery of damages or otherwise.

8. PRIVACY AND DATA PROTECTION

8.1 The Receiving Party undertakes to comply with South Africa's general privacy protection in terms Section 14 of the Bill of Rights in connection with this Bid and shall procure that its personnel shall observe the provisions of such Act [as applicable] or any amendments and re-enactments thereof and any regulations made pursuant thereto.

8.2 The Receiving Party warrants that it and its Agents have the appropriate technical and organisational measures in place against unauthorised or unlawful processing of data relating to the Bid and against accidental loss or destruction of, or damage to such data held or processed by them.

9. GENERAL

9.1 Neither party may assign the benefit of this Agreement, or any interest hereunder, except with the prior written consent of the other, save that Transnet may assign this Agreement at any time to any member of the Transnet Group.

9.2 No failure or delay in exercising any right, power or privilege under this Agreement will operate as a waiver of it, nor will any single or partial exercise of it preclude any further exercise or the exercise of any right, power or privilege under this Agreement or otherwise.

9.3 The provisions of this Agreement shall be severable in the event that any of its provisions are held by a court of competent jurisdiction or other applicable authority to be invalid, void or otherwise unenforceable, and the remaining provisions shall remain enforceable to the fullest extent permitted by law.

9.4 This Agreement may only be modified by a written agreement duly signed by persons authorised on behalf of each party.

9.5 Nothing in this Agreement shall constitute the creation of a partnership, joint venture or agency between the parties.

9.6 This Agreement will be governed by and construed in accordance with South African law and the parties irrevocably submit to the exclusive jurisdiction of the South African courts.

oooOOOooo

APPENDIX (vi)- Additional Technical Requirements

APPENDIX (vi): ADDITIONAL TECHNICAL REQUIREMENTS

ACCESS MULTIPLEXERS AND MICROWAVE RADIOS

Bidders must respond to this document with the information called for.

Technical Capacity / Resources

Bidders must describe the resources that they employ, or have immediate access to, in order to install and commission the particular equipment offered. Staff who have been accredited by the manufacturer(s) to be competent to install, trouble-shoot and program the equipment must be named.

Bidders must describe what level of technical support will be provided by the Original Equipment Manufacturers (OEMs). They must describe what their OEMs are prepared to commit to.

Bidders must describe the number and compositions of their installation teams who are permanent staff members. If subcontractors are to be employed, then the supervisors of the subcontractors must be permanent staff members and named.

References / Proof of Similar Works

This contract will require the installation of over 1000 network elements in the first year. TFR must be satisfied that the bidder has successfully undertaken such works in sub Saharan Africa before. In order to do this, bidders must provide references of similar works undertaken by them.

Customer	Description of the Works and Location	Value of Contract	Number of Elements	Duration of the Contract	Date Completed

Bidders must complete the above table and add any other information to prove their ability to undertake the Works required by TFR.

Delivery / Schedule

Bidders must commit to an acceptable delivery period and installation schedule.

On receipt of a fully detailed order, delivery will be made to the stipulated sites in South Africa within x days. Bidder to state this commitment.

After delivery to site, installation and commissioning will be completed within x days. Bidder to state this commitment.

Local Repair and Swap-out Facilities

Bidders will be required to support their equipment supplied for a minimum of 7 years. Bidders must name their maintenance facilities and their locations.

Bidders must state whether repairs will be undertaken locally or whether faulty modules will be sent overseas.

Bidders must state if a replacement module will be supplied to TFR while the faulty module is being repaired. If this is not offered, then bidders must commit to a turnaround time of x days to return the repaired module. Bidder to state this commitment.

Risk Analysis

Bidders must submit a risk analysis of what they consider to be likely scenarios that could lead to the failure of this contract. For each risk identified, mitigating actions must be stated.

Safety Plan

Bidders must provide TFR with a Safety Plan describing how they will deal with probable safety issues such as working in electrical substations, signalling relay rooms, radio high sites, climbing high radio towers and working in potentially unsafe areas.