AIRPORTS COMPANY
SOUTH AFRICA

Annexure A

SCOPE OF WORK

Preventative, Corrective, Maintenance and Support of Existing Tetra Radio Communication System, Including the Supply, Commissioning of Failover at Airports Company South Africa (ACSA) for 60 months.

TABLE OF CONTENTS

1. PURPOSE OF THIS RFP 7

2. OBJECTIVE 7

3. BACKGROUND 7

4. IN SCOPE 8

5. OUT OF SCOPE 9

6. SPECIAL INSTRUCTIONS TO BIDDERS: PREVENTATIVE, CORRECTIVE, MAINTENANCE AND SUPPORT. 9

7. SPECIAL INSTRUCTIONS TO BIDDERS: SUPPLY & INSTALLATIONS 10

8. SAFETY REQUIREMENTS 11

9. CURRENT LANDSCAPE 11

10. CURRENT INSTALLED EQUIPMENT 12

11. SYSTEM DOCUMENTATION REQUIREMENT 29

12. BASIC CORRECTIVE AND PREVENTATIVE MAINTENANCE & SUPPORT ACTIVITIES WILL INCLUDE BUT NOT LIMITED TO: 29

13. SERVICE-LEVEL REQUIREMENTS (SLRS) 31

TABLE OF TABLES

Table 1 National System Overview 12

Table 2 Servers 13

Table 3 Radio Terminals 14

Table 4 Radio System Hardware 14

Table 4 Ground-to-air Radio System 14

Table 6 Server 15

Table 7 Radio Terminals 16

Table 8 Radio System Hardware 16

Table 9 Ground-to-air Radio System 16

Table 10 Server 17

Table 11 Radio Terminals 18

Table 12 Radio System Hardware 18

Table 13 Servers 19

Table 14 Radio Terminals 20

Table 15 Radio System Hardware 20

Table 16 Servers 21

Table 17 Radio Terminals 21

Table 18 Radio System Hardware 21

Table 19 Radio Terminals 22

Table 20 Radio System Hardware 23

Table 21 Servers 23

Table 22 Radio Terminals **24**

Table 23 Radio System Hardware **24**

Table 24 Servers **25**

Table 25 Radio Terminals **26**

Table 26 Radio System Hardware **26**

Table 27 Servers **27**

Table 28 Radio Terminals **27**

Table 29 Radio System Hardware **28**

Table 30 Radio System Hardware **30**

Table 31 – Priority Levels **32**

Table 32 - Incident Response and Resolution time (Office Hours) **33**

Table 33 - Incident Response and Resolution time (After Hours) (and regional airports) **38**

Table 34 Availability SLR **40**

Table of Figures

Figure 1: ORTIA Layout 13

Figure 2: CTIA Layout 15

Figure 3: KSIA Layout 17

Figure 4: BFN Layout 19

Figure 5: UTN Layout 20

Figure 6: ELS Layout 22

Figure 7: KIM Layout 23

Figure 8: PLZ Layout 25

Figure 9: GRJ Layout 27

Glossary

Item	Description
ACSA	Airports Company South Africa
AMC	Airport Management Centre
ATC	Air Traffic Control
ATNS	Air Traffic Navigation Services
BFN	Bram Fischer International Airport
CTIA	Cape Town International Airport
DUR	Durban Airport
ECT	Electronic Communications and Transactions Act 25 of 2002
ELS	East London Airport
GRJ	George Airport
ICAO	International Civil Aviation Organization
ICASA	Independent Communications Authority of South Africa
ICASA Act	Independent Communications Authority of South Africa Act 13 of 2000
JNB	Johannesburg Airport
KSIA	King Shaka International Airport
OEM	Original Equipment Manufacturer
ORTIA	OR Tambo International Airport
PC	Personal Computer
PLZ	Port Elizabeth Airport
POPI Act	Protection of Personal Information Act 4 of 2013
PTT	Push to talk
SLA	Service Level Agreement
SLR	Service Level Requirements
UTN	Upington Airport
Users	Security personnel; Airport Operations Department; Parking Management Department; Fire and Rescue Department; AMC Department; Safety Department; Maintenance and Engineering Department; Trolley Department; Marshalling Department; Apron Department; Baggage Department; and other stakeholders as identified from time to time.

1. Purpose of this RFP

The purpose of this tender is to appoint a Service Provider that will provide Preventative, Corrective, Maintenance and Support of Existing Tetra Radio Communication System, Including the Supply, Commissioning of Failover at Airports Company South Africa (ACSA) for 60 months.

2. Objective

The objective of this tender is:

- To appoint and enter into an Agreement with a Service Provider that will provide Preventative, Corrective, Maintenance and Support of Existing Tetra Radio Communication System, Including the Supply, Commissioning of Failover at Airports Company South Africa (ACSA) for 60 months.
- The preventative and corrective maintenance and support which underpinned by SLA requirements critical to system availability.

3. Background

- Radio communication is the most cost-effective system that gives the required degree of mission-critical communication and flexibility; it enables communication between field-to-field, ground-to-air, and field-to-office communication. As a member of the Convention on International Civil Aviation (ICAO), Airports Company South Africa (ACSA) is required to have a functioning Radio Communication System with specified coverage in and around the airport's parameters.
- This mission-critical Tetra communication system is used daily as part of Airports Operations across different departments but not limited to fire & rescue, safety, security, and airport operations with key features are but are not limited to.
  - Secure private communication
  - Faster call setup
  - Radio Spectrum efficiency
  - Easy integration to third party IP based services/applications
  - Reach in features
  - Group voice and data calls
  - Individual voice and data calls
  - Interoperability to PSTN and PABX systems
  - Integration to legacy analogue (AM/FM) radio
  - Voice and data call recording and storage
  - GPS tracking of radio devices
  - Desktops bases dispatching systems for control room environment

4. In scope

- Preventative, Corrective, Maintenance and Support of Existing Tetra Radio Communication System across all Airports **(Refer to Annexure's).**
- Supply, Commissioning of Failover as per technical specification, including Adhoc supply and not limited to:
  - Repairs and or provision of spares
  - Attend to and resolve all incidents within SLA target timelines
  - Perform corrective and preventative maintenance and support as per SLA.
  - Provide reports according to the maintenance schedule.
  - Ensure that all the related patch update or firmware upgrade are carried out on time with less interruption
  - Ensure that all resources are available in accordance with the ACSA Airport Operating hours.
  - Ensure that the inventory and configuration management records are updated in the CMDB.
  - Ensuring that all change management process is followed
  - Ensuring that the best ITIL process are followed when addressing system changes or incidents.
  - Training of the Users on the Radio Commination Systems. The users shall include airlines and ACSA staff from various departments at all ACSA sites.
  - Training of IT technical personnel on the administration of the Tetra Radio Communication System and the first line troubleshooting. The training must include training manuals as well as proficiency assessment tests.
  - Decommissioning and replacement of existing identified equipment and handing over to ACSA for storage when required.
- The Potential bidder should ensure the minimum tools of trade for corrective and maintenance and support for Tetra Radio Communication System not limited to:
  - Appropriate stepladder with maximum safety requirements (can be used up to a maximum height of 6 meters).
  - Certified resources
  - Availability of scaffolding or cherry picker when required.
  - Personal Computing (Laptop).
  - Tetra signal Analyzer

- Antenna Analyzer
- Spectrum Analyzer
- Toolbox with normal minimum tools, including a digital multi-meter; and
- Protective gear for employees.

- From time to time, ACSA may require the Service Provider to perform new Installations, Moves, Additions, Change and De-installation ("IMACD")
- ACSA may request installations, change, de-installation or moves of components for Tetra Radio Communication System like brackets, screens, and hard drives.
- Maintain the Asset register indicating the location of all installed equipment.

5. Out of Scope

ACSA will provide the equipment and services listed as out of scope below:

- Network Infrastructure.
- Facilities (Power, UPS power and cooling);
- Servers;
- PCs and peripherals;
- Aircons and;
- Fire Extinguisher

6. Special Instructions to Bidders: Preventative, Corrective, Maintenance and Support.

- The Service Provider will need to obtain an ACSA permit for all its maintenance and project resources that will be working on this project. The granting of permits will require security checks/screening to be done and the successful completion of compulsory airside induction training. The cost of the permit and the airside induction training will be for the Service Provider.
- The Service Provider will be required to pay rental on office lease from ACSA at any of its airports. The rental information will be provided to the Bidders on this Tender.
- Work within the terminals where there are passengers or customers will be performed at night after the last flight departs and be concluded before the first flight departs/arrives in the morning; and
- Bidders to supply availability of spares for the installed equipment to be supported for the duration of the contract and highlight all related risks and or there are possible discontinuation of parts/spares 1 year in advance.
- Bidders are requested to provide pricing schedules for Maintenance and support of the existing systems.
- All prices to be in ZAR as requested both inclusive and exclusive of VAT.
- Pricing must include all applicable taxes and shipping to the location of implementation.

- Pricing must consider site establishment, Permits and Induction training.
- The provider must make provision for after hours, weekends and public holidays support at no additional costs (call out cost to be charge as an when required)
- The Service Provider's proposal must also cater for short notice call-out in an emergency where the supported system may be affected by other interruptions or change processes within the airport (e.g., power). This Bidders must provide a call-out basis and hour rate at the specific site. For planned activities advance notice will be given to the service provider.
- The Bidders' proposal must include after-hours telephone numbers, where support personnel are reachable. It is the responsibility of the Service Providers to ensure their resources are always available and reachable; and
- The Services shall be delivered in terms of SABS standards, OHS Act, manufacturer's specifications, and other statutory regulations.
- The Service Provider's proposal must make provision for enough personnel at each airport, during normal working to perform maintenance and support of the Tetra Radio Communication System. The number of resources allocated should consider the Service Level Agreement ("SLA") requirements as stipulated below to ensure that SLA targets are met.

7. Special Instructions to Bidders: Supply & Installations

- The Potential Service Providers proposal must make provision for enough personnel at each airport during the installation phase of the project and this should be costed as part of the submission.
- ACSA would not be liable for any additional costs the Potential Service Provider didn't include or omitted in his/her proposal unless the Potential Service Provider can proof beyond reasonable doubt that this was unforeseen.
- The Potential Service Provider has the right to request TPEC members to review the current installation with the aim of ensuring that future installation is costed correctly.
- The new installation will follow a PMBOK approach using a Project Manager. Risk mitigation and communication plans will be developed. Periodic progress reports will be provided.
- The Potential Service Provider should ensure that critical equipment as part of the installation is costed for correctly (Scaffolding and or cherry picker). Where possible that Scaffolding and or cherry picker cannot be costed; cost to hire should be presented as part of the proposal.
- As per safety reequipments an appropriate stepladder with maximum safety requirements (can be used up to a maximum height of 6 meters).
- Due to the Airport environment; all new installations will be done after hours; regional Airports earliest 19h00pm and International Airports earliest 21h00pm.

8. Safety Requirements

- The safety of the passengers and fire prevention are important in public buildings. Due to the nature of the airports, thousands of people pass through the airport, shop outlets and other public areas every day.
- Any potential injury to people or to property must be prevented; and
- The Service Provider will be required to provide a completed safety file for ACSA approval at each airport and have the necessary personal protective equipment.

9. Current Landscape

- Environmental Influences
  - Tetra Radio Communication System are subject to a variety of environmental influences which are not encountered in typical office environment. Extreme temperatures, dust, water, and humidity pose challenges to the normal functioning of the units. Additional mechanical stress and vandalism need to be considered. Also, electromagnetic compatibility is an issue in public environment like airports and train stations.
- Reliability during operation
  - Tetra Radio Communication System is used daily as part of Airports Operations across different departments. Normally the Tetra Radio Communication System need to function 24 x 365 throughout the year. Special care needs to be taken to make the Radios function reliably and to protect them against excessive wear and tear.
- Safety Requirements
  - Safety of the passengers and fire prevention are key issues in public buildings. Thousands of people pass through the airport or train station, shop outlets and malls, etc. each day and any potential injury or damage must be prevented at all cost.
- Availability
  - The Tetra Radio Communication System lifespan is typically 7 to 10 years. In case of replacement of Tetra Radio Communication System or extension of existing installations it is important to get identical products as originally installed. Therefore, it is important to have a product which is available in the same configuration regarding form, fit and functionality for a long period of time.

10. Current Installed Equipment

- Tetra Radio Communication System
  - Allow airport Users and stakeholders to have a real-time representation of key airport operational aspects;
  - Facilitate the implementation of active collaborative decision making (i.e. efficient, timely and reliable communication) throughout the airport community;
  - Facilitate communication with ATC; and
  - Listen to the communication between the pilot and the ATC; and to communicate with both the ATC and the pilot.

1) National System Overview

TNX A **TNX B** (Tetra Node Exchange Servers) **VLS**(Voice Logging Server)	**TNX** – is the Tetra Node Exchange, a system controller that interconnects and integrates the mission critical voice and data for all the sites, and supports the positioning, recording, telephonic interfacing and coverage extenders, etc The TNX also stores the data and configurations of the system**, as well as the making of back-ups.** **VLS** – is a server that records and stores all voice and data going through the Tetra system
BSS1 **Tetra Site 1(FSC)**	This is a Tetra site with digital carriers/repeaters (TBS's) that provides radio frequency coverage to allow digital terminals /radios to transmit and receive over the network. This is also backed up by a Fall-Back site controller (FSC).
BSS2 **Tetra Site 2(FSC)**	This is a Tetra site with a digital carriers/repeaters (TBS's) that provides radio frequency coverage to allow digital terminals /radios to transmit and receive over the network. This is also backed up by a Fall-Back Site Controller (FSC).
Conventional Site (Analog Gateway)	This is a Tetra site with analogue carriers and gateways that assist in linking and converting analogue signals to digital signals and vice versa. This helps analogue (VHF/UHF) terminals/radios to interact with digital terminals/radios.
ULM(Unified Location Manager) **STI**(SIP Telephone Interface) **DAS**(Distributed Antenna System)	**ULM** – This is used for the live tracking of GPS enabled terminals /radios. **STI** – This links to the ACSA Telephone exchange, and enables digital terminals to interact with telephones **DAS** – Assists with in-building and basement coverage ***NB; the radio system is an IP base network that is dependent on ACSA's network.***

Table 1 National System Overview

A. ORTIA Radio Network Layout

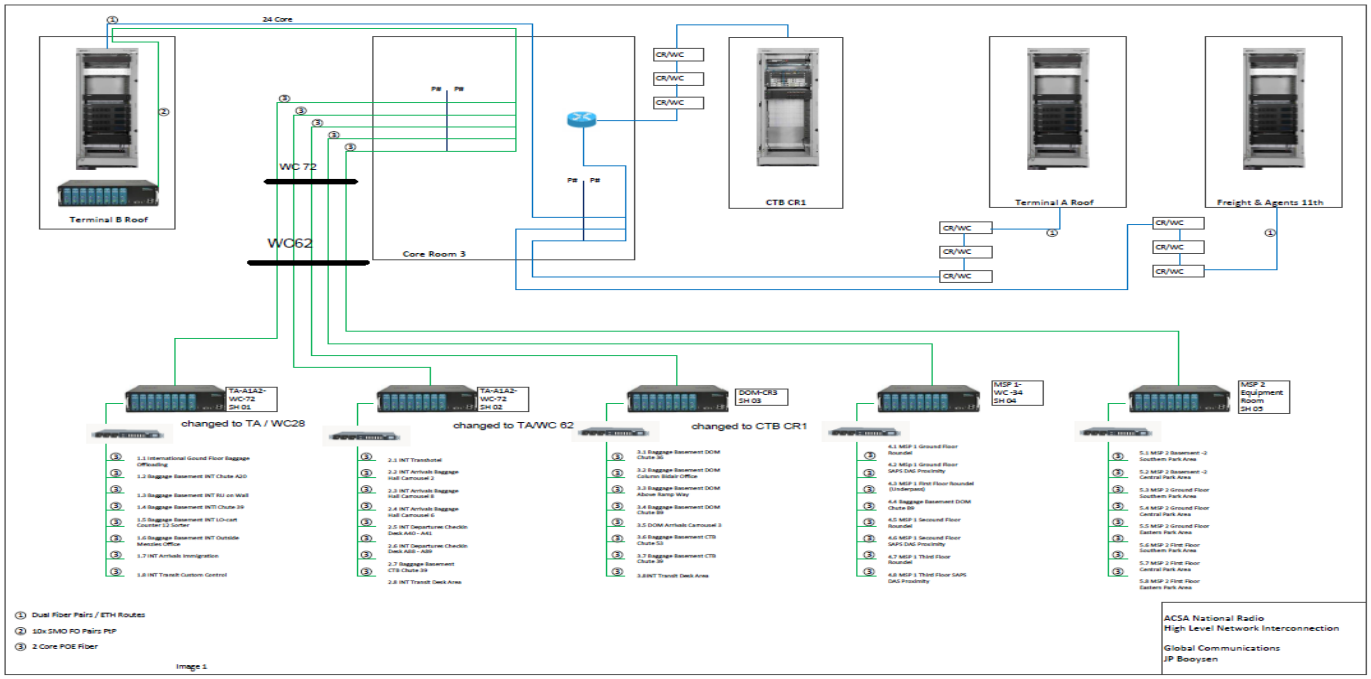

Figure 1: ORTIA Layout

i) Bill of Quantities for ORTIA Servers

Location	Server Name	Operating System	Server Type	Primary Role
AMSR	Main TNX	CentOS7	cPCI Blade	Radio Core Main
AMSR	Standby TNX	CentOS7	cPCI Blade	Radio Core /stby
AMSR	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
AMSR	Team Link Gateway (Redundant)	CentOS7	HP DL20	WiFi/Lte Gateway
AMSR	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
AMSR	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder
AMSR	SIP Telephone Interface Server	Suse 11.3	Dell R220	Telephone bridge

Table 2 Servers

ii) Bill of Quantities for ORTIA Radio Terminals

Deliverables	QTY
Handheld Radios	300
Handheld radios intrinsically safe	100
Mobile Radio (Vehicle radio)	80
Data Modem	70
Air band Handheld Radios	12
Air band Desktop Radios	18
Air band Mobile Radios	25
Analogue Gateway	8

Table 3 Radio Terminals

iii) Bill of Quantities ORTIA Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	2
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Repeater	8
Dispatcher	4

Table 4 Radio System Hardware

iv) Bill of Quantities ORTIA Ground-to-air Radio System

Deliverables	QTY
Ground to Air workstation application	1
IP Radio communication integration	1
Work station	9
Head phones	34
PTT (Push to talk) Foot Switch	9

Table 5 Ground-to-air Radio System

B. CTIA Radio Network Layout

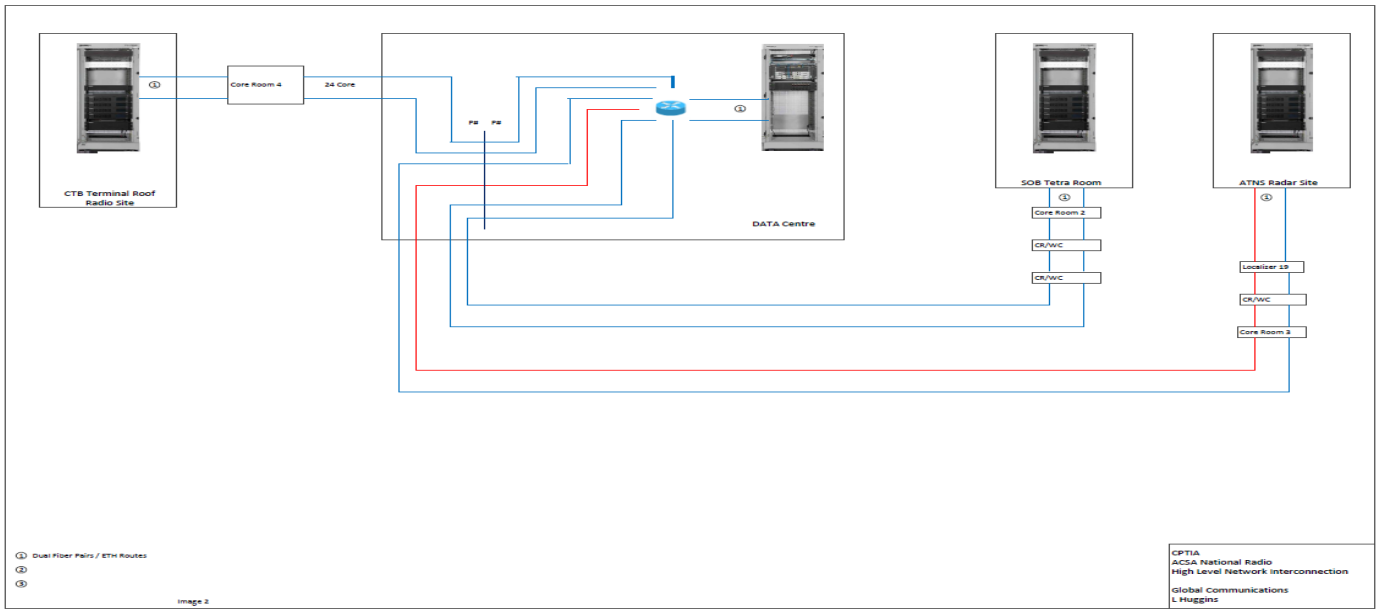

Figure 2: CTIA Layout

v) Bill of Quantities CTIA Servers

Location	Server Name	Operating System	Server Type	Primary Role
Data Centre	Main TNX	CentOS7	cPCI Blade	Radio Core Main
Data Centre	Standby TNX	CentOS7	cPCI Blade	Radio Core /stby
Data Centre	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
Data Centre	Team Link Gateway (Redundant)	CentOS7	HP DL20	WiFi/Lte Gateway
Data Centre	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
Data Centre	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder
Data Centre	SIP Telephone Interface Server	Suse 11.3	Dell R220	Telephone bridge

Table 6 Server

vi) Bill of Quantities for CTIA Radio Terminals

Deliverables	QTY
Handheld Radios	200
Handheld radios intrinsically safe	80
Mobile Radio (Vehicle radio)	25
Desktop Radios	8
Data Modem	131
Air band Handheld Radios	10
Air band Desktop Radios	8
Air band Mobile Radios	25
Analogue Gateway	8

Table 7 Radio Terminals

vii) Bill of Quantities CTIA Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	1
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Repeater	2
Dispatcher	4

Table 8 Radio System Hardware

viii) Bill of Quantities CTIA Ground-to-air Radio System

Deliverables	QTY
Ground to Air workstation application	1
IP Radio communication integration	1
Workstation	6
Headphones	6
PTT Foot Switch	6

Table 9 Ground-to-air Radio System

C. KSIA Radio Network Layout

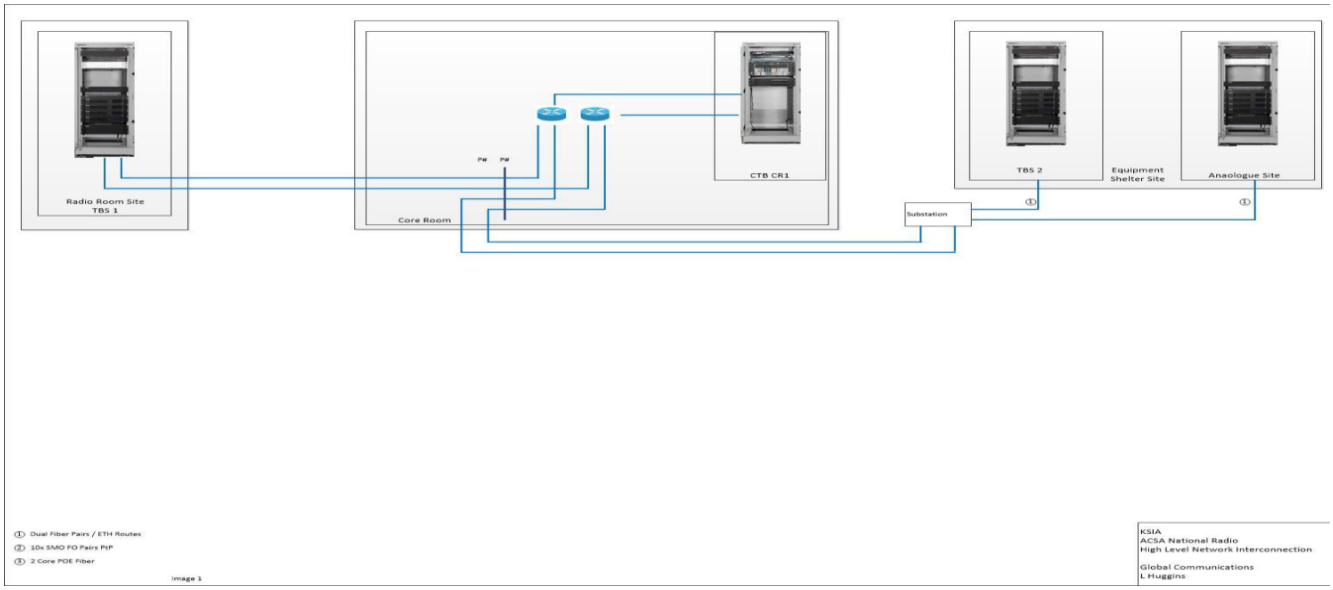

Figure 3: KSIA Layout

ix) Bill of Quantities for KSIA Servers

Location	Server Name	Operating System	Server Type	Primary Role
Data Centre	Main TNX	CentOS7	cPCI Blade	Radio Core Main
Data Centre	Standy/Backup TNX	CentOS7	cPCI Blade	Radio Core Main
Data Centre	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
Data Centre	Team Link Gateway (Redundant)	CentOS7	HP DL 20	WiFi/Lte Bridge
Data Centre	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
Data Centre	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder
Data Centre	SIP Telephone Interface Server	Suse 11.3	Dell R220	Telephone Bridge

Table 10 Server

x) Bill of Quantities for KSIA Radio Terminals

Deliverables	QTY
Handheld Radios	200
Mobile Radio (Vehicle radio)	25
Desktop Radios	8
Data Modem	55
Air band Handheld Radios	10
Air band Desktop Radios	8
Air band Mobile Radios	25
Analogue Gateway	8

Table 11 Radio Terminals

xi) Bill of Quantities for KSIA Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	1
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Repeater	2
Dispatcher	4

Table 12 Radio System Hardware

D. BFN Radio Network Layout

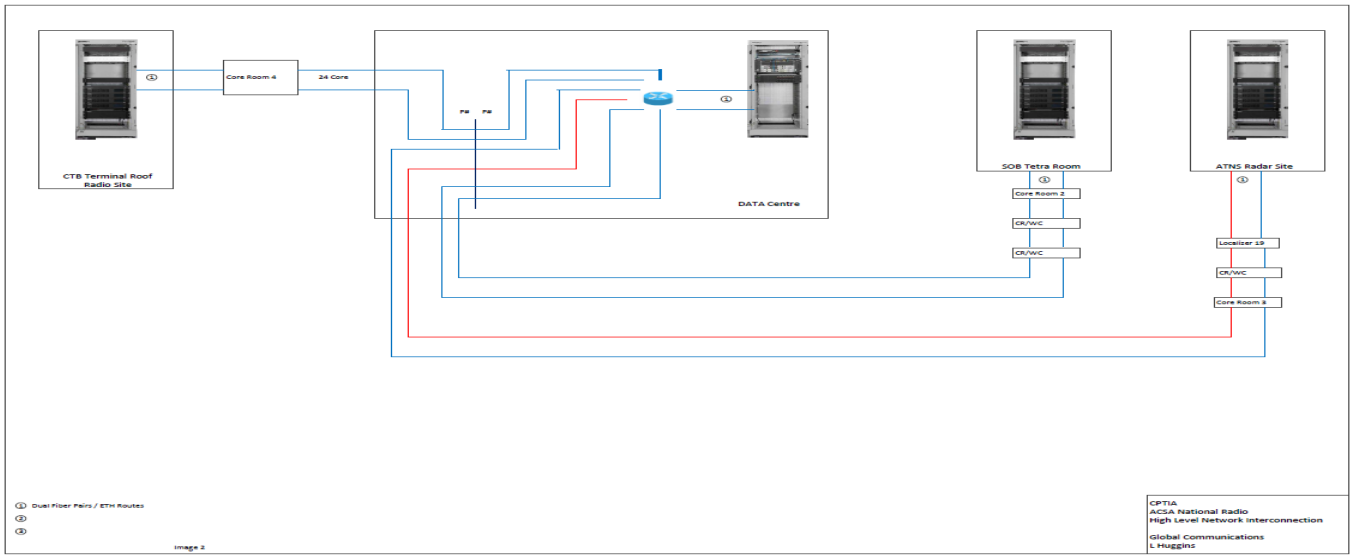

Figure 4: BFN Layout

xii) Bill of Quantities for BFN Servers

Location	Server Name	Operating System	Server Type	Primary Role
Data Centre	Main TNX	CentOS7	cPCI Blade	Radio Core Main
Data Centre	Standby TNX	CentOS7	cPCI Blade	Radio Core /stby
Data Centre	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
Data Centre	Team Link Gateway (Redundant)	CentOS7	HP DL20	WiFi/Lte Gateway
Data Centre	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
Data Centre	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder
Data Centre	SIP Telephone Interface Server	Suse 11.3	Dell R220	Telephone bridge

Table 13 Servers

xiii) Bill of Quantities for BFN Radio Terminals

Deliverables	QTY
Handheld Radios	50
Mobile Radio (Vehicle radio)	15
Desktop Radios	6
Data Modem	10
Air band Handheld Radios	6
Air band Desktop Radios	8
Air band Mobile Radios	18
Analogue Gateway	4

Table 14 Radio Terminals

xiv) Bill of Quantities for BFN Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	1
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Dispatcher	2

Table 15 Radio System Hardware

E. UTN Radio Network Layout

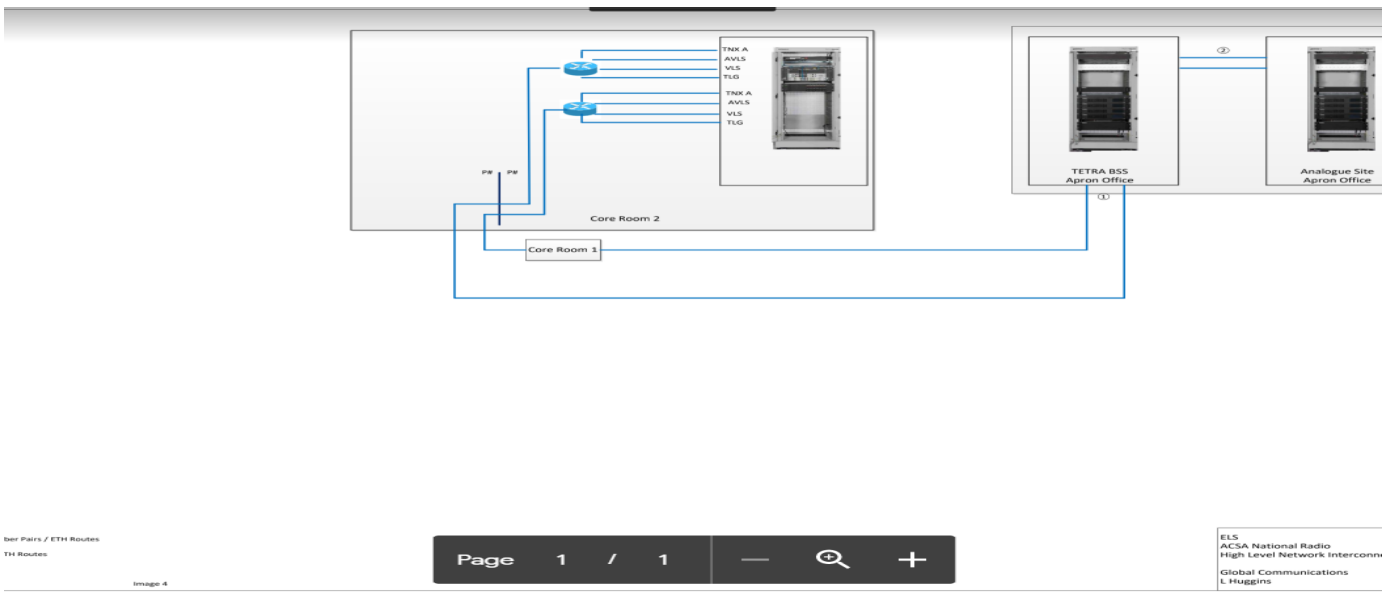

Figure 5: UTN Layout

xv) Bill of Quantities for UTN Servers

Location	Server Name	Operating System	Server Type	Primary Role
Wire Centre	Main TNX	CentOS7	cPCI Blade	Radio Core Main
Wire Centre	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
Wire Centre	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
Wire Centre	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder

Table 16 Servers

xvi) Bill of Quantities for UTN Radio Terminals

Deliverables	QTY
Handheld Radios	30
Handheld radios intrinsically safe	0
Mobile Radio (Vehicle radio)	10
Data Modem	10
Air band Handheld Radios	6
Air band Desktop Radios	10
Air band Mobile Radios	10
Analogue Gateway	4

Table 17 Radio Terminals

xvii) Bill of Quantities for UTN Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	1
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Dispatcher	2

Table 18 Radio System Hardware

F. ELS Radio Network Layout

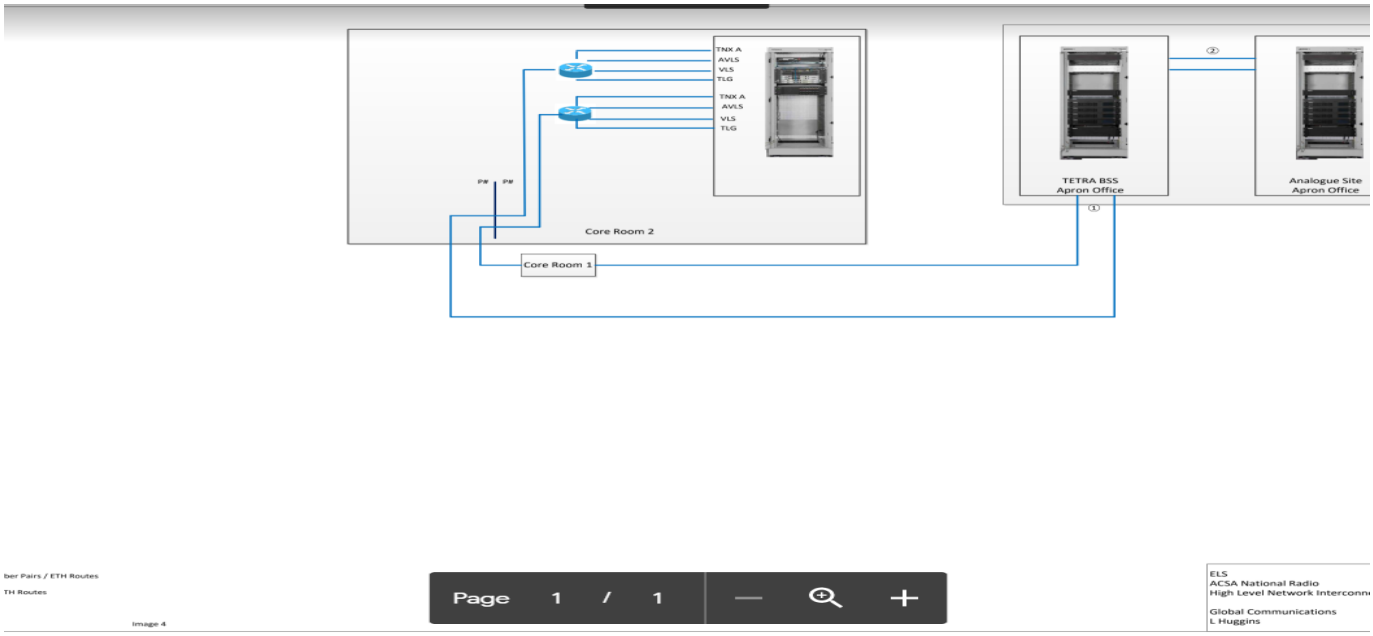

Figure 6: ELS Layout

xviii) Bill of Quantities for PLZ Radio Terminals

Deliverables	QTY
Handheld Radios	60
Mobile Radio (Vehicle radio)	12
Desktop Radios	5
Data Modem	10
Air band Handheld Radios	5
Air band Desktop Radios	12
Air band Mobile Radios	22
Analogue Gateway	4

Table 19 Radio Terminals

xix) Bill of Quantities for PLZ Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	1
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Dispatcher	2

Table 20 Radio System Hardware

G. KIM Radio Network Layout

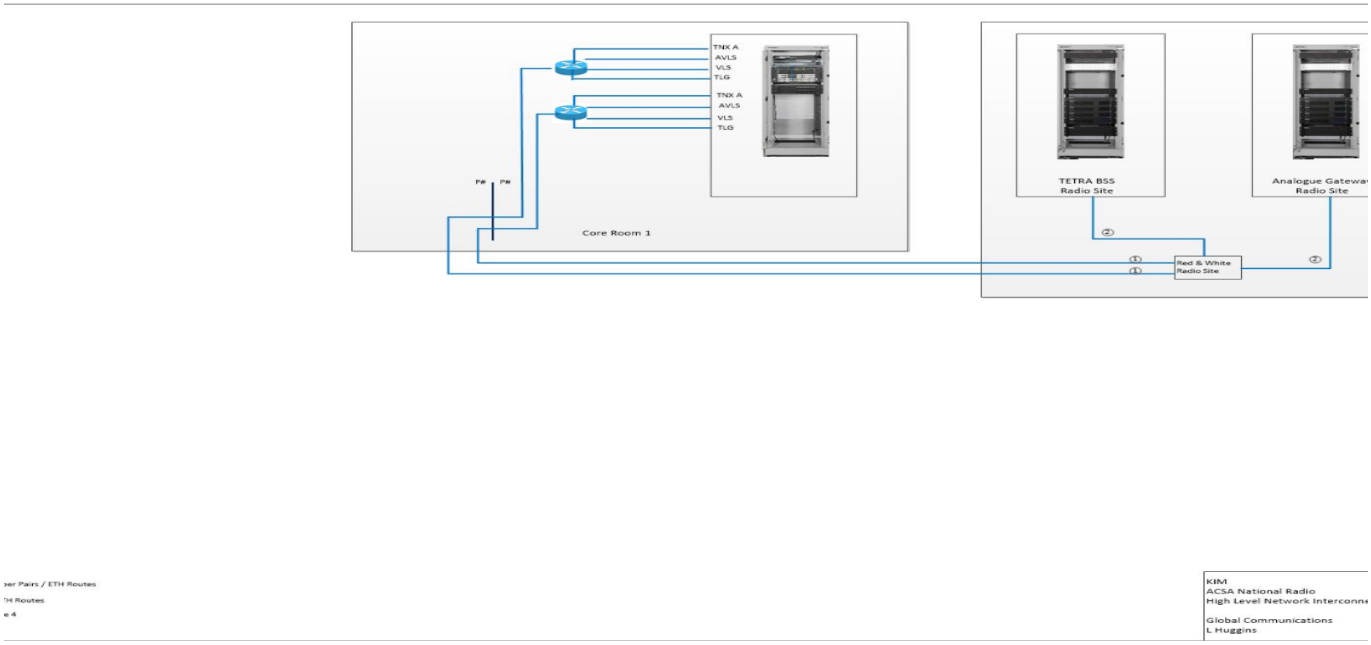

Figure 7: KIM Layout

xx) Bill of Quantities for KIM Servers

Location	Server Name	Operating System	Server Type	Primary Role
Core Room 1	Main TNX	CentOS7	cPCI Blade	Radio Core Main
Core Room 1	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
Core Room 1	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
Core Room 1	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder

Table 21 Servers

xxi) Bill of Quantities for KIM Radio Terminals

Deliverables	QTY
Handheld Radios	39
Mobile Radio (Vehicle radio)	19
Desktop Radios	6
Data Modem	15
Air band Handheld Radios	6
Air band Desktop Radios	4
Air band Mobile Radios	13
Analogue Gateway	4

Table 22 Radio Terminals

xxii) Bill of Quantities for KIM Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	2
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Dispatcher	15

Table 23 Radio System Hardware

H. PLZ Radio Network Layout

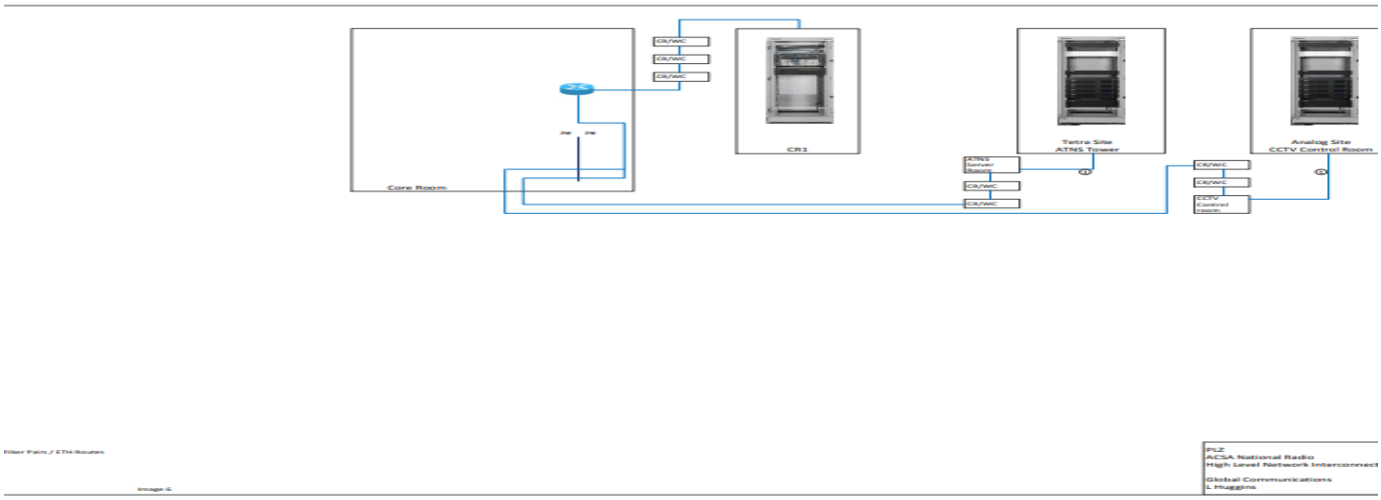

Figure 8: PLZ Layout

xxiii) Bill of Quantities for PLZ Servers

Location	Server Name	Operating System	Server Type	Primary Role
Core Room 1	Main TNX	CentOS7	cPCI Blade	Radio Core Main
Core Room 1	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
Core Room 1	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
Core Room 1	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder

Table 24 Servers

xxiv) Bill of Quantities for PLZ Radio Terminals

Deliverables	QTY
Handheld Radios	50
Mobile Radio (Vehicle radio)	15
Desktop Radios	6
Data Modem	10
Air band Handheld Radios	6
Air band Desktop Radios	8
Air band Mobile Radios	18
Analogue Gateway	4

Table 25 Radio Terminals

xxv) Bill of Quantities for PLZ Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	1
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Dispatcher	2

Table 26 Radio System Hardware

I. GRJ Radio Network Layout

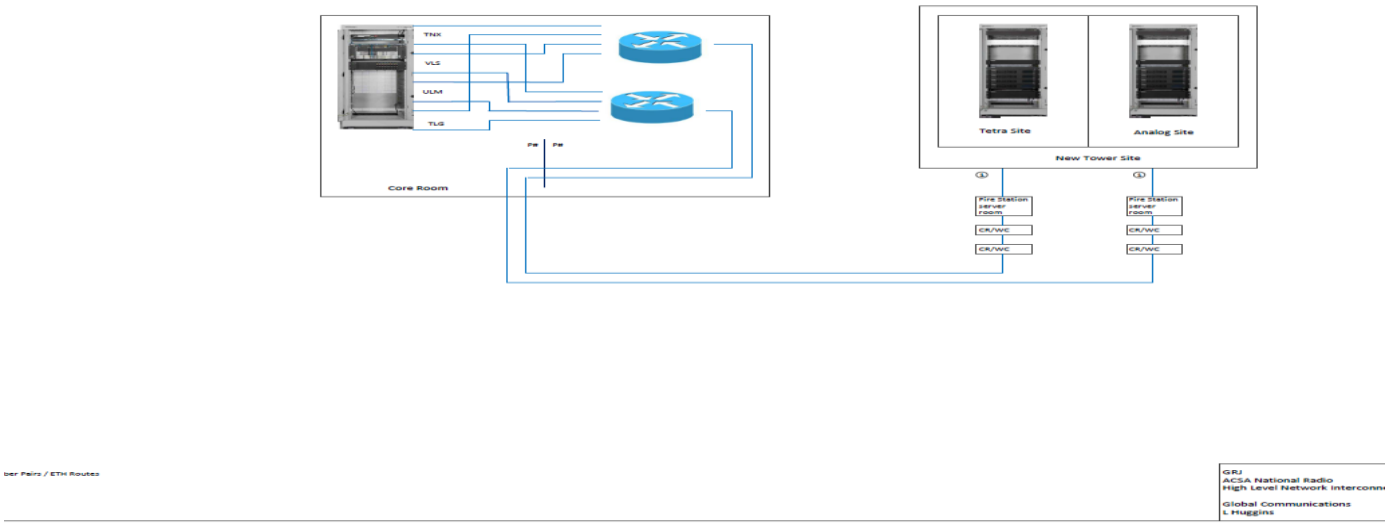

Figure 9: GRJ Layout

xxvi) Bill of Quantities for GRJ Servers

Location	Server Name	Operating System	Server Type	Primary Role
Data Centre	Main TNX	CentOS7	cPCI Blade	Radio Core Main
Data Centre	Team Link Core	CentOS7	HP DL 20	WiFi/Lte Bridge
Data Centre	Automatic Vehicle Location Server	Ubuntu	Dell R220	Vehicle/Personnel Tracking
Data Centre	Voice Logging Server	Suse 11.3	Dell R220	Voice and Data Recorder

Table 27 Servers

xxvii) Bill of Quantities for ORTIA Radio Terminals

Deliverables	QTY
Handheld Radios	75
Mobile Radio (Vehicle radio)	10
Data Modem	10
Air band Handheld Radios	6
Air band Desktop Radios	10
Air band Mobile Radios	22
Analogue Gateway	4

Table 28 Radio Terminals

xxviii) Bill of Quantities for GRJ Radio System Hardware

Deliverables	QTY
Base Station	2
Radio IP switch	1
Voice & Recorder	1
Radio Network Management System	1
PABX/PSTN Gateway	1
Dispatcher	2

Table 29 Radio System Hardware

11. System Documentation Requirement

- Where necessary the Bidders must provide ACSA with system documentation that includes architectural documents, training manual(s) and manuals.

12. Basic Corrective and Preventative Maintenance & Support Activities will include but not limited to:

- Downloading Tetra systems operations' data for reports
- Physical and visual inspections (preventative maintenance)
- Cleaning of equipment and sites
- Corrective maintenance if needed
- Generating of monthly reports and updating of the inventory
- Logging\managing\reporting and accepting calls via the ACSA Service Desk
- Clean bracketing
- Neaten cables
- Ensure that devices are mounted properly and securely fixed
- Preventative Maintenance which includes planned overhauls, replacements, inspections, tests, and any activity aimed at preventing failures through maintaining the condition of the infrastructure or assessing its condition for the purposes of corrective maintenance.
- Corrective maintenance which includes all activities following a preventative maintenance inspection.
- Breakdown maintenance which includes maintenance that is unforeseen and is necessary to restore the serviceability of the infrastructure, and functionality of the System. These break down maintenance could be requested after hours on weekend and public holiday. Bidders will be expected to respond and attend all the faults.
- The Service Provider will be held liable for any failure to the System that should have been prevented during preventative maintenance. Therefore, the service provider should include any further preventative maintenance recommendations, which in its opinion are necessary for the specific and other failure prevention.

Maintenance Schedule:

Component	Maintenance	Reporting
Base Stations	Monthly	Monthly
Control Equipment	Monthly	Monthly
Operator Terminals	Monthly	Monthly
Frequency coverage	Weekly	Monthly
Auxiliary Equipment	Monthly	Monthly

Table 30 Radio System Hardware

13. Service-Level Requirements (SLRs)

The following Service-Level Requirements (SLRs) represent minimum Service levels required. providers must consistently meet or exceed the following SLRs.

Review of Service Levels and KPIS

On an annual basis after the initial start-up (90 days), ACSA can request a change to any service level by providing notice to the provider that a service level needs to be changed.

This change can take effect only after the provider has had sufficient time (maximum 3 weeks) to review the requested change and determine if any modifications are required to the delivery of the support and maintenance services. Should changes be required by the provider, then ACSA must allow the provider reasonable time to make such changes before the service-level change takes place.

Priority levels

Priority Level 1 — Emergency/Urgent *Critical Business Impact*	The incident has caused a complete and immediate work stoppage affecting a critical function of the Tetra Radio Communication System or components, and a primary business process or a broad group of users (an entire department, floor, branch, line of business or external customer). No workaround available. Examples: • All or more than 50% of the Tetra Radio Communication System or components are down
Priority Level 2 — High *Major Business Impact*	A business process is affected in such a way that business functions are severely degraded, multiple users are impacted, a key customer is affected, or a critical function is operating a significantly reduced capacity or functionality. A workaround may be available but is not easily sustainable. Examples: • Between 20 and 100 Tetra Radio Ccommunication devices are not accessible as a result of system failure
Priority Level 3 — Medium *Moderate Business Impact*	A business process is affected in such a way that certain functions are unavailable to End Users or a system and/or service is degraded. A workaround may be available. Examples: • 2 than 20 Tetra Radio Communication devices are not accessible as a result of system failure.
Priority Level 4 — Low *Minimal Business Impact*	An incident that has minor impact on normal business processes and can be handled on a scheduled basis. A workaround is available or there is minimal negative impact on a user's ability to perform their normal daily work. Example: • Neatening of cables • Cleaning of equipment • User account locked • Adjustments (lights and sound) • Individual radio communication devices are not accessible as a result of system failure

Table 31 – Priority Levels

Incident management

Time to resolve incidents/problems following responses to different incident priority level classifications.

Each IT Service categorizes incidents/problems according to the incident/problem resolution priorities listed below.

Table 32 - Incident Response and Resolution time (Office Hours)

Incident management response and resolution times for International Airports (Office Hours)			
Incident/Problem Resolution	**Service Measure**	**Performance Target**	**SLR Performance %**
Time to Notify ACSA of or to accept/acknowledge a Priority 1	Time to Respond	<10 minutes	98.0%
Time to Notify ACSA of or to accept/acknowledge a Priority 2 Incident	Time to Respond	<20 minutes	98.0%
Time to Notify ACSA of or to accept/acknowledge a Priority 3 or 4 Incident	Time to Respond	<120 minutes	98.0%
Time to Notify ACSA of or to accept/acknowledge a Priority 5 Incident	Time to Respond	<3 hours	98.0%
Priority Level 1	Time to Restore (Not linked to hardware failure)	<2 hours	98.0%
Priority Level 2	Time to Restore (Not linked to hardware failure)	<4 hours	98.0%
Priority Level 3	Time to Restore (Not linked to hardware failure)	<8 hours	98.0%
Priority Level 4	Time to Restore (Not linked to hardware failure)	Next business day or as prioritized by provider	98.0%
Priority Level 5	Time to Restore (Not linked to hardware failure)	To be agreed	98.0%
Priority Level 1	Resolution (permanent fix)	To be agreed	98.0%

Incident management response and resolution times for International Airports (Office Hours)			
Priority Level 2	Resolution (permanent fix)	To be agreed	98.0%
Priority Level 3	Resolution (permanent fix)	To be agreed	98.0%
Priority Level 4	Resolution (permanent fix)	To be agreed	98.0%
Priority Level 5	Resolution (permanent fix)	To be agreed	98.0%
Priority Level1-5 Hardware Failure	Fix/replacement	In line with the hardware support procured by ASCA	98.0%
Root-Cause Analysis	Time to Report	Within 48 hours of incident resolution	98.0%
	Formula	Number of requests completed within Performance Target ÷ Total of all requests occurring during Measurement Interval	
	Measurement Interval	Weekly	
	Reporting Period	Monthly	
	Measurement Tool	Data from ACSA Service management Tool (Service NOW) complimented with other provider tools if applicable	
	SLR Element Weighting Factor Allocation	50%	

Incident management response and resolution times for International Airports (After hours Hours) and regional airports.			
Incident/Problem Resolution	**Service Measure**	**Performance Target**	**SLR Performance %**
Time to Notify ACSA of or to accept/acknowledge a Priority 1	Time to Respond	<15 minutes	98.0%
Time to Notify ACSA of or to accept/acknowledge a Priority 2 Incident	Time to Respond	<20 minutes	98.0%
Time to Notify ACSA of or to accept/acknowledge a Priority 3 or 4 Incident	Time to Respond	<160 minutes	98.0%
Time to Notify ACSA of or to accept/acknowledge a Priority 5 Incident	Time to Respond	<3 hours	98.0%
Priority Level 1	Time to Restore (Not linked to hardware failure)	<3 hours	98.0%
Priority Level 2	Time to Restore (Not linked to hardware failure)	<5 hours	98.0%
Priority Level 3	Time to Restore (Not linked to hardware failure)	<10 hours	98.0%
Priority Level 4	Time to Restore (Not linked to hardware failure)	Next business day or as prioritized by provider	98.0%
Priority Level 5	Time to Restore (Not linked to hardware failure)	To be agreed	98.0%

Incident management response and resolution times for International Airports (After hours Hours) and regional airports.			
Priority Level 1	Resolution (permanent fix)	To be agreed	98.0%
Priority Level 2	Resolution (permanent fix)	To be agreed	98.0%
Priority Level 3	Resolution (permanent fix)	To be agreed	98.0%
Priority Level 4	Resolution (permanent fix)	To be agreed	98.0%
Priority Level 5	Resolution (permanent fix)	To be agreed	98.0%
Priority Level1-5 Hardware Failure	Fix/replacement	In line with the hardware support procured by ASCA	98.0%
Root-Cause Analysis	Time to Report	Within 48 hours of incident resolution	98.0%
	Formula	Number of requests completed within Performance Target ÷ Total of all requests occurring during Measurement Interval	
	Measurement Interval	Weekly	
	Reporting Period	Monthly	
	Measurement Tool	Data from ACSA Service management Tool (Service NOW) complimented with other provider tools if applicable	

Incident management response and resolution times for International Airports (After hours Hours) and regional airports.		
	SLR Element Weighting Factor Allocation	50%

Table 33 - Incident Response and Resolution time (After Hours) (and regional airports)

Service Availability

Availability SLR	
Component	**Explanation of Component**
Definition	Based on the availability of specifically identified managed objects. Total availability of the Service is based on the number of managed objects and the number of hours within the reporting time period. Downtime is subtracted from the total availability time to determine Availability The following downtimes are excluded from the adjusted calculation: • Prescheduled outages for preventative maintenance in the Tetra Radio Communication System environment • Time required for third-party vendors to resolve hardware/software problems • Downtime caused by customer facility power, network and/or HVAC outages or malfunctions • Downtime attributed directly to customer personnel (such as relocating or reconfiguring devices without prior coordination, hardware negligence or abuse) • Time where the customer is responsible for providing resolution. • Acts of nature (such as lightning and floods)
Requirement	24 hours per day, 7 days per week (365 days a year)
Measurement Range	Priority 1 Objects = 98.0% Priority 2 Objects = 98.0% Priority 3 Objects = 98.0%

	Priority 4 Objects = 98% **NOTE: Allocation of items will be done during contract negotiations. The provide can however suggest a list per category**
Measurement Tool	ACSA supplied Enterprise monitoring tools
Frequency	Monthly
Calculation Formula	Performance is calculated as follows: Dl = Total downtime hours Al = Adjusted downtime hours based on exceptions H = Hours in the month Ol = Total number of managed objects in the Priority El = Expected availability = H x Ol Report Only: **Availability %** = (El — Dl)/El x 100 SLA: **Adjusted Availability** % = (El — Al)/El x 100
SLR Element Weighting Factor Allocation	50%

Table 34 Availability SLR

THE MATTER IS SUBMITTED FOR CONSIDERATION BY:

Prepared by:	
Name:	**Lehlohonolo Moate**
Designation:	**Engineer: Airport Systems**
Date:	

Supported by:	
Name:	**Jessida Mainganya**
Designation:	**Acting Technical Manager: Airports Systems**
Date:	

Supported by:	
Name:	**Vishalan Govender**
Designation:	**Chief Technology Officer**
Date:	