

**AIR TRAFFIC AND NAVIGATION SERVICES SOC. LTD**  
**REPUBLIC OF SOUTH AFRICA**



**REQUEST FOR PROPOSALS: ATNS/TPQ/RFP0023/2023/24/FALE CONTROL  
TOWER CCTV, ACCESS CONTROL AND ALARM SYSTEM-2**

**APPOINTMENT OF A SERVICE PROVIDER FOR THE PROCUREMENT, DELIVERY,  
INSTALLATION, COMMISSIONING AND 10 YEAR SUPPORT OF SECURITY SYSTEMS  
AT THE KING SHAKA INTERNATIONAL AIRPORT (FALE), VIRGINIA AIRPORT (FAVG),  
RICHARDS BAY AIRPORT (FARB) AND PIETERMARITZBURG AIRPORT (FAPM).**

**TECHNICAL SPECIFICATIONS**

**FEBRUARY 2024**

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**ABBREVIATIONS**

ATC	Air Traffic Controller
ATNS	Air Traffic and Navigation Services SOC Ltd
ATSU	Air Traffic Services Unit
CCTV	Closed-Circuit Television
COC	Certificate of Compliance
EMPr	Environmental Management Programme
ET	Engineering Technician
FALE	King Shaka International Airport
FAPM	Pietermaritzburg Airport
FARB	Richards Bay Airport
FAVG	Virginia Airport
FAR	False Acceptance Rate
FRR	False Rejection Rate
HD	High Definition
HDMI	High-Definition Media Interface
HMI	Human Machine Interface
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IP	Ingress Protection
LAN	Local Area Network
LED	Light Emitting Diode
MATS	Manager Air Traffic Services
MTS	Manager Technical Services
N/C	Normally Closed
N/O	Normally Open
NVR	Network Video Recorder
OIC	Operator in Charge
ONVIF	Open Network Video Interface Forum
PC	Personal Computer
PIN	Personal Identification Number

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PIR	Passive Infrared
PMP	Project Management Plan
PoE	Power over Ethernet
PVC	Polyvinyl Chloride
RFID	Radio Frequency Identification
SANS	South African National Standards
SAWS	South African Weather Services
SSD	Solid State Drive
STS	Supervisor Technical Services
TCP/IP	Transmission Control Protocol/Internet Protocol
UML	Unified Modelling Language
UPS	Uninterrupted Power Supply
WBS	Work Breakdown Structure
WDR	Wide Dynamic Range

## 1. SCOPE OF WORK

The project calls for the procurement, delivery, installation and commissioning of security systems within the King Shaka Region that includes access control systems, Closed-Circuit Television (CCTV) systems, intruder alarm systems and intercom systems. The security systems will be deployed in the Air Traffic Services Units (ATSUs) at the King Shaka International Airport (FALE), Virginia Airport (FAVG), Richards Bay Airport (FARB) and Pietermaritzburg Airport (FAPM). The scope of the project further includes the support and maintenance of the new security systems and decommissioning and disposal of the existing replaced security systems.

## 2. SUMMARY OF REQUIREMENTS

### 2.1 Location Description

The table below provides a high-level description of each location.

**Table 1: Description of each site.**

NAME	TYPE	DESCRIPTION
King Shaka International Airport	ATSU	Building
Pietermaritzburg Airport	ATSU	Building (part of the main airport building)
Virginia Airport	ATSU	Building (part of the main airport building)
Richards Bay Airport	ATSU	Building (part of the main airport building)

### 2.2 Items Required

The tables below summarise the items required per location.

**Table 2: ATSU items required.**

ATSU	Requirements	Quantity / Capacity
King Shaka	Access Control System	21 Access points 2 Card printing machine
	CCTV System	32 Cameras
	Intruder Alarm System	4 Control Panels 6 Perimeter Doors 5 Zones
Pietermaritzburg	Access Control System	5 Access points 1 Card printing machine
	CCTV System	5 Cameras
	Intruder Alarm System	1 Control Panel 2 Perimeter Door 1 Zone

	Intercom	1 Gate Station 1 Handset
Virginia	Access Control System	3 Access points 1 Card printing machine
	CCTV System	4 Cameras
	Intruder Alarm System	1 Control Panel 1 Perimeter Door 1 Zone
	Intercom	1 Gate Station 1 Handset
Richards Bay	Access Control System	2 Access points 1 Card printing machine
	CCTV System	1 Camera
	Intercom	1 Gate Station 1 Handset

## CHAPTER 1: GENERAL REQUIREMENTS

### 1. ENVIRONMENTAL CONDITIONS

[A] The security systems and its auxiliary components offered shall operate within specifications without any degradation in performance under the following environmental conditions and tolerances.

**Table 3: Environmental Conditions.**

Parameter	Value
<b>Outdoors</b>	
Temperature	-10° to +55°C
Relative Humidity	10% to 90% (non-condensing)
<b>Indoors</b>	
Temperature	-5 °C to +35 °C
Relative Humidity	10% to 80% (non-condensing)
<b>Protection Rating</b>	
Ingress Protection (IP) Rating	IP65 (Except where indicated otherwise)
Mechanical impact protection rating	IK08

### 2. MAINS SUPPLY

[A] The security systems shall be powered from an existing online Uninterrupted Power Supply (UPS) to protect the system from surge currents/voltages and provide continuous backup power should the main power supply be interrupted.

[B] Those devices that cannot be supported by the UPS shall be provided with a battery backup. The battery backup shall be able to keep the device operational for a minimum period of 6 hours after a power failure. The devices that will require a battery backup shall be capable of providing a low battery alert.

[C] All electrical work shall comply to SANS 10142-1.

[D] A Certificate of Compliance (COC) for all electrical work performed shall be supplied.

### 3. SYSTEM LIFESPAN

[A] The design life of the security systems offered shall be at least 10 years.



#### 4. SYSTEM HOUSING

- [A] One (1) dedicated 19-inch, 32U floor standing equipment cabinet shall be provided to house the equipment for the security systems as well as the associated support and auxiliary hardware offered for FALE.
- [B] The floor standing equipment cabinet shall be installed in the Ground Floor Equipment room at FALE.
- [C] One (1) dedicated 19-inch, wall mountable equipment cabinet shall be provided to house the equipment for the security systems as well as the associated support and auxiliary hardware offered for each of the other ATSU's.
- [D] The wall mountable equipment cabinet shall be installed in the equipment room at each of the other ATSU's.

#### 5. USER CAPABILITIES

- [A] The security systems shall cater for different users with configurable user permissions.
- [B] The security systems shall be configurable to cater for at least three (3) user levels and associated permissions as shown in the table below.

**Table 4: User permissions.**

#	USER	PERMISSIONS
1	Super User	Full system access
2	Administrator	All access excluding configuration changes.
3	General User	View only with limit control (e.g., 5-min playback, camera selection)

#### 6. SOFTWARE REQUIREMENTS

- [A] Software updates, patches, new versions, and new releases on all systems shall not overwrite, alter, amend or impact on the operational system configuration and operational system parameters. All systems shall be able to revert to previous software versions.

#### 7. NETWORK COMMUNICATION LAYOUT

- [A] The Access Control System and the CCTV System shall make use of the existing network, where applicable, for communication between the various components (i.e., door controllers, cameras, etc.).

- [B] New CAT6 Ethernet cables shall be installed to connect the necessary equipment (i.e., cameras, door controllers, etc.) to the network. A maximum length of 110m of cable per item, shall be provided for at each location to cater for each of the items (camera, door controllers, etc.)
- [C] The details below are applicable to the existing fibre optic layout at the FALE ATSU:
- [a] The Guard house and the Tower Equipment room are two separate sites and are connected to the Ground floor Equipment room via fibre optic cable.
  - [b] The fibre installed is single mode 1310nm with ST connectors. The fibre shall be used to connect to the Guard house and the Tower Equipment Room.
- [D] Suitable Network switches, fibre interfaces and patch panels shall be installed at the FALE guard house and the tower equipment room to connect the new security equipment to the main network.

## 8. DECOMMISSIONING AND DISPOSAL

- [A] The existing security equipment that are replaced shall be uninstalled, disassembled and disposed of in an environmentally friendly manner and in line with current environmental laws.
- [B] Waste shall be managed according to the ATNS waste management policies and there shall be adherence to the requirements of the National Waste Management Act: Waste Act (No.59 of 2008).
- [C] Records of disposal shall be kept at sites and also sent to ATNS Environment & Sustainability Department.

## CHAPTER 2: ACCESS CONTROL SYSTEM

### 1. MAIN ACCESS CONTROL SYSTEM

#### 1.1 General

- [A] The access control system shall consist of, the following devices, including but not limited to:
- I. Server
  - II. Proximity readers
  - III. Door controllers
  - IV. Desktop for enrolment of new users - biometrics, Radio Frequency Identification (RFID) and Personal Identification Number (PIN) code registration
  - V. Biometrics enrolment reader/writer
  - VI. Card printing machine
  - VII. Locking mechanisms (Magnetic door lock)
  - VIII. Existing physical barriers (Boom gates and Turnstiles)
- [B] The access control system shall be scalable.
- [C] The access control system shall cater for multiple entry/exit points.
- [D] The access control system shall allow for the configuration of different zones with different access rights. The access control system shall thus allow for the configuration of zones to have restricted access to authorised personnel only.
- [E] Each zone shall be monitored by the access control system and a record of users entering and exiting the zone shall be kept.
- [F] The cabling for the new access control system shall be installed in the existing cable routes, ducts and trays as far as possible.
- [G] The access control system shall allow for visitors and contractors to be enrolled on a temporary basis with an access time or duration limit. Visitors and contractor's identification details shall be stored on the database.
- [H] All devices associated with the access control system shall have a power status indicator.
- [I] The access control system shall cater for an interface from the existing fire detection system. The interface shall be a N/O (normally open) relay contact or a N/C (normally closed) relay contact.

- [J] In the event of a fire and during an emergency evacuation, the access control system shall unlock all doors automatically. The exception will be at FALE, where the guard house will be excluded from being automatically unlocked.

## 1.2 Access Control Management System

- [A] A central access management system shall be provided to manage the access control system.
- [B] The access management system shall have a user-friendly Human Machine Interface (HMI).
- [C] The access management system shall cater for administrator access to the server and database where users and events are stored.
- [D] The access management system shall allow for the setting up of access zone profiles. The system shall allow for the different zone profiles to be applied to specific user types. The system shall allow for access to be scheduled and restricted during specific times.
- [E] The access management system shall generate a visual and audible alarm/alert when an entry/exit door is left open for longer than a configurable duration.
- [F] The access management system shall log and track all system changes. The system shall be capable of extracting all system changes into a report in pdf format.
- [G] The Unified Modelling Language (UML) architecture of the access management system software shall be provided.

## 2. AUXILIARIES AND SUPPORT SYSTEMS

### 2.1 Proximity Reader

- [A] There shall be 2 proximity readers installed for each of the entry/exit points as defined in the table below.

Location	Entry/Exit Points	Associated Readers
FALE	21	42
FAVG	3	6
FAPM	5	10
FARB	2	4

[B] There shall be four (4) goose neck poles installed for the proximity readers to be installed at the vehicle entry/exit points.

[C] The proximity readers shall have the ability to identify personnel by means of:

- I. RFID cards
- II. Fingerprints
- III. Keypad PIN codes
- IV. Any combination of the above

[D] The proximity readers shall support Transmission Control Protocol/Internet Protocol (TCP/IP) network communication.

[E] The proximity readers shall support PoE (Power over Ethernet).

[F] The proximity readers shall provide an indication to show when access is granted or denied. If the indication is in the form of a LED light, the LED shall glow green when access is granted and red when access is denied.

[G] The proximity reader shall support the following RFID technologies, including but not limited to:

- I. HID 125KHz
- II. MIFARE 1K
- III. MIFARE 4K
- IV. MIFARE Ultralight / C
- V. MIFARE DESFire / EV1
- VI. MIFARE Mini

[H] The proximity reader shall have a card reading distance of 0 to 5cm.

[I] The proximity reader shall have a card reading duration of less than 1 second.

[J] The proximity reader shall have an optical fingerprint module.

[K] The proximity reader shall have a fingerprint comparing mode of 1:1 and 1:N.

[L] The proximity reader shall have a fingerprint False Acceptance Rate (FAR) of less than 0.001%.

[M] The proximity reader shall have a fingerprint False Rejection Rate (FRR) of less than 0.01%.

[N] The proximity reader shall be plug-and-play and seamlessly integrate with the access management system.

[O] All outdoor proximity readers shall have an IP67 rating and shall be fitted with an outdoor weatherproof housing to protect the unit from direct sunlight. Weatherproof housings shall be provided for as per the table below.

Location	Positions	Weatherproof housings
FALE	<ul style="list-style-type: none"> <li>• Vehicle entry (2)</li> <li>• Vehicle exit (2)</li> <li>• Reception entry (1)</li> <li>• Equipment Room A (ERA) entry (1)</li> </ul>	6
FAPM	<ul style="list-style-type: none"> <li>• Main Entrance</li> <li>• Emergency Exit</li> </ul>	2
FARB	<ul style="list-style-type: none"> <li>• Main Entrance Gate</li> </ul>	1

[P] The Contractor shall supply and install four (4) goose neck poles for the proximity readers at the vehicle entry/exit points at FALE.

**2.2 Door Controller**

[A] The access control system shall incorporate door controller(s). Door controllers can be associated per system, or per zone, or per door or per proximity reader.

[B] The supplier’s system configuration shall determine the number of door controllers to accommodate the number of entry/exit points and associated proximity readers per location as indicated in the table below. It shall be noted that the Entry/Exit points for the FALE Guardhouse are not doors. Six (6) of the associated readers will be used for boom gates and two (2) will be used for turnstiles. Requirements for these are provided under Section 2.7 of this Chapter.

Location	Entry/Exit Points	Associated Readers
FALE ATSU	17	34
FALE Guard House	4	8
FAVG	3	6
FAPM	5	10
FARB	2	4

[C] The door controller(s) shall have a storage capacity that can accommodate the database, of unique identification (biometrics, RFID card and PIN code) information, for a minimum of people per location as indicated in the table below.

Location	People
FALE	500

FAVG	100
FAPM	100
FARB	100

- [D] The database on the door controller(s) shall be updated/synchronised when changes are made at the access management system.
- [E] All events from the door controllers shall be recorded and stored on the central server. During a power or network outage, the door controller(s) shall have a storage capacity to cater for at least 100,000 events until the power or network is restored.
- [F] The door controller(s) and all associated devices (i.e., proximity readers, locking mechanisms, etc.) shall be able to function independently of the connection to the server and the backup power supply.
- [G] All data stored on the door controller(s) shall be retained during a power failure.
- [H] A bypass key switch shall be installed on the unsecured side of each door where a door controller is installed. All bypass keys for one location shall be keyed alike. The number of copies of the bypass keys to be provided at each location are indicated in the table below.

Location	Keys
FALE	10
FAVG	4
FAPM	4
FARB	4

- [I] A green resettable emergency door release call point shall be installed on the secure side of each door where a door controller is installed.

**2.3 Access Cards and Card Printing Machine**

- [A] RFID cards which are compatible with the access control system shall be provided with the system.
- [B] Blank Polyvinyl chloride (PVC) cards shall be provided for ATNS employee credentials to be printed on.
- [C] The number of cards to be provided per location are indicated in the table below.

Location	RFID cards	PVC cards

FALE	500	500
FAVG	50	100
FAPM	50	100
FARB	50	100

[D] Three (3) types of printing templates for the employee cards shall be designed and supplied. The layout of the templates shall be provided by ATNS after contracting.

[E] User registration workstations with a biometric reader/writer and associated card printing stations shall be provided as per the table below.

Location	Nr of workstations	Position
FALE	2	Manager Technical Services Secretary Manager Air Traffic Services Secretary
FAVG	1	Tower Cab
FAPM	1	Tower Cab
FARB	1	Tower Cab

[F] All workstations shall have the capability to enrol new users and print access cards.

[G] Card printing machines shall be delivered with a colour printer ribbon. Each printer ribbon shall have a yield of at least 500 cards.

[H] One spare colour printer ribbon shall be provided for each card printing machine.

## 2.4 Locking Mechanism

[A] A locking mechanism shall be provided for each of the entry/exit doors where a door controller is installed.

[B] The locking mechanism shall be a magnetic lock or equivalent.

[C] The locking mechanism shall have minimum break force of 500kg.

[D] The locking mechanism shall be compatible with the proposed door controller.

[E] The locking mechanism shall be installed on the inside of the door and the design shall cater for doors opening to the outside as well as to the inside.

[F] The locking mechanism shall have an LED to display the lock status.



[G] The locking mechanism shall generate an output signal to provide the lock status to the door controller and the access management system.

[H] The locking mechanism shall cater for an interface from the intercom system, where applicable, so that it can be unlocked from the intercom's handset.

## 2.5 Automatic Door Closures

[A] All doors, where a door controller is installed, shall be fitted with an automatic door closure.

[B] The door closure shall be able to cater for a door weight of up to 50kg.

[C] All door closures shall be installed indoor.

[D] The closing and latching speed of the door closures shall be adjustable.

## 2.6 Door Open/Close Sensor

[A] A door open/close sensor shall be installed on all entry/exit points where a door controller is installed.

[B] The door open/close sensor shall communicate the status of the door to the door controller and the access management system.

[C] An audible alarm, configurable per door, shall be generated at each door, if the door is left open for longer than a configurable duration. This will mostly be required at external access points and will be de-activated for internal access points. It must be possible to cancel the alarm, locally at the door, by means of a cancellation pin code.

## 2.7 FALE Guard House Requirements

[A] The control cards in the two (2) existing turnstiles shall be replaced. The new control cards shall interface with the new access control system.

[B] The four (4) existing boom gates and associated components (i.e. control box, control cards, motors, etc.) shall be replaced. The new boom gates shall operate with the new access control system.

[C] The control cards for the two (2) existing spike barriers shall be replaced. The new control cards shall interface with the new access control system.

[D] The four (4) existing loop detectors, including the loop connection wiring, installed under the boom gates shall be replaced.

[E] The existing boom gates, spike barriers and turnstiles shall be treated for corrosion and painted.

## 2.8 Network Connectivity

[A] The access control system and all associated devices shall support TCP/IP for network connectivity.

[B] All the devices associated with the access control system shall support Power over Ethernet (PoE).

## CHAPTER 3: CCTV SYSTEM

### 1. CCTV SYSTEM

- [A] A CCTV surveillance system shall be installed at the locations as indicated in Table 2.
- [B] The CCTV system for FALE shall be at least a 32-channel system and for other locations at least an 8-channel system.
- [C] The CCTV system shall cater for remote monitoring on a mobile device. The remote mobile monitoring shall be made available for the FALE Technical Services Manager (MTS) and the FALE Air Traffic Services Manager (MATS) as well as the respective Operator in Charge (OIC) at the other ATSU's. ATNS shall provide the internet connection for remote monitoring.
- [D] The CCTV system shall support the capability of offsite monitoring from a central control room. The bandwidth requirements to achieve this must be provided.
- [E] The CCTV system devices shall be Open Network Video Interface Forum (ONVIF) compliant devices.

### 2. CAMERA SPECIFICATIONS

- [A] The following types of cameras are currently installed at FALE and shall be replaced:
- [a] Eight (8) outdoor fixed mounted bullet camera
  - [b] Fourteen (14) indoor dome mounted camera
  - [c] Four (4) outdoor dome mounted camera
- [B] The Contractor shall assess the placement of the existing cameras in the FALE location and advise on the placement of the new cameras to cover all blind spots. Existing blind spots have been identified at the Rear Loading zone, Ground Floor Equipment Room and Air conditioning plant. Six (6) additional cameras shall be supplied of which three (3) will be used to cover the blind spots.
- [C] The types of cameras required at FAPM, FAVG and FARB are shown in the table below.

Camera Type	FAPM	FAVG	FARB
Indoor Dome	3	3	1
Outdoor Bullet	2	1	0

- [D] The CCTV camera placement shall allow for viewing of all entry/exit points that will be controlled by the access control system.
- [E] All cameras provided shall be wired cameras.
- [F] All cameras shall support PoE and TCP/IP.
- [G] All cameras shall have a minimum resolution of 2 megapixels.
- [H] All cameras shall have a minimum video resolution of 1080p at a minimum frame rate of 20fps.
- [I] All cameras shall support at least one of the following video compression formats; H.264, H.264+, H.265 or H.265+.
- [J] All outdoor cameras shall have an IP67 rating.
- [K] All cameras shall have an IR range of at least 20m for low light conditions, with the exception of the FALE guard house cameras that shall have at least a 50m IR range. The FALE guard house currently has eight (8) outdoor fixed mounted bullet camera.
- [L] All cameras shall be equipped with motion sensors. Recordings shall only be created when motion is detected.
- [M] The cameras shall have a minimum Wide Dynamic Range (WDR) of 120dB to ensure that images are not affected by backlight.

### 3. MONITOR AND OPERATOR POSITIONS

- [A] Monitor and operator positions shall be supplied with the CCTV system.
- [B] A monitor position shall only receive a live feed from the CCTV system without any interaction or control. The selection of the camera feeds being monitored shall be configurable. If a Personal Computer (PC) is required for a monitor position, the PC shall have an All-in-one form factor.
- [C] An operator positions shall be connected to the Network Video Recorder (NVR) and shall allow the user to view all camera feeds as well as select specific feeds to monitor. The operator positions shall have a playback function for the playback of recorded footage. The operator positions shall be restricted from making any configuration changes to the CCTV system.

### 3.1 FALE Requirements

- [A] There shall be one (1) monitor position, consisting of a 24-inch widescreen full High Definition (HD) monitor, installed at the reception area.
- [B] There shall be two (2) monitor positions, consisting of a 27-inch widescreen full HD monitor, installed at the FALE Tower controller position and the FALE Approach controller position. These monitor positions shall receive a live feed of the access points to the relevant rooms as well as a live feed of the hallways leading to relevant rooms.
- [C] There shall be two (2) operator positions, consisting of a PC and a 32-inch widescreen full HD monitor, installed at each of the 2 guard houses (entry and exit).
- [D] There shall be one (1) operator position, consisting of a PC and widescreen full HD monitor, installed in the equipment cabinet provided for the equipment room. The width of the monitor shall be the maximum size permissible for a 19-inch rack. The monitor installed in the equipment room shall be connected directly to the NVR. Users with Super User rights shall be able to make configuration changes on this operator position.

### 3.2 FAPM, FAVG and FARB Requirements

- [A] There shall be one (1) operator position installed in the tower at each ATSU. This position shall also work as a monitor position depending on the type of user that has logged in. Further details are provided under CHAPTER 6:.

## 4. NETWORK VIDEO RECORDER

- [A] A Network Video Recorder (NVR) shall be provided for the CCTV system.
- [B] The NVR shall have sufficient storage to store recorded footage for at least 30 days.
- [C] The NVR shall have a Solid-State Drive/s (SSD) to store the footage.
- [D] The NVR shall be capable of simultaneously recording of all available channels (i.e., the 32 channel NVR shall be capable of recording all 32 channels simultaneously).
- [E] The NVR shall have a user-friendly graphical user interface.

- [F] The NVR shall cater for comprehensive search and playback functions, including but not limited to:
- [a] Play
  - [b] Pause
  - [c] Rewind
  - [d] Fast forward
  - [e] Screenshot
- [G] The NVR shall allow for viewing and playback via a remote Web management connection.
- [H] The NVR shall support the use of PC software or a built-in web application via a network for live viewing, playback and configuration.
- [I] The NVR shall be capable of exporting video footage to a USB drive in mpeg4, MKV or any format suitable to be played on a windows-based PC.
- [J] The NVR shall allow for the user to select the date, time and duration of the video to be exported.
- [K] The NVR shall output video at a minimum resolution of 1080p.
- [L] The NVR shall have at least 2 High-Definition Media Interface (HDMI) outputs.
- [M] All recordings must be date and time stamped.
- [N] The NVR shall be password protected.
- [O] The NVR shall come pre-installed and pre-configured with all the necessary software.
- [P] The NVR shall support multi-level access control based on usernames and passwords. Users' authorisation shall be configured according to Table 4.
- [Q] The NVR shall have at least 1 ethernet port for connection to the Local Area Network (LAN).
- [R] The NVR shall support TCP/IP.
- [S] The NVR shall support the PoE standards IEEE 802.3af and IEEE 802.3at. The NVR shall have enough PoE supported ports to connect all 32 cameras or a suitable PoE switch/switches shall be provided to compensate for the cameras that cannot be connected directly to NVR.

## CHAPTER 4: INTRUDER ALARM SYSTEM

### 1. GENERAL

- [A] An intruder alarm system shall be provided and installed at FALE, FAPM and FAVG.
- [B] The intruder alarm system for FALE shall have the capability to configure five (5) zones that can be armed and disarmed independently. Two zones shall be configured for the FALE building during implementation. One section of the building is occupied by the South African Weather Service (SAWS) and the other section by ATNS. Therefore, SAWS and ATNS shall be able to arm and disarm their respective sections independently.
- [C] The intruder alarm system at FALE shall send an immediate alert to the security guards on-site should the alarm be triggered.
- [D] The intruder alarm systems supplied shall have the capability of linking to an off-site armed response company.
- [E] The intruder alarm system shall provide the option to override zones or bypass alarm sensors for the purpose of security patrolling.
- [F] The intruder alarm shall comply with the following standards:
- [a] SANS 60839-1-1:2007/IEC 60839-1-1:1988 Alarm systems Part 1: General requirements
  - [b] SANS 60839-1-3:2007/IEC 60839-1-3:1988 Environmental testing
- [G] The intruder alarm system shall consist of the following components at minimum:
- [a] Alarm control panel and keypad
  - [b] Magnetic contacts
  - [c] Infrared Strips
  - [d] Panic Buttons
  - [e] Motion detectors
- [H] The intruder alarm system shall be scalable and upgradable to cater for newer systems such as electric fencing, vibration sensors, Passive Infrared (PIR) Sensors as well as additional infrared beams and magnetic contacts.

## 2. ALARM CONTROL PANEL

[A] There shall be six (6) alarm control panels installed at eye-level in the following areas at the relevant ATSUs:

Location	Quantity	Areas
FALE	4	a. Reception Area b. Loading zone exit c. SAWS Entrance d. SAWS Exit
FAPM	1	a. Main Entrance
FAVG	1	a. Main Entrance

[B] The keypad on the alarm control panel shall be backlit and remain illuminated in the event of power failure.

## 3. MAGNETIC CONTACTS

[A] Magnetic contacts shall be used to trigger the alarm if any of the perimeter doors are opened when the alarm is in an armed state.

[B] The Contractor shall inspect the existing magnetic contacts at FALE and advise ATNS on the condition and if they can be reused. It will be at the discretion of ATNS on whether the existing magnetic contacts will be replaced.

[C] There shall be nine (9) magnetic contacts installed at the following perimeter doors at the relevant ATSUs:

Location	Quantity	Perimeter Doors
FALE	6	a. Reception Cubicle – single door b. Reception – double door c. SAWS Rear Exit – single door d. ATNS Loading Area Exit – single door e. UPS Room Exit – double door f. Equipment Room A Exit – double door
FAPM	2	a. Main Entrance b. Emergency Exit Door
FAVG	1	a. Main Entrance



#### 4. INFRARED STRIPS

- [A] There shall be infrared strips used at FALE to trigger the alarm if any motion is detected in front of the ground floor windows of the building when the alarm is in an armed state.
- [B] The Contractor shall inspect the existing outdoor infrared strips at FALE and advise ATNS on the condition and if they can be reused. It will be at the discretion of ATNS on whether the existing infrared strips will be replaced.
- [C] Outdoor Infrared strips shall be installed to cover all ground floor windows. Below are the areas and lengths to be covered:
- a. Eastern Side – 40m
  - b. Western Side – 45m
  - c. Northern Side (Main Entrance) – 40m
  - d. Southern Side – 31m
  - e. Loading Zone – 14m
- [D] The infrared strips shall be weatherproof with an IP rating of at least IP55.
- [E] The infrared strips shall eliminate false alarms in poor weather conditions.
- [F] The infrared strips shall be pet friendly to eliminate false alarms caused by animals.
- [G] The infrared strips shall output at least 4 beams.
- [H] The infrared strips shall have a minimum length of at least 70cm.

#### 5. PANIC BUTTONS

- [A] Eight (8) panic buttons which trigger an audible alarm shall be installed in the following areas listed in the table below.

Location	Quantity	Position
FALE	4	<ol style="list-style-type: none"> <li>a. Approach Controller position</li> <li>b. Tower Controller position</li> <li>c. SAWS Forecaster/Observer position</li> <li>d. Reception</li> </ol>
FAPM	2	<ol style="list-style-type: none"> <li>a. Tower Controller position</li> <li>b. To be advised</li> </ol>
FAVG	2	<ol style="list-style-type: none"> <li>a. Tower Controller position</li> <li>b. To be advised</li> </ol>

[B] Two wireless panic buttons shall be provided for the on duty patrolling security guards at FALE. These panic buttons shall be linked to a silent alarm.

[C] All panic button signals shall immediately alert security in the guard house at FALE.

## 6. MOTION DETECTORS

[A] The contractor shall inspect the existing indoor motion detectors at FALE and advise if they can be connected to the new alarm system and include this as an option.

[B] The existing motion detectors are microwave PIR sensors.

[C] There shall be two (2) PIR motion detectors installed in the following areas for the relevant ATSUs:

Location	Quantity	Position
FAPM	1	a. Ground floor area
FAVG	1	a. Ground floor area

## CHAPTER 5: INTERCOM SYSTEM

### 1. INTERCOM SPECIFICATIONS

- [A] An intercom shall be installed at the FAPM, FAVG and FARBATSUs.
- [B] The intercom shall consist of the following components, including but not limited to:
  - [a] Gate station
  - [b] Handset
- [C] The intercom shall support 2-way voice communication.
- [D] The gate station shall be installed at the main entrance.
- [E] The gate station shall consist of a speaker, microphone and a call button.
- [F] The call button on the gate station shall have a proximity sensor so that it does not need any physical contact.
- [G] The gate station shall be wall mounted.
- [H] The handset shall be installed at the tower Air Traffic Controller's (ATC) position.
- [I] The handset shall have an unlock button, or similar functionality, that can be used to unlock the locking mechanism installed at the main entrance to grant visitor's access.

## CHAPTER 6: SYSTEM INTEGRATION

### 1. SYSTEM INTEGRATION

- [A] Details of how the access control system and the CCTV system can be integrated. The benefits and the added functionality of integrating the two systems shall be outlined.
- [B] Details of an access control system with an integrated intercom shall be provided.
- [C] There shall be one 20-inch All-in-one PC installed at [FAPM, FAVG and FARB]. The PC shall cater for the following functionality:
- [a] CCTV operator/monitor position
  - [b] Management of the access control system and server
  - [c] Enrolment of new users
  - [d] Printing of employee cards

**Commented [KM1]:** Per location?

**Commented [MJ2R1]:** There will be one PC installed at each location.

# CHAPTER 7: PROJECT MANAGEMENT SPECIFICATIONS

## 1. PROJECT MANAGEMENT REQUIREMENTS

### 1.1 Draft Plans

The PMP shall encompass draft plans that will be refined as necessary during the execution of the contract. These plans shall include:

- [A] Project Management
- [B] Project Schedule
- [C] Resource management;
- [D] Risk management;
- [E] Quality management;
- [F] Installation, Transitioning and Commissioning; and
- [G] Environmental Management Programme.

### 1.2 Project Management Plan

Should outline all project management plans;

- [A] Project scope and overview;
- [B] Project deliverables;
- [C] Work Breakdown Structure (WBS) defining the scope of work and resources necessary to meet the contract requirements;
- [D] Configuration and integration management activities (regarding hardware, software and documentation version changes); and  
Budget management.

### 1.3 Project Schedule

- [A] The schedule shall include all project activities needed to be undertaken for the successful completion of the project in the form of a Master Time Schedule (Grant Chart)

### 1.4 Resource Management

- [A] The contractor shall employ a qualified and experienced project team with clearly defined roles and responsibilities for carrying out the project tasks.

## 1.5 Risk Management

[A] The risk management plan shall outline how project-related risks will be identified, assessed and mitigated. The plan shall further articulate the assessment methodology to be used in quantifying risk ratings attached to each identified risk.

## 1.6 Quality Management

[A] The quality management plan for the project detailing how quality will be controlled, assured and maintained throughout the lifecycle of the project. It shall also include quality assurance policy and procedures and relevant accreditations held by the company.

## 1.7 Installation, Transitioning and Commissioning

[A] The plan shall detail how the installation, transitioning and commissioning to meet project's technical, operational, contractual and performance requirements. This plan shall include an Acceptance Matrix, which identifies all deliverables, and the methods of testing proposed to demonstrate compliance.

## 1.8 Environmental Management Programme

[A] The Environmental Management Programme (EMPr) based on identified activities which may have potential or actual environmental impacts before the commencement of work in accordance with the National Environmental Management Act (No. 107 of 1998) and associated environmental legislation as well as ATNS' environmental specifications. The environmental management programme shall address, without limitations, the following:

- a. Energy efficiency pertaining to all aspects of the project;
- b. The use of Environmentally sustainable materials and products; and
- c. Waste management.

# CHAPTER 8: LOGISTIC SUPPORT REQUIREMENTS

## 1. TRAINING

[A] The Contractor shall provide training for each user type for the number people stipulated in the table below.

User Type	FALE	FAPM	FAVG	FARB
Super User	4	2	2	2
Administrator	6	2	2	2
General Users	6	4	4	4

## 2. WARRANTY

[A] The Contractor shall provide a minimum warranty period of 12 months per equipment.

**Commented [KM3]:** One year warranty for a 10 year product?

## 3. SPARES

[A] The Bidder shall specify and include any recommended spares that should be kept by ATNS in their proposal.

**Commented [MJ4R3]:** It's a one year warranty and 10 year support plan

## 4. SUPPORT CONTRACT

[A] The Bidder shall include a maintenance and support proposal for the duration of the specified life of the systems. The Bidder shall include any interventions that may be required to achieve the stipulated 10-year life span.

[B] The Contractor shall respond within 12 hours (Tmax) for FALE and within 24 hours (Tmax) for the other airports for any system failures.

[C] Should the Contractor not meet the proposed response time, the penalty shall be imposed. Service penalties will be determined by the Actual response time (Tact) per incident and calculated as per formula below: -

Service penalty = (Tact)(hours)/ (Tmax)(hours) \* (Priority factor\*)\*(10%\* next contract invoice value), up to a total maximum of the value of the Agreement per Agreement period where:  
Tmax (hours) = corresponding maximum agreed time to respond (arrive at the site).

Note: The penalty only applies to where the response time was exceeded. Priority factors for all types of failures is one (1).