



Provisional Bills of Quantities for the Proposed Refurbishment of Trans Kalahari Border to a One Stop Border Post, at Buitepos, in Omaheke Region

for

NAMIBIA REVENUE AGENCY

Bid No.: _____

ANNEXURE IV: ELECTRONICS INSTALLATION WORKS

Name of Bidder: _____

Bid Price (N\$-Incl. VAT): _____

PROJECT TEAM

Client	Architect	Electrical/Mechanical Engineer	Structural/Civil Engineer	Quantity Surveyor
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SCOPE OF PROJECT SPECIFICATIONS

The Project Specifications consist of two Portions:

- PORTION 1** Covers a general description of the Works, Site, circumstances, site facilities available and aspects requiring specific attention and requirements to be met by the Contractor.
- PORTION 2** Electrical Specifications covering amendments and additions to the SABS/SANS Standardised Specifications, applicable to this Contract.

STATUS OF PROJECT SPECIFICATIONS

The Project Specifications form an integral part of the Contract Document and shall be deemed to be included in and form part of the Specifications. In case of any discrepancy or conflict with any parts of the Standardised Specifications or the Drawings, the Project Specifications shall take precedence and shall govern.

PORTION 1: THE WORKS

PS 1 GENERAL DESCRIPTION OF THE WORKS

The contract covers all the Site Works required for the construction of Medium Voltage, Low Voltage and Building Electrical infrastructure for the Transkalahari Border One Stop Border Post, Omaheke Region, Namibia, The works include the upgrade of a 50 KVA Transformer to 200 KVA, underground feeder cables, distribution kiosks, streetlights, building distribution boards and building receptacles.

The Site Works would include:

- Establishment of necessary camp, personnel, plant and equipment on site;
- Setting out of Works;
- Locate, expose, protect and survey of existing services;
- Accommodation of traffic in road reserves, access to erven, facilitation of road crossings as and where necessary during the execution of the Works;
- Ensuring and maintaining site safety at all time during the construction of the Works for all site personnel, motorists, pedestrians and the general public in accordance with the applicable safety rules and regulations;
- Clearing and grubbing of site areas as required for the construction of the Works only;
- Construction of services;
- Testing of all works;
- Additional work as instructed by the Engineer;
- Finishing and trimming of the site.

The description serves to outline the extent of the Works, but does not limit the amount of work, which may be required by the Contractor under this contract. Approximated quantities are stated.

The Contractor is responsible for protecting his Works against damages by the general public during construction. Damage can largely be prevented by not letting incomplete works remain open for long periods of time.

PS 2 DESCRIPTION OF THE SITE AND ACCESS

The site is located at the "Kalahari" border Post, 110 km east from the Town of Gobabis in the Omaheke Region outside Gobabis. Approximate GPS Coordinates:

Latitude: 22°16'30.43"S
 Longitude: 19°59'22.54"E

PS 3 NATURE OF GROUND AND SUBSOIL CONDITIONS

No subsoil investigation was conducted. The Tenderer should familiarise himself with the site and the nature of the ground and sub-surface conditions. Based on visual inspections it appears as if the top section of the ground surface is covered with loose sandy material.

PS 4 DETAILS OF THE CONTRACT

This Contract covers all the work for the construction of bulk electrical services in Buite Pos Extension 8. Although this description serves to outline the extent of the Works, it does not limit the amount of work which may be required to be carried out by the Contractor under this Contract. Approximate quantities for the work to be carried out in accordance with these Contract Documents are listed in the Schedule of Quantities for this Contract (Part D).

PS 4.1 General

The general items of work to be executed under this contract include the following:

- Establishment on site of Contractor's construction camp and the moving of his plant, materials and personnel to the Site. The Contractor is obliged to remove all these items upon completion of the Contract;
- Provision of services required for construction;
- Setting out of the Works;
- Maintenance and protection of the Works under construction;
- Accommodation of traffic;
- All responsibility pertaining to the safety on site;
- Testing of materials and control over the quality of workmanship;

PS 4.2 Upgrading and Alterations of Existing Services

Care to be taken by Contractor not to damage existing services (refer to PSA 5.4).

Alterations to existing services shall only be implemented as indicated on the Drawings or as indicated by the Engineer.

Service departments of the Council and Telecom must complete alterations to their relevant services within a period of 30 days, after having been reasonably requested as such by the Contractor.

PS 4.3 Maintenance

The construction area will be handed over to the Contractor by the Employer upon the commencement of the Contract. During the construction period the Contractor will be responsible for the traffic accommodation, site safety as well as all other temporary works.

After completion of the Works, maintenance shall be as specified in the General Conditions of Contract.

PS 5 SITE FACILITIES AVAILABLE**PS 5.1 Services**

The Contractor shall make his own arrangements for the acquisition of water, power and all other services for construction purposes and shall be responsible for the cost thereof. The Contractor must ascertain the position of the nearest available municipal services to the Site, from the Council.

The water used for the mixing of concrete or slurry shall be to the satisfaction of the Engineer.

PS 5.2 Camp Site

Areas that could be used for the possible establishment of the Contractor's camp will be pointed out by the Client during the official tender site inspection. Staff will not be allowed to overnight on site, except for two security guards.

PS 5.3 Survey Beacons, Bench Marks and Reference Pegs

Benchmarks with co-ordinates and levels will be indicated on the construction drawings. The Contractor is responsible for the setting out of the Works and should include it in the tendered sum in Section 1 of the Schedule of Quantities/ Priced Activity Schedule. The Contractor is also responsible to see that no reference/bench marks, beacons and erf pegs are covered up or disturbed. Should the Contractor's Surveyor identify vertical or horizontal alignment discrepancies of the design with regard to the erven and accesses, or any of the services to be constructed, he must report this to the Engineer well in advance of the commencement construction. Under this contract, the Contractor will set out the entire Works including levels and compare the data to that given as part of the design and indicated on the design drawings. The Contractor shall report any discrepancies to the Engineer well in advance of the commencement of construction.

PS 6 **SITE FACILITIES REQUIRED****PS 6.1** Laboratory Facilities

An approved laboratory shall carry out the Contractor's process control tests. The Contractor shall liaise with the Engineer on the testing procedures that are to be followed. The approved laboratory will not be the same as the laboratory used for the Engineer's Control Testing as per PS 6.2 below.

PS 6.2 Control Testing by the Engineer

Control Testing shall be carried out as instructed by the Engineer, or as amended by Notice afterwards. The Contractor shall arrange payment of such laboratory, upon clearance of such payment by the Engineer. The cost for such testing as well as a 10% handling-fee shall be paid to the Contractor under this item in the Bill of Quantities.

PS 6.3 FACILITIES FOR ENGINEER

The Contractor shall make provision for a room furnished with a table and chairs to accommodate 10 people, suitable for site meetings, and which shall be at the Engineer's disposal at any time.

The Contractor shall make provision for a measuring wheel, electrical multimeter and 100m measuring tape to be on site and which shall be at the Engineer's disposal at any time.

PS 6.4 Sanitary Facilities

The Contractor shall provide adequate toilet facilities for all personnel on site. The facilities should be kept clean and be properly maintained for the duration of the project. Under no circumstances would the Contractor or his personnel be allowed to dump or dispose of any effluent on site.

PS 7 **SITE MEETINGS**

Monthly site meetings, or more regularly if required, shall be held and attended by an authorised representative of the Contractor with delegated authority to take contractually binding decisions. The meetings will be held at the site offices of the Contractor.

PS 8 **NOTICE BOARD**

One notice board, with Employer, Contractor's and Engineer's details shall be erected. Refer to the applicable drawings for details of the notice board.

PS 9 **APPLICABLE STANDARD SPECIFICATIONS**

All material and equipment supplied and/or installed under this contract shall be new and the best of their respective kinds and shall comply with the requirements laid down in the latest editions of the relevant SABS or BS and their amendments (if any) and the requirements of this Specification.

In event of items bearing the SABS mark being available in respect of the materials and equipment required, only items bearing this mark will be acceptable.

The workmanship under this contract shall be of a high standard and to the satisfaction of the Engineer.

The work shall be carried out in accordance with the General Technical Specification laid down in Section 2 of this Specification.

These Standardised Specifications are not issued with the Contract Documents.

PS 10 PAYMENT CLAUSES

SABS/SANS payment clauses not shown in the Schedule of Quantities will not be applicable to this contract.

Only payment clauses shown in the Schedule of Quantities will prevail and the Contractor must make provision in his rates to cover all incidentals required as per the drawings to perform the task to the satisfaction of the Engineer.

PS 11 QUALITY ASSURANCE SYSTEMS

The Quality Assurance Systems shall consist of procedures, checks and balances to ensure compliance with all requirements of the Contract inclusive of the requirements to Tender: "Minimum Requirements for Contractors Quality Assurance System". Such procedures, checks and balances shall be documented in a manual for the implementation by all key staff members of the Contractor. The Contractor shall ensure that all key staff members are trained and equipped to implement the Quality Assurance System.

The Quality Assurance System shall address all requirements of the Contract, but particularly:

- Minimum requirements;
- Quality control system;
- Measurement system;
- Approval system;
- Site administration

Which sections shall all be divided into "general" and "project specific" parts. The "general" part shall contain the Contractor's standard best practice. The "project specific" part shall contain project specific requirements, especially with regard to Quality Control Systems, which shall reflect the requirements of the Standard and Project Specifications.

The Quality Assurance Manual shall further contain an Appendix, showing the responsibilities of all site staff, relating to quality control. Name, designation, experience and qualifications, as well as function and responsibility for the quality of each listed staff member shall be included.

The Quality Assurance Manual shall be kept in the site office, and shall be available to all staff members who are involved in quality assurance. Proof of relevant training of listed staff and their familiarity with the content of the manual must be provided upon notice by the Engineer.

The Contractor will be required to provide as full time on site a Site Agent dedicated only to this project for the entire duration of the project. The Site Agent should have a minimum of 5 years' experience in the Electrical Construction industry with specific reference to MV/LV Cable terminations, Laying of MV/LV cables, Kiosks installation including wiring, Streetlight installation, applicable earthworks and the setting out of electrical lines. The Site Agents appointment to the project will be subject to the Engineers approval.

The Site Agent will under no circumstances be allowed to be absent from the site without the written approval of the Engineer. Should this approval be granted the Contractor will be required to provide an equally or better qualified replacement for the duration of the Site Agents absence from the site.

A detailed Curriculum Vitae of the Contractors proposed Site Agent should be attached to Schedule 4 (Schedule of Personnel Offered) and submitted with the tender documents.

Should the Contractor fail to comply with this sub-clause, Preliminary and General payments will be withheld until such time that the Contractor does comply to the above provisions.

PORTION 2: AMENDMENTS AND ADDITIONS

1 MINIMUM REQUIREMENT FOR THE INSTALLATIONS

- 1.1 Referenced Proof of at least Three completed similar projects
- 1.2 CV of Competent and Qualified Electronics Mechanician with Minimum of three Years Working Experience

2 INTRUSION DETECTION SYSTEM

The successful Bidder shall install a complete functioning Multi-Zone Intrusion Detection system, Including PIR's, Keypads, Magnetic contacts, Power supplies, Batteries, cabling and etc for the proposed building. All control hardware shall be positioned in the ground floor Server Room Inside the office building.

The Intrusion Detection system for the Training Centre building shall work in conjunction with the Access Control and CCTV Systems. It will provide intelligent inputs to the CCTV system, which in turn will activate cameras on standby at preset positions to monitor and record activities in breached zones.

3 PROXIMITY ACCESS CONTROL SYSTEM

The successful Bidder shall install a complete functioning proximity access control system, complete with digital master controller, slave controllers, power supplies, batteries, proximity card readers, proximity cards, cabling and etc. for the proposed building. All Access Control cabling shall be of minimum **Category 6e**.

GENERAL:

The control system shall comprise of the following major components:

- Central Computer & Associated Control Software
- Data Acquisition System
- Proximity Card Readers
- Keypads

All equipment offered shall be:

- Supported locally
- Utilize only the latest available technology

The system shall consist of a master controller, positioned in the Training Centre. The master controller shall be connected to slave controllers. Readers should be installed in such a way that drivers have easy access to the readers. The controller software shall be set up to monitor all entry and exits to the site with time and date stamping for access events.

The access control system shall be in accordance with Standard Specifications herein.

Central COMPUTER & Control Software:

The system shall comprise of one master control PC.

The Sub-Contractor should provide one complete personal computer, complete with 100MB network card, 21" Colour monitor, Mouse, Keyboard, Card reader for easy card assignment.

The access control software shall be sourced and supported locally. The primary function of the software shall be to efficiently handle traffic from the data acquisition network and respond to requests from the card reader controllers without undue delay.

In addition, it must simultaneously satisfy any system operator parameterisation functions as well as attend to general housekeeping chores such as time zone updating, file maintenance and real-time control output updates.

The Monitor shall simultaneously serve as a logged event output device, an operator's screen and an alarm-displaying colour graphics terminal. The alarm map display shall have the highest priority and override all other displays but with the ability to recall the last text/graphics display by acknowledging the current alarm display. While the screen is used by an operator for card or system programming, event logging will occur at the bottom-most or top-most line of the screen. All error messages will cause an audible tone to be sounded at short intervals until the error is acknowledged by the operator where-upon a time-stamped (real time to nearest minute) alarm acknowledge entry must be made in the log.

The software shall maintain a real-time sequential record on HDD of all card, reader, alarm and operator programming events. It must be possible to obtain a printout of all events in a pre-determined time-base. The software shall also allow readers to be defined for time and attendance events. Entry to the system shall be via a multi-level (at least 2) password system with different access levels. The system shall further be menu driven and extensive use shall be made of full-screen displays, which shows the selected parameters.

Details of the control software must be submitted with the Bid for verification of specifications.

Data ACQUISITION System

All card reader controllers shall interface directly to the central processor without the need for multiplexers or line expanders. A party line configuration which relies on regular polling of reader stations shall not be utilized.

Reader controllers shall be microprocessor-based devices capable of passing messages around the loop as well as being able to consume messages directed at their own address. Controllers shall be capable of originating messages and passing them into the loop traffic without disrupting other loop traffic. Each controller shall be equipped with a bypass relay by means of which it can be disconnected from the loop. The controllers shall be able to run in stand-alone mode, using the latest parameters received from the PC in the event of a break in the loop between the slave controller and the master controller, also logging all events as long as possible until the connection can be restored.

When the connection is re-established, all events logged on the slave controller, must then automatically download to the master controller.

Inputs to the controllers shall be compatible with "Wiegand" card or "Smart Hitag II" type proximity readers. Controllers shall control statuses on the proximity reader to give indication of card acceptance or errors. Sense inputs shall be provided for door status monitoring.

At power-up the controller shall refer access decisions to the latest parameters stored on-board, while the main controller will update these parameters when any parameters is changed. Provision shall be made for repeating any corrupted message between the central computer and the controllers.

All controllers shall be housed in a tamper proof enclosure, and properly mounted in the service shaft or ceiling void. The controller enclosures shall be fitted with a tamper switch. Backup power in the form of a battery pack is require for controllers

KEYPAD

A keypad is required to provide access to system programming, alarm and access control functions away from the Central Computer. The keypad serves as an auxiliary device to the functions of the Central computer. A backlit display with approximately 2 x 16 characters should form part of the keypad to allow the user to monitor current system settings and provide indication of fault and/or alarm conditions.

PROXIMITY Reader Parameters

The following parameters must be maintained:-

1. Validity

It shall be possible to (in) validate proximity cards in one of the following modes:

- i) Normal Validity
- ii) Valid in Search Mode – cards will unconditionally be diverted when presented at any reader where random selection is operative.
- iii) Valid in Trace mode – all activity of the card will be recorded at presentation to readers.
- iv) Valid as a "KEY" person – Key person cards are treated differently from normal cards insofar as they are not subject to anti-pass back rules.

2. Issue Level

The system shall compare the issue level of the card to the current issue level stored by the system and report any discrepancies.

3. Visitor Card

Provision shall be made for Visitor Cards issued at the reception desk. These cards will be programmed into the system for different zones that might be visited, restricting access to any other zone.

4. Card Search

It shall be possible to obtain a list of all cards with specifics of each card conforming to a combination of (non-) specific parameters.

5. Reader Identification

It shall be possible to attach a name (eight characters minimum) to a limited number of readers (Minimum 50 readers) to assist in reader identification/location.

6. Access Levels

Each proximity card shall render access only to pre-defined readers. Access outside a pre-designated location **and** time zone shall not be granted to a card not assigned to that location **and** time zone.

The Sub-Contractor shall provide proximity tags as part of this contract and on order from the client.

Access Door OPERATING Equipment

Magnetic locks shall be fitted on doors as shown in the layout drawings. The locks shall be fully sealed, durable metal construction and shall be suitable for operation with the access control system as described herein. Door/latch monitoring shall be via internal dry contact outputs from the magnetic locks. The holding strength shall be at least 300kg and locks shall have a 2-hour fire rating.

Magnetic door contacts shall be fitted on doors as shown in the layout drawings and shall be suitable for operation with the access control system as described herein.

Overhead door closers may require to be provided on all doors as shown in the layout drawing. Details of proposed door closers shall be submitted with the Bid.

4 EARLY WARNING FIRE DETECTION SYSTEM:

The successful Bidder shall supply, deliver and install a complete functioning multi-zone analogue addressable fire detection system. The system shall include point type smoke detectors, optical smoke detectors, rate-of-rise detectors, loop sounders, manual call points, fire panel, applicable power supplies, batteries and cabling. The system shall be an analogue addressable fire detection system of the type GE-Security series or similar and equal approved. The fire control panel shall be at reception.

Manual call points shall be fitted with resettable elements. The fire detection system shall be in accordance with international IEC and ISO standards.

The system offered must be of the latest design and comply with International IEC and ISO standards.

It must also be possible to download the information on the Fire Panel to a computer located at the security company offices or at the building itself in order to monitor the status of the system.

The system shall be tested at hand over (the modem, radio link and Security Company or other institutions response to a fire detection alarm).

Design Particulars

Fire Detection System

The new office building shall be protected by ceiling mounted ionisation type addressable devices as shown on the drawings. All sensors shall be installed as specified on the drawings.

Controls

(a) Main Fire Control Panel

Fire control panel shall be equipped with the following:

- Key switches for controls off and Auto
- Keypads to configure individual needs for software system
- Battery/s for at least 1 hour back up

- A modem, automatic dialer for connection to a direct telephone so that the Fire Panel can be linked to a remote computer and alarm monitoring control room located at a security monitoring company, fire brigade and police station
- The fire panel shall be complete with a RS 232 port for text display on a printer, diagnostics on a PC
- All other necessary facilities

(b) Wiring

- It must also be possible to down load the information on the Fire Panel to a computer located at the security company offices or at the building itself in order to monitor the status of the system
- The Sirens and Manual Call Points shall be hard wired directly back to the Fire Panel with a separate wire, which is not part of the multi-core wire used for the detectors

5 CCTV INSTALLATION

Indoor IP Dome Camera

indoor 6 megapixel full HD network cameras shall be supplied and installed similar or equal to Hikvision DS-2CD4135FWD-IZ.

The indoor IP dome camera shall have the following specifications:

Image Sensor:	.....1/2.8" Progressive Scan CMOS
Minimum Illumination:	..... 0.005 Lux @ (F1.2, AGC ON), 0 lux with IR
	..... 0.007 Lux @ (F1.4, AGC ON), 0 lux with IR
Shutter Speed:	..... 1s to 1/100 000 s
Slow Shutter:	.....Support
Lens:	.....2.8 – 12mm @ F1.4, angle of view 94.5° – 30.5°
Lens Mount:	..... ϕ14
Auto Iris:	..... DC drive
Day and Night:	..... IR cut filter with auto switch
Wide Dynamic Range:	..... 120dB

The camera shall be installed against the wall and against the underside of the ceiling in the positions indicated on the relevant drawing.

Outdoor IP Dome

Outdoor 6-megapixel full HD network camera shall be supplied and installed similar or equal to Hikvision DS-2CD4535FWD-IZ.

The outdoor IP dome camera shall have the following specifications:

Image Sensor:	.....1/2.8" Progressive Scan CMOS
Minimum Illumination:	..... 0.005 Lux @ (F1.2, AGC ON), 0 lux with IR
	..... 0.007 Lux @ (F1.4, AGC ON), 0 lux with IR
Shutter Speed:	..... 1s to 1/100 000 s
Slow Shutter:	.....Support
Lens:	..... 2.8 – 12mm @ F1.4
Lens Mount:	..... AF automatic focusing and motorized zoom lens
Auto Iris:	..... DC drive
Day and Night:	..... IR cut filter with auto switch
Wide Dynamic Range:	..... 120dB

The camera shall be installed against the wall on the exterior of the building in the position indicated on the relevant drawing.

Recorder

One new recorder shall be supplied and installed in a U cabinet in the Server Room. The recorder shall be similar or equal to Hikvision DS-7608NI-E2/A.

The recorder shall have the following specifications:

Video / Audio Input:	
IP video input:	8 channels
Two-way audio input:	1 channel, RCA (2.0 Vp-p, 1kΩ)
Network:	
Incoming bandwidth:	80Mbps
Outgoing bandwidth:	80Mbps
Remote connection:	128
Video/Audio output:	
Recording resolution:	6MP/5MP/3MP/1080P/UXGA/720P/VGA/4CIF/DCIF/2CIF/CIF/QCIF
Frame rate:	Main stream: 50 fps (P) / 60 fps (N) Sub-stream: 50 fps (P) / 60 fps (N)
HDMI/VGA output:	1 channel, resolution: 1920 x 180 /60Hz, 1600 x 1200 /60Hz, 1280 x 1024 /60Hz, 1280 x 720 /60Hz, 1024 x 768 /60Hz
Audio output:	1 channel, RCA (Linear, 1kΩ)
Decoding:	
Live view / Playback resolution:	6MP/5MP/3MP/1080P/UXGA/720P/VGA/4CIF/DCIF/2CIF/CIF/ QCIF
Capacity:	8 channel @ 720P 6 channel @ 1080P
Hard Disk:	
SATA:	2 SATA interfaces for 2 HDDs
Capacity:	Up to 4TB for each disk
External interface:	
Network interface:	1 RJ-45 10 / 100 / 1000 Mbps self-adaptive Ethernet interface
USB interface:	1 x USB 2.0 and 1 x USB 3.0
Alarm in/out:	4 / 1
Others:	
Power supply:	12V DC
Consumption (without hard disk):	≤ 10W
Working temperature:	-10°C to +55°C
Working humidity:	10 % to 90 %
Chassis:	380 chassis
Dimensions (W x D x H):	380 x 290 x 48mm
Weight (without hard disk):	1 kg

Recorder shall be supplied with hard disk of up to 4TB storage.

6 Patch Panels

Patch panel shall be supplied and installed in the U cabinet installed in the server room.

All required leads (patch cords) from the patch panels to the recorder shall be priced for in the Schedule of Quantities complete with RJ 45 outlets connected to the patch cords.

7 Brush Panels

All brush panels shall be black 1U rack mounted panel with a built-in brush strip. The brush panels shall be used to feed trough cabling for a neat installation.

8 Cabling

All the cabling from the recorder to the cameras shall be four pair Cat6 cables similar or equal to Krone 4-pair UTP Cable, Cat6

The Cable shall have the following specifications:

1. Construction Characteristics:

Conductor:	24 AWG solid bare copper
Insulation:	100 % Polyolefin
Jacket:	PVC

2. Mechanical Characteristics:

Bend Radius during Installation:	50 mm
Bend Radius Installed:	25 mm
Pull Tension:	108 N (11 kg)

3. Electrical Characteristics:

Conductor DC Resistance @ 20°C (max):	9.38 Ω / 100 m
DC Resistance Unbalance (Max):	5 %
Mutual Capacitance @ 20°C (max):	5.6 nF / 100 m
Operating Voltage (Max):	300 VDC
Worst Case Cable Skew:	45 ns / 100 m
Nominal Velocity of Propagation:	70 %

4. Environmental Characteristics:

Transport and Storage:	-15° to 70°C
Installation:	5° to 40°C
Operation:	-15° to 70°C

9 Labelling

All camera shall be neatly labelled with approved printed laminated label installed on the frame of the camera.

All inputs of patch panels shall be clearly labelled.

Cables connected to the patch panel shall be labelled with the corresponding camera number. All patch cords installed from the patch panel to the recorder shall be clearly labelled with the same number for maintenance purposes.

Cable labels shall be similar or equal to Lapp PT Marking sleeves including printed label. No labels installed with any kind of glue shall be acceptable to be installed directly onto cables.

The recorder and patch panel shall be labelled to ensure that it is clear that the equipment is used for the CCTV installation.

A sample of the labels shall be provided to the engineer for approval before the installation is completed.

10 Guarantee and Maintenance

The subcontractor shall guarantee the works for twelve (12) months after rectification of all outstanding items and acceptance of first delivery.

Fair wear and tear is excluded from the guarantee. The guarantee shall provide that all parts, spares and appurtenances that become defective during the guarantee period be replaced free of charge of any nature. Costs of labour and transportation required to replace such part of a defective installation shall be borne by the subcontractor and be included in his guarantee.

Full maintenance service for the entire installation shall be provided free of charge for a period of twelve (12) months after completion of the installation and is to run concurrently with the guarantee period.

During this guarantee and maintenance period the subcontractor shall test the system quarterly or as required by the manufacturer of the equipment, with a major inspection being carried out annually.

All faults and defects shall be immediately attended to during this period in order to keep the system fully operational.

11 Operating and Maintenance Manuals

The security CCTV subcontractor shall provide three (3) sets of operating and maintenance manuals.

Operating and maintenance instruction manuals shall include:

- A description of the system
- List of equipment with manufacturer's name and local agent.
- A maintenance schedule.
- Step-by-step instructions for starting/stopping each item of equipment.
- Three (3) copies of all manuals shall be provided to the engineer.

All manuals shall be submitted for approval by the engineer. All approved manuals shall be handed over at first delivery inspection.

In addition to the above the security CCTV subcontractor shall submit to the engineer all the operating instruction booklets supplied by the manufacturer for all equipment supplied and installed under this contract.

12 Testing

Testing and commissioning of the entire installation shall be carried out by the security CCTV subcontractor, at his expense.

The security CCTV subcontractor shall indicate to the engineer all the functionality of each camera during the testing and commissioning of the installation.

The drawings form part of the Specifications and must be read in conjunction with the Bid & schedule of quantities.

All copper cable installations must comply with ISO11801, EN50173 AND TIA/EIA 568A. Four pair bundled UTP of 0.51mm diameter core size must be used.

Cables installed inside cabinets are to be secured in such a manner as to ensure free movement of doors and covers.

Fly-leads and patch cables specification: 7/0.16 stranded conductors, polyolefin insulated. Must meet ISO 1101 AND en 50173.

The maximum allowed link is 100 meters. Fly-leads are not to exceed 7.5 meters.

The stripped and untwisted length of the cables to be made off for termination must comply to MOD-TAP Category 6 specifications.

The conductors must be solid copper of 26 AWG.

The cable must have 4 pairs of conductors. Multi core cables are not allowed.

The conductor colour coding must be in accordance with CAT 6 specifications.

The cable must be stamped with the following details:

Name of Manufacturer

Specification, it has been tested to (TSB 568 or ISO 11801, etc)

Name of testing laboratory that verified performance to specification, and

Cable rating.

Cables may not be terminated onto cross-connection frames. Cables may never be installed in the same duct or tray as power cables.

13 INFORMATION, DIAGRAMS, DRAWINGS AND MANUALS TO BE SUBMITTED

As part of his bid and subsequent contract, it will be required from the Bidder to submit certain documents, in accordance with the following programme:

WITH THE BID (AT CLOSING DATE):

- Marked-up copies of all drawings indicating in red all required alterations to the concrete, brickwork or whatever other aspect falling outside the scope of his contract;
- Manufacturer's pamphlets and/or brochures illustrating all equipment offered;
- Sketches/rough drawings showing the principle of the design in general and specifically where it deviates from the proposed layout and details given by the Engineer. Attention should be given to space requirements, ease of maintenance, practical problems during installation, etc. in drawing up sketches. If no such sketches are submitted or if any aspect of the design is not specifically detailed or highlighted, it will be assumed that the Engineer's proposal is acceptable, practical and economical;
- Any other information that the Bidder regards necessary to clarify his offer.

WITHIN 30 DAYS AFTER AWARD OF THE CONTRACT:

- Working drawings of all electronic boards showing layouts, equipment used and dimensions of boards for approval;
- A work programme as specified herein.

ON COMPLETION:

- A complete set of "As-Built" drawings;
- Final resistance test certificates;
- Continuity measurement results to be conducted on the completed sections of the installation;
- A certificate of acceptance by the Employer;
- Complete set of maintenance/operating manuals.

All certificates shall be completed in an orderly and logical manner, and shall be bound in booklet form with a protective cover. The text of instructions, diagrams and drawings shall be "English".

14 APPROVED MATERIAL

In the Bill of Quantities, the material is set out in detail to assist the contractor. The preferred manufacturer and code/type are indicated in Part C2. If the materials of other manufacturers are offered, these materials have to be approved by the Engineer.

All inferior work or work containing inferior material, shall be rejected by the Engineer at his discretion, where upon the Electrical Contractor shall immediately remove and rectify the works as required and bear all costs in connection therewith.

15 COMPLETENESS OF BID

The Bidder shall allow in his bid price for all material, labour, supervision, transport, tests and all other items necessary to complete the contract in its entirety and to the satisfaction of the Engineer.

In the event where the supply and/or installation of any item, material or equipment does not form part of this Contract, it will be specifically indicated as such in this specification and/or on the accompanying drawings.

16 RESPONSIBILITY OF THE CONTRACTOR

Until the Contract Works have been completed or deemed to have been completed the Contractor shall be responsible (subject to the Memorandum of Agreement and the Conditions of Contract), for the Contract Works, where under construction, during tests, or in use by the Employer.

The Contractor shall nominate a full-time contract manager, with a minimum of an electronics qualification, properly introduced and approved by the Engineer to manage the contract for the full duration of the contract.

During the period of maintenance, the Contractor shall make such arrangements as to ensure the attendance on Site within twenty-four hours of his being called upon to do so, of a competent representative for the purpose of carrying out any work or maintenance for which the Contractor shall be liable, and during such part of parts of the said period as the Engineer may deem it necessary the said representative shall be continuously available on the Site.

Work onsite shall be carried out at such times and during such hours as the Engineer may require.

17 INSPECTIONS AND TESTS

All equipment will be inspected and tested, both in the factory during manufacturing and on-site during installation. The tests required are prescribed in the standard and detail specification. The engineer will do all inspections accompanied by the contractor and the contractor shall perform all tests with the engineer as witness.

The engineer will require seven (7) days notification to avail himself for any tests or inspection. The contractor shall arrange for the maximum number of tests and inspections to be done on the same day.

The contractor shall provide all testing facilities and instruments and all equipment and labour required for a test or inspection. All instruments shall be adequately scaled for the application. All testing facilities and instruments remain the property of the contractor.

All instruments used shall have a valid test certificate issued by an accepted testing authority. The engineer reserves the right to call for a calibration test on any instruments used during the test.

The contractor shall record all results of the tests done on a test certificate, of which the engineer must receive two (2) copies.

The contractor shall ensure that the equipment is ready for testing or inspection and that the equipment conforms to the specifications before the engineer is requested to witness tests or inspections. Should it be found that the

equipment or contract works is not ready for testing/inspection, or does not conform to the specification, the client reserves the right to charge the contractor for any re-tests or subsequent costs.

18 COMMISSIONING

The Contractor shall be responsible for commissioning all sections of the works and shall perform the tasks set out below:

- a) Prior notice of and proper arrangements for the commissioning shall be made with the Employer, Engineer, Supply Authority, and all contractors and suppliers of equipment which will be affected by the commissioning operation.
- b) If plant and equipment which has been supplied by others has to be commissioned, the supplier's specific permission thereto, together with any specific requirements relating to commissioning shall be obtained prior to commissioning.
- c) All sections of the works shall be carefully inspected by a responsible representative of the Contractor to ensure that all construction and installation work has been properly completed.
- d) In particular the following pre-commissioning checks shall be done:
 - circuit breaker, fuse, cable and protective device settings and ratings
 - wiring connections
 - earthing conductors, connections and terminations
 - removal of transport clamps and supports
 - identification of all equipment
- e) During commissioning the following shall be checked and the results entered into a written report, which shall be handed to the Engineer within 7 days from completion of commissioning of any section of the works:
 - equipment nameplate details including serial numbers, kVA rating, voltage rating, current rating, frequency, full load current and number of phases.

The Contractor shall carry out the test specified in the Manufacturer's Works, on the site or elsewhere in accordance with the conditions thereof and such additional tests as in the opinion of the Engineer necessary to determine that the Contract Works comply with the conditions of this Specification, where under test or ordinary working conditions.

All materials used shall also be subjected to and shall withstand satisfactorily such routine tests as are customary in the manufacture of the types of plant or material included in the Contract Works.

Where, at the direction of the Engineer, tests and/or analyses are effected elsewhere than at the Works of the Contractor or a Sub-Contractor, or on the Site the costs incurred will be borne by the Employer should such tests prove satisfactory, but the Contractor will be called upon to pay all expenses incurred by the Employer in respect of any work or materials found to be defective, or of inferior quality, adulterated or otherwise unacceptable.

The Engineer shall be given two weeks written notice of tests.

All tests shall be carried out in the presence of, and to the satisfaction of the Engineer and at such times as they may require. The Contractor shall supply suitable test pieces of all materials as required by the Engineer.

All labour, materials, fuel, stores, apparatus, instruments and connections required for the above tests shall be provided by the Contractor. All apparatus and materials supplied under the Contract are subject to inspection by the Engineer, who shall be notified 14 days in advance when the material is ready for inspection.

Tests to be carried out on site:

- Such other tests as are required by the Engineer to prove compliance with the Specification independently of any test which may already have been carried out at the Manufacturer's Works, or elsewhere.
- Such tests as may be required by the Engineer to prove the load bearing capacity of foundations and stay anchors.
- Soil resistivity test
- Insulation resistance test
- Continuity test
- Polarity test
- Voltage test

19 HANDING OVER

The handing over of completed sections of the works to the employer and the energising/putting into operation of the completed sections of the works will only take place once the following documents and drawings have been submitted to the engineer:

- a certificate of compliance in terms of the relevant Act applicable
- a certificate issued by the contractor that the installation complies with the contract and specifications
- a certificate of acceptance which shall be specified and signed by the employer after the inspection, acceptance and approval of the completed sections of the works has taken place
- "as-built" drawings of the installation on 0,08 mm thick polyester film
- written application to energise the completed sections of the works.

The contractor shall be responsible for timeously arranging for all tests and inspections with the employer and engineer, submitting the necessary documents and drawings to the engineer and applying for the energising of the completed sections of the works.

20 "AS-BUILT" DRAWINGS

On completion of the contract, all drawings required for the manuals shall be prepared and included in the manuals as specified in hard copy as well as electronic copy. In addition, a set of drawings on 0,08-mm-thick polyester film shall be handed to the engineer to form the "as-built" records. The "as-built" drawings must also be submitted in AutoCad format, version 2018 or as specified by the engineer.

PORTION 3: FORMS TO BE COMPLETED BY BIDDERS

3.1 SPECIFICATIONS AND COMPLIANCE SHEET

[Bidders should complete columns C and D with the specification and performance of the Works offered. Also, state “comply” or “not comply” and give details of any non-compliance/deviation to the specification required. Attach detailed technical literature if required. Authorise the specification offered in the signature block below]

Item No	Specifications and Performance Required	Compliance of Specifications and Performance Offered	Details of Non-Compliance/ Deviation (if applicable)
A*	B*	C	D
1	Fire Detection Panel		
2	Alarm Panel		
3	Access Control Panel		
4	Four Door Controller (If applicable)		
5	CCTV Recorder / DVSR		
6	Motion Sensors		
7	Indoor Camera		
7	Outdoor Camera		
8	Optical Fire Detectors		

3.2 SCHEDULE OF WORK EXECUTED BY BIDDER

The bidder shall insert in the spaces provided below; a list of work completed by his firm during the past five (5) years under construction by his firm. Contact names at the various Employers and Consultants must be provided. Additional project sheets with the required information may be inserted.

EMPLOYER (NAME, TEL. NO)	CONSULTING ENGINEER (NAME, TEL. NO)	DESCRIPTION OF WORK	VALUE OF WORK	YEAR OF COM- PLETION

3.3 SCHEDULE OF WORK CURRENTLY BEING EXECUTED BY BIDDER

The bidder shall insert in the spaces provided below work at present under construction by his firm. Contact names at the various Employers and Consultants must be provided. Additional project sheets with the required information may be inserted.

EMPLOYER (NAME, TEL. NO)	CONSULTING ENGINEER (NAME, TEL. NO)	DESCRIPTION OF WORK	VALUE OF WORK	YEAR OF COM- PLETION

3.4 SCHEDULE OF CONSTRUCTION EQUIPMENT

The Bidder must state below which construction equipment will immediately be available for this contract, which construction equipment will be available from outstanding orders and which additional construction equipment will be acquired or hired for the work if the contract is awarded to him.

After the award of the Contract, the contractor must satisfy the Engineer that all equipment listed hereunder is available on the site when required. The Contractor must maintain the equipment in good working order for the duration of the Contract.

(a) CONSTRUCTION EQUIPMENT WHICH IS IMMEDIATELY AVAILABLE

DESCRIPTION	TYPE/ MODEL	POWER	MASS	CAPACITY	QUAN-TITY

CONSTRUCTION EQUIPMENT WHICH WILL BE BOUGHT OR HIRED FOR THE CONTRACT

(Statements must reflect particulars of delivery arrangements)

DESCRIPTION	DELIVERY DATE	TYPE/ MODEL	POWER	MASS	CAPACITY	QUAN- TITY

3.4 BID CHECKLIST SCHEDULE

[Public Entity to update this Checklist to ensure that it contains the documents required from Bidders for the specific procurement]

Description	Attached (please tick if submitted and cross if not)
Priced Activity Schedules	
Specification and Compliance Sheet	
Eligible or have a valid Registration Certificate with Electricity Service Provider authorising the bidder to operate up to 400V	
Form A: Schedule of Work executed by Bidder	
Form B: Schedule of Work currently being executed by Bidder	
Form C: Schedule of Construction Equipment	

Disclaimer: *The list defined above is meant to assist the Bidder in submitting the relevant documents and shall not be a ground for the bidder to justify its non-submission of major documents for its bid to be responsive. The onus remains on the Bidder to ascertain that it has submitted all the documents that have been requested and are needed for its submission to be complete and responsive.*

PORTION 4: PRICED ACTIVITY SCHEDULE

The quantities in this Bill of Quantities are provisional and shall be measured as executed and paid for according to prices in the Bill of Quantities and any unexpended amounts shall be deducted from the amount of the contract sum.

The quantities in this Bill of Quantities are not to be used for ordering materials.

The Bill of Quantities form part of and must be read in conjunction with the specification, which document contains the full description of the work to be done and material and equipment to be used and unless otherwise described in the Bill of Quantities, reference should be made to the specification for the full meaning or description of work to be done and materials and equipment to be used in this service.

The total bid price on the bidder form shall constitute the contract price of the successful bidder. bidders are advised to check their item extensions and total additions, as no claim for arithmetical errors will be considered.

No alteration, erasure or addition is to be made in the text of the Bill of Quantities. Should any alteration or erasure be made, it will not be recognized but the original wording of the Bill of Quantities will be adhered to.

The priced Bill of Quantities of the successful bidder will be checked and the Engineer reserves the right to call for adjustment to any individual price and to rectify the discrepancy.

Variations in the scope and extent of the work included in the Bill shall be allowed to meet the employer's requirements and shall be measured and costed at rates entered in the Bill, where appropriate, and shall form additions to or deductions from the total of the Bill.

Any items or variations for which rates have not been included in the Bill shall be agreed and priced as non-scheduled items in accordance with the provisions of the contract.

The rules covering the extent and costing of the variation shall be those provided for in the form of conditions of contract.

Unless a separate rate for the supply and for the installation of any item is specifically called for, the supply and installation cost of any item shall be fully included in the unit price.

The description of each item shall, unless otherwise stated herein, be held to include making, conveying and delivering, unloading, storing, unpacking, hoisting, waste, patterns, models and templates, plant, temporary works, return of packing, establishment charges, profit and all other obligations arising out of the conditions of contract.

All fittings and accessories always include the connections thereto. All measurements are nett, unless otherwise stated, and bidders must allow in their rates for wastage.

The quantities and rates included for daywork shall form part of the bidder price, but bidders shall note that this item must be regarded as provisional and will only be payable to the contractor if and when a written order to this effect has been issued. All provisional sums shall be expended as directed by the Engineer and any balance remaining shall be deducted from the amount of the contract sum

PORTION 5: DRAWINGS



Item	Description	Unit	QTY	Labour Rate	Material Rate	Total Rate	Amount (N\$)
1	<p>SECTION A1 : PRELIMINARY AND GENERAL</p> <p>Tenderers shall allow for all preliminary and general expenses and items not covered in the provisional Schedule of Quantities whatever cost they may consider necessary for carrying out and observance of the items - such as: compliance to General Conditions of Contract, Special Conditions of Contract, attendance, supervision & travelling, establishment of site, storage and clearing, workshop drawings where applicable, drawings for approval, temporary power and accommodation, administrative costs, transport, performance guarantee, commissioning, attendance of site meetings and ad-hoc.</p> <p>The Tenderer acknowledges by submission that the Employer reserves the right to adjust the scope of work to any degree, without recourse for renegotiation of rates (however, the Employer also reserves the right negotiate the rates in case of a variation)</p> <p>Fixed Charged Items:</p> <p>1.1 Compliance: General and Special Conditions, Technical Spec. Sum 1</p> <p>1.2 Performance guarantee / surety Sum 1</p> <p>1.3 Programing of work Sum 1</p> <p>1.4 Transport Sum 1</p> <p>1.5 Site Establishment Sum 1</p> <p>1.6 Setting Out & Survey (line routes, pole positions, kiosks, manholes, Distribution boards, electrical receptacles and etc. to verify position on planning and avoid conflicts with other services) Sum 1</p> <p>1.7 Progress Meetings Sum 1</p> <p>1.8 Attendance at Site Meetings and for Measurement Sum 1</p> <p>1.9 Site Supervision: during operations the contractor shall have on site a suitably experienced and qualified technician who shall supervise the works. Details of the site supervisor shall be submitted to the Engineer for approval prior to his assumption. Sum 1</p> <p>1.10 Test and inspection prior to completion Sum 1</p> <p>1.11 Marking-up of record drawings Sum 1</p> <p>1.12 Insurance (theft, damage, liability, etc.) Sum 1</p> <p>1.13 Certificates & Payment. Sum 1</p> <p>1.14 Tools & Equipment including Megger, Meters, eart Leakage tester to conduct commissioning at practical completion. Sum 1</p> <p>1.15 A Minimum of Four Free Maintenance Visits during the 12 month guarantee period Sum 1</p> <p>1.16 Co-ordination with Telecom / Power Utility at tie-in and as required by the Engineer. Sum 1</p> <p>Time Related Items: Quantities for the following items shall be as per the Tenderer's proposed contract completion period.</p> <p>1.17 Office & Storage facilities. Sum 1</p> <p>1.18 Living Accommodation, Ablution & Latrine facilities Sum 1</p> <p>1.19 Tools & Equipment Sum 1</p> <p>1.20 Water supplies, Electrical Power, Communications & access. Sum 1</p> <p>1.21 Supervision Sum 1</p> <p>1.22 Company & Office overhead costs Sum 1</p> <p>1.23 Transport Sum 1</p> <p>Tenderer to specify and price other relevant items</p>						
Total for section carried to Summary							

Refurbishment of Trans Kalahari Border to a One Stop Border Post

ITEM	DESCRIPTION	UNIT	QTY	LABOUR RATE	MATERIAL RATE	TOTAL RATE	AMOUNT
2	FIRE DETECTION						
2.1	FIRE SYSTEM _Adressable						
2.2	ZP2 Fire Panel - 2 Loopfire control panel - complete with 1 xZP2-ZI-40 & 2 x BS131N	No	2				
2.3	Supply and Installation of Addressable optical smoke detector	No	86				
2.4	Supply and Installation AddressableHeat sensor (ZP3 Version 3.XX software stream) Polar White	No	4				
2.5	Surface mounting sensor base Polar White	No	90				
2.6	Supply and Installation of Surface mounting addressable base sounder (90 dBA)* PolarWhite	No	90				
2.7	Supply and Installation White Pluggable base for ZP755 -2 and -3 devices Polar	No	4				
2.8	Supply and Installation ZPW767R Weatherproof Wall Mount Sounder/VAD (RED Body, Red Flash)	No	4				
2.9	Supply and Installation ZP785-3 Flush mounting red analogue callpoint c/w EN54 marking (Supply and Installation of fire -class break Box-Red)	No	12				
2.1	Supply and Installation Surface mounting box with connector, red	No	12				
2.11	Supply and Installation Hinged transparent MCP protection cover	No	12				
2.12	Supply and Installation a Fire Retardant Cable 2 X 1mm.sq. - PH30 - 100/100V (500m Reel)	No	2				
2.13	Supply and Installation 7AH 12V battery	No	4				
2.14	Addressable high Voltage line relays -A51E-1 A Series mini relay unit, mains switching -inside Box	No	4				
2.15	Configuration, testing and commissioning of above	Sum	1				
2.16	<i>Other items not mentioned: Please specify</i>						
TOTAL CARRIED TO SUMMARY							

Refurbishment of Trans Kalahari Border to a One Stop Border Post

ITEM	DESCRIPTION	UNIT	QTY	LABOUR RATE	MATERIAL RATE	TOTAL RATE	AMOUNT
3	SECURITY INSTALLATION - COMMERCIAL TERMINAL						
3.1	ALARM ALARM EQUIPMENT						
3.2	Supply, delivery and Installation of Main Controller Panel Hikvision PHA64-W4M -	No	1				
3.3	Supply, delivery and Installation of Hikvision DS-PM-RS18 8-ZONE EXPANSION MODULE	No	1				
3.4	Supply and Installation of PIR/PI motion sensor Hikvision DS-PD2-P10PE MOTION DETECTOR	No	15				
3.5	Supply and delivery of BS127N Battery 12 V 7.2 AH Equal or Better	No	2				
3.6	Supply, delivery and Installation Zone expander housing and battery + 12VdC 3.2AMP POWER SUPPLY	No	2				
3.7	Supply, delivery and Installation of Red Alarm Light - LED bulb	No	1				
3.8	Supply, delivery and Installation of 30 Watt Siren.	No	1				
3.9	Remote signal receiver unit Nova - 2 Channel Receiver	No	1				
3.1	Remotes transmitters for Alarm and Panic / Gate NOVA V3 4 Button SG Transmitter 433MHz	No	0				
3.11	Armed response transmitter	No	1				
3.12	Hikvision Alarm Wired LCD Keypad DS-PK-LRT(868MHz/white)	No	1				
3.13	Panic Buttons	NO	1				
3.14	Configuration, testing and commissioning of above	Sum	1				
3.15	<i>Other items not mentioned: Please specify</i>						
TOTAL CARRIED TO SUMMARY							

TOTAL BROUGHT FROM PREVIOUS PAGE						
3.15.1	ACCESS CONTROL SYSTEM The Access Control System shall form part of the Integrated Security Management System (ISMS) which shall connect to the Main Control Panel (MCP), which shall control as specified the Access & Control System.					
3.15.2	Supply and installation of a 4 door controller DS-K2604T	No	2			
3.15.3	Supply and installation of biometric card readers HIKVISION DS-K1T201AMF	No	12			
3.15.4	Supply and installation of non exit button HIKVISION DS-K7P03	No	12			
3.15.5	Supply and installation of breakglass	No	6			
3.15.6	Supply and installation of mag locks DS-K4T108	No	12			
3.15.7	Supply and installation of 12V 7Ah Battery	No	10			
3.15.8	HiKvision Access Control Mifare 1 Contactless Smart card, Frequency: 13.56MHz.	No	50			
3.15.9	Medium Duty Door Closers	No	12			
3.15.10	Fingerprint Enrollment Reader DS-K1F820-F	No	1			
3.15.11	Card Enrollment Reader DS-K1F100-D8E	No	1			
3.15.12	Cable	No	500			
3.15.13	Configuration, testing and commissioning of above	Sum	1			
3.15.14	Other items not mentioned: Please specify					
3.16	CCTV INSTALLATION CCTV EQUIPMENT					
3.16.1	HiKvision IP (2.0+ Gen with Acusense) 4MP Mini Dome Camera, 2.8mm lens, up to 30m IR - DS-2CD2143G2-IU	No	13			
3.16.2	Bullet cameras, HiKvision 8MP or Similar Approved for Outdoor application. Long Range Vision. IP65 Rated DS-2CD2083G2-I (4mm)	No	11			
3.16.3	HiKvision POE Switch L2, Unmanaged, 8x 1Gbps PoE port, 2x Gbps uplink port, 802.3af/at PoE power budget 240W	No	1			
3.16.4	HiKvision POE Smart Managed Switch L2, 16 100M PoE port, 2x Gigabit Combo uplink ports, 802.3af/at, AF/AT camera can reach up to 300 m in extend mode, 400W PoE po	No	4			
3.16.5	HiKvision IP NVR AcuSense (4K resolution) 256Mbps Bit Rate Input Max(up to 32ch IP video), 4 SATA Interfaces, 16 independent PoE network interfaces, alarm I/O: 4/1, 380 1.5U case	No	1			
3.16.7	Cabinet 9U	No	3			
3.16.8	HiKvision Junction Box, White aluminium alloy, with lid	No	20			
3.16.9	Seagate 8TB/256MB(6Gbs NCC)/7200RPM/SATA	No	3			
3.16.10	Orange Box Cabinet	No	3			
3.16.11	Wireless IP Ubiquiti Airmax	No	3			
3.16.12	Airmax 5Ghz sector	No	3			
3.16.13	HiKvision Monitor 42.5" LED, VGA & HDMI Input, 24/7 operation rated, Build-in	No	3			
3.16.14	Cabling and installation per point - Cat 6	Item	24			
3.16.15	Configuration, testing and commissioning of above	Sum	1			
3.16.16	Other items not mentioned: Please specify					
3.16.17	Supply and installation of monitor 24"	No	2			
3.16.18	Supply and installation of server PC, i7, 6GB RAM, 2 TB HDD	No	2			
TOTAL CARRIED SUMMARY						

Refurbishment of Trans Kalahari Border to a One Stop Border Post

ITEM	DESCRIPTION	UNIT	QTY	LABOUR RATE	MATERIAL RATE	TOTAL RATE	AMOUNT
4	SECURITY INSTALLATION - PASSENGER TERMINAL						
4.1	ALARM ALARM EQUIPMENT						
4.2	Supply, delivery and Installation of Main Controller Panel Hikvision PHA64-W4M -	No	1				
4.3	Supply, delivery and Installation of Hikvision DS-PM-RS18 8-ZONE EXPANSION MODULE	No	1				
4.4	Supply and Installation of PIR/PI motion sensor Hikvision DS-PD2-P10PE MOTION DETECTOR	No	8				
4.5	Supply and delivery of BS127N Battery 12 V 7.2 AH Equal or Better	No	2				
4.6	Supply, delivery and Installation Zone expander housing and battery + 12VdC 3.2AMP POWER SUPPLY	No	2				
4.7	Supply, delivery and Installation of Red Alarm Light - LED bulb	No	1				
4.8	Supply, delivery and Installation of 30 Watt Siren.	No	1				
4.9	Remote signal receiver unit Nova - 2 Channel Receiver	No	1				
4.1	Remotes transmitters for Alarm and Panic / Gate NOVA V3 4 Button SG Transmitter 433MHz	No	0				
4.11	Armed response transmitter	No	1				
4.12	Hikvision Alarm Wired LCD Keypad DS-PK-LRT(868MHz/white)	No	1				
4.13	Panic Buttons	NO	1				
4.14	Configuration, testing and commissioning of above	Sum	1				
4.15	<i>Other items not mentioned: Please specify</i>						
TOTAL CARRIED TO SUMMARY							

TOTAL BROUGHT FROM PREVIOUS PAGE						
4.15.1	ACCESS CONTROL SYSTEM The Access Control System shall form part of the Integrated Security Management System (ISMS) which shall connect to the Main Control Panel (MCP), which shall control as specified the Access & Control System.					
4.15.2	Supply and installation of a 4 door controller DS-K2604T	No	2			
4.15.3	Supply and installation of biometric card readers HIKVISION DS-K1T201AMF	No	8			
4.15.4	Supply and installation of non exit button HIKVISION DS-K7P03	No	8			
4.15.5	Supply and installation of breakglass	No	5			
4.15.6	Supply and installation of mag locks DS-K4T108	No	8			
4.15.7	Supply and installation of 12V 7Ah Battery	No	10			
4.15.8	HiKvision Access Control Mifare 1 Contactless Smart card, Frequency: 13.56MHz.	No	50			
4.15.9	Medium Duty Door Closers	No	8			
4.15.10	Fingerprint Enrollment Reader DS-K1F820-F	No	1			
4.15.11	Card Enrollment Reader DS-K1F100-D8E	No	1			
4.15.12	Cable	No	500			
4.15.13	Configuration, testing and commissioning of above	Sum	1			
4.15.14	Other items not mentioned: Please specify					
4.15	CCTV INSTALLATION CCTV EQUIPMENT					
4.16.1	HiKvision IP (2.0+ Gen with Acusense) 4MP Mini Dome Camera, 2.8mm lens, up to 30m IR - DS-2CD2143G2-IU	No	17			
4.16.2	Bullet cameras, HiKvision 8MP or Similar Approved for Outdoor application. Long Range Vision. IP65 Rated DS-2CD2083G2-I (4mm)	No	16			
4.16.3	HiKvision POE Switch L2, Unmanaged, 8x 1Gbps PoE port, 2x Gbps uplink port, 802.3af/at PoE power budget 240W	No	1			
4.16.4	HiKvision POE Smart Managed Switch L2, 16 100M PoE port, 2x Gigabit Combo uplink ports, 802.3af/at, AF/AT camera can reach up to 300 m in extend mode, 400W PoE po	No	4			
4.16.5	HiKvision IP NVR AcuSense (4K resolution) 256Mbps Bit Rate Input Max(up to 32ch IP video), 4 SATA Interfaces, 16 independent PoE network interfaces, alarm I/O: 4/1, 380 1.5U case	No	1			
4.16.6	Cabinet 9U	No	3			
4.16.7	HiKvision Junction Box, White aluminium alloy, with lid	No	10			
4.16.8	Seagate 8TB/256MB(6Gbs NCC)/7200RPM/SATA	No	3			
4.16.9	Orange Box Cabinet	No	3			
4.16.10	Wireless IP Ubiquiti Airmax	No	3			
4.16.11	Airmax 5Ghz sector	No	3			
4.16.12	HiKvision Monitor 42.5" LED, VGA & HDMI Input, 24/7 operation rated, Build-in	No	3			
4.16.13	Cabling and installation per point - Cat 6	Item	33			
4.16.14	Configuration, testing and commissioning of above	Sum	1			
4.16.15	Other items not mentioned: Please specify					
4.16.16	Supply and installation of monitor 24"	No	1			
4.16.17	Supply and installation of server PC, i7, 6GB RAM, 2 TB HDD	No	1			
TOTAL CARRIED SUMMARY						

REFURBISHMENT OF TRANSKALAHARI BORDER TO A ONE STOP BORDER POST

ELECTRONICS SCHEDULE OF QUANTITIES : SUMMARY

SECTION	DESCRIPTION	AMOUNT
1	PRELIMINARY AND GENERAL	
2	FIRE DETECTION SERVICES	
3	COMMERCIAL TERMINAL SECURITY SERVICES	
4	PASSENGER TERMINAL SECURITY SERVICES	
Total of Schedule of Quantities		
CONTINGENCIES (5 % of Total of Schedule of Quantities)		
SUB TOTAL		
VAT 15%		
TOTAL TENDER AMOUNT (ALL INCLUSIVE)		