PART 3: SCOPE OF WORK

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C3.1: *EMPLOYER*'S WORKS INFORMATION

Contents

1 Description of the *works*

1.1 Executive overview

(1) Duvha Power Station has been declared as a National Key Point (NKP) and hence needs to conform to certain requirements and recommendations as set out by the National Key Point Act (NKPA), NKP office and Eskom Corporate Security.

(2) The works involve the design, supply, delivery, installing, testing and commissioning of a complete CCTV Surveillance system at Duvha Power Station and the addition of Access Control that interfaces with the Access Control at the stations main gate. The system must conform to the Integrated Access Control (IAC) Standards and Specification.

(3) In addition to the scope the Works Information includes the repairing and commissioning of the main gates Access Control.

(4) The Civil Works Information covers the repairing and commissioning of the turnstiles and electrical reticulation scope.

(5) The complete system will include a fibre optic link between the cameras and the Duvha Security control room where the CCTV monitors will be set up.

(6) The *Contractor* provides all services, plant, material, equipment and resources to fulfil the requirements of this Works Information.

(7) The *Contractor* warrants that the works provided is fit for the intended purpose specified in this Works Information.

(8) The *works* furthermore include:

- The validation of completeness and accuracy of information for the design basis;
- The engineering and design;
- The complete technical clarification;
- The manufacture, fabrication, assembly and supply;
- The packaging of Equipment, Plant and materials, transport and delivery to Site;
- The off-loading at Site;
- The quality control and assurance during all phases and stages of the project;
- The installation;
- The commissioning;
- The performance testing;
- The Completion; and
- The correction of Defects.

(9) The *Contractor* employs and provides a dedicated full time on-site project manager and a full time dedicated Responsible Person (RP).

(10) The *Contractor* ensures commissioning spares are available for the duration of the commissioning period.

(11) The *Contractor* performs the function of co-ordinator and technical leader and takes full responsibility for the provision of all technical interfaces required by the works.

(12) The *Contractor* carries out all activities and supplies everything necessary to provide the Works in accordance with the requirements of the IAC Standards and Specification, including clarification and co-ordination with the Employers plant engineers.

1.2 *Employer*'s objectives and purpose of the *works*

1.2.1 Employer's objectives

(1) The objective of this project is to implement an Access Control System for allowing or denying access to critical plant areas and CCTV Surveillance System as it will serve as a key tool in providing security officers with a visual verification of plant activities.
(2) Management will use the system to prevent sabotage, vandalism and theft of equipment inside plant areas.
(3) Use specific parameters to control access while enhancing the Station's security.
(4) Enhancing the Security personnel's effectiveness in ensuring the safety of the Station and the people.

1.2.2 Improvements

Improvements include:
(1) Protection of Plant Equipment and Machinery
(2) Post Incident Investigations and Audit Trails (Safety and Security)

1.2.3 Life Expectancy

The CCTV Surveillance System should conform to the following life expectancy criteria:
(1) All new CCTV cameras and associated equipment shall last for a productive use of at least 5-7 years. It must be possible to maintain the CCTV System for at least up to 5-7 years after installation with minor hardware and software upgrades.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
C&I	Control and Instrumentation
CB	Circuit Breaker
CCTV	Closed Circuit Television
CEP	Condensate Extraction Pumps
CoC	Certificate of Compliance
CW	Cooling Water
ECSA	Engineering Council of South Africa
EPB	Emergency Push Button
EQ	Equipment
ID Fans	Induced Draught Fans
IP	Internet Protocol
IR	Infrared
KVM	Keyboard Video Mouse; a system to combine multiple servers' keyboard, video and mouse through a KVM-switch to one set of keyboard, screen and mouse.
LON	Local Operating Network
LV	Low Voltage
mm	millimeter
MV	Medium Voltage

NKP	National Key Point
NKPA	National Key Point Act
PoE	Power over Ethernet
PSU	Power supply unit
PTW	Permit To Work
QA	Quality assurance
QCP	Quality Control Procedure
RAID0	2 drives mirrored
RAID5	At least 3 drives with striped date and a 4th with parity
RP	Responsible Person
SACPCMP	South African Council for Project and Construction Management Professionals
SAN	Storage Attached Network; where multiple servers share a single storage environment.
TVL	Television lines
UC	Unit Controller
UCR	Unit Control Room
WDR	Wide Dynamic Range

2 Management and start up.

2.1 Management meetings

(1) Regular meetings of a general nature may be convened and chaired by the *Project Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Kick off meeting , implementation strategy	Immediately after contract award. (Time to be announced by Project Manager)	Project Managers office	PM, System Engineer and *Contractor*
Risk register and compensation events	As and when required	Project Managers office	PM, System Engineer and *Contractor*
Overall contract progress and feedback	Weekly on Monday at 10:00	Project Managers office	*PM. Contractors' Manager*
Commissioning	Once off	Project Managers office & Site	PM. *Contractor*s' Manager & Supervisor
Hand Over	After Completion	Project Managers office	PM, System Engineer and *Contractor*

(2) Meetings of a specialist nature may be convened as specified elsewhere in this Works Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *works*.
(3) Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.
(4) All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting.
(5) Such minutes or register as in point (3) shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.
(6) The *Contractor* reports the overall progress and as a minimum requirement, the following is addressed:
- *Contractor's* current activities progress and planned finish dates.
- *Contractor's* planned start and finish dates for the works.
- *Contractor's* and Project Manager's programme agenda compared for problematic differences.
- The progress of any other relevant activities.
- To discuss any technical, commercial, quality, and safety issues in the project.

2.2 Documentation control

(1) The *Contractor's* site manager must keep a daily log, which needs to be signed by the *Employer's Supervisor* daily.

2.3 Health and safety risk management

(1) The *Contractor*'s personnel is to undergo Safety Induction Training at Duvha prior to commencement of this contract and all the relevant Documentation is to be approved by Safety Officials and the Project Manager before any activities can be started on site.
(2) The *Contractor* complies with the requirements of the Duvha Power Station Safety, Health & Environmental Specifications SAS 0012: Duvha Power Station *Contractor*s safety manual.
(3) The documents are completed by the *Contractor*'s and submitted to the *Employer* before taking possession of the works.
(4) These documents are valid for the duration of the works.
(5) The induction course is presented by the Safety Risk Department at Duvha Power Station.
(6) The *Contractor* makes arrangements with Safety Risk Management at telephone number 013-690-0143.
(7) The *Contractor* completes all appointments required and ensures that the appointee and appointees fully understand their responsibilities and are competent and trained to execute their duties.
(8) The appointees/appointee ensures that all duties are carried out and records are kept by the *Contractor* for review/audit by the *Employer* or Inspector of Machinery.
(9) Duvha Safety Risk Management has the right and authority to visit and inspect the *Contractor*'s work place or Site establishment.
(10) The *Contractor* supplies and ensures that his employees wear the necessary PPE according the risk assessments performed on the specific tasks to be carried out.
(11) The *Contractor* ensures that everyone entering Duvha Power Station under his supervision are medically, physically and psychologically fit to enter Duvha Power Station.
(12) The medical examination, at the *Contractor*s cost, is carried out by a Registered Professional Occupational Health Practitioner and the examination shall include the following tests:
    i. Eye Test, Blood Pressure,
    ii. Heart Function,
    iii. Hearing Test and
    iv. Lung Function.
(13) A thorough examination is done and previous physical injuries, as well as occupational diseases/complications are covered.
(14) If at any point in time during the execution of the works, the *Contractor* has a radiation-related incident/exposure, the onus is on the *Contractor* to immediately notify the *Employer*, the Medical Station, the Risk Manager and the Safety Risk Management Department.
(15) The onus thereafter is for the *Contractor* to immediately arrange, at his/her cost, for blood samples to be taken by a Registered Laboratory and for this sample to be sent to the Excellerator Laboratory in

Cape Town for full radiation exposure tests. This test results are then to be discussed with the Duvha Occupational Health Practitioners, who will then advise the Power Station Management on the risk, if any, of the incident/exposure.

(16) The *Contractor* takes full responsibility and accountability for all other people/staff/personnel/labour that he/she employs or utilises, whether in full-time/part-time/contract basis, in executing the works or other work whilst on the *Employer*s premises.
(17) The *Contractor* ensures that Safety Harnesses are used for all work carried out in elevated positions, as defined in the Occupational Health and Safety Act, No 85 of 1993 or any other Code of Practice or standard or the Construction Regulations.
(18) All safety equipment or Machinery used complies with the SANS Codes of Quality and Practice or any Code as stipulated in the Occupational Health and Safety Act, No 85 of 1993, and any amendments thereto.
(19) The *Contractor* at all times consider himself as "*Employer*" as defined in the Occupational Health and Safety Act, No 85 of 1993 and do not consider himself as under supervision or management of the *Employer* with regard to Health and Safety Requirements but only from a Commercial Contractual Condition of Contract. Under no circumstances does the *Contractor* consider himself a sub-ordinate or being given supervision.
(20) The *Contractor* provides and maintains his own facilities as required in the Occupational Health and Safety Act, No 85 of 1993 or any other Code of Practice or standard or the Construction Regulations, if not agreed contractually or arranged by the *Employer*.
(21) The *Contractor* has Safety Systems in place at his premises for the total contract period and these shall include the following:
(22) Safety Management Structure and Compliance to these
(23) Statutory Appointments
(24) Records and documentation of all Risk and Hazard Analyses.
(25) Planned Job Observations Records and Documents.
(26) Employment history and records of all personnel, part-time or full-time or contract labour.
(27) Medical History of all personnel, part-time or full-time or contract labour
(28) Training and Competency Records with regard to Safety, Health and Environment.
(29) Training and Competency Records with regard to the skills he uses to carry out the works or any other works in the *Employer*s premises.
(30) Compensation Commissioner records and proof of registration.
(31) Records and documentation with regard to any sub-*Contractor* or labour-only contracts he places or uses to carry out the works or any other works in *Employer*s premises.
(32) Personal Protective Equipment and Safety Equipment Inspection, training and competency records and documentation.
(33) Employment contracts for all sub-*Contractor* or labour-only contracts.
(34) Compliance to a Safety System, such as NOSA or any other system that is similar in nature.
(35) Records of all incidents or accidents, and vehicle accidents, incurred during execution of this works or any other works in the *Employer*s premises.
(36) Records of all man-hours, including sub-*Contractor*s or labour-only contracts, the *Contractor* spends on the *Employer*s premises.
(37) Written Safe Work Procedures for all hazardous tasks the *Contractor* executes on the *Employer*s premises.
(38) A Fall Protection Plan for all elevated work the *Contractor* does on the *Employer*s premises.
(39) Environmental Plan and awareness training.
(40) Induction training records of his staff by himself/herself.
(41) Minimum wage compliance for the different skills and to which Bargaining Council compliance is made to and proof of membership, if any.
(42) Risk Assessment of this type of works
(43) Proof of authorisation/accreditation from Department of Labour and or other Statutory Body for this type of works, if applicable
(44) Emergency Evacuation and Rescue Plan for the hazardous tasks related to the works.

2.4 Environmental constraints and management

(1) The *Contractor* shall comply with the environmental criteria and constraints stated in ENVP 0005: Procedure for Waste Management.
(2) The *Contractor* is responsible to keep the work area clean of any rubble.

(3) All waste introduced and/or produced on the *Employer*'s premises by the *Contractor* for this contract, is handled in accordance with Procedure for Waste Management (ENVP0005).
(4) Refuse Disposal
   i. The *Employer* will provide special colour coded bins for refuse disposal.
   ii. The *Employer* will empty these bins.
   iii. The *Contractor* ensures that all workers under his control strictly adhere to the correct use of refuse bins:
      a. Maroon bins: - Scrap metal only
      b. White bins: - Lagging and general household rubbish
      c. Yellow bins: - Ash, dust, coal dust and sand
(5) For the full duration of the Works, the *Contractor* is responsible to keep the work area clean of any rubble, and to place all refuse into the bins provided.
(6) Removal of scrap and waste, including concrete/ash/refractory material/guniting material, to a location within the Duvha Power Station security gates and/or the ash dams must be included in the Price Schedule or Bill of Quantities. This must be inclusive of labour and equipment i.e. forklifts, spades, shovels, transport, etc.

2.5 Quality assurance requirements

(1) All work is carried out under the supervision of an experienced supervisor.
(2) The *Contractor* complies with the *Employer*'s Quality Requirements as specified in Eskom Generation Standard GGS 0462, GGP0102, ISO9001.
(3) Annexure B to this Standard indicates the specific application thereof.
(4) The Contractor shall comply with the Employer's Quality Requirements as specified in Eskom QM58 document.
(5) A Quality Control Plan (QCP) with defined witness and hold points is developed by the Contractor and submitted to the Project Manager for acceptance within 7 days of Contract date, but in any event prior to commencement of any work on Site. This requirement is shown in the Acceptance Programme.
(6) Were excavations are necessary, survey checks will be done on excavations by the Project Engineer to check depth and alignment.
(7) The *Contractor* defines the level of QA/QC or inspection imposed on his Sub-Contractors and suppliers.
(8) The programming of inspections, hold and witness points will be agreed between the *Employer* and the *Contractor* prior to undertaking any work.

2.6 Programming constraints

(1) The *Contractor* submits a programme within 1 week of the Contract Date.
(2) The program shall be in Microsoft Excel or Projects format (Latest version of the programs)
(3) The programme indicates
   i. The hour duration of each activity,
   ii. The working calendar (number of work hours per day, days per week),
   iii. The exact quantity of people per day
   iv. All phases and interfaces
(4) Refer to section 5 for more supporting detail.

2.7 *Contractor*'s management, supervision and key people

(1) The *Contractor* shall provide a site Supervisor or Project Manager to supervise, monitor, control and coordinate all activities during the execution of the project.
(2) The Contractor ensure that all key personnel assigned to the works in terms of the contract meet the requirements of the Employer's security and medical qualifications as well as training and experience generally required by similar utilities elsewhere in respect of similar work.
(3) The Contractor provides orientation and technical training for all key personnel in accordance with the requirements of the Employer's Industrial Safety Programme, and, in general, the whole framework of plant rules and regulations which may be in force at the Employer from time to time, which is available on request.
(4) Proof of qualifications of personnel is made available to the Project Manager on request.

2.8 Invoicing and payment

(1) As per the signed NEC contract.

2.9 Insurance provided by the *Employer*

(1) As per the signed NEC contract.

2.10 Contract change management

(1) The *Contractor* or the Project Manager notifies each other of any event which may lead to a change in agreed terms as per NEC 3.

2.11 Provision of bonds and guarantees

(1) The form in which a bond or guarantee required by the *conditions of contract* (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.
(2) The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Project Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* does not affect the *Employer*'s right to termination stated in this contract.

2.12 Records of Defined Cost, payments & assessments of compensation events to be kept by the *Contractor*

(1) The *Contractor* may keep records of payment and assessments of compensation events if he deems it necessary.

2.13 Training workshops and technology transfer

(1) The *Contractor* provides training sessions and training booklets for the following functionaries that need to be trained on how to operate and maintain the plant:
   i. System Engineer x10
   ii. Security personnel responsible for operating the system x26
(2) Refer to section 5.2.9 for further detail.

3 Engineering and the *Contractor*'s design

3.1 Phasing of Scope of Work

(1) The Scope will be broken down into 2 phases as seen in ***Table 1***.

Phase:	Scope
Phase 1	• Design, replace/install and commission existing CCTV camera system at main gate. • Design, implement and commission CCTV cameras for areas specified in WI.
Phase 2	• Repair, replace/install and commission main gate access control • Design, implement and commission Access Control for areas specified in WI.

Table 1: Scope of work phases

3.2 Parts of the *works* which the *Contractor* is to design

(1) The Contractor designs the entire works according to the IAC standards and specifications. Design refers to the process of specifying, calculating, selecting and documenting different engineering concepts, hardware, software and other technologies to realise an integrated Access Control and CCTV Surveillance System.

3.2.1 Design Phase

(1) Three sets of printed copies of the systems engineering and design stage documentation is submitted to the Project *Manager* for acceptance five (5) working days prior to the start of the detailed technical clarification discussions.
(2) The systems engineering and design stage documentation is in a logical format and adequate state of completeness, prepared in conformity with the agreed documentation synopsis.
(3) Records are kept of all designs, design decisions and calculation in a format that can be readily followed. Such designs and calculations are submitted to the *Projects Manager* for review and acceptance. Acceptance by the *Project Manager* in no way diminishes the Contractors design responsibility.
(4) The *Contractor* obtains the acceptance of the systems engineering and design stage documentation from the project manager prior to the commencement of the technical clarifications.
(5) It is the *Contractors* responsibility to solve any process information, protection, measuring, monitoring and interface problems encountered during execution of the Contract.
(6) The *Contractor* prepares and presents all designs and documentation in order to discuss and finalise the functional definition and scope of the work to be done for the works during the technical clarification.
(7) The *Contractor* is responsible for the verification, formulation and engineering of the measuring, monitoring, protection, display, data handling, interfacing and information management philosophy for all the components of the works.
(8) The *Contractor* is responsible for leading technical clarification discussions with the Employer.
(9) The *Contractor* is responsible for collecting all information and data required for design to enable the design to be complete.
(10) The *Contractor* will supply a layout of the Access Control and CCTV system after basic/detailed design as well as after implementation to ensure that any areas that were lacking in the design has been covered when the project has been finalised.
(11) The *Contractor* performs the function of the coordinator and technical leader and takes full responsibility for all technical interfaces between the works and other systems as indicated in the Works Information.
(12) Refer to Section **12.4 CCTV Integration** on the IAC Technical Standards Rev 3.0 for CCTV compatibility with Digital Video Manager. .

3.2.2 Scope of Work

3.2.2.1 Access Control and Cameras

(1) The contractor protects all Access Control and CCTV Surveillance Cameras against all environmental conditions.
(2) The Contractors supplies and installs the Access Control and CCTV Surveillance cameras according to the following scope:

Plant Area	Description	CCTV Cameras	Access Control points
Security Control Room	Static IP cameras which are day/night cameras that work well in low light areas	1	2
Main Gate	Outdoor IP PTZ IR Camera with video analytics and ceiling mount outdoor dome IP cameras with IR backlight	29	20
Coal Gate	Static Outdoor IR Camera with video analytics	8	2
Handhelds biometric units			8

Turbine House Doors	Static Outdoor IR Camera with video analytics	6	
Feed pumps entry points (8ml)	Static IP cameras which are day/night cameras that work well in low light areas	18	
Feed pumps (0m)	Static Outdoor IR Camera with video analytics	12	
Turbine floor 16ml	Static IP cameras which are day/night cameras that work well in low light areas	12	
H2 panel & stator cooling	Static Outdoor IR Camera with video analytics	6	
Extraction Pump area	Static IP cameras which are day/night cameras that work well in low light areas	6	
MOT room	Static IP cameras which are day/night cameras that work well in low light areas	6	6
22kV breaker area	Static IP cameras which are day/night cameras that work well in low light areas	6	
Turbine deluge stations 0 & 16ml	Static IP cameras which are day/night cameras that work well in low light areas	12	
CPP Room Entrance	Static IP cameras which are day/night cameras that work well in low light areas	6	
Smoke stack entrance			2
Unit Control Room entrances	Static IP cameras which are day/night cameras that work well in low light areas	6	9
New simulator	Static IP cameras which are day/night cameras that work well in low light areas	1	1
Boiler house doors	Static Outdoor IR Camera with video analytics	6	
Pyro area	Static IP cameras which are day/night cameras that work well in low light areas	24	
HP bypass power packs	Static IP cameras which are day/night cameras that work well in low light areas	6	
Feeders	Static IP cameras which are day/night cameras that work well in low light areas	12	
AH lube oil sets	Static Outdoor IR Camera with video analytics	6	
Unitised SO3 plant	Static IP cameras which are day/night cameras that work well in low light areas	6	
Common SO3 plant + PLC	Static IP cameras which are day/night cameras that work well in low light areas	2	
FFP/Precip subs	Static Outdoor IR Camera with video analytics	12	12
Mill reject areas	Static Outdoor IR Camera with video analytics	12	
Ash Hoppers	Static Outdoor IR Camera with video analytics	6	
Fans (lube oil sets)	Static Outdoor IR Camera with video analytics	36	
Ash Plant (Toya pump cables)	Static Outdoor IR Camera with video analytics	6	
DHP blower house control room	Static Outdoor IR Camera with video analytics	6	6
50% drain valve landing access stairs (16ml)	Static IP cameras which are day/night cameras that work well in low light areas	12	
ESP /FFP access stairwells / bridges	Static Outdoor IR Camera with video analytics	4	
FFP compressor Houses	Static Outdoor IR Camera with video analytics	2	2
Fuel Oil North Plant	Static Outdoor IR Camera with video analytics	1	1

Fuel Oil South Plant	Static Outdoor IR Camera with video analytics	1	1
Diesel Gen Rooms	Static Outdoor IR Camera with video analytics	6	6
Water Treatment Plant & Control Room			4
LP Services	Static Outdoor IR Camera with video analytics	3	
H2 Plant	Static Outdoor IR Camera with video analytics	2	2
CW pump houses	Static Outdoor IR Camera with video analytics	4	2
AWR Pump house and substation	Static Outdoor IR Camera with video analytics	11	2
Raw water dams enclosure			1
Driefontein pump station			1
Process Water Pump Station	Static Outdoor IR Camera with video analytics	6	1
Sluice Booster Pump Station and substation	Static Outdoor IR Camera with video analytics	14	1
Cable Tunnel Entrances			8
Outside plant Control room			2
Unit MV Rooms			12
Unit LV Room	Static IP cameras which are day/night cameras that work well in low light areas	12	12
Unit Battery rooms			6
Unit DC rooms	Static IP cameras which are day/night cameras that work well in low light areas	6	6
Unit Equipment rooms (old)	Static IP cameras which are day/night cameras that work well in low light areas	12	12
Unit Equipment rooms (new)	Static IP cameras which are day/night cameras that work well in low light areas	2	6
New EOD	Static IP cameras which are day/night cameras that work well in low light areas	1	1
HVAC Rooms and plant rooms	Static IP cameras which are day/night cameras that work well in low light areas	12	
Diesel Bulk Tank	Static Outdoor IR Camera with video analytics	1	
Conveyor mimic panel room	Static Outdoor IR Camera with video analytics	1	1
Admin Building lift lobbies			8
Canteen/ Shisa Taba	Static IP cameras which are day/night cameras that work well in low light areas	4	
Steel Store			1
Main Store			2
Station MV Subs			2
Sub North			1
Sub East			1
Sub West			1
Staithe 1 Sub			1
Staithe 2 Sub			1
Fuel Oil South Sub			1
Fuel Oil North Sub			1
Admin server room	Static IP cameras which are day/night cameras that work well in low light areas	1	1

IT Offices			1
TOTAL		**399**	**170**

(3) The above list is merely an estimate, type of camera to be used, as well as the number of CCTV cameras to be used per area and may be revised subject to the Eskom Projects Engineers approval.
(4) All cameras to be installed shall use network (IP) communication instead of analogue.
(5) All cameras to support Power over Ethernet (PoE) to power the unit.
(6) Outdoor cameras shall be positioned in order to avoid sunlight on the lens of the camera. If not possible, cameras shall have wide dynamic range (WDR) functionality.
(7) The cameras shall be well protected from the elements and vandalism by mounting it within an appropriate housing.
(8) All camera housing and junction boxes shall have a minimum protection IP65 casing rating, unless stated otherwise.
(9) Cameras installed in low light areas shall have the ability that will allow for easy identification of intruders in low light areas.
(10) Cameras to have the functionality of having technology/features that allows for night mode footage other than IR functionality for night or extremely dark areas were applicable.
(11) The camera housing shall have a sun visor and be steel constructed.
(12) The camera housing shall be weather-proof, environmental, corrosion and vandalism resistant as well as UV resistant.
(13) When an alarm triggers the PTZ shall zoom into the zone/area that is linked to the alarm. If a person was detected, the PTZ shall focus on the person and follow them.
(14) The *Contractor* ensures that all cameras have sufficient viewing angles and viewing distances as to maximise security at Duvha Power Station.
(15) The *Contractor* ensures that all the Thermal Cameras have an alarm when triggered.
(16) The *Contractor* designs an easy maintenance system for the cameras situated in dusty environments.

3.2.2.2 Communication System

(1) The *Contractor* designs, supplies, deliver, installs, and commissions an effective communication system according to the IAC standards and specifications, which will not be easily susceptible to EMI and RFI signal.
(2) The *Contractor* installs fibre optic communication network from cameras to the security office where fibre is not provided by the *Employer*.
(3) The *Contractor* ensures that the designed communication system does not interfere with any of the existing fibre networks. This has to be a dedicated communication system for CCTV Surveillance alone.
(4) The *Contractor* ensures that if fibre cannot be used in the area to communicate to the security office, radio communication needs to be used.

3.2.2.3 Security Control Room

(1) The *Contractor* ensures that the Security Control Room can effectively monitor all surveillance areas and that Duvha Power Station has all the necessary tools and skills to carry out their duties.
(2) The Contractor designs, supplies, installs, delivers and commissions new monitoring screens in the control room to monitor all plant areas where existing screens cannot be re-used.
(3) The *Contactor* ensures that the security control room has an adequate archive system, which will record all criminal activities.
(4) The *Contractor* ensures that security can create and print snapshots of live video feed.
(5) The *Contactor* ensures that access to the system is blocked from less privileged users.
(6) The *Contractor* is to supply, install and connect all Software and Hardware Control Room Equipment (full infrastructure) including Control Servers, Video Management Software, etc.
(7) The *Contractor* is to supply, install and connect all Control room hardware with a cooling system
(8) The *Contractor* is to supply, install and connect an air conditioning unit in the Control Room.
(9) Refer to Section ***7.2.3. Control Room Workstations*** on the IT0018_DRA 1_IAC Technical Standards for CCTV monitoring Workstation Specification.
(10) The Contractor to ensure that the Workstation Specifications as mentioned in (9) to be of the same specifications or new technology that exists on the market.

3.2.3 System Layout

(1) The *Contractor* to determine the best possible routes for the connectivity of the various components.
(2) Item (1) to be confirmed and signed off by the *Employer*.
(3) A system drawing to be compiled for easy reading and fault finding.
(4) Implementation of Access Control and CCTV Surveillance system should have the functionality to be integrated into the EBI platform.
(5) All cables and wiring to be secured inside trunking.
(6) Dome and PTZ cameras shall be mounted with the appropriate brackets, which prevent the pole from being in the camera's field of view.
(7) Brackets used to secure the camera shall be robust and shall minimize vibration.
(8) Brackets shall be capable of being "lock-tight" to reduce the possibility of accidently moving.
(9) All brackets shall be "cable managed" so that cables entering the housing is enclosed within the bracket from the support of the housing, allowing no cable to be exposed.

3.2.4 Biometric readers

(1) The *Contractor* to determine the best solution of reader based on the IT00118_IAC_Access_Control_Procrement_Specification document.
(2) The *Contractor* must also design suitable mounting positions taking into consideration section ***3.2.5 System Layout*** of the works.
(3) Biometric support is supplied to the EBI system via SAGEM MEMS. The SAGEM MEMS server stores all fingerprint data recorded during the user registration.
(4) Zoning areas to be specified by Eskom security upon implementation.

3.2.5 Access Control Flow

(1) The *Contractor* needs to align to the IAC access control processes as documented within the eHPUM and provide the best solution for flow that takes into consideration the amount of people, readers, breathalysers and exit points.
(2) The design will be reviewed by the *Employer* and corrections and/or suggestions made for changes where applicable.

3.2.6 TemaServers

(1) All card readers, door controllers and biometric scanners are to be connected to a TemaServer via a controller on a physical LON.
(2) Each TemaServer is to have two IP addresses configured, one of North East Regional EBI server and second of the North East Regional Disaster Recovery (DR) server.
(3) Each TemaServer can manage up to 16 controllers and runs on firmware version 5.3.
(4) Refer to ***Section 8.1 TemaServer (Controller)*** on the IT00118_DRA 1_IAC Technical Standards for Access Control Hardware and Installations.
(5) TemaPower is an intelligent power supply that monitors incoming power, battery status and only supplies power to the TemaServer. A backup battery of at least 4 hours Autonomy is required.
(6) Refer to ***Section 8.2 TemaPower*** on the IT00118_DRA 1_IAC Technical Standards for Access Control Hardware and Installations.
(7) TemaServers to be of the most-up to-date technology or version.

3.2.7 Door Access

(1) Door monitor to be used to monitor the status of the door if it is either opened or closed.
(2) A08 controllers are an interface that manages the physical door. It releases the maglock and monitors the status of the door. A08 controllers must not run a firmware version older than X2E.
(3) An OMNI 10 Reader to be supplied for reading of Prox cards and sends data via Wiegand standard data to A08.
(4) LON cables and protocol to be used to connect the A08 devices to the TemaServer.

(5) A maglock is to be used to lock the door with a specific break force capability. The maglock is to get a release from the A08 controller with an authorised access card. Refer to ***Section 8.19 Maglock*** on the IT00118_DRA 1_IAC Technical Standards.
(6) A door closer is to be used to keep the doors closed and locked.
(7) All doors to be fitted with a Resettable Break Glass unit. When the Break Glass is triggered, it should override the door access and should keep the door unlocked. To be used in emergencies only.
(8) Refer to ***8.4 Tema Hardware A08 Wiegand Module*** on the IT00118_DRA 1_IAC Technical Standards.
(9) Refer to ***8.5 Typical Door, 8.6 Door Type 1, 8.9 Door Type 2*** on the IT00118_DRA 1_IAC Technical Standards for a Typical Door Connection description.

3.2.8 Software (Access Control)

(1) Supplier: Honeywell
(2) The software must have the following capabilities as a minimum but not limited to
   i. Black listing per user based on various criteria such as medical, induction, criminal record, etc.
   ii. Anti-pass back
   iii. User-defined reports

3.2.9 Network

(1) Refer to the IT00118_DRA 1_IAC Technical Standards document.
(2) *Contractor* to also consider Cyber Security within their design for Access Control, refer to section ***6.2.2 Cyber Security Requirements*** of the works.

3.3 Procedure for submission and acceptance of *Contractor*'s design

(1) The *Contractor* submits any drawing (eg. As Built Drawings) and documentation that will fulfil the requirements of this works.
(2) The Contractor submits design package to Project Engineer
(3) Project Engineer and Engineering Work Lead evaluates and approves design package
(4) Project Manager accepts design package.
(5) The design package shall contain the design basis, design requirements, calculations, design drawings, design specification and design outputs.it should also contain all relevant documentation change requirements and design check off sheets.
(6) The Contractor submits the following data in neat files for acceptance by the Project Manager and approval by Employers System Engineer.
(7) Submission of all drawings should be accompanied by a drawing register with detailed information of the drawings.

3.4 Other requirements of the *Contractor*'s design

(1) The following standards and specification documents must be adhered to when performing the works:
   i. IAC System Specifications

4 Procurement

(1) The *Contractor* shall comply with Basic Condition of Employment Act and Labour Relation Act for the use of labour in executing the works to give effect to the right to fair labour practices referred to in section 23(1) of the Constitution by establishing and making provision for the regulation of basic conditions of employment; and thereby to comply with the obligations of the Republic as a member state of the International Labour Organisation; and to provide for matters connected therewith.

4.1 People

4.1.1 Minimum requirements of people employed on the Site

(1) The *Contractor* supplies and ensures that his employees wear the correct PPE according the risk assessments performed on the specific tasks to be carried out.
(2) The *Contractor* ensures that everyone entering Duvha Power Station under his supervision is medically, physically and psychologically fit to enter Duvha Power Station.
(3) The medical examination, at the *Contractors* cost, is carried out by a Registered Professional Occupational Health Practitioner and the examination shall include the following tests:
   i. Eye Test, Blood Pressure,
   ii. Heart Function,
   iii. Hearing Test and
   iv. Lung function.

4.1.2 BBBEE and preferencing scheme

(1) The *Employer* formal Black Economic Empowerment (BEE) programme was first initiated in 1995 with the publication of its policy regarding procurement from Black Suppliers (ESKADAAT6). ESKADAAT6 has set the standard for BEE programmes within Eskom and across South Africa as a whole.
(2) Eskom's policy is to maximise purchases from Black or Black Empowering Enterprises (BEE's) whether Black Woman-owned, small or Large Black or Black empowering suppliers. The purpose is to promote entrepreneurship in black communities and give black business access to the mainstream of business opportunity.
(3) Eskom will concentrate its development efforts on black suppliers ninths manufacturing, construction and mining /extraction sector of the economy and provide

4.1.3 Accelerated Shared Growth Initiative – South Africa (ASGI-SA)

(1) The *Contractor* complies with and fulfils the *Contractor's* obligations in respect of the Accelerated and Shared Growth Initiative - South Africa in accordance with and as provided for in the *Contractor*'s ASGI-SA Compliance Schedule IT 1.2 ASGI-SA requirements.
(2) Eskom is committed to the Accelerated and Shared Growth Initiative for South Africa (Asgisa) and its prime objectives of higher growth, more jobs and less poverty.
(3) Eskom's most significant contribution is through its core business of supplying competitively priced electricity.
(4) The capacity expansion programme and Eskom's focus on operating efficiency are central to our effort to provide the power that will drive accelerated growth.
(5) ASGI-SA is not only about economic growth, but ensuring the growth is shared. To contribute to this objective, Eskom will leverage its build programme and associated activities for optimum developmental impact.
(6) The *Contractor* shall keep accurate records and provide the *Project Manager* with reports on the *Contractor*'s actual delivery against the above stated ASGI-SA criteria.
(7) The *Contractor*'s failure to comply with his ASGI-SA obligations constitutes substantial failure on the part of the *Contractor* to comply with his obligations under this contract.

4.2 Subcontracting

4.2.1 Preferred sub-*Contractor*s

(1) The *Contractor* shall make use of any supplier for sourcing of equipment, tools and material whatever that the *Contractor* will use to execute works shall comply with the SABS.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

(1) The *Contractor* shall submit the proposed contract data for each subcontracting for acceptance to the Project Manager
(2) The *Contractor* shall prepare subcontracting document as according to NEC contract.
(3) The *Contractor* must inform the *Employer*'s representative when intending to subcontract some of the works from the contract scope.
(4) The *Contractor* shall not subcontract a *Contractor* that has lower or higher level accreditation than his/her according to CIDB.

4.2.3 Limitations on subcontracting

(1) The *Contractor* shall not subcontract more than 25% of the contract scope

4.2.4 Attendance on subcontractors

(1) The *Contractor* shall in writing inform the *Employer*'s representative about the subcontractor intentions for site visit.

4.3 Plant and Materials

4.3.1 Quality

(1) All work is carried out under the supervision of an experienced supervisor.
(2) The *Contractor* complies with the *Employer*'s Quality Requirements as specified in Eskom Generation Standard GGS 0462. The *Contractor*, when using materials that are required to comply with a standard specification
(3) Shall, if so ordered, furnish the Engineer with certificates showing that the materials do so comply.
(4) Where so specified, materials shall bear the official mark of the appropriate standard.
(5) Samples ordered or specified shall be delivered to the Engineer's office on the Site.
(6) Unless otherwise specified, all proprietary materials shall be used and placed in strict accordance with the published instructions of the relevant manufacturer.
(7) All quality control documentation is submitted to the Project Manager within 7 days of Contract date.

4.3.2 Plant & Materials provided "free issue" by the *Employer*

(1) The *Employer* will provide power supply, water and land for the storage of equipment and material.
(2) The *Contractor* shall supplies all the necessary equipment and material required to execute the Works.
(3) Should the *Contractor* require using of any of the *Employer's* Equipment, including compressed air, electricity, water supply and crane age, it must be specified in the Works Information supplied by the *Contractor*.
(4) The *Employer* does not guarantee continuity of supply of any of these items required in point 3.

4.3.3 *Contractor*'s procurement of Plant and Materials

(1) The *Contractor* shall make use of SABS approved plant and material.
(2) Test certificates shall be given to the *Project Manager* of the project.

4.3.4 Spares and consumables

(1) The *Contractor* shall not provide any spares and consumables as they are not required for this project.
(2) The *Contactor* must supply a recommendation for spares holding based on the project requirements and the *Employer's* goals.

4.4 Tests and inspections before delivery

(1) The *Contractor* does not bring to the working area those plant and material which the works information states are to be tested or inspected before delivery until the supervisor has notified the *Contractor* that they have passed the test.

4.5 Marking Plant and Materials outside the Working Areas

(1) All plant and materials outside working areas are to be marked "for *Contractor*" until such time that they are tested and installed at the site/plant.

4.6 *Contractor*'s Equipment (including temporary works).

(1) The *Contractor* shall supply their own equipment to conduct work mentioned in the WI.

5 Construction

5.1 Temporary works, Site services & construction constraints

5.1.1 *Employer*'s Site entry and security control, permits, and Site regulations

(1) The *Contractor* applies for access permits for all works exceeding four (4) weeks via the Project Manager, who will co-ordinate this.
(2) The *Contractor* applies for *Contractor*'s Permits for all his employees and/or sub*Contractor*s at the Security gate, at least 24 hours prior to entry of the Duvha Power Station Security Area. .
(3) The *Contractor* completes the specific form in the Duvha Power Station *Contractor*s Safety Manual, listing all of the personnel that he intends using on site.
(4) The completed list, identified with the *Contractor*'s name, contains the following information:
    i. Employee Name
    ii. Employee ID Number
    iii. Eskom Safety Co-ordinator signature
    iv. Eskom Project Manager signature
    v. Validity Date
(5) No permits are issued to personnel who have not attended safety induction.
(6) The *Contractor* photocopies the first page of the ID book of every one of his employees; reduced to the size 65%.
(7) This completed list, together with the photocopies of the ID books is delivered to Protective Services for the preparation of the *Contractor*'s Permits.
(8) The *Contractor* allows at least 24 hours for the preparation of the security permits, before he collects the permits from the Protective Services offices.
(9) The *Contractor*'s personnel are required to be in possession of a *Contractor*'s Permit at all times inside Duvha Power Station.
(10) All *Contractor*s' permits are submitted back to Protective Services when the workers leave the site after completion of the works. Failure return the permits will result in a penalty for each non returned permit. Manual permits will result in a R25.00 penalty and electronic permits will result in a R150.00 penalty.
(11) The *Contractor* compiles detailed Tool Lists (obtainable from Protective Services) of all tools and equipment to be taken on site before arriving at the power station.
(12) Authorised copies of these lists are retained to be used again when the tools and equipment is removed from site.
(13) The *Contractor*'s visitors and all personnel conform to the security arrangements in force at Duvha Power Station.
(14) Application forms for visitors are filled in by the *Contractor*'s Site Manager and approved by the Project Manager, and submitted to the *Employer*'s Protective Services office one day prior to the visit.
(15) Visitors will not be allowed on site if the necessary forms are not in the possession of security staff.
(16) The Chief Security Officer may, with valid cause, remove any of the *Contractor*'s personnel from the site, either temporarily or permanently. He may deny access to the site to any person whom, in the opinion of the said Chief Security Officer, constitutes a security risk.
(17) No unauthorised vehicles will be allowed on site. Only *Contractor*'s vehicles with displayed Contract Vehicle Permits disks will be allowed on site. Contract Vehicle Applications are directed to the Project Manager for consideration and approval.
(18) The *Contractor* is restricted to the Site. The *Contractor* is forbidden to enter any other areas, and ensures that his employees abide by these regulations.
(19) Parking inside the power station is strictly forbidden, except for loading purposes.
(20) No recruiting of casual labour may be done on Eskom premises, including the area outside the Power Station Security Gate.
(21) Security personnel may search any premises, property or person within the security area of Duvha Power Station
(22) No Photographic equipment will be allowed within the security area of the Power Station without obtaining permission.
(23) Application forms for such permission is available from the Protective Services offices.
(24) Any person found in possession of such equipment will be prosecuted in terms of the National Key Point Act

5.1.2 Restrictions to access on Site, roads, walkways and barricades

(1) Pedestrian crossing are make on the road they should be used when crossing the road
(2) Inside the plant walkways are clear makes they should be used when walking inside the plant to keep safe on any object that might fall.
(3) Barricades are provided where there are open trenches and around the sumps and manholes.
(4) The *Contractor* shall occupy only such ground as is necessary to carry out the works.
(5) All fences and other structure that have been damaged or interfered with by the *Contractor* shall be restored to be a condition at least equivalent to their original condition

5.1.3 People restrictions on Site; hours of work, conduct and records

(1) The LAR is for the person in charge of the plant to maintain control over activities taking place on his plant that are not covered by the Plant Safety Regulation and Operating Regulations for High Voltage Systems.
(2) Activities that are allowed to be carried out under the LAR must not require a permit and must satisfy the following criteria:
(3) They must not involve danger to the person carrying out the activity;
(4) No plant isolations must be required;
(5) The activity must be performed by a skilled person and there must be no risk of a production loss;
(6) The duration of the activity must be less than 24 hours
(7) The Supervisor accompanies the *Contractor* during the first instances of working under a LAR on a specific plant area.
(8) It is very important that the person who plans to do an activity on a plant under the LAR informs the person in charge of the plant (ASS on the panel or PPO at WTP) of what will be done.
(9) This means verbally telling the person in charge of the plant what will be done and not just signing the LAR book. The LAR book is also signed.
(10) It is also important that as soon as the activity is completed the person, who was doing the activity, notify (verbally) the person in charge of the plant that conditions are back to normal and that the LAR has been signed off. Just signing the LAR book is not sufficient.
(11) For more information please refer to Plant Safety Regulation C11.

5.1.4 Health and safety facilities on Site

(1) The *Contractor* provides a First Aid service to his employees and sub-*Contractor*. In the case where these prove to be inadequate, like in the event of a serious injury, the *Employer*'s Medical Centre and facilities will be available.
(2) Outside the *Employer*'s office hours, the *Employer*'s First Aid Services will only be available for serious injuries and life threatening situations. The *Employer* shall be entitled, however, to recover the costs incurred, in the use of the above *Employer*'s facilities, from the *Contractor*.
(3) The *Contractor* to ensure that qualified and competent First Aiders and Emergency Care staff is permanently on site and at actual construction site for emergency situations, as and when they arrive.
(4) The *Contractor* or his staff shall not move the injured party from the incident position and site unless the person's/persons' life is in danger or the person is moved by a qualified and trained Emergency Care Worker.

5.1.5 Environmental controls, fauna & flora, dealing with objects of historical interest

(1) No fauna or flora will be collected or removed from site by any visitor without written permission of the landowner, in which case cognizance will be taken of appropriate provincial legislation pertaining to fauna and flora.
(2) Under such cases Eskom Holding's ethical policies and guidelines will be strictly applied.

5.1.6 Title to materials from demolition and excavation

(1) The *Contractor* has no title to an object of value or historical or other interest within the site
(2) The *Contractor* shall notify the Project Manager when such an object is found and the Project Manager will instruct the Contract how to deal with it.
(3) The *Contractor* does not move the object without instruction.

5.1.7 Cooperating with and obtaining acceptance of Others

(1) The *Contractor* has no title to an object of value or historical or other interest within the site
(2) The *Contractor* shall notify the Project Manager when such an object is found and the Project Manager will instruct the Contract how to deal with it.
(3) The *Contractor* does not move the object without instruction.

5.1.8 Publicity and progress photographs

(1) Should publicity and progress photographs be required an application shall be made via the Project Manager.

5.1.9 *Contractor*'s Equipment

(1) The *Contractor* has no title to an object of value or historical or other interest within the site
(2) The *Contractor* shall notify the Project Manager when such an object is found and the Project Manager will instruct the Contract how to deal with it.
(3) The *Contractor* does not move the object without instruction.

5.1.10 Equipment provided by the *Employer*

(1) Should the *Contractor* require using of any of the *Employer*'s Equipment, including compressed air, electricity, water supply and crane age, it must be specified in the Works Information supplied by the *Contractor*.
(2) The *Employer* does not guarantee continuity of supply of any of items in point (1).
(3) The *Employer* shall be entitled to withdraw use of the said Equipment, should proper maintenance and cleanliness not be ensured.
(4) In the event of point (3), the *Contractor* shall be obliged to provide the necessary Equipment at his own cost.
(5) The *Contractor* is responsible for the repair, replacement or correction as necessary of all pieces of tools and equipment supplied by the *Employer* which are damaged and / or lost whilst in the *Contractor*'s custody and control.
(6) The *Contractor* site manager must ensure that any one of his employees or Sub-*Contractor*, operating hoist equipment belonging to the *Employer*, is authorised by an Accredited Company and retraining is done annually.
(7) Arrangements for training courses can be made via Duvha Power Station Maintenance Training but the *Contractor* will absorb costs.
(8) A copy of this accredited and valid training certificate must be given to the *Employer*'s Supervisor, who will then arrange access for usage.

5.1.11 Site services and facilities

(1) Potable Water Supply:
    i. Potable water is available at the existing points. There are no portable points for the work that is done outside the station therefore the *Contractor* to provide his/her alternative supply.
(2) Electrical Power Supply
    i. Power is available at the existing points.
    ii. The *Contractor* provides his own portable 380V electrical distribution boards, and supply cables to and from the boards, for all his power supply requirements to execute the works.
    iii. *Contractors*' Electrical Distribution Boards complies with OHSA as referred to in the Electrical Installation Regulations and the Electrical Machinery Regulations.
    iv. Each board brought onto site has a Certificate of Compliance issued by an accredited person.
    v. The *Contractors*' electrical distribution boards are installed at the works on a time negotiated with the Supervisor, prior to the possession date.
    vi. The *Employer* connects distribution boards to a 380V three-phase AC power supply, only after the *Contractor* has submitted the valid Certificate of Compliance.
    vii. All *Contractors*' Electrical Distribution Boards are earthed to the steel structure of the plant.
    viii. There will be no supply points for work that will be done away/outside from the station therefore a *Contractor* to provide alternative supply system (e.g petrol/ diesel equipment)

5.1.12 Facilities provided by the *Contractor*

(1) The *Contractor* should provide facilities they deem necessary in executing the work. This must be discussed with the Project Manager prior to commencement of work.

5.1.13 Underground services, other existing services, cable and pipe trenches and covers

(1) A survey must be carried out to determine if any underground cabling and services will hinder the design and execution of the project.
(2) If no up-to-date drawings are available for such purposes as in point (1), the onus falls on the *Contractor* to perform an on-site survey.
(3) If during execution of the project any damage to identified or unidentified underground cabling and services occur, the cost of repair will be for the *Contractor*.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Operational Testing Phase

(1) As per the scope of work and any other additional information as outlined in the NEC contract.

5.2.2 Certifying Completion

(1) The *Project Manager* certifies the *works* complete after successful testing and commissioning, and Operational Testing.

5.2.3 Work to be done by the Completion Date

(1) On or before the Completion Date the *Contractor* shall have done everything required to provide the Works except for the work listed below which may be done after the Completion Date but in any case before the dates stated.
(2) The *Project Manager* cannot certify Completion until all the work except that listed below has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the *works* and Others from doing their work.

	Item of work	**To be completed by**
	As built drawings of section 7.1.	Within 5 days after Completion
	Performance testing of the *works* in use as specified in section 3 & 6 of this Works Information.	See performance testing requirements.

(3) The *Contractor* is responsible for registration of all Duvha employees and contractors onto the database.

5.2.4 Commissioning

(1) Commissioning is done as a pre-requisite for Completion.
(2) Commissioning procedures/requirements should be submitted to the Project Manager during the execution so that the Project Engineer can review it.
(3) The *Contractor* is responsible for submitting Commissioning documents.
(4) The *Contractor*'s installation testing needs to be done by the IAC team as per the test cases prior to sign off of the project to govern designs and quality of implementation.
(5) The Commissioning documents will be reviewed and signed off.
(6) The *Contractor* is responsible for following the signed off Commissioning documentation.

5.2.5 Take over procedures

(1) During take over, the *Contractor* is responsible to demonstrate to the relevant parties the completed works.

(2) If any concerns are raised during the demonstration, the onus falls on the *Contractor* to address and correct.
(3) If any concern as per point (2) was part of the works, the final signoff will be postponed until such concerns have been addressed.

5.2.6 Access given by the *Employer* for correction of Defects

(1) If the *Contractor* is required to correct any defect, a Permit To Work (PTW) will be issued.
(2) The availability of the PTW will be dependent on the plant accessibility and constraints.

5.2.7 Performance tests after Completion

(1) The performance of the system will be verified and tested during normal production cycles. Refer to Test Plan IT00118_DRA 1_Test Plan Document and Section 13. Testing on the IAC Technical Standards.
(2) If any defect or deviation from the required performance is identified, it will be treated as a defect and applicable clauses will apply.
(3) The *Contractor* will be responsible for first line maintenance during the defects period and such incident will be handled as system defects.
(4) A mandatory quarterly site visit is required to assess the performance of the system and equipment.
(5) A performance report must be issued after each visit as per point 4, detailing any failure events or warnings.
(6) The performance criteria of the system must utilise the following method:
    i. Availability of 99.9%.
    ii. Incorrect or non-reading of fingerprint to be 1 in 1000.
    iii. Process time for access verification to be less than 3 seconds.

5.2.8 Operating Manuals, Maintenance Schedules, and Documentation

(1) All drawings must be supplied in electronic format as well as hard copies must be drawn in Micro Station V8 format (DWG format).

5.2.9 Training and technology transfer

(1) Security:
    i. Before the Works can be handed over, the *Contractor* must supply training to the Security Personnel of all the shifts.
    ii. Topics that must be included in the training that will enhance their understanding, but not limit to
        a. Reader and Turnstile operations
        b. Reader and turnstile operating modes
        c. User additions
        d. Allowing/Restricting access
    iii. Upon mutual agreement that the training dealt with all the new aspects, a training register must be signed by all relevant parties.
        a. The register must show all the names of the trainees who attended together with their signature as well as the *Contractor's* representative who performed the training.
        b. The register must be submitted to the *Project Manager* for approval and record keeping.

(2) Control and Instrumentation
    i. Before the Works can be handed over, the *Contractor* must supply training to the Control and Instrumentation Maintenance Personnel.
    ii. Topics that must be included in the training that will enhance their understanding and fault finding, but not limit to
        a. Reader and Turnstile connections
        b. Reader and Turnstile diagnostics
        c. Reader and Turnstile components
    iii. Upon mutual agreement that the training dealt with all the new aspects, a training register must be signed by all relevant parties.
        a. The register must show all the names of the trainees who attended together with their signature as well as the *Contractor's* representative who performed the training.

iv. The register must be submitted to the *Project Manager* for approval and record keeping

6 Plant and Materials standards and workmanship

6.1 Investigation, survey and Site clearance

(1) A site survey must be carried out in order to ensure the ergonomics aspect of the design is not limited by physical plant equipment or material.

6.2 Process control and IT works

6.2.1 Control & Instrumentation Requirements

(1) Cabling
   i. Double steel taped armoured
   ii. PVC Covered
   iii. Twisted pair and unscreened
   iv. Halogen free
   v. Conduit and trunking to conform to the latest standard GGS0386 – 5 Requirements for Control and Power Cables for Power Stations
(2) Termination
   i. All wire terminations to use appropriate lugs
   ii. Any termination to conform to the latest standard GGS0386 – 5 Requirements for Control and Power Cables for Power Stations.
(3) Labelling
   i. The following labelling standards must be used:
      a. ETS0004 – AKZX Plant Location Labelling Specifications
      b. ENP0008 – Drawing Control Procedure
      c. ENS0002 – AKZX Plant Location Coding Reference Manual
      d. Drawing 46945 - AKZX Plant Location Labelling and Coding Specification and Detail

6.2.2 Cyber Security Requirements

(1) *Contractor* shall comply with the ***240-55410927 Cyber Security Standard for Operational Technology***.
(2) The Contractor shall focus on the following that is included in the Cyber Security standard but is not limited to:
   i. Designing of the network configuration and setup for the Access Control when interfacing with Eskom's Business LAN (***3.7.1 System Design and Configuration***)
   ii. The design of the DMZ to comply with the standard ***240-79669677 DMZ Designs for OT***.
   iii. Use of anti-virus software on thin clients/servers (***3.7.3 Malicious Software Prevention***)
   iv. Managing of user accounts and password for personnel who has access to the Access Control and CCTV camera system (***3.7.4 Account Management***).

7 List of drawings

7.1 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

Note: Some drawings may contain both Works Information and Site Information.

Drawing number	Revision	Title

C3.2 *CONTRACTOR*'S WORKS INFORMATION