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CONTENTS

Page

1. INTRODUCTION 4

2. SUPPORTING CLAUSES 4

2.1 SCOPE 4
2.1.1 Purpose 4
2.1.2 Applicability 4
2.2 NORMATIVE/INFORMATIVE REFERENCES 4
2.2.1 Normative 4
2.2.2 Informative 5
2.2.3 Disclosure Classification 5
2.2.4 Definitions 5
2.3 ABBREVIATIONS 5
2.4 ROLES AND RESPONSIBILITIES 6
2.5 PROCESS FOR MONITORING 7
2.6 RELATED/SUPPORTING DOCUMENTS 7

3. ENGINEERING AND THE *CONTRACTOR'S* DESIGN 7

3.1 DESCRIPTION OF THE *WORKS* 7
3.1.1 Executive overview 7
3.1.2 Employer's objectives and purpose of the *works* 7
3.1.3 Interpretation and terminology 7
3.1.4 Existing System 7
3.2 MANAGEMENT AND START UP. 8
3.2.1 *Management* meetings 8
3.2.2 Documentation control 8
3.2.3 Health and *safety* risk management 9
3.2.4 Environmental *constraints* and management 9
3.2.5 Quality *assurance* requirements 9
3.2.6 Programming constraints 11
3.2.7 *Contractor*'s management, supervision and key people 11
3.2.8 Invoicing and *payment* 11
3.2.9 Insurance *provided* by the *Employer* 11
3.2.10 Contract *change* management 11
3.2.11 Provision of *bonds* and guarantees 12
3.2.12 Records of *Defined* Cost, payments & assessments of compensation events to be kept by the *Contractor* 12
3.2.13 Training *workshops* and technology transfer 12
3.3 *ENGINEERING AND THE CONTRACTOR'S DESIGN* 12
3.3.1 *Employer*'s design 12
3.3.2 Parts of the *works* which the *Contractor* is to design 15
3.3.3 Procedure for submission and acceptance of *Contractor*'s design 26
3.3.4 Other requirements of the *Contractor*'s design 26
3.3.5 Use of *Contractor*'s design 26
3.3.6 Design of Equipment 26
3.3.7 Equipment required to be included in the *works* 27
3.3.8 As-built drawings, operating manuals and maintenance schedules 27
3.4 *PROCUREMENT* 27
3.4.1 People 28
3.4.2 Subcontracting 29
3.4.3 Plant and Materials 29
3.4.4 Tests and inspections before delivery 31
3.4.5 Marking Plant and Materials outside the Working Areas 32
3.4.6 *Contractor*'s Equipment (including temporary works). 32
3.4.7 Cataloguing requirements by the *Contractor* 32

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3.5 *CONSTRUCTION* 32
3.5.1 Construction and Erection 33
3.5.2 Handover 33
3.5.3 Data Book 33
3.5.4 Temporary works, Site services & construction constraints 34
3.5.5 Completion, testing, commissioning and correction of Defects 37
3.6 *PLANT* AND MATERIALS STANDARDS AND WORKMANSHIP 40
3.6.1 Investigation, survey and Site clearance 40
3.6.2 Building works 40
3.6.3 Civil engineering and structural works 40
3.6.4 Electrical & mechanical engineering works 41
3.6.5 Process control and IT works 41
3.6.6 Other [as required] 41
3.7 LIST OF DRAWINGS 41
3.7.1 Documentation issued by the *Employer* 41

4. SPECIFICATIONS FOR THE *WORKS* 41

4.1 APPLICABLE NATIONAL STANDARDS 41
4.2 ADDITIONAL REQUIREMENTS AND PREREQUISITES 42
4.2.1 General 42

5. AUTHORISATION 43

6. REVISIONS 43

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1. INTRODUCTION

The Mega Watt Park (MWP) security fence is compromised as the system is non-functional. The Client, MWP Facilities has requested an upgrade of the security system.

This document provides the specifications related to the refurbishment and upgrade of the perimeter fence to be performed by the *Contractor.*

2. SUPPORTING CLAUSES

2.1 SCOPE

This document covers the minimum technical specification for the scope of the *works*. This document is to be inserted into the relevant NEC Part 3 Contract.

2.1.1 Purpose

The purpose of this document is to outline the minimum technical specifications for the *works*. This document provides the Engineering input to be included in a Contract document based on the NEC conditions of contract.

2.1.2 Applicability

This document applies to the MWP Perimeter Fence Upgrade Project only.

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] ISO 9001 Quality Management Systems.

[2] Construction Regulations, 2014

[3] 32-727 - Eskom Safety, Health, Environment and Quality (SHEQ) Policy

[4] Occupational Health and Safety Act No. 95 of 1993,

[5] SANS 9001, Quality; systems

[6] SANS 10400, The Application of the National Building Regulations

[7] SANS 10222, the National Standard applicable to electric fences

[8] Electrical Machinery Regulations 2011.

[9] 240-139282493, Security Lighting for Eskom Applications

[10] 240-91190304, Specification for CCTV Surveillance with Intruder Detection

[11] 240-170000096, Physical Security Integration Standard

[12] 240-78980848, Standard for Non-Lethal Energized Perimeter Detection System (NLEPDS) Electrical Components

[13] 240-139282493, Security Lighting for Eskom Applications

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[14] 240-76368574, High Security Mesh Fencing

[15] 240-56364545 Structural Design and Engineering Standard

[16] 240-132496539r0 Yard Digital Interface Junction Boxes for Transmission

[17] 240-64139144AC Boards and Junction Boxes for Substations,

[18] 0.50/45006 Sheet 1 Rev 0 – MWP Perimeter wall and Security Fence Plan, Sections & Details and Lighting Layout and Site Plan

[19] SANS 10222 Part 5 (all sub-parts) – Electrical Security Installations (CCTV Installations)

2.2.2 Informative

[20] 240-53113685, Design Review Procedure

2.2.3 Disclosure Classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.2.4 Definitions

Definition	Description
N/A	N/A

2.3 ABBREVIATIONS

Abbreviation	Description
CCTV	Closed-Circuit Television
ECM	Engineering Change Management
ECSA	Engineering Council of South Africa
ERE	Eskom Real Estate
est.	Estimate
LDC	Leadership Development Centre
MDR	Multi-disciplinary Review
NEC	New Engineering Contract
OEM	Original Equipment Manufacturer
RAC	Registered Asbestos Contractor
SABS	South African Bureau of Standards
SANS	South African National Standards
VMS	Video Management System
MWP	Megawatt Park
EDWL	Engineering Design Work Lead

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2.4 ROLES AND RESPONSIBILITIES

Roles and responsibilities shall be as per *The Employer's* design review procedure 240-53113685.

Contracts Manager:

The contracts manager is responsible to incorporate this Technical Specification into a contract based on the NEC conditions of contract.

Architectural Practitioner:

The Architectural Practitioners are responsible to review the completed contract to ensure that this Technical Specification has been incorporated correctly.

Project Manager:

The project manager is responsible for facilitating and ensuring continuous coordination and management of the requirements during the design development, execution phase and closing out of the project.

Facilities Manager:

The facilities manager is responsible for ensuring continuous sustainable performance of facilities. During construction phase he/she ensures that there are smooth interactions with tenants and stakeholders where required.

Contractor:

The contractor's responsibility is to build the project according to the contract documentation within the required cost and time budgets and the specified standards.

The Contractor will play the role of the design authority ensuring the following:

- The design satisfies the design requirements.
- All relevant Eskom design standards, procedures and guidelines have been adhered to.
- The design is suitable and correct calculations, philosophy, functionality, etc. have been applied.
- The design is integrated by identifying all interfaces with other packages/plant systems/assets and ensuring that these interfaces are catered for.

Eskom Engineering

Eskom Engineering will play the role of architect engineer and ensure that:

- The design satisfies the stakeholder requirements (i.e., validation of design deliverables against stakeholder requirements);
- The design is integrated by identifying all interfaces with other packages/plant systems/ assets and ensuring that these interfaces are catered for;
- Foreseen technical risks are identified and addressed/challenged with the Design Authority
- General technical oversight is provided over the design.

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2.5 PROCESS FOR MONITORING

The design aspects will be monitored by conducting end of phase design reviews as described in the Eskom design review procedure [20]

2.6 RELATED/SUPPORTING DOCUMENTS

None.

3. ENGINEERING AND THE *CONTRACTOR'S* DESIGN

3.1 DESCRIPTION OF THE *WORKS*

3.1.1 Executive overview

This Project upgrades the perimeter security of the Eskom Megawatt Park campus. Which entails the following:

- Replacement of the Outer Barrier.
- Installation New None Lethal Energized Electric Fence.
- Installation of New Lighting Design.
- Installation of New Camera System.
- Upgrading of the Main and Western Gates.
- Upgrading of the Emergency (Bus) Gate.
- Refurbishment of the Patrol Roads.

The outline of the scope is further detailed within the Employers requirements.

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

The *works* is intended to provide a complete security solution for the perimeter of the Eskom Megawatt Park Campus

3.1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
AFC	Approved for construction
ERE	Eskom Real Estate
MWP	Megawatt Park
OBL	Outside battery limits

3.1.4 Existing System

MWP consists of three entrances/exit gates: Main, western and the emergency gate. The perimeter fence is approximately 4.2km long with approximately 162 light poles. The perimeter

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fence consists of an outer steel and face brick palisade barrier, climb detection system and outer non-lethal electric fence. Internal to the perimeter fence is a patrol road.

3.2 MANAGEMENT AND START UP.

3.2.1 *Management* meetings

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:
Risk register	Weekly	Eskom Megawatt Park	Employer, Contractor, Supervisor, and Designing team
Overall contract progress and feedback	Weekly	Eskom Megawatt Park	*Employer*, *Contractor*, *Supervisor*, and Designing team
Compensation events	When required	Eskom Megawatt Park	*Employer*, *Contractor*, *Supervisor*, and Designing team
Look ahead schedule etc	Fortnightly	Eskom Megawatt Park	Employer, Contractor, Supervisor, and Designing team

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*. Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register 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.

3.2.2 Documentation control

All documents supplied by the *Contractor* are subject to Eskom's acceptance. The language of all documentation is English.

The *Contractor* includes the *Employer's* drawing number in the drawing title block. This requirement only applies to design drawings developed by the *Contractor* and *Subcontractors*.

Drawing numbers are assigned by the *Employer* as drawings are developed.

The *Contractor* complies a Master Document List (MDL) which contains a list of all documents issued for review, document number, document title, transmittal number, date of submission, overall document review status. The MDL is a live document, the contractor issues an updated MDL within the progress report to the *Project Manager*

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3.2.3 Health and *safety* risk management

The *Contractor* shall comply with the health and safety requirements contained in Annexure for health and safety to this Works Information.

3.2.4 Environmental *constraints* and management

The *Contractor* shall comply with the environmental criteria and constraints stated

3.2.5 Quality *assurance* requirements

The *Contractor* complies to the following documents when working at/rendering a service to Eskom but not limited to the following:

i. 240-12248652 - List of Tender Returnable/Quality Requirement Document

ii. 240-68099512 - FORM A: Tender & Contract Quality Requirements for QM 58 and Quality Requirements for ISO 9001 Standard

iii. 240-105658000 (QM 58)- Supplier Quality Management: Specification

iv. 240-109253698- Contract Quality Plan (CQP)

v. 240-109253302- Quality Control Plan (QCP)/ Inspection and Test Plan (ITP)

After the acceptance of the construction drawings the *contractor* submits the associated construction Method Statements and relevant QCP/ITP for acceptance and determination of intervention points prior to construction.

Failure to comply with an accepted Method Statement/QCP or ITP may result the issuing of a NCR, rejection of the works as well as the withholding of payment until the appropriate remedial actions have occurred.

1. The *Contractor* demonstrates, provide and maintains a Quality Management System that is ISO 9001:2015 certified or compliant thereto. Compliance with the provisions of this clause in no way relieves the *Contractor* of the final responsibility to furnish an acceptable product and/or services.

2. The *Contractor* agrees to control and professionally preserve and store appropriate documents, records, and recordings for a period of at least 3 years after termination of the agreement to guarantee the traceability of the services rendered and inspection thereof.

3. The *Contractor* agrees to regularly update and implement all the latest technology available as well as the necessary improvements for the installation, production and organisation deemed necessary to meet the requirements of the agreement and to enhance all system capabilities and effectiveness to deliver high quality, cost-effective services.

4. The delivered product and / or services shall be uniform in Quality and condition, sound and free from defects or external copyright or intellectual property rights, consistent with good industry practices and adhere to requested Eskom requirements, without deviation.

5. Eskom shall have the right to conduct surveys and perform surveillance of the *Contractor's* and/or *Sub-Contractor* facilities to evaluate their capability to comply with the requirements necessary to conform to contractual requirements.

6. Eskom reserves the right to inspect, at reasonable times, any or all the *work* included in the Works Information at the *Contractor's* or *Sub-Contractor's* premises or elsewhere. Verification by Eskom shall not absolve the *Contractor* of the responsibility to provide acceptable product and / or services, nor shall it preclude subsequent rejection by Eskom.

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7. The services must comply with the agreed specifications and the applicable directives and technical standards set out in the contract and annexures. Defects notified by Eskom shall be remedied by the Contractor upon demand by Eskom without undue delay and at no extra cost. The Contractor shall continuously monitor and identify non-conformances, both internal and external, as signals of opportunities for improvement making process and other relevant changes to prevent recurrence.

8. The *Contractor* shall further identify potential problems before they occur by identifying deviations in patterns or trends in product, service or process performance.

9. Nothing contained in the contract and/or scope of work and /or works information shall relieve in any way the Contractor from the obligation of quality control thereof.

10. The *Contractor* guarantees that the quantity, quality and outward appearance of the delivered Product / services comply with the requirements of the contract and/or relevant specifications.

11. The *Contractor* shall, on request, prove its ability to relate to the proposed scope of work which establishes the way the Contractor intends to perform the Contract.

12. The *Contractor* shall, on request, prove its organisational, logistics and support resources to ensure the requirements of the contract can and will be achieved.

13. Eskom reserves the right to assess and measure, during the existence of the agreement, the qualifications, capability and competence of the key staff (assigned personnel) in relation to the scope of work and to interview any / all Contractors to confirm the Quality evaluation.

14. The professional personnel who will be conducting the service will be available on a continuous basis until the conclusion of the project.

15. The *Contractor* shall demonstrate experience in comparable projects or specific aspects of the project and / or performance in similar projects, on request.

16. The Quality of the service / product and the contents thereof will always be in accordance with professional standards.

17. For the duration of the Contract, the professional staff rendering the service / product, must be and remain a member of his/her Professional Society (where available/applicable)

18. The *Contractor* must, at all relevant times, scrutinise and be aware of Eskom's requirements with specific focus on, inter alia, its philosophy , principles , strategies , practises , mission , vision , models, policies and practises.

19. It is the *Contractor's* obligation to ensure that their operations and the products and services it provides to Eskom comply with any applicable statutes and or regulations. Any non-compliance by the Contractor and the resultant corrective actions shall be the responsibility of the Contractor.

20. The *Contractor* shall ensure that he complies with the works information and that appropriate quality requirements (as in the main contract) are included in subcontracts placed by Contractors to ensure subcontractor's compliance with the works Information.

21. The *Contractor* shall execute the Works in accordance with Eskom's Quality requirements set out in QM 58 document: Supplier Contract Quality Requirements Specification.

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3.2.6 Programming constraints

A programme showing the key activities is to be submitted with the tender documents or once appointed within two weeks. The *Contractor* submits a single integrated programme that incorporates all the work to be performed including that of his Sub*contractor*s.

The interfaces between Sub*contractor*s as well as the interfaces between Sub*contractor*s and the *Contractor* are clearly identified.

Project key dates are incorporated into the programme.

All critical path items are indicated and outlined on the programme.

The order and timing of operations which the Contractor plans to provide the works. Strict adherence to the programme will be monitored and updated on fortnightly basis to achieve the completion dates and submitted to Eskom Project Co-ordinator. Non-conformance to the stated programme will be liable for delay damages. Any deviations on time and cost are subject to Eskom approval.

The *Contractor* provides the Project Programme in Microsoft Projects Format to the level 3 detail. The programme is to be updated weekly and submitted to the *Project Manager* for review.

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

The *Contractor* provides the *Employer* with a detailed organogram of all staff and management on the contract, showing their lines of authority / communication, within two weeks of contract award. This is revised monthly and reflects any changes to the staff and management structure. The *Employer* reserves the right to audit and verify the structure. The *Contractor* has a full-time Safety and Health Officers onsite.

3.2.8 Invoicing and *payment*

Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Project Manager's* payment certificate.

The *Contractor* shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project Manager;*
- The contract number and title;
- *Contractor*'s VAT registration number;
- The *Employer*'s VAT registration number 4740101508;
- Description of service provided for each item invoiced based on the Price List;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

Add procedures for invoice submission and payment (e. g. electronic payment instructions)

3.2.9 Insurance *provided* by the *Employer*

Contractor familiarises themselves with the Eskom Insurance Format A as provided in the Contract Data and make provision for all items that they are liable for.

3.2.10 Contract *change* management

The *Employer* instructs changes to the scope at any time, each instruction sets out the change and the date on which it becomes effective; and is issued to the *Contractor* in writing to be valid.

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3.2.11 Provision of *bonds* and guarantees

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.

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.

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

N/A

3.2.13 Training *workshops* and technology transfer

Contractor shall provide training to Eskom's technical team on how the installed equipment and systems must be operated. This training must be recorded.

3.3 *ENGINEERING AND THE CONTRACTOR'S DESIGN*

3.3.1 *Employer*'s design

The *works* entails the upgrading of the perimeter security for the Eskom Megawatt Park campus. Which entails the following including the scope detailed within the following section (*Contractor's* design):

- Replace of the Outer Barrier:
  - The replacement of the outer barrier where a vehicle collision had occurred.
  - The construction of a new outer barrier to close off the existing bus gate and ensure the uniform continuation of the composite high security system.
  - Assessment of the Existing outer barrier to identify potential security risks.
  - The *Contractor* removes all existing steel palisade panels and installs a new high security system, the details for which are included within the Civil Design Scope 3.3.2.1.
  - Prevents vegetation growth between outer barrier and electric fence.
  - Ensure the outer barrier is a uniform minimum 3m height from NGL on the outside
- Installation of the New Non-Lethal Energized Electric Fence:
  - The installation of a new non-lethal energized perimeter fence system and associated infrastructure (includes and not limited to, new structural supports, new electrical supply, energisers, and new zones), in accordance with the Eskom Security and electrical requirements (240-78980848).
  - At the Main and Western gates, the Electric Fence begins and terminates at relevant gates (from the perimeter line of the spike and boom) ensuring a complete electrical barrier throughout MWP.

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- The electric fence controller unit will via the energizer alarm output trigger the security lights covering that zone.
- The zones shall be designed such that the failure of an energiser shall not result in any single zone being unprotected.
- Each zone shall be no more than 100m measured along the fence line.
- The Electric Fence has a speaker system with the functionality that during an intruder detection at a specific zone, either an alarm is sounded, or communication is broadcast from the security control room to the impacted zone.
- Assess the integrity of the Earthing and provide the certificate of competency in accordance with 240-56356396.
- Installation of access points (gates) at every zone within the electric fence to allow the maintenance of the outer barrier, when closed the gate needs to act as part of the electric fence.
- The design of the new electric fence makes consideration of false alarms triggered from vegetation overgrowth as well as cutting of cables during grass cutting.
- Installation of a new Electrical Ring Supply along the fence for all the electrical requirements for the perimeter security (Fence, cameras, lights, and motors)
- The decommission and removal of the existing system including the climb detection.
- Replace three mini substations feeding the Fence with 11/0.4kv 500kVA prefabricated mini substations.

- Installation of New Lighting Design:
  - The *Contractor* installs Energy Efficient Perimeter lighting, in accordance with the Eskom Security Lighting (240-139282493) and Electrical Standard.
  - Lights to be zoned as per the new electric fence and camera zones.
  - The installed lighting system has the capability of either being constantly on or lighting up specific zones in the event of intruders and to assist security.
  - The Lighting design at the entrances accommodates vehicle searches by security personnel.
  - Ensure the perimeter lighting poles are spaced to meet the required lux distribution and positioned to allow for the future construction of the third tier.
- Installation of New Cameras:
  - The *Contractor* designs the Perimeter camera system in line with 240-91190304, the cameras are mounted on the light masts at a minimum spacing of 60m apart. The camera arrangement ensures clear identification.
  - The *Contractor* installs cameras at all three gates (Main, Western and Emergency (Bus)) and along the perimeter that are linked to the security monitoring system.
  - The cameras have the functionality of intruder detection to alert security of a possible events in a particular zone as well as illuminate that area.
  - The Cameras are designed to be installed on the perimeter lighting poles. Based on the capability of the proposed cameras, the spacing between cameras is determined by the *Contractor's* design.
- Security System:

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- The *Contractor* installs a ring communication network, focusing specifically on the performance, security, and conformance to basic internet protocol connectivity, around the perimeter.
- The ring network is then daisy chained through a redundant dual network system linked to the MWP Security control room situated in the basement of the building.
- All security solutions and equipment are designed to interface with the existing MWP security monitoring systems
- All statutory signage, network equipment, power supplies, surge protection and peripherals form part of the *Contractor's* scope for design, supply, and installation.
- The *Contractor* installs a back-up solution in a form of portable battery units to ensure the perimeter camera identification and detection systems remain functional in the event of a power outage with adequate capacity to supply until the changeover to the site generators supply is established.

- Upgrading of the Main and Western Gates:
  - The Contractor removes and installs new spike and boom systems with battery backup during the changeover to generator power. The equipment installed has a daily cycle limited suitable to the security operations and traffic flows of the megawatt campus (approximately 4500 cars per day).
  - The interlocking boom gates with spikes are designed to prevent unauthorised persons or vehicles from tailgating.
  - All Entrance lanes consist of a single spike and boom combination, with the spikes positioned to limit bi-directional intrusion. The spikes are flush mounted.
  - All Exit lanes consist of an interlocking spike and boom system (Sally Port) with the spikes positioned to limit bi-directional intrusion. The spikes are flush mounted.
  - At the truck lanes a single spike and boom system is installed that is compatible with heavy vehicle loads as well as has the capability of being disabled by security.
  - The Lighting and camera design accommodates vehicle searches by security personnel within the lanes.
  - At the western gate, the Contractor repairs the existing sliding gates and tracks and installs new motors that are compatible to the gates of this size and weight.
- Creation of the new Emergency (Bus) Gate:
  - The Contractor installs new 2 x 2.5m (length) swing gates that are in line with the outer barrier and has a minimum height of 3m.
  - The Contractor installs a sliding gate that is in line with the electric fence and continues the electric barrier across the emergency gate. The Gate has an electrically isolated handle to allow for manual operation
  - The swing gates installed are motorize ready.
  - The Lighting and camera design accommodates normal surveillance at the gate.
  - The electrical infrastructure (lighting, sockets within the guardhouse and electric motor) at the gate is upgraded to meet the electrical requirements at and around the emergency gate.
- Refurbishment of the Patrol Roads
  - The Contractor creates a suitable patrol road which is next to the electric fence (and the future inner third tier)

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- The patrol road is a “dirt road” in accordance with the existing patrol road.
- The Contractor creates culvert crossings at the points where the existing stormwater crosses the boundary wall.
- The Contractor creates a stormwater crossing at the emergency gate to allow for the easy of security vehicles to cross over the road while monitoring the site boundary.

- Refurbishment and relocation of electrical infrastructure:
  - Replace the existing Parking mini-substation with 500kVA mini-substation and install the new mini-substation 1km towards the West Gate, as indicated on drawing number 0.50/45006 sheet 1 rev 0.
  - Replace and relocated the Bus Depot mini substation with 500kVA mini substation.
  - Replace the Sports-Field mini substation with 500kVA mini substation.
  - Creation of Electric ring supply for the perimeter fence infrastructure
  - Replacement of the East and West Horticulture Minisubs
  - Provision of electrical supply to the emergency gate for lighting, power sockets within the security guard house, motors for sliding gate and boom gate, and security cameras. The electrical supply to emergency gate is from Kiosk number 2 which shall be upgraded. Alternatively new electrical supply shall be sourced from the parking mini sub via new electrical kiosk which shall be installed in the vicinity of emergency gate.

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

The *contractor’s works* includes the Scope listed within the *Employer’s* design and what is listed within this section.

3.3.2.1 Civil Design Scope

The *Contractor*’s Engineer develops an inception report which includes and not limited to a list of the required site investigations, proposed layouts and proposed concepts. Once this is accepted the Contractor may begin with the development of the detailed design and construction drawings.

The Civil *works* consists of:

3.3.2.1.1 Outer Barrier

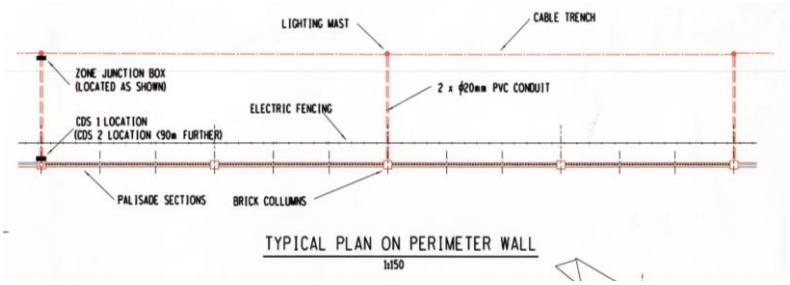
The existing outer barrier consists of:

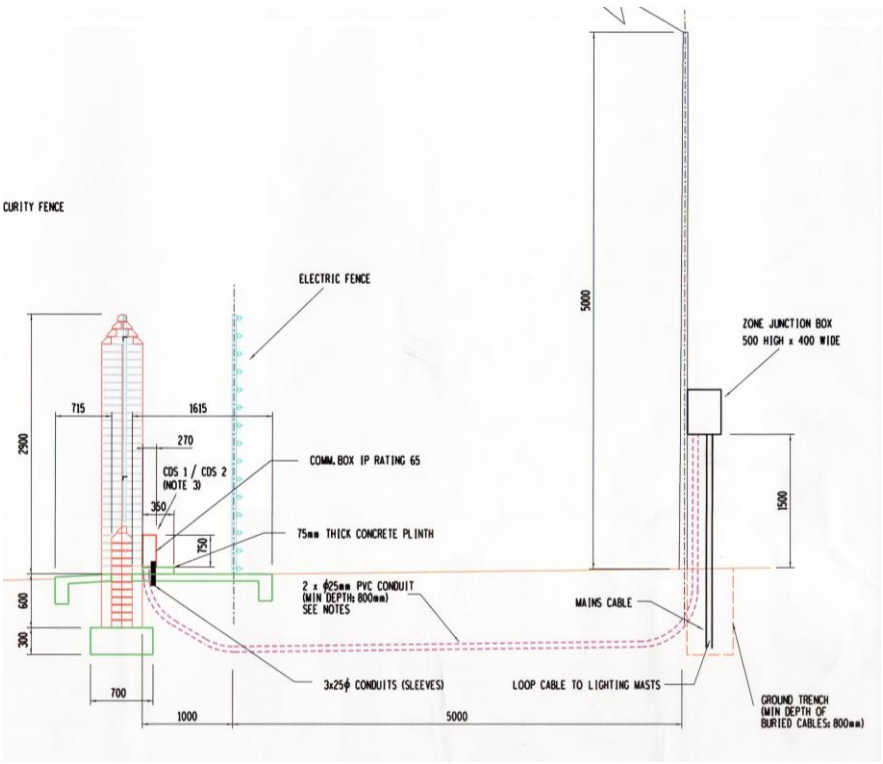
- face brick/ steel palisade wall
- height of minimum 2.4m above NGL (2.9m for the brick piers/columns) and including strip footing minimum 0.9m below NGL (anti-tunnelling)
- 75mm thick apron slab extending 715mm outwards and 1615mm inwards with ground beams (Anti-tunnelling and stormwater and vegetation control), as indicated in the following figure.

Drawing 0.50/45006 Sheet 1 Indicates a cross section of the wall. Image below is an extract of the drawing.

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The *works* consists of constructing a new composite outer barrier closing the bus road. As shown in the image below.



The *Contractor* designs and implements the stormwater management required from closure of the gate.

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The *Contractor* ensures the new wall is tied into the existing wall and associated systems (anti-tunnelling, stormwater, and vegetation control), ensuring a uniform security barrier.

The *Contractor* conducts a land survey to ensure the proposed wall route is no impacting existing waterways, conducts Site clearance, stabilising and grading to ensure a uniform transition for the wall.

Where applicable the contractor repair, designs and constructs erosion control measures

The *Contractor* designs to withstand heavy rainfall events as well as possible soil erosion effects.

The concrete strength for the wall foundations is 25 MPa.

The *Contractor* repairs the panels of the outer barrier that were damaged by the vehicle collision.

The *Contractor* shall repair and reinstate all blocked or damaged weep holes to ensure proper drainage and prevent excessive hydrostatic pressure buildup behind the wall, thereby reducing the risk of wall failure or toppling during periods of heavy rainfall.

The *Contractor* removes all the steel palisade panels along the outer perimeter and replaces it with a high security barrier. The *Contractor* maintains the security integrity of the MWP perimeter whilst conducting the *works.*

The panels are to be installed within the face brick piers/columns. The new panel ensure an outer barrier height of minimum 3m above ground.

The *Contractor* uses the existing steel columns and installs additional structural steel columns to support the panels were needed. The repair and corrosion protection of the existing columns consists of but not limited to:

- mechanically removing all previous paint and corrosion.
- applying an appropriate high-quality polymer based waterborne rust converter;
- applying a waterborne, anti-corrosive primer for mild and galvanised steel;
- apply an appropriate topcoat with a colour to match the new panels;
- all paints are submitted to the *Project Manager* prior to application and applied according to the manufacture's specifications.

The high security barrier has the following features as a minimum:

- High Transparency
- Flush panel post finish
- Concealed internal Fixtures, anti-tamper bolts
- Difficult to cut, locking recess, anti-scale inserts
- High durability all weather coating (Black)
- Topping that will prevent climbing as well as be aesthetically appealing
- Minimum 25-year maintenance free life span
- Category 3 fencing system, suitable for National Key Points perimeter specifications

3.3.2.1.2 Supports for the Electric Fence and Camera/Lighting Poles

The Supports for the electric fence are approximately 1 m from the face of the inner brick column face and embedded into the ground, prior to the pouring of the inner apron slab. The *Contractor* sizes the supports in accordance with SANS. The supports are to be corrosion protected.

The *Contractor* installs corrosion protected poles for the installation of the cameras and light fixtures at the "new outer barrier route". The poles are to be installed as per the existing design

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(5 m inwards from the electric fence), the poles are to be spaced at 20 m apart. The concrete strength for the pole foundations is 25 MPa.

3.3.2.1.3 Perimeter road

The *Contractor* ensures a security perimeter Patrol road, to allow the security staff to monitor the fence.

The figure below indicated the stormwater crossings along the boundary.



The *Contractor* designs a pipe chamber that connects the 2 discharge pipes and directs the stormwater off site.

At both stormwater pipe crossings, the *Contractor* designs and constructs culverts to allow the continuation of the patrol road near to the fence. The Culvert is sized and designed as a single lane crossing for the security patrol vehicle.

The *Contractor* provides a crossing over the stormwater channel at the emergency gate so that the patrol road remains near the fence line.

3.3.2.1.4 Emergency Gate (New Bus Gate)

The swing and sliding gates that are installed at this gate are corrosion protected with a duplex system, with the colour to match the new fencing.

The Gates are constructed of S355JR grade steel with runner and wheels that allow for easy operation (Minimum wheel size of 100mm).

Sweepers are included on the sliding gates.

The *Contractor* modifies the vehicle lanes to prevent tailgating. SANS 2220 and ISO/IEC 27001:2022 Annex A.7.2 – Physical Entry Controls: Secure areas shall be protected by appropriate entry controls and access points to prevent unauthorized access, including measures to deter and detect tailgating.

3.3.2.1.5 Main Entrance

The *Contractor* modifies the heavy vehicle lane and installs a speed bump to prevent unauthorized access from persons crawling under the gate.

The Contractor modifies the vehicle lanes to prevent tailgating. SANS 2220 and ISO/IEC 27001:2022 Annex A.7.2 – Physical Entry Controls: Secure areas shall be protected by

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appropriate entry controls and access points to prevent unauthorized access, including measures to deter and detect tailgating.

3.3.2.1.6 Western Entrance

The *Contractor* repairs the existing sliding gates by means of replacing the track with a smoother heavy-duty profile, replacing the gate wheels with bigger heavy-duty wheels (minimum 100mm) and installing new motors that are compatible to the gates of this size and weight.

The Contractor modifies the vehicle lanes to prevent tailgating. SANS 2220 and ISO/IEC 27001:2022 Annex A.7.2 – Physical Entry Controls: Secure areas shall be protected by appropriate entry controls and access points to prevent unauthorized access, including measures to deter and detect tailgating.

The sliding gates is corrosion protected and painted to match existing by:

- mechanically removing all previous paint and corrosion.
- applying an appropriate high-quality polymer based waterborne rust converter.
- applying a waterborne, anti-corrosive primer for mild and galvanised steel.
- apply an appropriate topcoat with a colour to match existing.
- all paints are submitted to the *Project Manager* prior to application and applied according to the manufacture's specifications.

3.3.2.2 Electrical Design Scope

The Electrical design complies with SANS 10142, Eskom Specification for NLEPDS for Protection of Eskom Installations & its Subsidiaries (240-78980848), 240-91190304 Specification for CCTV Surveillance with Intruder Detection and SANS standards, Eskom Security Lighting (240-139282493). All fencing wire shall comply with SANS 675 and are to be wired to the sides of posts to prevent the wires from being displaced or becoming loose.

The *Contractor* of the whole Electrical scope of works is Electrical and is registered with Private Security Industry Regulator Authority (PSIRA). Valid proof of registration to be submitted. In case the *Contractor* is not in possession of the Private Security Industry Regulator Authority (PSIRA), sub-contracting of the security services by the *Contractor* is allowed.

The *Contractor* is registered with the Department of Labour as an Electrical Contractor.

Contractor provides valid ECSA Certificate and CVs for a Professionally Registered Electrical Engineer or Technologist who will be responsible for the Electrical Designs or Site Supervisor with Electrical Trade Test Certificate including 1 x Electrical Artisan with at least NQF level 4 Qualification. All electrical resources shall have minimum of 10 years relevant work experience.

3.3.2.2.1 Electric Fence

The Electric Fence Installer is an accredited Electric Fence System Installer (EFSI)

- Detection system

The *Contractor* to design the perimeter detection system such that it is divided into 20 alarm zones.

- Energizers

The *Contractor's* design of the energizers and protection zones to ensure full perimeter coverage during individual energizers failures. Provide 10 energisers for 20 alarm zones.

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The *Contractor's* to design the energiser system to multiple single-zone energizers can be wired as a group. Energizers to synchronize pulses and become a multi zone group.

Energisers must comply with safety criteria as stipulated in IEC 60335-2-76:2006.

- Posts

The posts shall be designed in compliance with 240-76368574 High Security Mesh Fencing. And Earthing connection points to be available on all posts.

Assess the existing lighting poles for reuse and provide a detailed assessment report for review by the Employer. The Contractor to plan for supply and installation of new lighting poles as the worst-case scenario.

Assess the existing power cables for lighting for reuse and provide a detailed assessment report for review by the Employer. Contractor shall provide provision for installation of new cables.

Install new insulator holders, fireproof insulators and 50mm stays.

All posts and stays are hot dip galvanized in accordance with ISO 1461-1999 after manufacture and bedded in concrete footings size 600 x 600 x 600mm deep, at a maximum of 100m centres.

- Earthing and Lighting protection

The fence shall be protected to safeguard the electronic equipment from lightning damage. Earthing and Lightning Protection For the earthing and lightning protection works, the *Contractor* is required construct new earthing as per 240-78980848 Specification for NLEPDS for Protection of Eskom Installations and Its Subsidiaries. Provide all equipment and components required. Certificate of Compliance issued by a Registered Person certifying that the fence meets the requirements of SANS 10222-3:2016. 3. SANS 10142

3.3.2.2.2 Perimeter Supply

The Electrical *Contractor* is to design the systems within these scopes to interface with the following:

1. Perimeter protection, detection and lighting interfaces to the CCTV systems and control
2. Alarm interfacing to CCTV and Perimeter protection system.
3. Any integration connection terminations required between the energised fence and electronic access control.

- Power Supply

1. With reference to drawing number 0.50/2001, existing Vistors Parking mini substation has been decommissioned, isolated from the 11kV ring and scrapped. The Contractor shall be responsible for procuring new 500kVA mini substation to replace the decommissioned Visitors Parking mini substation in accordance with SANS 10142 and issue electrical CoC once the new mini substation has been connected on the 11kV ring and commissioned. Replace the 11kV cable with new 3 core armoured type of XLPE type (estimated length to the new proposed location is 1000m X 6, 150 mm2). Contractor shall reroute and join with PVC/PVC/SWA, armoured cable if necessary all the temporary LV cables which are currently feeding from block A and block B main LV Boards on the north west and south west respectively for the following loads (Vodacom Tower, Guardhouse, and street lights. . The new mini substation to be installed 1km towards West Gate near the Helipad Kiosk. The Contractor to design the new mini substation with 40A circuit breaker to feed DB/P.G4 and 100A circuit breaker, 50A feeding kiosk no 7, 20A circuit breaker, 200A to feed Kiosk no 6. The utility and cable location scans need to be conducted before the installation.
2. Replace Bus Depot and Sports Field mini substations including their sub-distribution boards, with new 500kVA, test for re-use of the 11kV power cabling, replace all LV cabling

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with PVC/PVC/SWA, armoured type supplying the loads. The utility and cable location scans need to be conducted before the installation.

3. The Contractor shall provide the type testing certificates of mini substations in compliance with SANS testing standards.
4. The Bus Depot Mini Sub is equipped with Traffic light 50A circuit breaker and Incomer isolator
5. Sports Field is equipped with main isolator 60A, 20A X 3 circuit breakers feeding the sports field loads. The Contractor to design the new mini substation equipped with new circuit breakers, isolator with new compliant circuit breakers in accordance with SANS10142 and issue CoC.
6. The Contractor shall replace all electrical kiosk including Distribution Boards which are fed directly from the Mini Substation forming part of replacement scope.
7. Bus gate Kiosk is equipped with 40 A Main Circuit breaker, 3 X 10A Circuit breakers, 15 A Circuit breaker, 20A Circuit breaker, 63A Load Isolator. Bus guard house is equipped with sub-distribution box feeding 2 Fluorescent Light fittings and two plugs. Contractor shall refurbish the bus guard and replace existing sub-distribution, plugs and exiting lights with LEDs in compliance compliant with SANS 10142 and issue a CoC. The utility and cable location scans need to be conducted before the installation.
8. Replace the Helipad Kiosk with new in compliance with SANS 10124 and issuing of the CoC. The existing Helipad was fed from the Visitors parking mini substation. The Kiosk is equipped with 15 X 15A circuit breakers, 63A Earth leakage circuit breaker, and 60A main circuit breaker. The utility and cable location scans need to be conducted before the installation.
9. The existing 11kV ring power cabling: 3 X 150 mm2 3 core Cu Fepex is forming a ring feed for Bus Depot, Sports Field mini substations. Replace the 11kV cabling with armoured type of XLPE type and replace all LV cabling with PVC/PVC/SWA, armoured type supplying the loads.
10. The existing low voltage power cable from Sports Field Deport, Bus Depot and Parking Mini Substation to the nearest junction box is 2.5mm2 Cu PVC/PVC/SWA with estimated length 200m and 500m respectively as indicated on drawing number 0.50/45006 sheet 1. Replace the 11kV cabling with armoured type of XLPE type and replace all LV cabling with PVC/PVC/SWA, armoured type supplying the loads.

- **Power cabling**

The *Electrical Contractor* supply, installation, testing, commissioning, and handover of the following:

- Cable designs as per *Contractors* designs. The *Contractor* to conduct load calculations before installation and submit to *Employer* for acceptance. This helps in preventing oversizing/under sizing of the cables. Assess the existing lighting poles and cable for reuse.
- All underground cables to be installed with cable sleeves.
- Underground cabling and copper earth conductors with plastic cable warnings and necessary accessories for termination purposes.
- Cable Route Markers.

The *Contractor* provides the routes for power cabling, provide 16A X 3 circuit breakers, 6mm2 X 4.2km (4.2km long to supply approximately 162 light poles), compiles the cable schedules

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and cable block diagrams, supplies, and installs the cables, sleeves, labels them, test the cables, completes the quality documentation and issues to the Project Manager for acceptance.

The *Contractor* conducts cable tests as per 240-56227443 - Requirements for Control and Power Cables for Power Stations Standard, section 3.8.

The *Contractor* provides the *Project Manager* with the additional power requirements within 30 days after award of the contract. The *Contractor* provides an industrial grade 8-port POE/POE+ switch with 2 fibre ports at each of the equipment kiosks along the inner fence. The switch shall be supplied complete with the recommended power supply and all cabling.

Where armoured cables are buried, a 40mm layer of lightly rammed soft screening earth or sand shall be placed on the bottom of the trench and the cables shall be covered with a min of 80mm of lightly rammed soft screened earth or sand. *Drawing number: 0.50/45006 sheet 1&2.*

The trench shall then be backfield with the excavated earth. Where required, plastic marker tape shall be laid in the trenches to warn against digging up of the buried pipes.

Climb Detection System 1 Contents: Power supply battery back-up, Fibre-RS485 converter and lighting controller module located fixed to wall pillars @ less than 180m centres.

Climb Detection System 2 Contents: Power Supply Battery Back-up, Fiber-RS485 Converter Located fixed to wall pillars @ less than 180m centres.

At road crossings, 3X100ø Sleeve pipe required. (South Gate & West Gates)

Sports Field Substation (SFS) power cable (approximately 200m) to the nearest junction box (C3Z1). *Drawing number: 0.50/45006 sheet 1&2*. Replace the power cable supplying fence junction box with new PVC/PVC/SWA 3core power cable.

Bus Depot Substation (BDS) power cable (approximately 200m) to the nearest junction box (C2Z3). *Drawing number: 0.50/45006 sheet 1&2.* Replace the power cable supplying fence junction box with new PVC/PVC/SWA 3core power cable.

Parking Lot Substation (PS) power cable (approximately 500m) to the nearest junction box (C1Z1). *Drawing number: 0.50/45006 sheet 1&2.* Replace the power cable supplying fence junction box with new PVC/PVC/SWA 3core power cable.

- **Motors**

The *Contractor* to size the electric motor/s for the sliding gates (as per existing Gates designs), power cables and a dedicated power Kiosk fed from the mini substation.
The *Contractor* to assess the West gate and size the electric motor/s of the West gate base on the existing gate.
The sliding gate shall be operated by means of an electrically controlled industrial type gate motor/s.

The *Contractor* to connect and terminate the power cables to the Kiosk located 100m from the Emergency Bus Gate.

All Earthing connection points to form part of the pillar. Motorized gates are to be earthed in the open and closed position.

3.3.2.2.3 Commissioning and Testing

- The *Contractor* shall thoroughly test the system to ensure that it meets the SANS 10222-3 code of practice and is operating correctly to the manufacturer's specifications.
- The type tests certificates to be supplied by the *Contractor* prior to design freeze phase.
- The motor to comply with 240-57617975 New Low Voltage Motors Procurement Standard.

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- The *Contractor* shall issue an Electric Fence System Certificate of Compliance, issued by an accredited person for the installation of the energised fence.
- Measurements shall be undertaken by the *Contractor* and supplied in the final handover document.
- These measurements shall include the following:
  - Pulse rate,
  - Pulse width (500-ohm load),
  - Voltage (no load, return point to ground, per zone),
  - Energy (500-ohm load, return point, per zone),

The *Contractor* shall design, supply, install, test, commission, and handover the following works:

- Low Voltage reticulation ring is made up of Main Kiosks as per Contractor's design reviewed and accepted by the Employer.
- The electrical kiosks shall be IP65 rated and be constructed in compliance to SANS 10142-1 and 240-56227516: LV Switchgear and Control Gear Assemblies and Associated Equipment for Voltage up to and including 1000V AC and 1500V DC Standard.
- Wiring, Trunking and Labels shall comply with requirements specified in Eskom Specification for NLEPDS for Protection of Eskom Installations & its Subsidiaries (240-78980848).
- All wiring shall be carried out in general-purpose 600/1000 V SANS approved multi-strand PVC wire.
- The design of Junction Boxes shall comply to clause 5.1.1 of SANS 10142-1, which states that:
  - It shall not be possible to touch any live part within arm's reach with the standard finger test. During normal operation, or when a cover is removed unless the cover is removed with the use of a tool or a key.
- **Kiosks and junction boxes**

The *Contractor* is to design the following items for the power supply ring to the different junction boxes as per *Contractor* design:

- Kiosks for housing the electrical protection components and POE's as per Contractor's design in accordance with Eskom Specification for NLEPDS for Protection of Eskom Installations & its Subsidiaries (240-78980848)
- Energizers X 10 for 20 Zones Perimeter fence.

3.3.2.2.4 Method Statements

The *Contractor* shall provide detailed method statements on how he intends to carry out the works; this shall apply to all, and any part of the works as provided in the conditions of contract. Method Statements shall be provided for:

- All activities associated with the erection of all fence types, and access control features.
- All activities associated with the installation and commissioning energised fence and perimeter detection systems.
- All activities associated with the installation and commissioning of lighting.

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3.3.2.2.5 Designs

- Non-Lethal Energised Perimeter Detection Functional Design Specification/ System Design Report:

- The tenderer is required to produce and submit a Functional Specification and a System Design Report, as part of his tender submission.
- The Functional Specification details Eskom's functional requirements in the context of the product that is offered by the Tenderer.
- The System Design Report documents the design that has been developed to meet the requirements as specified in the Functional Specification and the scope of work document.

Functional Design Specification and System Design Report shall cover the functional and interconnection details of system components below in line with the standard for NLEPDS system and the scope of work document.

- Electric fence conductors
- Power supply
- Configuration PC / Controller
- User interface / Display unit
- Synchronising equipment/mechanism
- Relay cards
- Communication infrastructure
- Energizer(s)
- Integration designs

3.3.2.2.6 Interface

The *Contractor* is to design the systems within these scopes to interface with the following:

- Perimeter protection, detection and lighting interfaces to the CCTV systems and the security Control.
- Alarm interfacing to CCTV, security Control and Perimeter protection system.
- Any integration connection terminations required between the energised fence and electronic access control.

3.3.2.2.7 Drawings and Documentation

The *Contractor* to provide “As built” pdf drawings, native drawings and components specification/ data sheets. The *Contractor* is required to include Factory Acceptance Test results in all relevant design handover packs.

Before a Certificate of Completion will be issued, all as-built data and drawings (e.g. final surface levels etc.) must be provided to the Project Manager on completion of the Permanent Works. The data shall be provided both in electronic and hard copies format and shall be delivered for acceptance before a Certificate of Completion is issued. Any information in the possession of the *Contractor* which is required under this contract shall be supplied timeously to the Supervisor on a regular basis.

After *Employer’s* acceptance of the design documents, the *Contractor* shall procure equipment, material and performs production, assembly, installation and commissioning.

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3.3.2.2.8 Tests

The *Contractor* shall arrange and conduct the Factory Acceptance Tests (FATs) for the *Employer* to witness and evaluate. The *Contractor* installs systems and equipment on site, in accordance with *Employer's* master programme to which the *Contractor* align his own program and schedule.

The *Contractor* performs Site Integration Test.

The *Contractor* completes hand over certification with the Employer.

The *Contractor* is required to include all technical information in all relevant design handover packs. In addition, the *Contractor* is to include all construction and erection documents of all relevant design handover packs.

The *Contractor* shall complete Quality Control Plans (QCPs) and Inspections and Test Plans (ITPs) (at a check sheet level) before contract award. These shall be reviewed, and *Employer* comments addressed (by the *Contractor*) and signed off by the *Employer* within 30 days after contract award.

3.3.2.3 Lighting Design Scope

The lighting design and products complies with 240-139282493 and SANS 10389-2.

The Contractor submits the lighting design documentation including supporting relux files and product IES/LTD files are submitted to the *Project Manager* for review and acceptance.

The lighting products comply with the Schedules within Annexure A/B of 240-139282493. Prior to installation, the *Contractor* demonstrates the lighting equipment meets the project requirements and properties used within the lighting design.

All lighting equipment samples, designs and product information are submitted to the Eskom Lighting lab for acceptance prior to implementation.

3.3.2.3.1 Perimeter Lights

The Area lighting and perimeter lighting is designed to a risk class of High.

- Average illuminance – 10 lux
- Minimum illuminance – 4 lux
- Uniformity (Minimum to average) – 0.2 lux

3.3.2.3.2 Check Point Lights

- Average illuminance – 5 lux
- Minimum illuminance – 4 lux
- Uniformity (Minimum to average) – 0.2 lux

3.3.2.3.3 Commissioning

The *Contractor* demonstrates the installed lighting system is as per the accepted design and within the required parameters, which includes and not limited to onsite measurement with a calibrated Lux meter, witnessed by the *Project Manager*.

3.3.2.4 Security Design Scope

The final security solution installed is compatible with the current and future refurbishment of the existing security system.

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The *Contractor* conducts a visual assessment of the site perimeter to determine possible security risks.

The *Contractor* installs a barrier above the pedestrian turnstiles, to prevent unauthorised entry via climbing over the turnstiles.

The current perimeter is separated into 8 zones, the *Contractor* splits each existing zone into new zones, creating a new arrangement of 20 zones. This new zone configuration is linked to the associated perimeter security systems (Electric fence, Cameras, and lights). The perimeter security system is set so that the security control room alarm and lighting for a specific zone is triggered by either the camera's intruder detection or the electric fence.

The *Contractor* installs access gates within the electric fence to allow for maintenance activities.

The perimeter fence currently arranged with one energiser supplying two zones of the existing 8 zone arrangement. The *Contractor* reconfigures the electric fence infrastructure such that multiple energizers are installed and provide a form of detection in accordance with the newly formed 20 zone arrangement.

The security design is in accordance with:

- 240-139282493 - Security Lighting for Eskom Applications
- 240-170000096 - Physical Security Integration Standard
- 240-76368574 - High Security Mesh Fencing
- 240-78980848 - Standard for Non-Lethal Energized Perimeter Detection System (NLEPDS) Electrical Components
- 240-91190304 - Specification for CCTV Surveillance with Intruder Detection

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

All Documents are submitted to the *Project Manager* for review prior to implementation. All review documentation is submitted with transmittals. Any review information submitted without transmittals are considered rejected automatically.

At the end of each contracted design phase (e.g., Concept, Basic, detailed design phase), the *Contractor* provides an integrated design report which is reviewed at a Multi-Disciplinary Design Review (MDR) which will allow the project to move into the next design phase or allow for design freeze.

Implementation of the designs may not begin prior to design freeze.

3.3.4 Other requirements of the *Contractor*'s design

All the design solutions are developed by the relevant Professional Engineers registered with South African Engineering Council of South Africa (ECSA) at all design stages, the associated Professional Engineer will form part of the *Contractor's* supervision team and inspect and sign off the various quality documents.

3.3.5 Use of *Contractor*'s design

N/A

3.3.6 Design of Equipment

N/A

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3.3.7 Equipment required to be included in the *works*

None

3.3.8 As-built drawings, operating manuals and maintenance schedules

At Take-over, the *Contractor* provides two full sets of as-built documentation as hard copies and electronic PDF and native CAD formats (. DGN or .DWG which must be compatible with Bentley MicroStation) to the *Employer*.

The Operating and Maintenance Manual must describe how the plant is to be operated and by whom, as well as the desired level of training and orientation required for the building occupants. The operation and maintenance manuals are to consist of the following as a minimum:

a. List of Contents (Index)
b. Introduction
c. General description of the functions of each of the systems including detailed description of each element of each system, how it functions, how it operates and how to maintain it and what attic stock or tools to carry.
d. Full as-built drawings and detailed drawings, brochures and catalogues for each system and each element of each system.
e. The format of the Operations & Maintenance (O&M) manuals or documentations is to be A4 and be a specially bound document with hard cover and with metal ring binding. (All drawings and details are to be reduced to A3 format and folded into A4 format.)
f. The names, addresses and telephone/fax numbers/email addresses of all responsible persons and manufacturers/suppliers are to be listed in the O& M manual.
g. A full list with reference numbers is to be included to enable the O&M staff to order materials and spares from the original equipment manufacturers (OEM).
h. Colour diagrams are be provided to illustrate the operation and function of each system with reference to the relevant as-built drawings or brochures of Plant and Materials. These diagrammatic drawings must also indicate the locations of valves with their numbers.
i. The *Contractor* shall develop and submit a Maintenance Strategy covering all plant, equipment, systems, and infrastructure installed under this *Contract.* The Maintenance Strategy shall include, as a minimum:

- Asset register with Kraftwerk-Kennzeichensystem (KKS code) and Equipment criticality assessment.
- Preventative, predictive, and corrective maintenance requirements for all items.
- Recommended maintenance frequencies and task schedules for all items.
- Maintenance procedures and work instructions.
- Inspection and condition monitoring requirements.
- Spare parts and consumables strategy.
- Maintenance resource and competency requirements.
- Statutory inspection and regulatory compliance requirements.
- Failure reporting, root cause analysis, and continuous improvement processes.
- Key performance indicators (KPIs) for maintenance performance monitoring.
- Long-term asset preservation and lifecycle replacement recommendations.

The *Maintenance Strategy* shall form part of the Operation and Maintenance (O&M) Manual submitted at handover.

3.4 *PROCUREMENT*

The *Contractor* provides the following procurement services in performing the *works*:

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- Preparation of Employer approved supplier and Sub-Contractor's lists for equipment and contracts to be submitted to the *Employer* for review and approval.
- Follows the most cost and time saving procurement strategies.
- Contract management services for the selection, appointment, and management of Sub-Contractors, where required to execute the scope.
- Obtains delivery dates from Sub-Contractors and suppliers to realize the Completion Date.
- Receiving of invoices, verification thereof in terms of purchase orders and contract provisions, certification of invoices as being correct and payable and supply of correct invoices to the Employer
- Management of and negotiating of all suppliers and Sub-Contractors compensation events and recommendations to the Employer as to the validity, amount and payment of such events.
- Determination of penalties payable by suppliers and Sub-Contractors and recommendation to the Employer as to the enforcement of such penalties prior to any communication to suppliers and Contractors.
- Ensuring that all suppliers and Sub-Contractors, from whom the Contractor procures equipment and materials do not retain, encumber or reserve title to such items.

3.4.1 People

3.4.1.1 Minimum requirements of people employed on the Site

- All Contractors personnel are subjected to access control conditions as per Eskom requirements.
- All workers employed on site comply with Eskom's health and safety standards. Workers are not allowed to be transported on the back of vans or bakkies.
- Workers are restricted to the area of activity near the construction.
- The Contractor recruits within the immediate District Municipality for general labour/ skills to execute the project.

3.4.1.2 BBBEE and *preferencing* scheme

Contractors has a minimum BBBEE Level 6 rating after contract award.

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

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 stated below

.*[Insert the agreed ASGI-SA Compliance Schedule here]*

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. [Elaborate on access to and format of records and frequency of submission etc.]

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.

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3.4.2 Subcontracting

3.4.2.1 Preferred *subcontractors*

The *Contractor* notifies the *Project Manager* in the event of using any Sub-contractor and provides the *Project Manager* with a list of all sub-contractors on the project. Subcontractors cannot subcontract work to another subcontractor. The choice of the proposed sub-contractor is subject to the *Project Manager's* approval before using the services of such subcontractor. The Subcontractor must be familiar with the required work and should submit CV's of experience and have the necessary statutory accreditations.

The *Contractor* provides the *Project Manager* with the Health and Safety plans of all the sub-contractors on the project, before commencing the project.

3.4.2.2 Subcontract documentation, and *assessment* of subcontract tenders

The *Contractor* uses the NEC subcontractor agreements. All subcontractor quotations for which provisional sums or budgets have been allowed, is first approved by the *Employer* or his representative with documentary proof. This is done well in advance of the planned scheduling of the work.

3.4.2.3 Limitations on *subcontracting*

As per Eskom requirements, subcontracting will be limited to 30% as far as possible. The *Employer* is notified where subcontracting exceeds the 30% threshold prior to commencement of the specific subcontracting works.

3.4.2.4 Attendance on *subcontractors*

The *contractor* attends to the activities of all subcontractors including direct subcontractors.

3.4.3 Plant and Materials

3.4.3.1 *Quality*

The *Contractor* will not use Plant or Materials which are generally recognised as being unsuitable or otherwise to be avoided for the purpose for which they are intended.

Only components of high reliability will be utilised, with a proven operating history, to enable the Plant to achieve required reliability and availability. Plant and Material design, engineering and manufacture will accord with the best modern practice applicable to high-grade products of the type to be furnished, to ensure the efficiency and reliability of the Works and the strength and suitability of the various parts for the Works.

Plant and Materials withstands ambient conditions and the variations of temperature arising under working conditions without distortion, deterioration or undue strains in any part.

All parts are made accurately, and where practicable, to standard gauges to facilitate replacement and repairs. Like parts are interchangeable.

No repair of defective Plant and/or Materials will be permitted without the Project Manager's Acceptance and any such repair, if accepted, will be carried out to the satisfaction of the Employer.

The Project Manager is free to specify hold and witness points during the installation and on-site testing stages of the project. The Contractor issues preliminary notification of such hold and witness points by fifteen working days advance notice to the *Project Manager* and confirms such hold and witness points at least seven working days prior to the activity.

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Typical hold points are listed below:

a. Design Review

b. Factory Acceptance Test

c. Delivery to Site

d. Erection

e. Site Acceptance Test

f. All manuals and drawings (in the specified format)

g. Commissioning

In addition to maintaining appropriate inspection and test records to substantiate conformance to requirements, the following records are safely stored for a minimum period of seven years following the final Completion of the Works:

a. Construction, layout and component Acceptances

b. Type and routine test certificates

c. Construction drawings and Acceptances

After this period, the Contractor offers these records to the Employer (in writing) and obtains a disposal instruction.

Documentation regarding quality procedures is submitted within thirty days of Contract Award. The Employer will review and comment on the acceptability of these documents in a time frame as per the requirements of the contract for contractual correspondence. If controlled copies of these documents have been submitted to the Employer, then the controlled copy numbers may be quoted in the submission.

The Contractor adheres to:

Vendor Document Submittal Schedule (the schedule to be issued to the Contractor by the Employer)

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

The *Contractor* shall note that the *Employer* may issue material for the sole use in this contract.

3.4.3.3 *Contractor*'s procurement of Plant and Materials

The *Contractor* is responsible for ensuring that all products are preserved in their appropriate manner as described in their specifications or in Eskom preservation, shipping and transportation procedures as applicable. The *Contractor* shall submit the preservation, shipping and transportation procedures to the *Employer* for review and acceptance. The Employer may choose to witness the packaging, loading and offloading of the products depending on their criticality, this will be indicated in the intervention points on the QCP / ITP document. The Contractor shall ensure that all storage requirements for products are properly implemented to preserve the products against adverse conditions, deterioration, damages, etc. Storage and preservation procedures for the different products must be submitted to the Employer for review and

acceptance. The Employer may request to inspect the stored products at any given point during the storage period of the product. Requirements for preservation, shipping and transportation are addressed in 240-105658000

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3.4.3.4 Spares *and* consumables

The *Contractor* is required to provide the following spares as a minimum:

- Electrical Equipment:
  - One set of full light fitting with globes for all types of lights installed.
  - One energiser with Power Over Ethernet (POE) switch
- Control & Instrumentation Equipment:
  - One set of interface cables and licence dongles for the PLC interface.
  - Spare PSU if applicable.
  - One of each type of signal conditioning modules if applicable.
  - One of each type of interposing relay if applicable;
  - Spare globes/LED for panel indications

3.4.4 Tests and inspections before delivery

The *Employer* carries out quality inspections at his own discretion. The Employer will inspect and approve stages of manufacture of all Plant and Materials necessary to ensure the correct quality of Plant and Materials as prescribed in the accepted project quality plan.

All inspections and testing are to be performed in accordance with the Quality Control Procedure (QCP) developed by the Contractor after Acceptance by the Employer.

The *Contractor* must provide facilities for inspection of all items of Plant and Materials at the place of the manufacture and this requirement must extend to all sub-contractors and suppliers if applicable. All material labour or assistance, tools, gauges, articles or apparatus that the Employer may require for the purpose of testing, gauging and inspection, must be provided by the Contractor. The Contractor must provide all such facilities for testing and the contract price must include for this.

The *Employer* reserves the right to reject items that do not conform to the Employer's requirements. When the plant has passed the prerequisite tests the Employer will furnish to the Contractor a certificate or endorse the *Contractor's* test certificate to that effect. Examination by the Employer does not relieve the Contractor from the responsibility of carrying out all tests which may be necessary to ensure the required standard of manufacture or from any obligations in terms of the contract.

The achievement of adequate standards during the tests at the place of manufacture, if performed, is only the first requirement. The final criterion will be performance onsite, and any of the requirement which proves defective due to bad workmanship or material must be replaced forthwith by the Contractor at his own cost on the instruction of the Employer.

The following tests are conducted by the Contractor and are to be witnessed by the Employer at the manufacturer's works or Contractor's premises as a minimum requirement:

a. Visual inspection of the Plant and Materials
b. Review of the certification requirements
c. Inspection of paint work and corrosion protection.
d. Verification that all components are delivered to the Contractor's premises.
e. Verification that all power plugs is correct.
f. Verification that components installed is correct.

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g. Verification that all labels are correct.

h. Phase rotation

3.4.5 Marking Plant and Materials outside the Working Areas

All Material paid for by the *Employer* is clearly labelled as being the *Employer's* property.

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

N/A

3.4.7 Cataloguing requirements by the *Contractor*

Unique Identifier 240-1289988974 to be provided on request

3.5 *CONSTRUCTION*

The *Contractor* is required to:

a) Submit a comprehensive Method Statement of the entire *works* to the *Project Manager* for acceptance prior to the start of the *works*

b) Submit a project specific safety file to the *Employer* for comments / acceptance.

c) Prepare earthworks for craneage access and working rigging areas if required.

d) Manage his activities on Site to ensure that no interference takes place between his work and that of others.

e) Complete "Contract Activities Daily Reports".

f) Liaise with the *Project Manager* regarding utilities and telephone facilities required for his Site establishment.

g) Liaise with the *Project Manager* regarding the location of waste disposal sites and rubbish dumps,

h) Maintain and promotes labour harmony on the Site and in the working environment.

i) Immediately report any potential labour disharmony to the *Project Manager*.

j) Not recruit or employ any personnel from the *Employer* and Others, without prior acceptance of the *Project Manager*.

k) The *Contractor* submits a fully detailed Quality Control Plan (QCP) for acceptance within one week of the Contract Date.

l) The *Contractor* submits a schedule of unpriced orders to be placed and this is updated regularly.

m) The *Contractor* is responsible for defining the level of QA/QC (intervention Points) or inspection to be imposed on his *Subcontractors* and suppliers of material in the Quality Control Plans (QCPs). This level is based on the criticality of plant and materials, and is submitted to the *Employer* for acceptance.

n) Product data sheets and product samples are submitted for review and acceptance by the *Project Manager* after contract award and prior to the commencement of work.

o) All quality control documentation is submitted to the *Project Manager* within 7 days of Contract Date.

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3.5.1 Construction and Erection

a) The *Contractor* is responsible for the design, erection, maintenance, and removal of all temporary or falsework required for the execution of the works.

b) The *Contractor* takes all necessary precautions to ensure that none of the existing structures and services that are not in the scope of works is damaged during any demolition required. If structures and services which are not in the scope of work is damaged, the *Contractor* is liable to repair or replace the damaged items at their own cost.

c) All construction works complies with SANS 1200 standardised specification for civil engineering construction.

3.5.2 Handover

The *Contractor* is responsible for the provision of a final data book. The document contains all the relevant documentation, designs, drawings including as-built drawings (pdf and native), materials certificates, and product specifications on all products used, tests and results etc. which were applicable during the contract. The *Contractor* ensures that all relevant documentation is traceable and cross referenced where applicable.

3.5.3 Data Book

a) Apart from any statutory data packages required, the *Contractor* also compiles a data package of the relevant drawings, test certificates etc. which he submits to the *Project Manager* for acceptance. These include, but are not limited to:

- Document List
- Instruction for Work/Purchase Order
- Approved ITP's, QCP's
- Method statements and specification adhered to
- Rigging studies (if applicable)
- Risk assessments
- Approved Drawings
- Fabrication Drawings
- Material Certificates
- Approved Non-destructive Testing (NDT) procedure
- NDT Reports / Results
- Certificate of Manufacture
- Inspection Reports
- Corrosion Protection Consumables Certificates
- Calibration Certificates
- Notifications
- Modifications
- Concessions
- TQ's, ER's and communication with Employer
- Non-conformance reports

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- Internal Release Notes
- Transport notifications
- Additional
- Calculations for any temporary works that may be required for the safe execution of the works.
- Concrete cube test results and reports
- Welding procedure specifications
- Welder qualifications
- Non-destructive weld test results
- Weld test certificates
- Steel grade certificates
- Concrete test results
- As-built data and drawings of the completed *works* upon handover. As-built drawings are submitted in PDF and native CAD formats (.DGN)
- Structural Certificate signed by the Professional Civil Engineer confirming that *works* have been constructed in accordance with the design.

The contents are presented in a hard cover file or files.

The data packages are prepared daily for all completed work.

Two hard copies and one soft copy of the Data Book are handed to the *Employer* for acceptance.

Data Books are submitted for review and acceptance before completion of the *works* to the *Employer.*

3.5.4 Temporary works, Site services & construction constraints

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

The site is in a part of an existing campus, with existing buildings all around, most buildings are currently occupied.

1. The *Contractor* attends the **Compulsory site meeting** prearranged by the *Employer* prior to submitting tender.
2. The *Contractor* ensures that he familiarizes himself with site conditions.
3. *Contractors* access is limited to the areas as indicated in the scope and *Contractor's* staff is prohibited from roaming in the rest of the facility.
4. Eskom Holdings indemnifies themselves from any negligent events by the *Contractor* relating to the scope of the works within the contract period
5. The *Contractor*, his staff and the Sub-contractors always maintain identification e.g. Uniforms etc.
6. The *Contractor* is deemed to execute Safety Procedures to ensure the safety of his staff, Sub-contractors, Eskom staff during the Contract Period.
7. Use of power and loud tools to be controlled and/or managed with Eskom office management team.
8. The safety of the *Contractors Employees*, Subcontractors and building's tenants takes preference over the scope of the works of this project.
9. All site instructions to be approved and authorised in writing by the *Project Manager.* If this directive is not adhered to it could result in non-payment.

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3.5.4.2 *Restrictions* to access on Site, roads, walkways and barricades

3.5.4.2.1 Access to the site

1. The *Employer* provides the *Contractor* with an Access Certificate to formally provide access to the site.
2. The *Contractor* ensures that he is familiar with conditions of access to the buildings, which includes constraints to limited parking and no goods lift is available in some of the blocks.
3. The *Contractor* adheres to all the requirements which include, but not restricted to:
    a. Identity cards with photographs
    b. Cooperation to help Eskom provide the customer with a project schedule reflecting the period during which the construction and commissioning activities will take place.
4. The Contractor will be responsible for external disputes which may occur regarding the *works*.
5. The Contractor is when necessary or needed, required to make all the necessary arrangements with the Local Authorities via the Building Manager and or Eskom Representative.

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

Working after normal working hours and on weekends requires special permission. The Contractor shall give the *Employer a*dequate notice if this is planned.

3.5.4.4 Health *and* safety facilities on Site

Refer to SHE specifications issued.

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

The *Contractor* shall ensure that all fauna and flora is preserved and protected during his activity on site. All such fauna and flora will be reinstated after completion of the work.

3.5.4.6 Title to *materials* from demolition and excavation

N/A

3.5.4.7 Cooperating with *and* obtaining acceptance of Others

Two weeks look-ahead schedule to be developed and submitted to *Project Manager* on a fortnight basis to make timeous arrangements for access into occupied buildings with the occupants concerned.

3.5.4.8 Publicity and *progress* photographs

The *Contractor* requests approval from *Project Manager* for any photography and progress photographs prior to undertaking.

3.5.4.9 *Contractor*'s *Equipment*

The C*ontractor* keeps an inventory of equipment brought to site. This is verified and acknowledged by Eskom security to allow removal of such equipment when required by the contractor.

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3.5.4.9.1 Security of materials on sites:

The *Contractor* provides own security on site and is held liable for excess of insurance in case of theft or loss.

3.5.4.9.2 Material and Bill of Quantities

Storage and security of material is the responsibility of the *Contractor* until the Final Completion Certificate is certified. The *Contractor* is responsible for all costs involved to expedite lost, damaged or stolen material.

3.5.4.10 Equipment *provided* by the *Employer*

The *Contractor* provides all equipment and tools required to complete the *works*.

3.5.4.11 Site services and facilities

The *Employer* will provide power and water,

The *Contractor* shall make provision of waste disposal, and submit proof in a form of Waste Disposal Certificates to the Employer for approval

The *Contractor* shall provide everything else necessary for providing the Works.

3.5.4.12 Facilities provided by the *Contractor*

A clearly demarcated site establishment area will be provided by the *Contractor* for the following:

- Suitable facilities for *Contractor* to store all material and equipment
- Suitable facilities for his employees for changing
- Facilities for the consumption of food
- Site offices
- Toilet/Ablution facilities
- Other temporary facilities required by the *Contractor*

3.5.4.13 Existing premises, *inspection* of adjoining properties and checking work of Others

Contractor is to investigate existence of any services before commencement of work. Care is to be taken when *Contractor* is doing demolitions so as not to damage the work of others.

3.5.4.14 Survey control *and* setting out of the *works*

It is the *Contractors* responsibility to ensure accuracy when performing setting out of the *works*,

The *Contractor* shall provide adequate fastening to existing connection points.

3.5.4.15 Excavations and *associated* water control

Where excavation is required, the *Contractor* takes the necessary precautions not to damage any existing services.

3.5.4.16 Underground services, *other* existing services, cable and pipe trenches and covers

There is limited information regarding existing underground services

Should the need arise for the contractor to work on underground services, the *Contractor* is required to conduct Scanning to determine the existing/underground services and provides this information as As-Build drawings to the *Employer*.

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3.5.4.17 Control of noise, dust, water and waste

The *Contractor* takes all precautions necessary to prevent any noise and dust whilst carrying out the work.

3.5.4.18 Sequences of *construction* or installation

N/A

3.5.4.19 Giving notice of work to be covered up

All project communication shall be in writing.

3.5.4.20 Hook ups to *existing* works

Contractor stipulates methodology for hooking-up when working in heights and provides notification to the SHE Officer in advance and obtain permission to proceed. The Contractor cannot not hook up for lifting, supporting or for any other reason to any position or existing works in the plant without a written approval by the Project Manager.

3.5.5 Completion, testing, commissioning and correction of Defects

3.5.5.1 Work to be done by the Completion Date

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. 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	Within days after Completion
	Performance testing of the *works* in use as specified in paragraph of this Works Information.	See performance testing requirements.

3.5.5.2 Use of the *works* before Completion has been certified

N/A

3.5.5.3 Materials facilities and samples for tests and inspections

The *Contractor* provides all Materials, facilities and/or samples required for tests and inspections.

The *Employer* reserves the right to call for samples of the Equipment offered to inspect the workmanship as the work proceeds and to either accept or reject the Equipment or workmanship.

The *Employer's* Acceptance of the workmanship or Equipment must in no way reduce the *Contractor's* liability to provide complete buildings.

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The purpose of these inspections is to reduce the risk of non-compliant Equipment and *Materials* being transported to site. The presence of the *Employer* at the inspections does not reduce the *Contractor's* responsibility to comply with the contract.

The *Contractor* is to make arrangements that these inspections are carried out within the boundaries of South Africa. Should any tests or inspections be required outside of the Gauteng Area, the *Contractor* is to allow in his Tender price for all costs (travel, accommodation, subsistence, etc) for two persons to attend such tests or inspections. Accommodation and subsistence arrangements are to be submitted to the *Employer* for *Acceptance* in writing.

3.5.5.4 Commissioning

- When the perimeter security is ready for service; commissioning shall take place to check whether the correct quantities of equipment have been delivered and the installation is in accordance with the specifications. Commissioning shall be performed in co-operation with the *Contractor* and representatives of the *Employer* and *Supervisor*.
- Practical Completion certificates will only be issued once the whole of the perimeter protection system installation satisfies the operational performance requirements of the contract and the Supervisor is satisfied that all perimeter protection systems can operate effectively.
- Performance and acceptance testing to determine whether the perimeter protection systems achieves the required level of performance will only be undertaken after all routine testing, adjusting, commissioning, approvals and building work associated with the contract are complete and the work have been fully tested and commissioned by the *Contractor*.
- Details of the testing required for each system and equipment shall be included in the *Contractor's* quality plan.
- The *Contractor* shall supply all labour, materials and equipment required to fully commission and test the installation.
- All costs associated in demonstrating that the perimeter protection system performs as required by the contract, shall be borne by the *Contractor*. Equipment which fails to operate correctly or is found to be installed incorrectly shall be repaired or replaced by the Contractor. Where any test is unsuccessful the defective equipment shall be repaired appropriately and subjected to retesting.
- The *Contractor* shall fully test and commission the perimeter security system to ensure that correct operation of all systems prior to final performance and acceptance testing with the Supervisor. Tests shall include activation of electrified fence alarms for each zone to prove the efficiency of all aspects of the system to the satisfaction of the Employer.
- The *Contractor* shall do his own complete commissioning tests before the actual first take-over tests are done. This is to satisfy himself that everything is working and is in accordance with the specification.

3.5.5.5 Start-up procedures required to put the *works* into operation

No alterations or adjustments will be made to the *Works* after functional checks are done without the *Employer's* written permission.

At this stage the following must have been achieved:

a. Installation and pre-commissioning completed.
b. Testing report and the associated certificates received.
c. Signed erection and safety clearance certificates received.
d. Final Draft of the Technical, Operating, Maintenance manuals delivered.
e. All Quality Control Plan (QCP) documentation received.

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3.5.5.6 Take over procedures

The *Employer* takes over completion of the *Works* on *Completion Dates* of the Accepted Program.

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

The *Project Manager* arranges the date and access to site for the *Contractor* to correct defects. The *Contractor* updates the site safety file, and the records contained inside as per construction regulations. The *Contractor* will be responsible for ensuring that the area is barricaded before correcting any defects.

3.5.5.8 Performance tests after Completion

In accordance with clause X17, performance test will be conducted on completion.

3.5.5.9 Training and technology transfer

The Contractor is required to train the staff at the sites dependent on the tasks. Training will include, but is not limited to the following:

- Energized Fencing Systems
- Perimeter Protection System and Alarms
- Operation and Maintenance of the facility

The *Employer* will allocate operators and maintenance staff to participate in the manufacture, erection and commissioning of the plant as provided in this contract. It shall be the responsibility of the *Contractor* to train these personnel during the execution of the *Contract* to develop the standard of competence required for their subsequent employment on the operation and maintenance of equipment included in the works. The *Contractor* shall provide training to the *Employer's* staff, covering the following about the *Contractor's* Plant:

- to operate,
- to maintain,
- to perform disassembly and assembly,
- to test,
- to recommission,
- to be fully aware of the location of all equipment within the system's entire area of responsibility.

The *Contractor* shall accordingly take into the works an agreed number of members of the *Employer's* staff for an agreed period. The *Contractor* shall give the staff workshop hands-on training as fitter-erectors on the plant and shall give instruction in the assembly, adjustment and works testing of main items of plant.

Subsequently the *Contractor* will have the assistance of *Employer's* staff in commissioning of the plant and shall give appropriate instruction during these periods. Whilst the personnel allocated by the Employer can be expected to contribute in some measure to the erection work, the Contractor shall, in the Tender and when determining the programme, consider that these personnel are involved only for training purposes.

The *Contractor* shall include attendance of the *Employer's* staff during testing and witnessing and for key works inspections.

The Contractor shall provide detailed proposals setting out the key aspects of training which will be provided for the *Employer's* personnel, both in the manufacturers' works and on the Site, including the proposed training programmes.

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3.5.5.10 Operational Maintenance, Warranty and Support after completion

Following the successful completion of commissioning, testing, acceptance, and Taking Over of the *Works*, the *Contracto*r shall provide operational maintenance, warranty and support services for a period of thirty six (36) months or as specified in the *Contract Data*.

During this period, the *Contractor* shall:

- Perform all preventative maintenance activities in accordance with the approved *Maintenance Strategy*, Maintenance Plan, manufacturer's recommendations, statutory requirements, and applicable Eskom standards.
- Provide corrective maintenance and fault rectification for all defects attributable to design, workmanship, materials, software, equipment, or installation deficiencies at no additional cost to the *Employer*.
- Maintain the installed plant and equipment in a safe, reliable, and fully operational condition throughout the maintenance period.
- Undertake scheduled inspections and condition assessments at intervals specified in the approved Maintenance Plan and submit inspection reports to the *Employer*.
- Record all maintenance activities, inspections, breakdowns, repairs, replacements, and modifications in a maintenance register and provide copies to the *Employer*.
- Maintain all warranties and guarantees associated with the *Works* and ensure that warranty claims are managed and resolved timeously.
- Provide suitable technical support and emergency call-out services for critical system failures occurring during the maintenance period.
- Update the Asset Register, KKS coding, maintenance records, and as-built documentation where changes are made during the maintenance period.
- Monitor system performance against the specified design criteria and implement corrective measures where performance deviations occur.

3.6 *PLANT* AND MATERIALS STANDARDS AND WORKMANSHIP

The drawings include final general arrangements. Drawings include sections and details to fully identify design concepts, design loadings and any other special features.

Drawings are fully dimensioned and the dimension figures on the drawing are deemed to be correct, even if the drawings are not to scale. No dimensions are obtained from a drawing by scaling.

All drawings show full endorsement by a Professional Civil Engineer (including Pr. Eng Number and signature evident on all civil and structural drawings).

3.6.1 Investigation, survey and Site clearance

N/A

3.6.2 Building works

N/A

3.6.3 Civil engineering and structural works

All Civil works are to follow the relevant SANS standards

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3.6.4 Electrical & mechanical engineering works

All Electrical and Mechanical Engineering Works be in compliance with the relevant SANS standards

3.6.5 Process control and IT works

N/A

3.6.6 Other [as required]

N/A

3.7 LIST OF DRAWINGS

3.7.1 Documentation issued by the *Employer*

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

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

Document number	Revision	Title
0.50/2001	0	MWP MV Reticulation SLD
0.50/45006 Sheet 1	0	MWP Perimeter wall and Security Fence Plan, Sections & Details and Lighting Layout and Site Plan
0.50/45006 Sheet 1	0-1	Redline drawing showing the new locations for the mini subs
240-139282493	1	Security Lighting for Eskom Applications
240-170000096	1	Physical Security Integration Standard
240-76368574	1	High Security Mesh Fencing
240-78980848	4	Standard for Non-Lethal Energized Perimeter Detection System (NLEPDS) Electrical Components
240-91190304	2	Specification for CCTV Surveillance with Intruder Detection
Appendix A	0	Cable Schedule
N/A	0	Screen shot for 11kV Mini Subs Ring Feed

4. SPECIFICATIONS FOR THE *WORKS*

4.1 APPLICABLE NATIONAL STANDARDS

The *Contractor* is required to adhere to the latest editions of, and the normative references within, the following SANS standards, codes of practice, regulations & standards:

Number	Title
N/A	N/A

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4.2 ADDITIONAL REQUIREMENTS AND PREREQUISITES

4.2.1 General

a) N/A

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5. AUTHORISATION

This document has been seen and accepted by:

Name & Surname	Designation	Signature
Andre Van Den Berg	ERE C&I LDE	
Atams Mdledle	MWP Middle Manager Maintenance	
David Kunene	ERE Electrical LDE	
Pakgadi Legodi	ERE Civil LDE	PP
Kgotso Moloi	Security Operations Advisor	

6. REVISIONS

Date	Rev.	Compiler	Remarks
April 2023	0.1	BW Thomas	Draft
May 2023	1.0	BW Thomas	Issued for Procurement
July 2024	1.1	BW Thomas	Changes to Security and Facilities requirements which has impacted the scope
March 2025	2.1	A Koenane	Updated Electrical Scope
July 2025	3.1	BW Thomas	Replacement of steel palisade (ERE-MWP-A0005)
August 2025	4.1	BW Thomas	Revised outer barrier height as per NKP requirements and Electrical Scope
September 2025	5	BW Thomas	Final
September 2026	6	Pakgadi Legodi and SD Koloane	Revised scope based on lessons learnt
October 2026	7	BW Thomas	Updated Scope

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