	Standard	Distribution Cape Coastal Cluster
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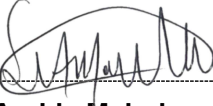

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1. Introduction

This document serves as the technical Scope of Work (SoW) for the Intelligent Security System Pilot Project; a critical initiative aimed at enhancing intelligence and security capabilities across designated sites. It builds upon the functional specifications and general scope, providing comprehensive and granular details necessary for prospective tenderers to understand the full breadth of the undertaking.

This SoW is designed to ensure a clear understanding of all requirements, facilitating the submission of accurate, complete, and technically compliant proposals for the entire project lifecycle, from initial design and procurement through to commissioning, training, and ongoing support.

2. Supporting Clauses

2.1 Scope

This SoW defines the works to be quoted upon, encompassing all designated sites including the central control centre, along with all additional project requirements for a fully operational intelligent security system.

2.1.1 Purpose

The purpose of this document is to enable tenderers to submit accurate, complete, and fully compliant proposals that directly address the specific needs and objectives of the project.

2.1.2 Applicability

This document shall apply to the Cape Coastal Cluster in the Distribution Division of Eskom Holdings Limited Divisions.

2.1.3 Effective date

This document is effective from authorisation date.

2.2 Normative/Informative References

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

2.2.1 Normative

- [1] ISO 9001, Quality Management Systems
- [2] 240-91190304, Specification for CCTV Surveillance with Intruder Detection
- [3] 240-171000524, Intelligent Substation & Security System Specification
- [4] 240-139282493, Security Lighting for Eskom Applications
- [5] SANS 10389-1, Exterior Lighting Part 1 – Artificial lighting of exterior areas for work and safety
- [6] SANS 10389-2, Exterior Lighting Part 2 – Exterior security lighting
- [7] SANS 10114-1, Interior Lighting Part 1 – Artificial lighting of interiors

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- [8] SANS 10114-2, Interior Lighting Part 2 – Emergency Lighting
- [9] D-DT 5240, Earthing Standards Series
- [10] D-DT 5254, Civil Cable Trenching and Ducting Standard Series
- [11] D-DT 5217, Lighting and Lighting Mast Standard Series

2.2.2 Informative

None

2.3 Definitions

Definition	Explanation

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2.4 Abbreviations

Abbreviation	Description
AI	Artificial Intelligence
BOM	Bill of Materials
CCTV	Closed-Circuit Television
CNC	Customer Network Centre (field depot)
CoC	Certificate of Compliance
DB	Distribution Board
DC	Direct Current
DRT	Design Review Team
Dx	Distribution
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Global System for Mobile Communications
HV	High Voltage
IP	Internet Protocol
LED	Light Emitting Diode
LFP	Lithium Iron Phosphate
LV	Low Voltage
Mbps	Megabits per second
MCCB	Moulded Case Circuit Breaker
MTP	Media Redundancy Protocol
MTS	Main Transmission Substation
MV	Medium Voltage
NAT	Network Address Translation
ORHVS	Operating Regulations for High Voltage Systems
PTZ	Pan-Tilt-Zoom
RDC	Regional Distribution Centre
RSTP	Rapid Spanning Tree Protocol
SA	Substation Automation
SMS	Short Message Service
SS	Substation
TRA (STA)	Threat and Risk Assessment
UPS	Uninterruptible Power Supply
VLAN	Virtual Local Area Network
VMS	Video Management System

2.5 Roles and Responsibilities

Not applicable.

2.6 Related/Supporting Documents

Not applicable.

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3. Scope of Work

3.1 General Requirements

- a) All scope of work shall be provided in compliance with the associated functional specification [3].
- b) The contractor shall strictly adhere to Eskom's Operating Regulations for High Voltage Systems (ORHVS) throughout the execution of works in live substations.
- c) The contractor is solely responsible for the appointment and management of their own appropriately authorised personnel.

3.2 Designs Requirements

- a) The successful tenderer shall be responsible for the comprehensive design of the system, ensuring it meets all functional, performance, and integration requirements outlined in the relevant documents and this Scope of Work.
- b) The overall solution design and implementation approach (per site) shall be formally presented to the CCC Design Review Team (DRT) for technical governance and approval. This meeting is held monthly. Designs must be submitted at least 2 weeks prior to the meetings, and only after being reviewed by the core Eskom project teams.
- c) All design drawings, including but not limited to, architectural layouts, system schematics, wiring diagrams, and equipment placement plans, shall be provided in a MicroStation DGN or DWG compatible format.
- d) The tenderer shall provide all other necessary design documents, including detailed engineering specifications, system architecture diagrams, interface control documents, datasheets, operation and maintenance manuals, test plans, test reports and any other relevant reports or documentation pertaining to the entire system.
- e) The make, model and field of view for all cameras shall be clearly indicated as part of the basic design provided at tender stage, in compliance with the functional specification [3].
- f) The design shall strictly adhere to all applicable industry standards, local regulations, and Eskom's internal technical specifications and guidelines.
- g) The design shall consider future scalability and potential expansion, ensuring the system can be adapted or upgraded with minimal disruption.
- h) Cybersecurity principles shall be embedded into the design from the outset, addressing potential vulnerabilities and ensuring the robust protection of the system and its data.
- i) The contractor's designs shall ensure that the security system is resilient to unauthorized disabling, protecting all components from tampering or malicious interference.
- j) Any existing as-built drawings or documentation provided by Eskom are for informational use only and come without guarantee; the contractor is solely responsible for on-site confirmation of all conditions before design or installation.
- k) All Eskom-supplied drawings shall be comprehensively updated to reflect the specific changes, installations, and configurations implemented by this project as part of the final as-built documentation. Where no existing drawing is available, the tenderer shall, at a minimum, compile and provide a new drawing detailing the additions made by this project to Eskom.

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- l) Where minimum specifications, quantities, and existing conditions are provided by Eskom within this document, tenderers shall utilise these as a baseline for their proposal. It remains the contractor's sole responsibility to thoroughly assess all site conditions, confirm requirements, and propose a comprehensive solution that optimally achieves the specified security objectives and ensures full operational effectiveness, even if it necessitates exceeding the minimums or addressing conditions not fully detailed.
- m) Where necessary, all environmental authorisations and approvals shall be acquired to the satisfaction of the Eskom Land Development Environmental section.

3.3 Power Supply Requirements

The successful tenderer shall ensure that all power supply provisions for the Intelligent Security System comply with the following requirements to guarantee reliability, safety, and proper system operation:

- a) The security system shall draw its power from the building's main Alternating Current (AC) supply Distribution Board (DB).
- b) Within substations, the system shall explicitly NOT draw power from existing AC/DC panels (unless specified or agreed to by Eskom) or, critically, from the station's auxiliary Direct Current (DC) supply, as these sources may be capacity-constrained, or designated for other critical operational loads.
- c) A robust Uninterruptible Power Supply (UPS) backup system, utilising new Lithium Iron Phosphate (LFP) cells, shall be included as an integral part of the power solution for all critical security system components.
- d) The UPS system shall provide a minimum standby capacity of two (2) hours to ensure continuous operation of the security system during power interruptions.
- e) Refer to the site-specific sections herein for further details.

3.4 Use of Existing Cableways

- a) The successful tenderer shall, where feasible, utilise suitable existing cableways (cable trenches, conduits, ducts, etc.) for the installation of new security system cabling. This utilisation is subject to specific conditions to ensure system integrity, safety, and future maintainability.
- b) Existing cableways may be utilised by the contractor only if they are 'open' and readily accessible (i.e., not enclosed within closed conduits or inaccessible structures).
- c) The design and installation within existing cableways must ensure clear physical separation and unambiguous identification of all newly installed cables from any existing cabling.
- d) For any shared cableways where work may occur in the future, the tenderer's installation shall incorporate appropriate measures to duly protect its cables. This protection may include, but is not limited to, the use of dedicated sleeves, flexible conduits, or the specification of armoured cable types to safeguard against potential damage during future interventions.
- e) All installations within existing cableways shall strictly adhere to all relevant safety standards, Eskom's internal policies and standards, and industry best practices for cable management and protection.
- f) Refer to the site-specific sections herein for further details.

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3.5 Alarm System

- a) Where indicated per site, the scope may include the supply, installation, testing, and commissioning of a comprehensive hard-wired intrusion detection system to protect the specified areas.
- b) The primary alarm system shall be a Paradox EVO 192, providing a robust and scalable intrusion detection platform.
- c) Indoor areas of all buildings shall be protected by hard-wired Passive Infrared (PIR) motion sensors, strategically placed for optimal coverage and minimal false alarms.
- d) No dedicated outdoor sensors are required.
- e) All openable building's doors and windows throughout the site shall be secured with hard-wired magnetic contact sensors.
- f) The alarm remote controls shall be fully operable from all designated entry and exit points, and the system must include a minimum of two wireless signal extenders, optimally placed to ensure maximised coverage.
- g) No battery-powered sensors are permitted; all sensors must be hard-wired.
- h) At least one (1) keypad shall be installed at a primary entry point, providing full system control and status indication.
- i) Four (4) bright outdoor blue status LEDs shall be strategically mounted on the building corners to provide clear visual indication of the system's armed/disarmed status.
- j) A high-decibel outdoor siren shall be installed to provide immediate audible alerts upon alarm activation.
- k) The alarm system, including all its components, shall be seamlessly integrated with the existing lithium-based UPS system for continuous power backup. Alternatively, a suitable standalone LFP-based backup power solution shall be provided if integration with the existing UPS is not feasible or approved.
- l) A minimum of ten (10) REM2 remote controls shall be provided for convenient arming and disarming by authorised personnel.
- m) The system shall be capable of accepting an external dry contact input for remote arming and disarming functionalities, facilitating integration with other control systems.
- n) The system shall support multiple alarm communication paths to:
 - 1) IP, GPRS/GSM module for cellular fallback (to transmit alarm events, status updates, and system faults to a central monitoring station),
 - 2) Designated personnel via SMS.
- o) All system components, including the main panel, keypads, and critical sensors (PIRs, magnetic contracts), shall incorporate tamper detection mechanisms to alert against unauthorised access or tampering.
- p) The system shall maintain a comprehensive, non-volatile event log, capable of storing a minimum of 500 events, complete with timestamps for forensic analysis.
- q) The alarm system shall have a dedicated video alarm zone input, linked to the local NVR or other suitable device, to trigger an alarm based on object analysis, thus indicating an intrusion within the site perimeter rather than relying on potentially less accurate measures like the fibre perimeter sensing system alone.

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- r) The system shall be designed with sufficient spare zones (30% spare zone capacity) to allow for future expansion without requiring significant hardware replacement.
- s) The entire alarm system installation shall comply with all applicable local standards, regulations, and Eskom's internal security specifications.
- t) Comprehensive system documentation, including user manuals, programming guides, and as-built wiring diagrams, shall be provided.
- u) User and administrator training shall be conducted upon system commissioning.

3.6 Decommissioning Requirements

- a) The successful tenderer shall be responsible for the professional decommissioning and removal of all existing equipment rendered redundant or no longer in use, including those deemed damaged or no longer operable.
- b) All equipment proposed for removal shall be subject to Eskom's explicit approval and confirmation during the detailed design stage, or, if identified during construction as faulty or no longer operable, to ensure alignment with asset management and operational requirements.
- c) All decommissioned equipment shall be carefully removed, inventoried, and furnished to Eskom.
- d) The contractor shall provide Eskom with a decommissioning plan, including a detailed Bill of Material (BOM) of all items to be decommissioned, prior to commencing any removal activities.
- e) Decommissioning activities shall be conducted safely, efficiently, and in accordance with all applicable environmental regulations and Eskom's safety procedures. The tenderer shall ensure minimal disruption to ongoing site operations during this process.
- f) Upon removal of equipment, the tenderer shall ensure that the affected areas are left in a clean, tidy, and safe condition, consistent with the original site state, where reasonably practicable.
- g) Refer to the site-specific sections herein for further details.

3.7 Earthing Requirements

- a) The successful tenderer shall ensure that all newly installed structures and equipment, as part of this project, comply with stringent earthing requirements to ensure personnel safety, equipment protection, and optimal system performance. See [2] 240-91190304 for further requirements.
- b) All structures not explicitly or comprehensively addressed in [2] or any other direct or indirectly referenced Eskom standard or document, shall be earthed in accordance with relevant national standards and industry best practices.
- c) All earthing connections, terminations, and components shall be designed and installed to resist corrosion and ensure long-term integrity and reliability in the prevailing environmental conditions.
- d) All earthing shall comply with the latest revision of D-DT-5240.
- e) Refer to the site-specific sections herein for further details.

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3.8 Lighting Requirements (Indoor & Outdoor)

- a) The design and implementation of the Intelligent Security System shall account for optimal lighting conditions necessary for its proper functioning, especially concerning camera performance and AI-based analytics. The tendered cost must already include all necessary provisions for any identified and required lighting upgrades to achieve the specified system performance.
- b) The overall design shall include clear provisions and recommendations for any necessary lighting upgrades or modifications required to ensure the security system, particularly its optical components and video analytics capabilities, functions properly and achieves its specified performance parameters.
- c) Eskom shall provide all available information and existing resources pertaining to site lighting. However, the successful tenderer is explicitly required to conduct their own independent site surveys and measurements to accurately assess current lighting conditions and determine the precise requirements for any proposed upgrades that contribute to optimal system performance.
- d) All lighting provisions, whether new installations or upgrades, shall be designed to ensure continuous and adequate illumination levels to facilitate clear image capture and reliable operation of the security system, day and night, without creating glare or blind spots.
- e) The installation shall exclusively utilise luminaires approved by Eskom, and designs done in compliance with Eskom standards.
- f) All security lighting must comply with Eskom's standard 240-139282493, "Security Lighting for Eskom applications," and all relevant SANS standards contained within it.
- g) The design of all lighting civil foundations and lighting mast structures shall comply with Eskom's standard D-DT-5217 (latest revision).
- h) The design shall form part of the overall design; however, it shall not be implemented or installed under this scope.

3.9 Network Configuration and Security

The network design and configuration shall adhere to the following stringent requirements:

- a) The network architecture must strictly comply with Eskom's Network Architecture standard (240-81321219).
- b) The use of CAT (copper) cables for Ethernet communication outdoor shall be limited to end devices and not used on backhaul links. Such links and connector terminations shall be suitably protected against environmental influences.
- c) No communication link length shall exceed 80% of its rated range.
- d) To ensure a robust and reliable system, the network architecture shall utilise an open and standard redundancy protocol that provides at least two separate Ethernet routes back to the control room for a minimum of 90% of all cameras.
- e) Network redundancy mechanisms must be capable of recovering from link or equipment failures and returning to the primary link within 30 seconds of the failure or link restoration. Additionally, any failure of a link, switch, or other network component must be alarmed and visually indicated within the control centre(s). RSTP or MRP shall be the preferred recovery mechanisms.
- f) A dedicated firewall shall be integrated to provide robust network protection, meeting all relevant cybersecurity standards.

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- g) All security-related network traffic shall be exclusively routed through VLAN 1002 and assigned to the IP range 172.30.252.0/22. Within this range, 172.30.252.1 is reserved for the gateway device, and the usable IP range for all other devices is 172.30.252.3 through 172.30.255.254.
- h) All networking equipment deployed shall support both static and dynamic Network Address Translation (NAT) functionalities, facilitating seamless integration with existing site-specific IP ranges as required.
- i) At some sites the solution shall utilise dedicated telecommunication circuits provided by Eskom's service provider, with a minimum bandwidth of 2 Mbps. However, the solution must provide for and support temporary cellular modem infrastructure (point-to-point) to ensure connectivity if the primary telecommunication links are not ready at the time of commissioning.
- j) Refer to the site-specific requirements, which may provide further detailed specifications.

3.10 Fibre Perimeter Intrusion Detection

- a) The system shall implement a fibre-optic perimeter intrusion detection system to provide complete coverage for both the inner and outer fences.
- b) Refer to the site-specific requirements, providing further detailed specifications.

3.11 Perimeter Surveillance (PTZ Cameras)

- a) The system shall include the deployment of PTZ cameras positioned to provide full, unobstructed views of all sections of the fibre-protected perimeter fences.
- b) These cameras shall be automatically linked to the fibre perimeter detection system to direct to suspected breached areas upon alarm activation.
- c) Refer to the site-specific requirements, providing further detailed specifications.

3.12 Entry/Exit Point Surveillance (Bullet/Suitable Cameras)

- a) Entry/exit point cameras shall provide clear, high-resolution footage of all individuals and vehicles entering or exiting the premises.
- b) Cameras deployed at entry points shall be capable of integrating with and optionally utilising facial recognition and LPR technology to identify individuals and vehicles, against a pre-defined database.
- c) Refer to the site-specific requirements, providing further detailed specifications.

3.13 Site Overview and Anomaly Detection (Overview/High-Point Cameras)

- a) Systems shall include the installation of high-point overview cameras, typically at the corners, and on poles within the substation yard, to achieve near-to-no blind spot coverage of the entire site, at once.
- b) These cameras shall integrate advanced AI algorithms specifically for the detection of plant anomalies, including, but not limited to, smoke and fire detection, abnormal equipment states, and other critical environmental deviations.
- c) Refer to the site-specific requirements, providing further detailed specifications.

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3.14 AI-based Plant Monitoring Solution

- a) For all AI-based plant monitoring solutions, refer to the included specification [3] for a complete and detailed list of expected functions to be performed.
- b) The site-specific requirements will specify which sites require this feature and provide additional detailed specifications.

3.15 Execution of Works

- a) All required Eskom authorisations shall be acquired in a timely manner before the commencement of work.
- b) All work conducted by contractors and stakeholders within the substation must be done under the proper Eskom authorisations and work permits.
- c) As required, wayleaves shall be requested and obtained from Eskom's Land Development department before any work can begin.
- d) It is strictly prohibited to remove or relocate any existing cables utilised within sites, unless explicitly approved by Eskom.
- e) All security cables not routed through existing trenches to be marked with the appropriate warning tape.

3.16 Provided Site Drawings & Documentation

All relevant project site documents and drawings are provided within clearly organised folder structures.

4. Site-Specific Requirements

4.1 Scope of work: Brackenfell Warehouse

The scope for Brackenfell Warehouse includes the comprehensive design, supply, installation, testing, and commissioning of a complete site protection and advanced surveillance capability system, inclusive of an:

- a) integrated CCTV and perimeter detection system,
- b) fibre perimeter detection solution on all perimeter and fences,
- c) alarm system.

The appointed service provider(s) shall ensure that all equipment and systems supplied are fully compatible and capable of integration with the existing CathexisVision platform currently utilised within the Cluster.

4.1.1 Site Location

Req.	Description	Measure / Qty	Unit
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	Site location:	Eskom Rd Brackenfell South Cape Town 7560 GPS Coordinates: Latitude: 33.888056° S Longitude: 18.685434° E	Address & GPS Coordinates
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4.1.2 Proposed Equipment Placement Plan

This section provides a top-down view of the proposed security system layout, illustrating the strategic placement of all cameras and sensors across the site. While this document serves as a baseline for equipment location, the tenderer's final proposal must include detailed drawings that explicitly represent the fields of view and coverage areas, confirming the system's design and operational objectives.

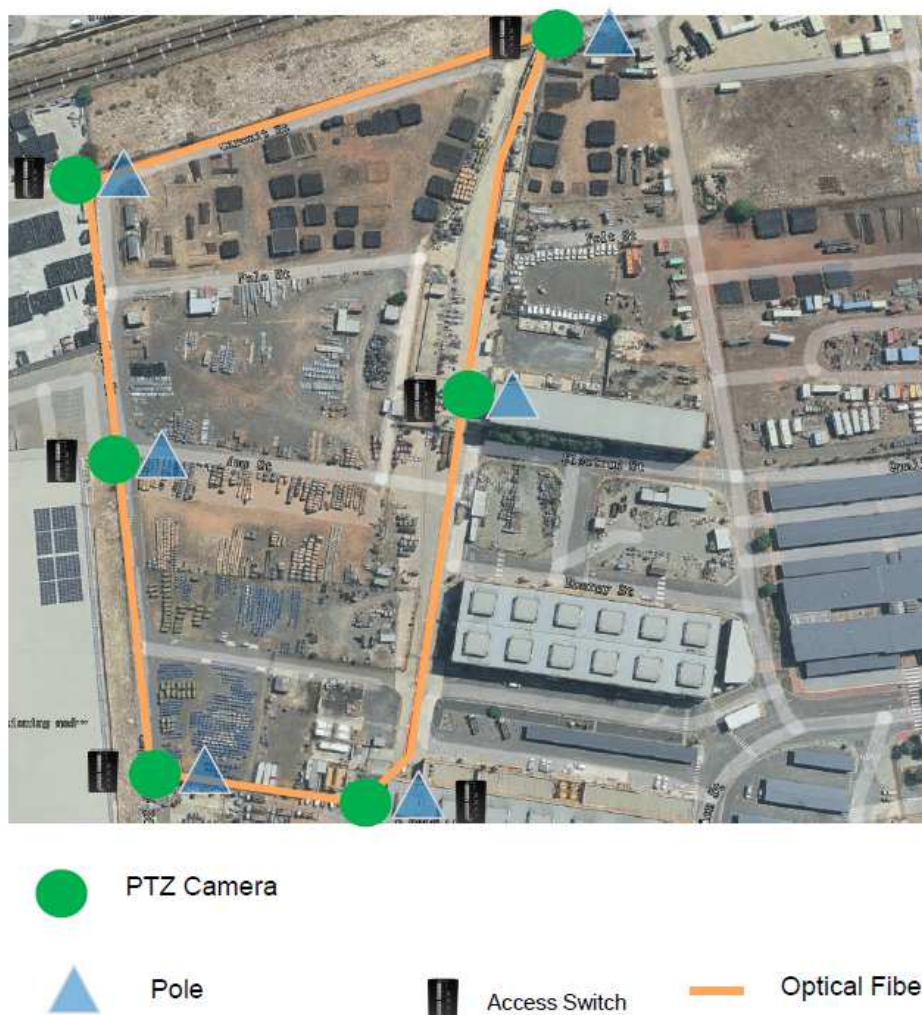


Figure 1: Brackenfell Warehouse: Proposed Outdoor Equipment Placement

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4.1.3 Fibre Perimeter Intrusion Detection

Req.	Description	Measure / Qty	Unit
a)	Outer fence estimated length:	990 (including storage / pole area)	m
b)	Perimeter structures:	Steel diamond mesh fence with razor coil wire (2.5 – 3m high) Medium integrity condition, as fence is rusted in some areas.	

4.1.4 Perimeter & Outdoor Surveillance (PTZ Cameras)

Req.	Description	Measure / Qty	Unit
a)	The minimum number of PTZ cameras to be deployed to provide full perimeter coverage, with each camera strategically located at approximate 90-degree turns on the perimeter fence extreme edges, and one in the centre of the facility:	6	PTZ Cameras

4.1.5 Server & Control Room Equipment Location

Req.	Description	Measure / Qty	Unit
a)	All local security equipment, including servers, an operator station, and associated infrastructure, shall be installed within the:	Dedicated security office	
b)	The existing control room utilises primary displays. Tenderers must propose solutions that offer enough viewable area, comparable to at least the existing displays each with up to a 9x9 grid view. The solution must offer full local control (all hardware provided) of all cameras (incl. PTZ control), video playback, providing for alerts and event searching, etc.		

4.1.6 Site Description

- a) The site is characterized by a large, warehouse structure.
- b) It features multiple access-controlled gates, dedicated storage yards, and various parking areas.
- c) Additionally, the facility includes external open areas for storing oversized items (e.g., steel, poles, pipes), all serviced by inner access roads and internal service lanes. Several sections of this facility are cordoned off by fencing.
- d) The security system shall provide an intuitive interface for on-site security staff to temporarily pause active alerting for specific sections while they are conducting patrols. This functionality must not disable the camera feed or recording but should allow for the selective suspension of alarms to prevent false alerts during manual surveillance.

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4.1.7 Existing conduits/trenching and perimeter fence

- a) Existing conduits and cable trays shall be assessed by the contractor for their suitability, structural integrity, and adequate capacity. Where found compliant, these existing pathways shall be reused to accommodate new security system cabling.
- b) Any existing underground trenching within the site, utilised for relatable power, communication, or previous security systems, shall also be assessed. These trenches may be reused for the new security system's cabling infrastructure, provided they meet all technical and safety standards.

4.1.8 Power availability and backup

For power connectivity, Distribution Boards (DBs) are available on-site, each possessing sufficient space to accommodate the security system's electrical requirements.

4.1.9 Lighting Conditions

The contractor shall conduct comprehensive on-site measurements and assessments of existing lighting conditions. These measurements are essential to inform and complete the detailed design of the security lighting system, ensuring optimal illumination for effective surveillance.

4.2 Scope of Work: Royston Substation

The scope for Royston substation includes the comprehensive design, supply, installation, testing, and commissioning of a complete site protection and advanced surveillance capability system, inclusive of an:

- a) integrated CCTV and perimeter detection system,
- b) fibre perimeter detection solution on all perimeter and fences,
- c) AI-based plant monitoring solution,
- d) remote video assistance platform,
- e) alarm system.

The appointed service provider(s) shall ensure that all equipment and systems supplied are fully compatible and capable of integration with the existing CathexisVision platform currently utilised within the Cluster.

4.2.1 Site Location

Req.	Description	Measure / Qty	Unit
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	Site location:	C/O Bonza Bay Rd and Edge Rd, Beacon Bay GPS: Latitude: 32.960156° S Longitude: 27.934701° E	Address & GPS Coordinates
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4.2.2 Proposed Equipment Placement Plan

This section provides a top-down view of the proposed security system layout, illustrating the strategic placement of all cameras and sensors across the site. While this document serves as a baseline for equipment location, the tenderer's final proposal must include detailed drawings that explicitly represent the fields of view and coverage areas, confirming the system's design and operational objectives.

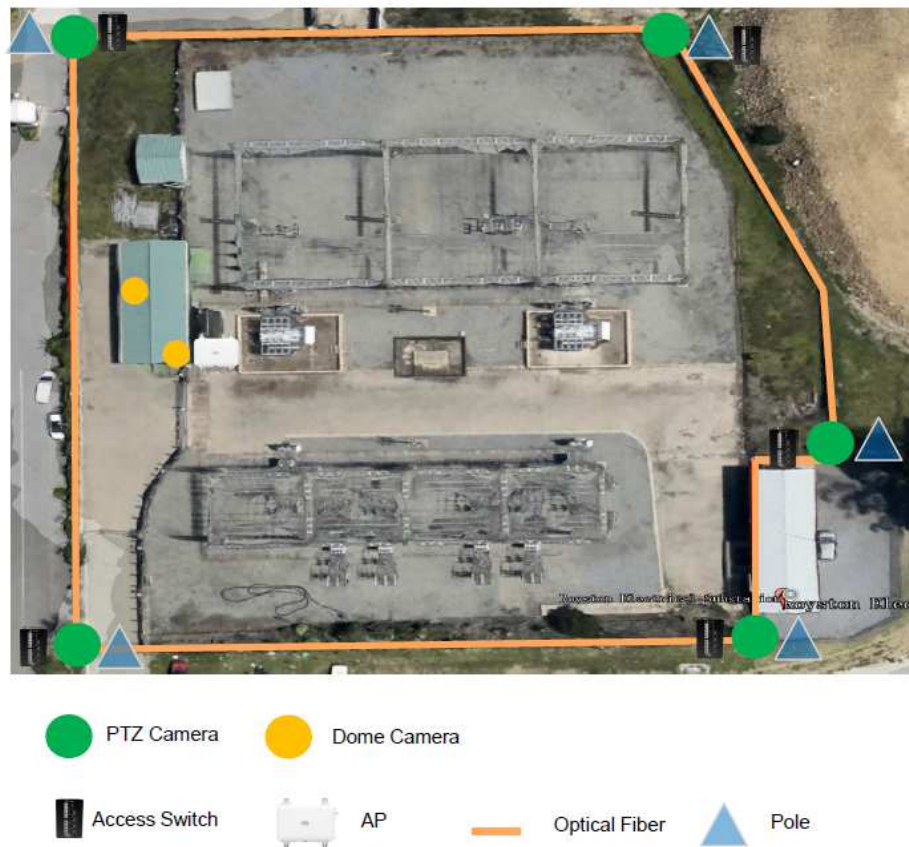


Figure 2: Royston Substation: Proposed Security Equipment Placement

4.2.3 Fibre Perimeter Intrusion Detection

Req.	Description	Measure / Qty	Unit
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a)	Fence estimated length:	327	m
b)	Perimeter structures:	Solid precast concrete fence (1.5m high) with razor wire.	

4.2.4 Perimeter Surveillance (PTZ Cameras)

Req.	Description	Measure / Qty	Unit
	The minimum number of PTZ cameras to be deployed to provide full perimeter coverage, with each camera strategically located at approximate 90-degree turns on the perimeter fence:	5	PTZ Cameras

4.2.5 Entry/Exit Point Surveillance (Bullet/Suitable Cameras)

Req.	Description	Measure / Qty	Unit
a)	Minimum number of bullet cameras to be deployed, or other equally suitable fixed cameras at the designated entry and exit point(s):	2 (2x at entry/exit to monitor 2 gates)	Bullet Entry/Exit Cameras
b)	Locations of entry & exit points:	Passageway off Edge Road.	Entry/Exit point

4.2.6 AI-based Plant Monitoring Solution – Outdoor Transformers

Req.	Description	Measure / Qty	Unit
a)	Outdoor direct monitoring of transformer metrics as described in Error! Reference source not found. , including and not limited to <ul style="list-style-type: none">temperatures (incl. body, bushings and cable terminations),oil and winding gauge temperature,detection of anomalies.	2x 66/11kV Transformers	Transformers

4.2.7 AI-based Plant Monitoring Solution – Indoor Control Room

Req.	Description	Measure / Qty	Unit
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CONTROLLED DISCLOSURE

a)	As described in Error! Reference source not found. , visual monitoring & AI-based interpretation of control plant panel states and readings, situated throughout the control room, each typically 800 (w) x 600 (d) x 2400 (h) mm in size.	Four sets of side-by-side panels: 1. 2x Panels: Transformer & AC/DC. 2. 1x Panel: HV Feeder 3. 4x Panels: MV Feeders 4. 1x standalone DC charger (short panel)	panels
b)	The control room's approximate size is:	18 x 6.5	m
c)	The current state of lighting within the control room & contractor's requirements:	Lighting inadequate, contractor to replace defective units and include any automated lighting controls necessary to enable the visual monitoring functions.	n/a

4.2.8 Telecommunications

The substation will be connected to the Gazebo Control Room at SOC.

Royston Substation is directly connected to Sunilaws Operations Centre via SMFO, which means that high-speed communications are available and will adequately meet the connectivity requirements of any security system and plant condition monitoring system.

Req.	Description	Measure / Qty	Unit
a)	The main control centre telecommunication link for this site shall be provided by:	Eskom	
b)	The type of communication link:	Tenderer to confirm	
c)	The interface to which the solution shall connect:	Tenderer to confirm	

4.2.9 Remote Video Assistance Platform

- a) A remote video assistance platform shall be installed as detailed in **Error! Reference source not found.**
- b) The entire substation yard shall be covered by this platform.

4.2.10 Site layout and access points

- a) The substation is accessed via a narrow, brick-paved alley south of the site, off Edge Road. This alley extends to a secondary access point at the rear, which includes a substation gate.
- a) The substation yard is equipped with an existing main earth mat constructed from 10mm diameter black copper rod. The earth mats for the 11kV switch room and the control room are also made from 10mm diameter black copper rod. The system utilizes 50 x 3 mm flat copper for the earth tails.

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- b) The substation has underground power cables running from the 11kV switch room.

4.2.11 Existing conduits/trenching and perimeter fence

- a) In the control room, new cables shall be accommodated exclusively within the existing metal plate-covered trenches. All cabling must enter these trenches through existing cable entries only.
- b) The substation yard has existing 600mm wide cable trenches, covered with concrete. A new cable route, using ducts, is to be identified and proposed for the security system.
- c) The substation's outer perimeter fence is constructed from a combination of precast concrete with razor wire.
- d) An overgrowing tree is present, encroaching upon and through the fence and mesh, which shall require removal or trimming. This work and all necessary environmental approvals required is included as part of the scope.

4.2.12 Power Availability and backup

- a) The security system's primary AC power supply shall be drawn from the existing building Distribution Board (DB).
- b) A suitably rated 2-pole MCB for the AC supply must be installed within the available space on the existing DB. The MCB shall include an auxiliary contact to indicate when it has tripped or been switched off.
- c) This new MCB shall be clearly and appropriately labelled upon installation.
- d) A revised Certificate of Compliance (CoC) for the entire electrical installation shall be issued upon completion.

4.2.13 Lighting Conditions

- a) Drawings indicating the positions of existing light poles in the substation yard shall be provided.
- b) On-site analysis / measurements shall be performed by contractor to complete security lighting design. The contractor shall not be required to implement this design.

4.2.14 Environmental Considerations

- a) The substation is bordered by residential units on its North, South, and West sides.
- b) Given the proximity to these residential areas, the design and implementation of the security system must be sensitive to the privacy of surrounding properties and mitigate any potential impact on their occupants.

4.2.15 Control Room Layout

- a) The existing control room has available space for the installation of security panels.
- b) Should multiple panels be required, vertical stacking (one above the other) is the preferred installation method, subject to panel dimensions.
- c) Eskom will provide a floor layout plan indicating the precise positioning of the panel(s) once their sizes are finalised.

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4.2.16 Decommissioning Requirements

- a) Where an existing, non-operational security system is installed on-site it must be fully decommissioned and removed by the contractor.

4.2.17 Provided Site Drawings & Documentation

All relevant project documents and drawings shall be provided to Eskom within a clearly organized, separate folder structure.

4.3 Scope of Work: Kraaifontein CNC

The scope for Kraaifontein CNC includes the comprehensive design, supply, installation, testing, and commissioning of a complete site protection and advanced surveillance capability system, inclusive of an:

- a) integrated CCTV and perimeter detection system,
- b) fibre perimeter detection solution on all perimeter and fences,
- c) alarm system.

The appointed service provider(s) shall ensure that all equipment and systems supplied are fully compatible and capable of integration with the existing CathexisVision platform currently utilised within the Cluster.

4.3.1 Site Location

Req.	Description	Measure / Qty	Unit
	Site location:	1 st Avenue Kraaifontein 7570 GPS: -33.8564, 18.7252	Address & GPS Coordinates






4.3.2 Proposed Equipment Placement Plan

This section provides a top-down view of the proposed security system layout, illustrating the strategic placement of all cameras and sensors across the site. While this document serves as a baseline for equipment location, the tenderer's final proposal must include detailed drawings that explicitly represent the fields of view and coverage areas, confirming the system's design and operational objectives.

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Figure 3: Kraaifontein CNC: Proposed Security Equipment Placement

				
PTZ	Dome	Bullet	Designated equipment room	Perimeter

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4.3.3 Fibre Perimeter Intrusion Detection

Req.	Description	Measure / Qty	Unit
a)	Outer perimeter estimated length:	400	m
b)	Perimeter structures:	Combination of: <ul style="list-style-type: none">• Palisade fence• Precast concrete• Brick walls	

4.3.4 Perimeter & Outdoor Surveillance

Req.	Description	Measure / Qty	Unit
	The minimum number of PTZ cameras to be deployed to provide full perimeter coverage, with each camera strategically located at approximate 90-degree turns on the perimeter fence extreme edges, and one in the centre of the facility:	5	PTZ Cameras
	Strategically located bullet (or similar) outdoor cameras at the most vulnerable areas:	12	Bullet / similar Cameras

4.3.5 Strategic Surveillance Areas

Req.	Description	Measure / Qty	Unit
	Dome cameras located indoor within stores areas and strategic locations, providing for a wide field of view.	4	Dome Cameras

4.3.6 Entry Point Surveillance (Bullet/Suitable Cameras)

Req.	Description	Measure / Qty	Unit
	Minimum number of bullet cameras to be deployed, or other equally suitable fixed cameras at the designated entry and exit point(s):	2 (included in outdoor totals)	Bullet Entry/Exit Cameras
	Locations of entry & exit points:	1x Guarded gates off 1st Avenue Road	Entry/Exit point

4.3.7 Server & Control Room Equipment Location

Req.	Description	Measure / Qty	Unit
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a)	All core security equipment, including servers, alarm system, and associated infrastructure, shall be installed within the:	Dedicated server room	
b)	A local display within the supervisor's office shall be provided to show a live grid view of cameras, preferably with simple controls:	55"+ Display 3x3 Grid	
c)	The local display shall be situated at:	Supervisor's office (approx. 35m from server room)	

4.3.8 Telecommunications

Req.	Description	Measure / Qty	Unit
a)	The main control centre telecommunication link for this site shall be provided by:	Eskom (NTCSA)	n/a
b)	The type of communication link:	Router / ADM (1410ADM / Cisco IR8340) 10 Mbps bandwidth	n/a
c)	The interface to which the solution shall connect:	Optical SFP / Copper SFP / built-in ports on telecoms devices Ethernet connection, 1Gbps or greater	n/a

4.3.9 Site Description

This section provides a detailed description of the Customer Network Centre (CNC) site, outlining its operational characteristics and existing infrastructure relevant to the proposed security system.

- a) The site functions as a critical field depot, accommodating field staff, their vehicles, tools, dedicated office spaces, and various storage facilities for materials and consumables.
- b) Presently, the facility's security is managed by contracted personnel stationed at the main gates, complemented by security patrols conducted at regular intervals across the premises.
- c) During standard work hours, the facility is actively manned by field staff. Significant activity also occurs after-hours, primarily driven by responses to power network events.
- d) The security system shall provide an intuitive interface for on-site security staff to temporarily pause active alerting for specific sections while they are conducting patrols. This functionality must not disable the camera feed or recording but should allow for the selective suspension of alarms to prevent false alerts during manual surveillance.

4.3.10 Lighting Conditions

- a) The site currently has LED floodlights covering vulnerable sections, though not all areas are comprehensively illuminated.

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- b) Tenderers are required to thoroughly assess these existing lighting conditions and tender a comprehensive solution that ensures optimal performance of the security system under all operational scenarios.

4.3.11 Decommissioning Requirements

- a) The successful tenderer shall be responsible for the professional decommissioning and removal of all existing and redundant security equipment on site.
- b) Decommissioning requirements include, but are not limited to, cameras, sensors, cables, conduits, poles with equipment boxes, and any other associated infrastructure rendered obsolete by the new security system.

4.3.12 Provided Site Drawings & Documentation

All relevant project documents and drawings shall be provided to Eskom within a clearly organized, separate folder structure.

4.4 Scope of Work: King Williams Town Complex and Warehouse

The scope for King Williams Town Complex and Warehouse includes the comprehensive design, supply, installation, testing, and commissioning of a complete site protection and advanced surveillance capability system, inclusive of an:

- a) integrated CCTV and perimeter detection system,
- b) fibre perimeter detection solution on all perimeter and fences.

The appointed service provider(s) shall ensure that all equipment and systems supplied are fully compatible and capable of integration with the existing CathexisVision platform currently utilised within the Cluster.

4.4.1 Site Location

Req.	Description	Measure / Qty	Unit
	Site location:	Everitt Cl Qonce 5601 GPS Location: Latitude: 32.892018° S Longitude: 27.402327° E	Address & GPS Coordinates

4.4.2 Proposed Equipment Placement Plan

This section provides a top-down view of the proposed security system layout, illustrating the strategic placement of all cameras and sensors across the site. While this document serves as a baseline for equipment location, the tenderer's final proposal must include detailed drawings that explicitly represent the fields of view and coverage areas, confirming the system's design and operational objectives.

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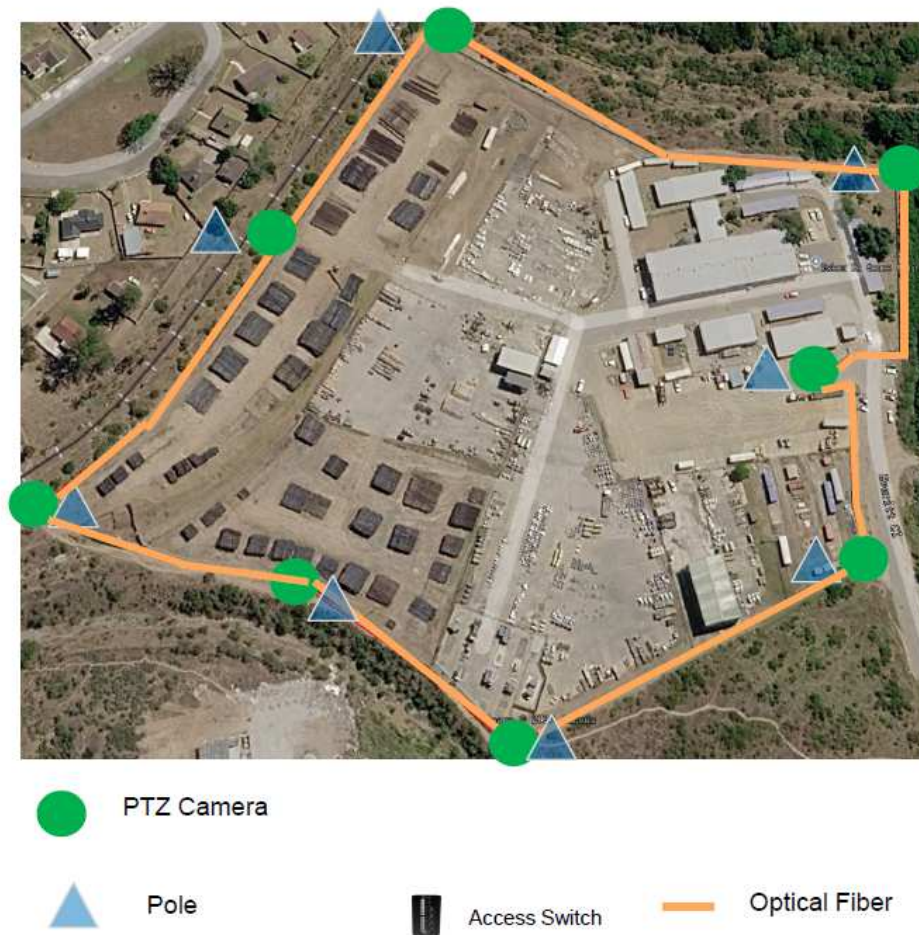


Figure 4: King Williams Town Complex and Warehouse: Proposed Outdoor Equipment Placement

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4.4.3 Fibre Perimeter Intrusion Detection

Req.	Description	Measure / Qty	Unit
a)	Outer perimeter estimated length:	1 100	m
b)	Perimeter structures:	Combination of: <ul style="list-style-type: none">• Steel mesh fence with razor coil wire (2.5 – 3m high)• Electric fence on the inside of the perimeter fence.	

4.4.4 Perimeter & Outdoor Surveillance (PTZ Cameras)

Req.	Description	Measure / Qty	Unit
a)	The minimum number of PTZ cameras to be deployed to provide full perimeter coverage, with each camera strategically located at approximate 90-degree turns on the perimeter fence extreme edges, and one in the centre of the facility:	8	PTZ Cameras

4.4.5 Server & Control Room Equipment Location

Req.	Description	Measure / Qty	Unit
a)	All local security equipment, including servers, an operator station, and associated infrastructure, shall be installed within the:	Dedicated security office.	
b)	The existing control room utilises primary displays. Tenderers must propose solutions that offer enough viewable area, comparable to at least the existing displays each with up to a 9x9 grid view. The solution must offer full local control (all hardware provided) of all cameras (incl. PTZ control), video playback, providing for alerts and event searching, etc.		

4.4.6 Site Description

- e) The site is characterized by a large, metal-roofed warehouse structure.
- f) It features multiple access-controlled gates, dedicated storage yards, and various parking areas.
- g) Additionally, the facility includes external open areas for storing oversized items (e.g., steel, poles, pipes), all serviced by inner access roads and internal service lanes. Several sections of this facility are cordoned off by fencing.
- h) The contractor shall assess and communicate all vegetation clearance requirements with the site. This communication will enable Eskom to perform the necessary clearing to support the security system design.

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- i) The security system shall provide an intuitive interface for on-site security staff to temporarily pause active alerting for specific sections while they are conducting patrols. This functionality must not disable the camera feed or recording but should allow for the selective suspension of alarms to prevent false alerts during manual surveillance.

4.4.7 Existing conduits/trenching and perimeter fence

- c) Existing conduits and cable trays, previously utilised for the legacy camera system, shall be assessed by the contractor for their suitability, structural integrity, and adequate capacity. Where found compliant, these existing pathways shall be reused to accommodate new security system cabling.
- d) Any existing underground trenching within the site, utilised for relatable power, communication, or previous security systems, shall also be assessed. These trenches may be reused for the new security system's cabling infrastructure, provided they meet all technical and safety standards.

4.4.8 Power availability and backup

For power connectivity, Distribution Boards (DBs) are available on-site, each possessing sufficient space to accommodate the security system's electrical requirements.

4.4.9 Lighting Conditions

The contractor shall conduct comprehensive on-site measurements and assessments of existing lighting conditions. These measurements are essential to inform and complete the detailed design of the security lighting system, ensuring optimal illumination for effective surveillance.

4.5 Training

The successful tenderer shall provide comprehensive training to ensure all relevant personnel are fully proficient in the operation, maintenance, and administration of the deployed Intelligent Security System.

The training shall include/cover:

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- a) hosting in the designated provinces to maximise accessibility and relevance for local teams;
- b) as a minimum requirement, both technical aspects tailored for maintenance personnel (e.g., system diagnostics, troubleshooting, preventative maintenance, component replacement) and operator-level instruction for end-users (e.g., VMS operation, alarm monitoring, incident response protocols, report generation);
- c) presentation by qualified and experienced instructors with proven expertise in the deployed systems and technologies;
- d) both in-person and online delivery methods, with recordings of all sessions provided to Eskom for future internal use. The specific delivery method and frequency (**up to four sessions**) shall be mutually agreed upon between Eskom and the successful tenderer, allowing for a combination of in-person and online instruction;
- e) post-training support to address any queries or issues that may arise during the initial operational period.

4.6 Guarantees, Warranties, and Support

The tenderer shall provide comprehensive guarantees and warranty provisions covering all hardware, software, and the overall system implementation. The warranty period shall be clearly defined and shall include, as a minimum, coverage for defects, performance, and workmanship. The tenderer shall also outline the support arrangements during the warranty period, including response times, and escalation procedures.

4.7 Software and Hardware Licensing

The tenderer shall provide a flexible, transparent, and clearly defined licensing model for all software and hardware components. Licensing structures shall accommodate future expansion, upgrades, and scalability requirements without imposing undue restrictions or excessive costs. Full details of licensing terms, including validity periods, renewal conditions, and associated costs, shall be included in the proposal.

5. Acceptance

This document has been seen and accepted by:

Full Name and Surname	Designation
Thembuz Mbali	Cape Coastal Cluster: Portfolio Manager
Elliot Ntaka	Cape Coastal Cluster: Programme Manager
Zolile Mvakade	Cape Coastal Cluster: Control Plant
Dumisani Nkambule	Cape Coastal Cluster: Power Plant Maintenance
Dumza Masingata	Cape Coastal Cluster: Plant Manager
Elre du Plessis	Cape Coastal Cluster: Security Manager
Archie Mabula	Cape Coastal Cluster: AC Chief Engineer
Christine Van Schalkwyk	Cape Coastal Cluster: AC Chief Engineer
Donny Govender	Cape Coastal Cluster: M&O Chief Engineer
Tebello Mahlaba	Cape Coastal Cluster: M&O Chief Engineer
Tracy Knight	Cape Coastal Cluster: M&O Chief Engineer
Njabulo Ngwane	Cape Coastal Cluster: Portfolio Manager

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Full Name and Surname	Designation
Ahilan Kailasanathan	Cape Coastal Cluster: Programme Manager
Raees Dalvie	Cape Coastal Cluster: Control Plant
Mark Bellingan	Cape Coastal Cluster: Control Plant
Quaseem Mohamed	Cape Coastal Cluster: Power Plant
Arlene Martin	Cape Coastal Cluster: Security Manager
Lukanyo Matyila	Cape Coastal Cluster: Real Estate
Adolph Lekganyane	Dx Security
Theophilus Milubi	Dx Security

6. Revisions

Date	Rev.	Compiler	Remarks
April 2026	1	Henry Jordaan	SoW for the establishment of a contract for security projects

7. Development Team

Special acknowledgement is hereby given to Tertius Hyman for his contribution in compiling the original National Scope, which, although not published, forms the basis of this document.

The following people were involved in the development of this document:

- Cluster Project Teams

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