



Additional Specification for Dual-Stage Intrusion Detection & Deterrent System with Pepper Spray Backup at the Upgraded Effluent Plants				
Compiled By:	Qaasim Soeker		Date:	01.06.2025
Approved By:	Sibonelo Msizazwe			02 June 2025
Local Business:	Locomotive			
Location:	Swartkops, Cambridge (Excludes Bellville and Saldanha)			

The following specification is to cover security issues identified at the Swartkops and Cambridge Depots only

1. INTRODUCTION

This specification outlines the supply, installation, and commissioning of a dual-stage intrusion detection and deterrent system at the effluent plant. The system must function with:

- Stage 1: Motion detection via PIR sensors and activation of a high-decibel audible siren alarm. Audible at least 100 meters
- Stage 2: Pepper spray deployment via a secondary microwave sensor if intrusion persists, acting as the final line of defense.
- The system must have wired power with solar + battery backup and include training for security personnel.

2. SCOPE OF SUPPLY AND INSTALLATION

2.1 Primary System: PIR Motion Detector + Siren

- Install dual-zone PIR motion detectors along inner fence perimeter.
- The siren must activate automatically upon detection.
- Siren specifications:
 - i. Minimum 120 dB SPL, audible at $\geq 100\text{m}$ distance.
 - ii. Outdoor-rated IP65.
 - iii. Mounting brackets and tamper-proof casing.
- Zone-based configuration with timed arming/disarming function.
- Manual override option for deactivation.

2.2 Secondary System: Microwave Sensor + Pepper Spray Unit

- Install microwave or radar-based presence detectors at critical locations to confirm sustained intrusion.
- Units must trigger pressurized pepper spray dispersion in direction of intrusion zone.
- Pepper spray canisters:
 - i. Minimum 15-second continuous burst capacity.
 - ii. Non-lethal, CS/OC-based.
 - iii. Outdoor-rated, IP55-rated stainless steel casing.

- Control panel with programmable logic for:
 - i. Delay function post-siren.
 - ii. Fail-safe deactivation during maintenance.
 - iii. Secure arming via keypad and simple remote (Should be able to do both)
- Include safety signage and audible pre-dispersion countdown alert.

2.3 Power and Backup System

- Wired AC power (230V).
- Solar backup system with:
 - i. 2 x 100W panels.
 - ii. 12V DC inverter system.
 - iii. Deep cycle 100Ah battery.
- All cabling to comply with SANS 10142-1.

2.4 Training for Security Personnel

- Onsite training for security and operational personnel
- Topics to cover:
 - i. System arming/disarming – Both Systems should be armed/disarmed via simple remote (8 of these to be supplied as part of this contract)
 - ii. Emergency override.
 - iii. Incident reporting protocol.
 - iv. Monthly testing procedures.
- Training material to be supplied in printed and digital formats.
- Safety training on pepper spray use and personal protective measures.

3. COMPLIANCE AND STANDARDS

All components and work shall comply with:

- OHS Act 85 of 1993
- SANS 10263-0: Use of aerosol spray deterrents
- SANS 10142-1: Electrical installations
- SAPS Controlled Substances Guidance (for non-lethal deterrent sprays)

4. DELIVERABLES

- Complete installation and commissioning.
- User manual and system wiring diagram.
- Test certificate.
- Asset register of components.
- Attendance registers and certification of trained personnel.