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Access Control within the BCMM Electrical Infrastructure

BUFFALO CITY
METROPOLITAN MUNICIPALITY

Represented by: Darrel Puzilewicz

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Background

- Break-ins involving theft and vandalism in Buffalo City Metro's substations and switch houses increased significantly in recent years.
- Once thieves were able to gain access to the substation yards, they would cut the control cables and earth conductors from transformers steel structures and other equipment.
- Thieves frequently broke down the wooden substation doors to gain access.

Challenges

- Conductor and cable theft
- Substation earthing theft
- Battery theft
- Solar panel theft
- Own staff not reporting entry into the substation and activating the alarm
- To identify an attempted intrusion vs a positive intrusion
- On going maintenance

Challenges – Vandalism

- Damage to infrastructure and loss of supply to the consumer

Steps Taken

- Installation of steel doors, gates, new fencing and electric fencing
- Perimeter Lighting
- Alarm Systems
- CCTV
- Inverter systems
- Control/surveillance Room
- Linking access control to BCMM SCADA systems

Doors, Gates, fencing

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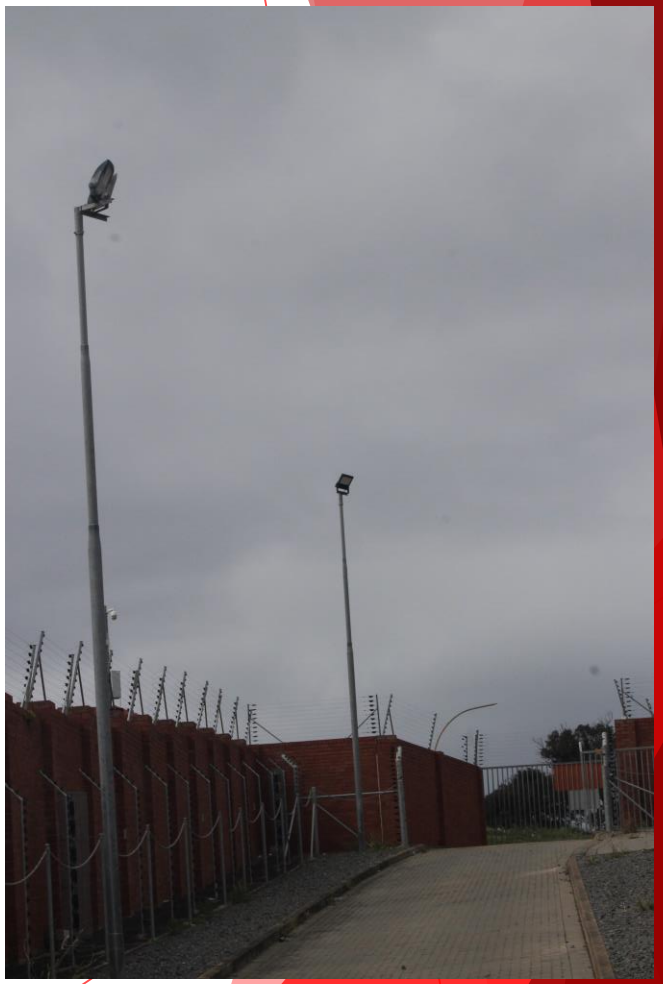
- Installation of:
  - Steel doors,
  - Trellidor gates,
  - Betafence fencing
  - Electric fencing linked to the alarm system

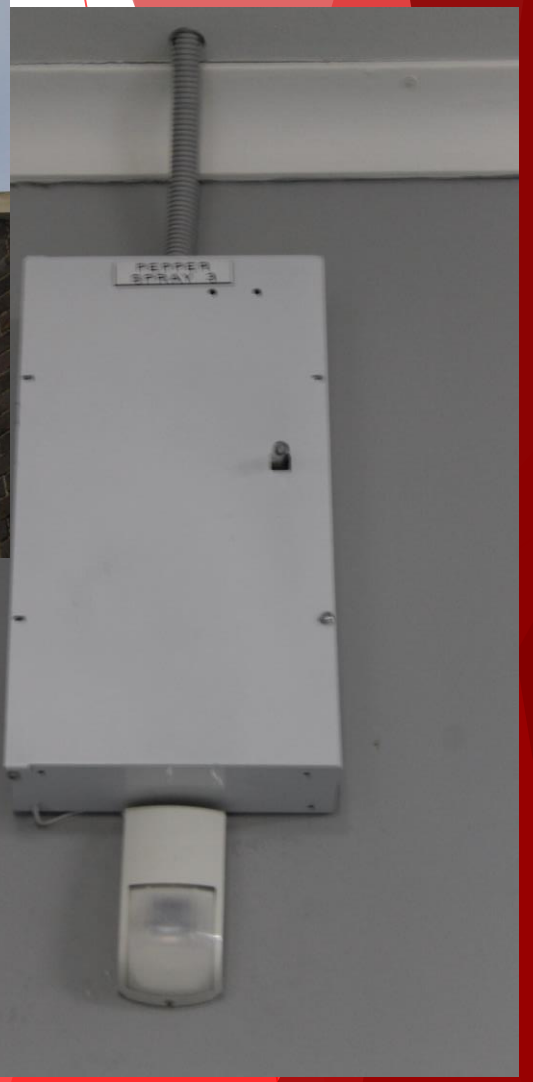
Perimeter Lighting

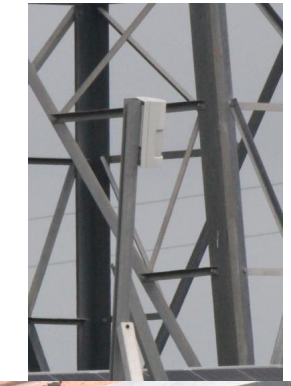
- Installation of:
  - High Mast lights,
  - Flood lights on the Sub Station Buildings



Alarm Systems

- Installation of:
  - 24hr monitored alarm,
  - Vibration sensors,
  - Pepper Spray,
  - Infra red beams,
  - Door mags and anti cloak PIR's (in ceiling voids as well)
  - Electric fencing linked to Alarm
  - Linked to an Olarm and SCADA system where it shows which zone has been activated





CCTV Systems

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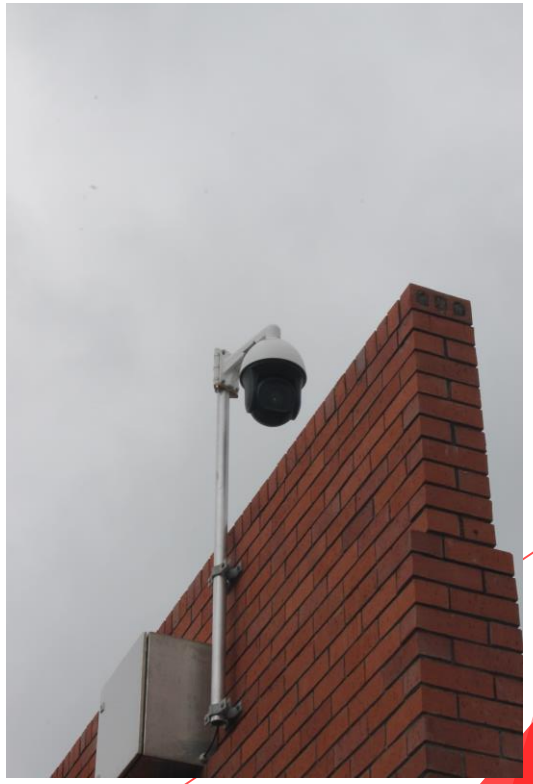
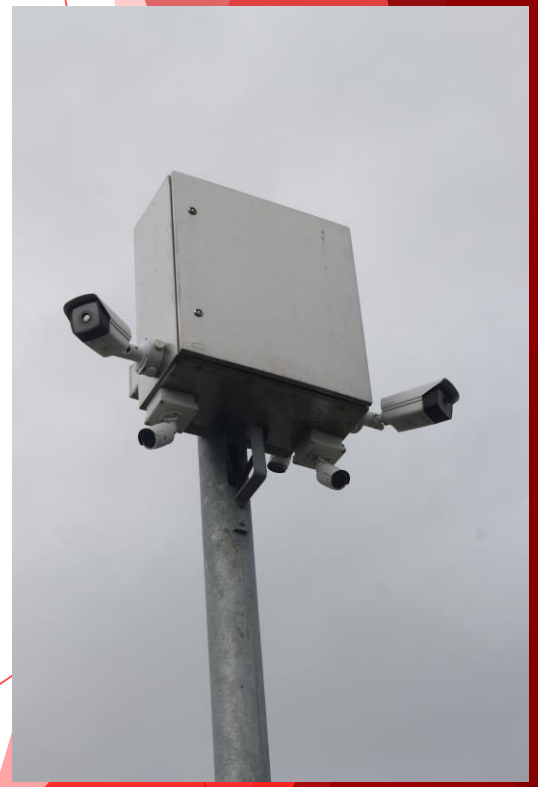
- Installation of:
  - Bullet, Dome, thermal, PTZ, & Covert Cameras,
  - Perimeter Cameras with a virtual fence,





CCTV Systems

- Thermal Cameras

CCTV Systems

- Monitored 24 hrs

Inverter Systems

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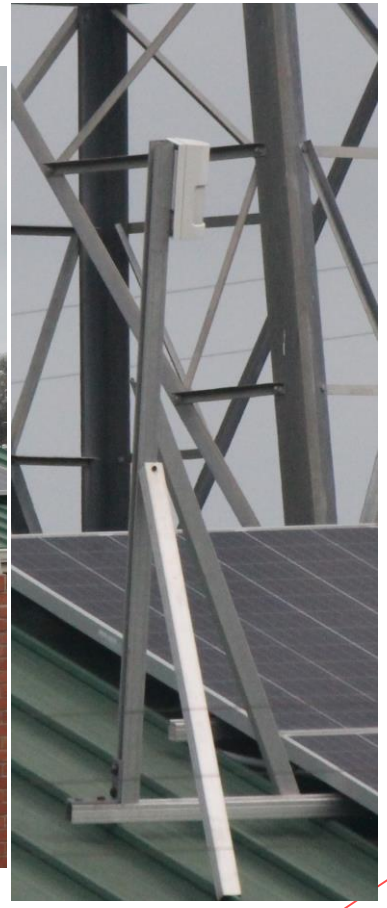
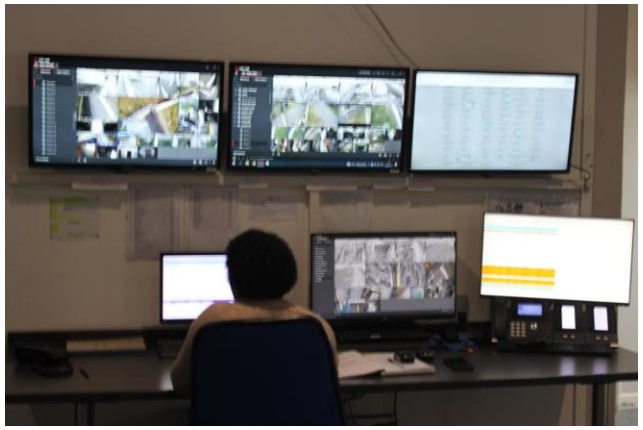
- Installation of:
  - Inverters with Lithium Iron Batteries,
  - PV Systems on keys Sites, with electric fencing



Control/Surveillance Room

- Connected 24/7 to all the alarms and CCTV cameras
- Intercom systems to each substation
- Reel time footage
- If a credible threat, can send out a reaction team
- Linked via a series of radio links and fibre optic cables



Control/Surveillance Room

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Pro's & Con's

- Pro's:
  - System is working
- Con's:
  - False Activations
    - Vermin (geckos)
    - Equipment failure (PIR's, etc)
    - Doors not closed properly by staff
    - Staff not reporting upon enter and activating alarms
    - Vegetation maint. along electric fence
    - Monthly inspections on the fencing

In Conclusion

- In the past we experienced multiple break-ins. We are still rolling out these measure across the Metro, but on the last intruction we had on a site with these measures in place, the reaction officers were on site with the intruders still in the yard before they could steal anything.

Thank you