

REPORTS

CONDITION ASSESSMENT REPORT FOR THE (former) OFFSHORE WAREHOUSING PROPERTY AT BAYHEAD PARK

Project Name : Condition Assessment (38 Kobe Road)

Project Number : TBA

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Owner : Transnet National Ports Authority

Client/User : Transnet National Ports Authority

Revision Number : 00

Release Date:

Print Date: 19/06/2023



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
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1 EXECUTIVE SUMMARY

1.1 General Description

The Bayhead area in the Port of Durban is a complex comprising of storage container yards, ship repair facilities, and other support services. This technical report presents the findings of a condition assessment conducted on the ex-offshore warehouse in Bayhead on June 12, 2023.

Condition assessments play a vital role in verifying that structures comply with applicable building codes, particularly in terms of their structural integrity and electrical installations. These assessments aim to identify potential structural failures caused by inadequate building maintenance and other non-controllable factors. Structural integrity ensures that a building functions optimally, withstands various structural loads (including its own weight), and remains stable, without significant deformation, brittle fractures, or collapse, while serving its intended purpose.

Regular inspections and maintenance are essential to ensure a structure operates at its optimal level. Neglecting these activities can lead to structural failure.

It is important to note that this physical inspection was conducted in the absence of as-built drawings. Consequently, all estimates and inspections were based solely on visual observations. The site comprises of a warehouse with a loading area, a canteen commonly known as the fish-shop, and an administrative building, which appears to be newer than the other structures.

1.2 Property Description

The Ex-Offshore Warehousing property is located within the Bayhead precinct in the Port of Durban. The surrounding area consists of mainly logistics companies that handle containers, there are multiple container storage yards within the vicinity of the site. Figure 1 shows the aerial view of the site.



Figure 1: Locality

Property Details:

<i>Name:</i>	EX-OFFSHORE WAREHOUSING
<i>Description:</i>	Portion 15 of Erf 10013- <i>DURBAN</i>
<i>Address:</i>	38 Kobe Road, Bayhead Precinct, Durban, 4001
<i>Purpose:</i>	Cold storage
<i>Size:</i>	3 255m ²

2 INTRODUCTION

2.1 Purpose

The objective of this report is to present the findings of a condition assessment conducted at the former Offshore Warehouse property in the Bayhead Precinct on June 12, 2023. The purpose of this assessment was to evaluate the physical condition of the existing infrastructure, and electrical installation of the facility (and air-conditioning), as well as the electrical connection from the Municipality. It is important to note that the assessment was limited to a visual inspection of the structural components of the buildings on the property.

The results of this report aim to provide guidance to the Transnet (NPA) Property Department regarding the plans for the property. These plans may include options such as demolishing the building, upgrading the building, or repurposing it for other uses.

2.2 Scope of Investigation

The scope of the assessment was mainly focused on the structural elements of the buildings and including the electrical installations. The civil engineering team had to establish the condition of the structure and whether it is structurally sound and fit for purpose.

The main structural elements inspected consist of the following:

- Walls
- Structural Steel Frames
- Floors
- Roof
- Staircase, etc.

The team was also looking for any visible sign of defects caused by natural and unnatural events such as:

- Natural disasters like lightning, hail and storm, flood, and volcanic eruption.
- Vandalism
- Fire

The electrical engineering team had to establish the condition of all electrical installations including air-conditioning units caused by natural and unnatural events such as:

- Natural disasters like lightning, hail and storm, flood, and volcanic eruption.
- Vandalism
- Fire

3 CONDITION ASSESSMENT FINDINGS

This section comprises of the findings from visual inspection conducted on the 12th of June 2023. It gives the structural description of the building, detailed assessment of defects and deterioration, and the survey of exposure to aggressive environment. The conclusion and recommendations provided include engineering views, assessment, and judgement. Of which such conclusions and recommendations could be different, depending on the professional engineer assigned to undertake the inspections at that time.

The buildings were evaluated and rated using the TNPA Asset Maintenance Principles and Procedures (AMPP) shown in Table 1 below:

Table 1: AMPP Rating Guide

Condition				
Poor	<40%	Not safe for use	Major upgrades required	Decision required on future of asset
Satisfactory	40-59%	Safe	Some urgent work required	Use of current and planned budget
Good	60-79%	Safe	Moderate ongoing maintenance required	Plan for next cycle
Very good	80-89%	Safe	Minor maintenance required	Plan for next cycle
Excellent	90-100%	Safe	No maintenance required	No budget needed

3.1 Layout of the Property

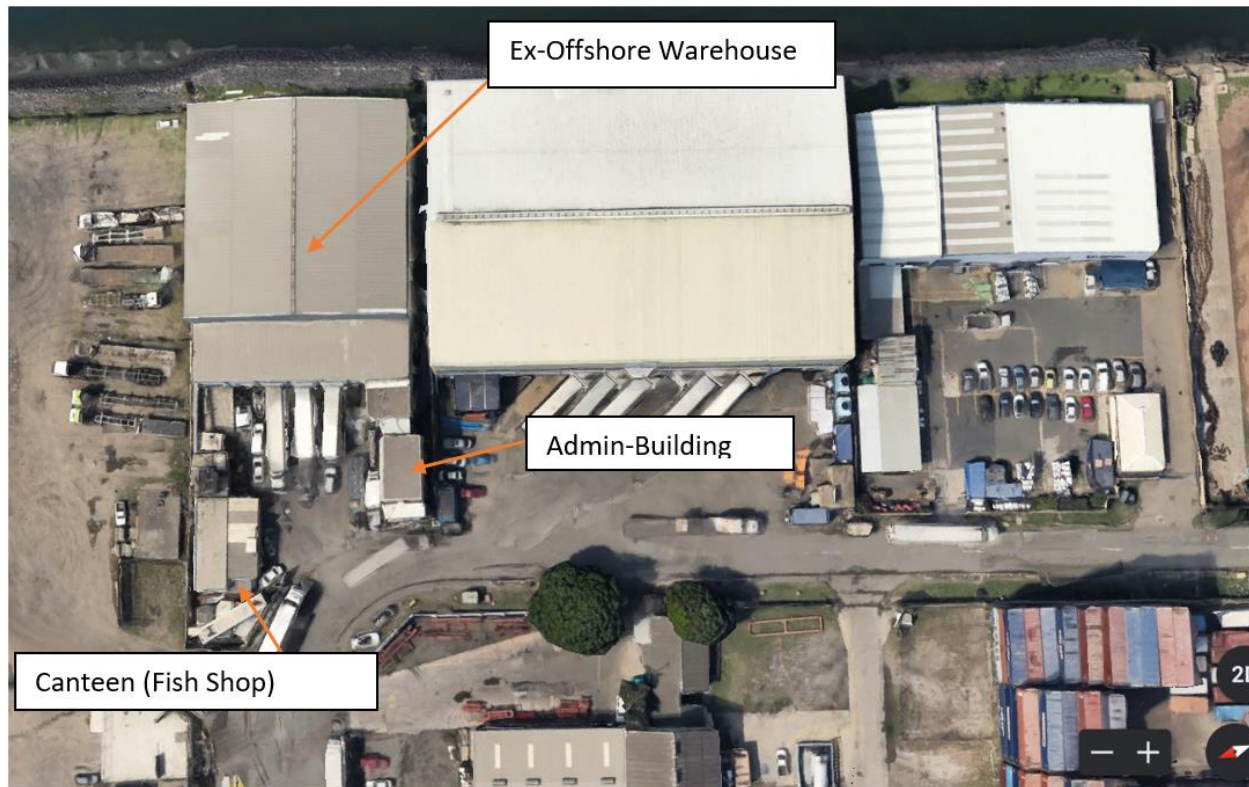


Figure 2: Site Layout (38 Kobe Road)

The property comprises of three structures, namely, the warehouse, the admin building, and the canteen (fish shop) building as shown in figure 2. The warehouse was mainly used as a cold storage facility, and the admin building was used for office space and ablution facilities.

3.2 The Canteen (fish shop) Building

The canteen (Fish Shop) building illustrated on Figure 3 is constructed of approximately 50% brick walls, and 50% prefabricated modular panels which seem to be an addition to the original brick structure. This building is separated into 2 units, the canteen, and the refrigeration plant building.

- The fish shop has a length of 15m and a width of 10,4m which makes an area of approximately 156m² of the canteen building, and the cooling system building is approximately 36.85m².
- The prefabricated panels forming the addition of the canteen are in poor condition, which is evidence of prolonged exposure to the natural elements.
- Detail of the inside of the canteen could not be observed as the inside of the building was not accessible.



Figure 3: Canteen (Fish shop)

- The adjoining brickwork building has an area of approximately 36,85m².
- The adjoining building next to the canteen building is constructed of 100% clay bricks and has a cooling system on the roof. The brickwork of this building has water damage causing the dark stains.
- The cooling system is corroded due to its exposure to an atmosphere high in sodium chloride.
- This building has a concrete roof and seems to be in good condition.
- There are doors missing for this building, and the gates are damaged.

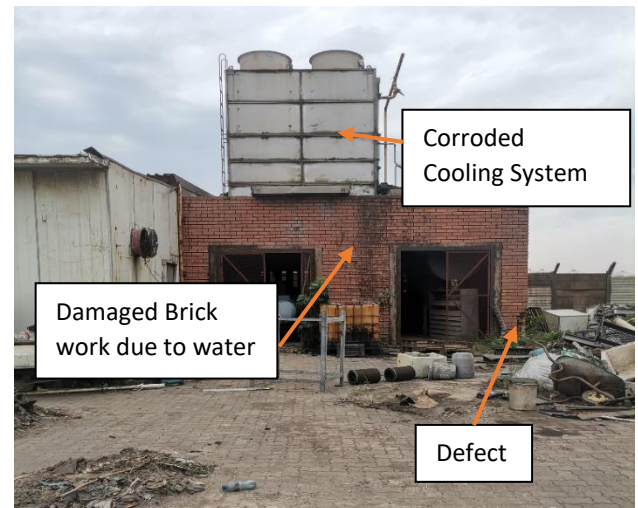


Figure 4: Refrigeration plant building

- Figure 5 shows the doorway of the prefabricated part of the fish shop.
- The prefabricated panels have been affected by corrosion due to its unmaintained exposure to the water and environment.



Figure 5: Canteen entrance door

- Figure 6 shows the state of the equipment in the plantroom.
- Control Panel Stripped.
- Cooling Tower Vandalized & Corroded.



Figure 6: Electrical Equipment

Structural Element	Condition Rating		Comments
	%	Safe/not safe	
Brick walls	50%	Safe	Minor refurbishments required
Prefabricated Panels	39%	Not Safe	Needs to be removed
Steel Cover (cooling system)	39%	Not Safe	Needs to be removed
Concrete Roof	90%	Safe	Minor refurbishments required
Electrical Equipment/Installations	39%	Not Safe	Must be scrapped

3.3 Warehouse Building

The warehouse is the largest structure within the property. The walls consist of 60% steel cladding, 25% brick and masonry and 15% prefabricated modular panels, which may assume to be used as insulation. The internal steel members seem to have been exposed to the sodium chloride particles in the atmosphere which have resulted in the corrosion.

- The warehouse served as a cold storage facility; it has a floor area of 1575 m².
- Structural elements that make up the ex-offshore warehouse are 60% wall cladding, 25% brickwork, 15% prefabricated modular panels, I-beam steel columns, and a roof sheeting supported by steel rafters (I-beam).
- It consists of insulated sliding doors.
- The marine environment increases corrosion in steel structures as it is known for high levels of humidity and high salt content in water particles.

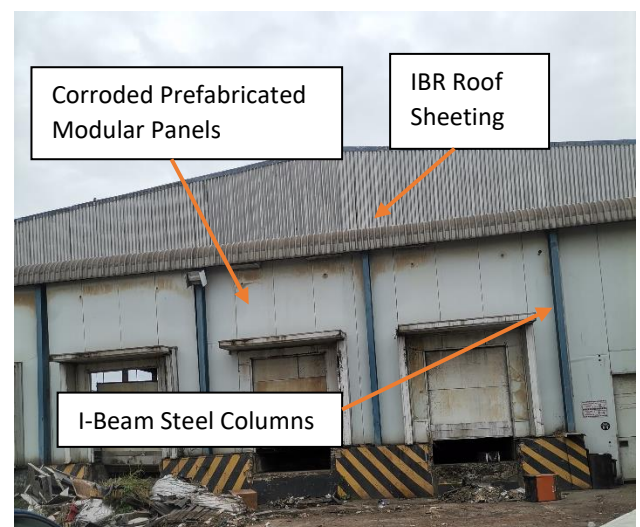


Figure 7: Exterior view of the ex-Offshore warehouse

- The steel columns are of 3mm thickness, 30cm x 17cm in length, width respectively and are spaced 5m apart.
- Some of the steel columns in this warehouse are not in good condition as shown in Figure 6, they are corroded due to exposure to the marine environment.



Figure 8: Steel column

- The loading section has a floor area of 250m² and made of a concrete slab.
- It has an IBR sheeting utilised for the roof, c-shaped steel purlins and I-beam steel rafters supporting the roof structure.
- The steel material in this section is in good condition.



Figure 9: Interior view of a mono-pitched loading section

- The loading section has an elevation of 1,6m, 25m in length and 10m wide.
- Water leaks onto the side of the loading section (see Figure 8) can damage the foundation given that concrete foundations are porous.
- Steel structures in this section of the warehouse are in good condition.



Figure 10: Concrete slab elevation of the loading section

- Structural steel members that were utilized to support the internal side of the roof are trusses, hollow bracings, c-shaped purlins, and I-beam rafters.
- The external part of the roof is 100% roof sheeting.
- The portal frames are spaced at 5m apart (center-to-center) and extend over a span of 35m in total.
- Corrosion was identified on the roof sheeting as shown in figure 10.

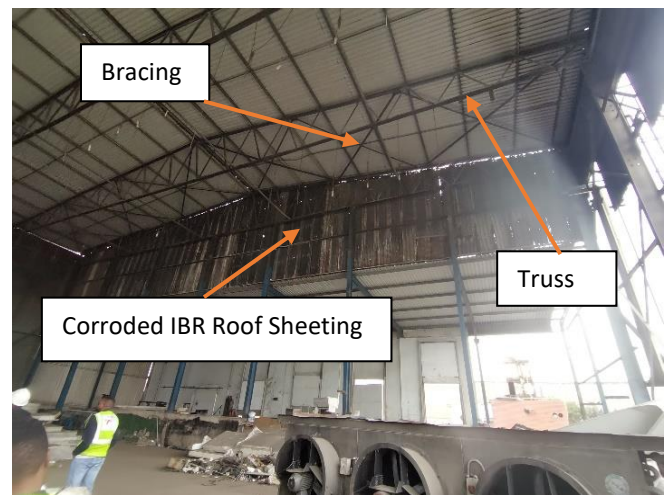


Figure 11: Interior view of the roof

- The warehouse is only braced at the end panels along the sides excluding the loading section (see figure 8 and 11).
- The wall cladding is damaged, partitioning parts of it have come off and the material is corroded.
- The brick work is exposed and affected by water leaks.

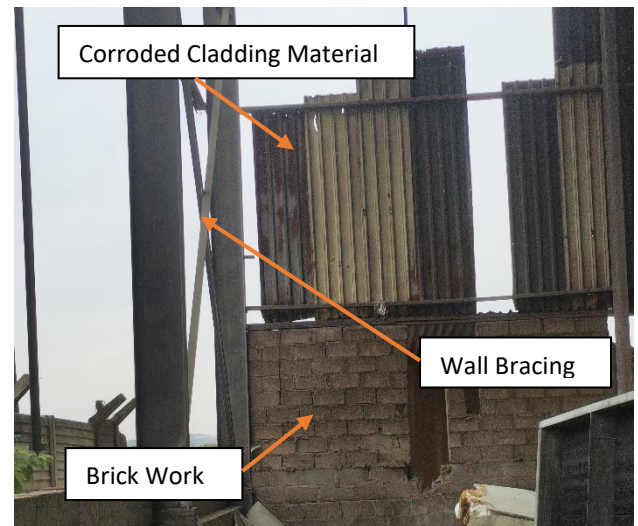


Figure 12: Wall (inside the warehouse)

- The doors are not in a good condition as shown in figure 12. The doors do not slide properly, and corrosion was identified on steel parts of the door.
- Some doors have fallen off.



Figure 13: Damaged sliding doors of warehouse

- Girts are of a channel section of steel and sag bars are of an angle section type of steel.
- The steel members shown in figure 13 are in a good condition and however,
- The wall cladding on the sides has come off (see figure 13).

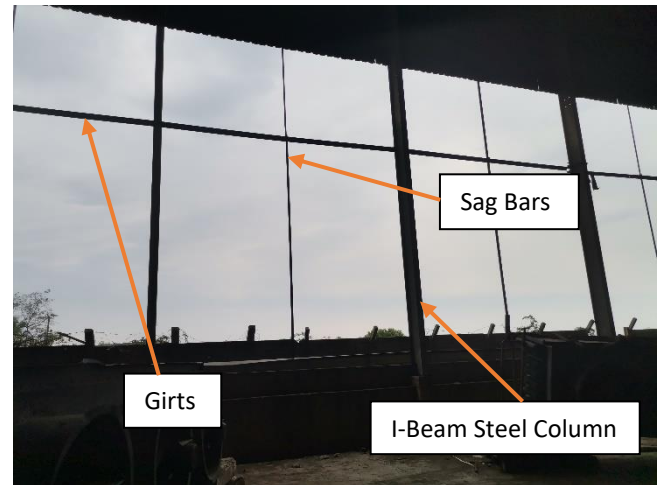


Figure 14: Interior steel members

- Handrails and the staircases are corroded therefore are not in a good condition.
- There is no allowance between the staircase and the door.
- The steps of this staircase are too close and too small, this may have been done to accommodate the small space in which they are located. In the case of an emergency, these stairs may be risky as people may fall.

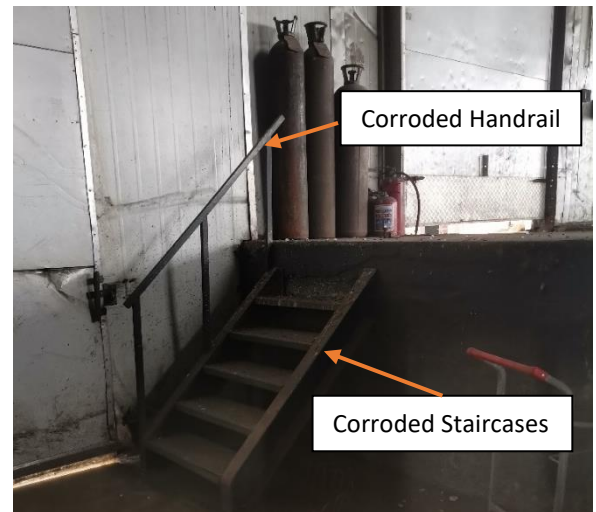


Figure 15: Steel staircase and handrail

- Figure 16 shows the damaged Cooling Fans on the floor removed from the ducting.



Figure 16: Damaged Cooling Fan

Structural Element	Condition Rating		Comments
	%	Safety	
Masonry Walls	60%	Safe	Refurbishments and maintenance is required.
Prefabricated Panels	39%	Not Safe	Replacement required.
Insulated Doors	60%	Safe	Replace or fix broken doors.
Sag bars	80%	Safe	Minor maintenance required.
Steel Beams	80%	Safe	Minor maintenance required.
Steel Columns	75%	Safe	Minor maintenance required.
Steel Bracing	80%	Safe	No maintenance required.
Steel Purlins	90%	Safe	No maintenance required.
Steel Girts	85%	Safe	No maintenance required.
Steel Connections (bolted)	90%	Safe	No maintenance required.
Steel Connections (welded)	90%	Safe	No maintenance required.
Wall Cladding	20%	Safe	Replace steel cladding with new cladding.

Steel Stairs and Handrails	39%	Not safe	Replace with wide stairs for safety.
Concrete Floor	80%	Safe	Minor repairs required.
Electrical Equipment/Installations	39%	Not Safe	Must be scrapped

3.4 The Admin Building

The admin building is one of the newer buildings on this property, but due to the lack of maintenance and over-sight, some of its elements have started to deform and have defects. The admin building is mainly used for offices, ablutions, and the security control room. This building is approximately 90% brick work, and 10% steel (the stairs, the balcony and the railings)

- Figure 15 shows the front view of the admin building, which seems to be structurally sound.
- This admin building is approximately 98m² and is a 2-story building.
- From this picture no defects can be identified.



Figure 17: Admin building (front view)

- The steel sheeting used to cover the entrance to the ablutions and prevent it from rain is starting to deteriorate due to the lack of maintenance and harsh winds and other environmental factors it is exposed to as it is located near the ocean.



Figure 18: Deteriorated steel sheeting

- Figure 17 and 18 show the corrosion of the steel components of the admin building.
- Most of the corroded parts have broken off on their own making the balcony and staircase unsafe for use, and thus the 1st floor is not accessible.



Figure 19: 1st Floor balcony



Figure 20: Steel balustrades on the balcony

- One of the rooms used as offices has electric cables that are left hanging from the ceiling which may have been previously used for the security systems or network systems.

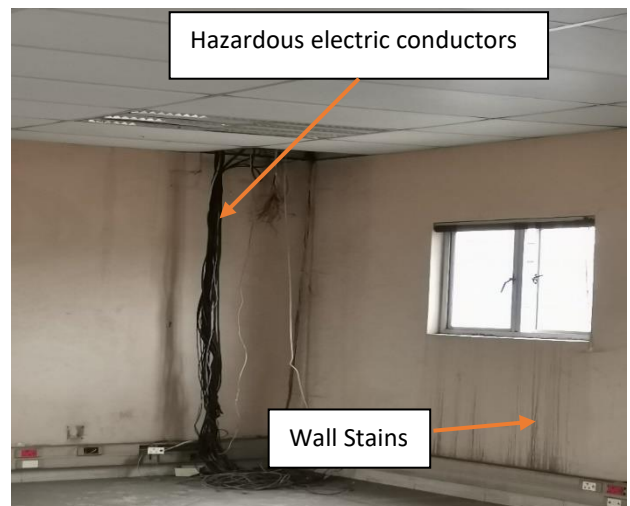


Figure 21: Exposed electrical cables

Structural Element	Condition Rating		Comments
	%	Safe/not safe	
Brick walls	90%	Safe	Minor maintenance required for the water-stained areas

Steel Railing	39%	Not Safe	Material needs to be replaced
Steel Balcony	20%	Not Safe	Major upgrades need to be done
Roof	70%	Safe	Leaks need to be closed

4 LIMITATIONS

This was solely a visual inspection of a building structure, no load calculations or design verifications conducted. The constraints experienced include tall heights for roof inspection, lack of As-built drawings to assess the original design of the buildings.

5 FINANCIAL IMPLICATIONS

Item	Description	Unit	Qty	Rate	Amount
1	Clear and remove rubble	m ²	1169	R 21,042.00	R 21,042.00
2	Clear site of all bushes, grass, weeds, shrubs, trees with trunks not exceeding 200mm girth, etc., including grubbing up all roots, and cart away all vegetation and debris.	m ²	1185	R 27,814.32	R 27,814.32
3	Supply and install IBR sheeting for roof cladding	m ²	23.75	R 7,054.32	R 7,054.32
4	Supply and install IBR sheeting for side wall cladding	m ²	475	R 141,086.40	R 141,086.40
5	Supply and install PVC rainwater gutters and downpipes	m	130	R 43,580.42	R 43,580.42
6	Supply and install ceiling boards	m ²	98	R 25,560.36	R 25,560.36
7	Supply and apply paint interior walls	m ²	285	R 45,349.20	R 45,349.20
8	Supply and install windowpanes	sum	1	R 2,121.60	R 2,121.60
9	Supply and install roller doors	No.	4	R 58,831.97	R 58,831.97
10	Supply and install toilets, cistern, sink and all necessary plumbing accessories	sum	1	R 2,735.80	R 2,735.80
11	Supply and apply warehouse floor coating	m ²	1225	R 584,766.00	R 584,766.00
12	Demolish Canteen Building: (footprint : 192.85m2)	sum	1	R 392,926.17	R 392,926.17
13	Reinstate drainage system within the site	sum	1	R 50,000.00	R 50,000.00
Total Estimated Costs					R1,402,868.57

6 CONCLUSION

Civil Structures:

The general condition of the property is poor; however, the main buildings (Warehouse and Admin building) are still salvageable through major refurbishment. There was some steel equipment identified on the property, this equipment must be scrapped as it is no longer in fit for purpose. The canteen or fish shop building is in a very poor condition and should be demolished to make space for the repurposing of the property.

The structural steel members of the portal frame warehouse have no significant damage, however there are signs of prolonged exposure to the elements, hence the residual strength of the timber members must be assessed. The key elements of the structure (Walls, Roof, Foundation) require a further assessment by a professional engineer to establish the residual strength of the steel members.

Electrical Installations:

The facility receives its power supply from eThekweni Municipality via a 3 phase 500kVA 11kV/415V 50Hz mini substation is situated on Kobe Road alongside the Canteen Area. This mini substation could not be inspected due to a lot of vegetation that grew around it.

Inspection of the electrical installation of the facility revealed that the distribution network has been stripped by vagrants.

7 RECOMMENDATIONS

- a) The Admin Building's Steel balcony, railings and staircase needs to be replaced.
- b) The corroded and missing steel cladding in the warehouse must be replaced.
- c) Steel members (purlins, sag bars, girders, column, etc.) to be further assessed to establish residual strength of members, however there were no major visible defects observed during the investigation, just minor corrosion.
- d) Organize the necessary equipment (scaffolding or otherwise) for the inspection of the roof drainage system.

- e) The general drainage system on the property was not identified, hence the scope for refurbishing the property must include the establishment of a comprehensive drainage system.
- f) Demolish and remove the canteen (fish-shop) building and the adjoining brick wall, including the "cooling tower" and other equipment.
- g) Refurbish the brick wall, floors, doors, and windows.
- h) Structural Assessment of the foundation of the buildings must be conducted by a Professional Service Provider.
- i) The electrical and Mechanical and Electrical Infrastructure is badly vandalized. To prevent vagrants from further entering the facility TNPA needs to scrap all the remaining steel from the HVAC and electrical panels as they attract attention.