



# **WIMS 070196 : MOTOR LICENSING BUREAU MORNINGSIDE**

## **VISUAL ASSESSMENT REPORT**

**MAY 2022**

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## 1. INTRODUCTION

Dartingo Consulting Engineers (DCE) was engaged by the Department of Public Works to perform a Visual assessment of the roof, cracks and stormwater drainage concerns identified at 284 Percy Osbourne Road, a Specific Structural Inspection on the clients' concerns was carried out on Thursday 03 March 2022. All comments are based on visual inspection only and no opening up of areas was carried out.

This document is a visual conditional assessment report on the structural integrity of the roof visible structure and drainage.

## 2. PURPOSE OF REPORT

The purpose of the visit was to undertake a visual, non-intrusive, inspection of the property to identify any significant structural defects and put forward recommendations for further investigations or remedial work that might be required, to maximise the useful life of the assets. Our findings at time of inspection are presented herein.

All information is spatially referenced to show where the individual problems and interventions are located and to provide spatial context and understanding of the problems and their proposed solutions.

In the performance of this inspection, Dartingo Consulting Engineers, has acted as an engineering consultant subject to the Engineering Council of South Africa (ECSA) Professional Engineers code of ethics.

## 3. PROJECT LOCATION

Municipal District	eThekweni Municipality	
Address	284 Percy Osbourne Road, Morning Side	
GPS coordinates	Latitude	Longitude
	29°49'3.23"S	31° 1'31.80"E

## 4. SCOPE

The scope of the inspection included visual observations. Only elements visible and accessible at the time of the inspection were viewed and are included in this report.

The basis of our opinions will be the apparent performance of that portion of the building readily visible at the time of the inspection. Disassembly or removal of any portion of the structure, mechanical equipment, plumbing equipment, or electrical equipment is beyond the scope of this inspection.

The components included in scope of the assessments:

**Structural:** Roof, Primary load-carrying walls, foundations, retaining elements, water penetration, and miscellaneous items related to the building.

Although the structural portion of this inspection was done by an engineer, no calculations, structural analysis, or physical material testing were performed.

It is pointed out that it is possible for latent defects to exist in the structure and its related equipment, underground piping, and systems that are not visible at the time of the inspection and may not be able to be viewed during inspection. The investigation has been conducted in accordance with generally accepted engineering practice, and the opinions and conclusions expressed in the report are made in good faith based on the information at hand at the time of the investigation.

This is particularly applicable in items relating to water, water penetration conditions, etc., where the condition may exist, but not be visible at the time of the inspection (e.g., where it has not rained for a period, allowing materials time to dry out).

The contents of this report are valid as of the date of preparation. However, changes in the condition of the site can occur over time as a result of either natural processes or human activity. In addition, advancements in the practice of engineering and changes in applicable practice codes may affect the validity of this report. Consequently, this report should not be relied upon after an elapsed period of one year without a review by DCE for verification of validity.

Dartingo Consulting Engineers does not claim or warrant that the observations listed in this report are exhaustive and represent every condition that may exist. In using the information supplied by this inspection, one must recognize the limitations of a limited, visual inspection, and accept the inherent risk involved.

## 5. HISTORY (INFORMATION SUPPLIED BY CLIENT)

### **MLB Building**

The Client has indicated that the building has presented signs of water ingress and cracking along the building. The building was initially constructed as a school, the building was subsequently converted into motor licensing bureau, the courtyard was closed and used as a service area for the licence bureau patrons.

The building had been assessed previously; the report was made available to the professional team, this report highlighted the clients concerns of cracking, settlement and stormwater penetration.

## 6. OBSERVATION SUMMARY

Reference notes pertaining to the location of defects are illustrated in the annexure A below.

### **Perimeter Roof.**

The building has a pin style duo-pitch timber truss with clay tiles, no evidence of roof plastic membrane was identified during the inspection. Wood borer was noted in numerous trusses. External light was visible inside the ceiling cavity indicating possible cracked tiles and a route for water to pass through into the building.

### **Courtyard Roof.**

The courtyard is a portal frame structure, the roof drains onto the existing adjacent slab and down into the gutter system. There are signs of damp on the internal ceiling of the service area suggestive of leaks.

### **Drainage.**

The roof drains externally to stormwater gutter along the perimeter and internally to a flat slab that has a fall to drain into a full-bore gutter. There is vegetation in the gutters and downpipes which suggestive that maintenance was not carried out. The capacity of the gutters will require assessment the initial arrangement, as this would not have catered for additional runoff from the portal roof covering the service area.

### **Building.**

The building is a 2-storey structure, comprising of brickwork and reinforced concrete slab, the courtyard has been converted to a service area as indicated prior.

There are visible cracks along the external wall, these cracks are typical throughout at the window lintels and corner-wall interaction with ceiling. Some cracks on the external coincide with internal cracks at window lintel location. Some cracks resemble general masonry cracks suggestive that it may be plaster cracks.

Mildew was identified on internal walls, paint blisters and delamination visible in majority of offices.

Mortar along the external skin of brickwork have eroded, brick masonry spalled and broken in some instances.

**Foundation.**

No excavations were carried out, the type of foundation was not identified, the substructure exposed along the north-east, is the same composition as the building walls.

**Drainage and Stormwater Discharge.**

Stormwater from the building and portal frame is directed downwards into the open area of the courtyard, the stormwater flows towards the east under the building and towards municipal drainage catchpit network at the driveway.

**Retaining Elements.**

The retaining wall adjacent to entrance stairs has visible sign of repair/join. This wall links to the north exterior wall and retains the terraced area above. There is erosion and debris along the building and drainage.

**Walkway and Paving.**

Undulation and rutting associated with tree's roots and subgrade material settlement.

**7. SUMMARY OF INVESTIGATION**

Majority of the defects identified can be attributed to the age and maintenance of the building. The timber roof structure require replacement, The cracks in the structure are associated with settlement, the cracks will be treated by metal stitching. The capacity of the stormwater system will be increased to accommodate concentrated flows.

## 8. REMEDIAL ACTION

The following remedial action is recommended to rectify the identified problems.

### **Perimeter Timber Roof.**

Replacement of the timber trusses system is advised; the existing tiles are to be reclaimed and reused to maintain the existing aesthetics of the building. (A beetle inspection can be carried out with rehabilitation measures; this would require ongoing periodic maintenance and may prove to be problematic)

### **Courtyard Portal Roof.**

The location of the leak needs to be identified, the associated roof sheeting and isolation repaired/replaced. Rust proofing of structural steel will may be required.

### **Drainage (roof).**

The existing capacity of the roof drainage system is inadequate. The slab will require a screed to direct the water efficiently to the full-bore drainage system, additional downpipes are to be added to the system to reduce ponding of water during storms.

A maintenance schedule will be required to prevent gutters and downpipes from being blocked with debris.

### **Building.**

Cracks on the building appear to be minor, it is assumed that no previous repair or underpinning has been carried out on the building. It is also implied that the building has settled after construction and further movement will be minimal, hence no underpinning will be carried out in this rehabilitation project.

Concrete cracks and spalling are to be exposed to reinforcement, reinforcement shall be painted with and epoxy or similar rust inhibitor. The repaired work is to be recast with a 35 MPa concrete.

The walls exhibit similar strains of cracking throughout, exposing of cracks on brickwork will be required to verify degree and extent. Superficial plaster cracks can be filled and replastered. Cracks that permeate through mortar and brickwork are to be metal stitched. (Refer to annexure for Metal stitch detail)

Mildew, paint blisters and delamination are to be addressed as per architect requirements after structural repairs are carried out.

Eroded brickwork and mortar are to be replaced and rejointed. Eroded mortar must be clean to two thirds the depth and regouted.

The cracks identified are of concern as these cracks are evident on internal and external wall skins at same location, there is a possibility that the fracture continues through the wall, compromising the structure. Localised exposing of plaster will be required to verify the extent of cracks and differentiate plaster cracks from structural cracks.

### **Foundation.**

Exposed foundation brickwork will be addressed as per the building repair methods.



**Drainage and Stormwater Discharge.**

The Stormwater from the building and portal frame is directed downwards into the open area of the courtyard, the stormwater flows towards the east under the building and towards municipal drainage catchpit network at the driveway. The capacity of the drain under the building will have to be increased for the additional runoff from the roof.

**Retaining.**

The saturation level of the ground above the retaining wall seems likely that the water table behind the retaining wall is not managed or controlled adequately. A subsoil drain with Netlon drainage against the back of the wall is required. This must aligned with the floor level to manage the water at a level below the floor. It is recommended that the stormwater control route be formalised to direct water away from the building. A subsoil adjacent to building wall that is retaining the embankment. would also assist in maintaining the groundwater level.

**Walkway and Paving.**

Intrusive roots are to be removed and the paving reconstructed. Import material will be required for subsurface pavement layers.

**Annexures**

General pictures	Annexure: A
Services network co-ordinate list.	Annexure: B
Repair Detail/drawings	Annexure: C
Field inspection report.	Annexure: D

## Annexure A: General Photos



Front view of building.



Inside of roof.



Open Courtyard: vegetation, mildew and moss.



Passage : Ceiling damp and deteriorated.



View of building from east.



Passage : Ceiling damp



Vegetation along down pipe.



Construction Joint.



Paint Peeling.



Timber rot.



Crack on above window.



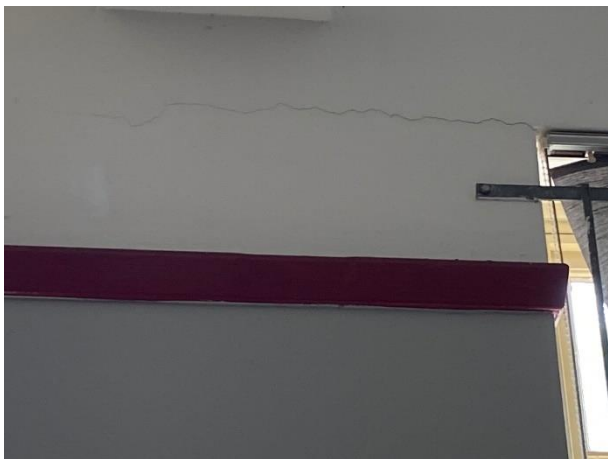
Open channel drain.



Crack on external wall coincides with internal cracks.



Crack on external wall coincides with internal cracks.



Typical Crack at window lintel.



Typical crack around windows.



Typical crack around windows.



Crack adjacent to internal beam, further investigation required.

