

**ASSESSMENT AND REPAIR METHOD**  
**QUARANTINE FACILITY**  
**VELANA INTERNATIONAL AIRPORT**  
**JUNE 2023**

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## 1. Introduction

This report is based on the assessment carried out in order to assess the cause for water leakage in **Quarantine Facility at Velana International Airport**. The request for assessment was established to ascertain the current condition of the building.

## 2. Assessment

### 2.1. Visual inspection and observation

Visual inspections and observations carried out on site revealed, multiple crack formation in exterior masonry walls, water seepage and leaks that have occurred through the cracks leaving marks and allowing mold growth. A thorough examination of the building was conducted to identify visible signs of water leakage, such as dampness, stains, discoloration, or pooling water. This included an inspection of both interior and exterior components, including roof slab, walls, windows, doors, plumbing systems, and other vulnerable areas.

## 3. Findings

Main defect of the subjected floor can be summarized as;

- Masonry cracks
- Floor screed and tiling
- Water proofing
- Plumbing

### 3.1. Masonry cracks

While cracks in walls can be a common issue, most cracks form in the plastering due to the hydration process of setting cement plaster mortar. Multiple cracks are observed in all the floors are scattered in formation allowing water seepage from the exterior side.

Water seepage actions and cracks are also observed at some of the power outlets, this

happens when the masonry walls are cut too deep to make provision to fix the outlets.

### 3.2 Floor screeding and tiling

It is obvious that the terrace floor screeding and tiling is done without the provision of expansion joints. Multiple tiles are observed to have popped up which further enhances the water absorption and seepage from terrace floor screed to the bottom floors.

### 3.3 Water proofing

It is observed that waterproofing is not done on the terrace and corridor areas in bottom floors. water proofing and tile skirting is essential in areas exposed to rainy weather.

### 3.4 Water leakage

the severeness of the damping and seepage issues suggest that a water supply pressure pipe embedded in the walls or floor screed has been damaged. The continuous pooling of water in first floor rooms and the pattern of seepage suggests a compromised water pressure pipe in the area marked in figure 1.

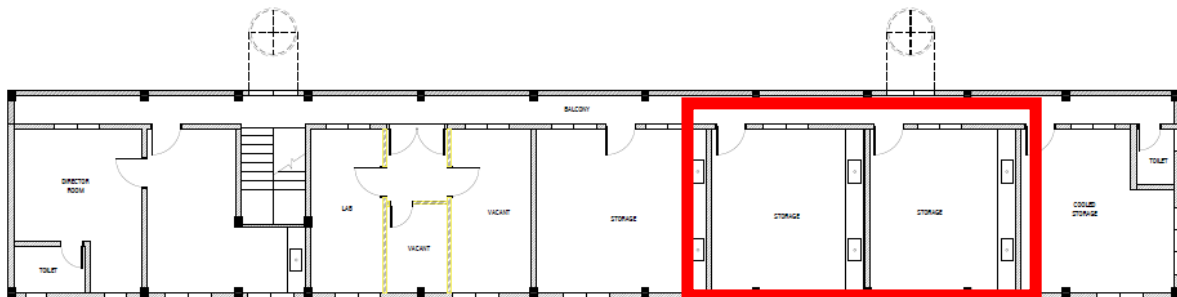


Figure 1. Location of first floor water pooling.



## 4 Recommendation

Based on the inspections and investigations, ground floor needs to undergo immense repairs and rehabilitation for the level to be usable. All the areas that are exposed to weather conditions need to undergo extensive repairs.

### 4.1 Recommended Method of Repair

A standard method of repair for the defects mentioned in this report will be described in detail. It is recommended that the repairing and renovation works to be done as soon as possible before the damages propagate further, questioning the services and structural integrity of the building.

Before commencing any work, all surfaces to be cleaned and washed thoroughly from dirt and debris.

Visual inspections for cracks shall be performed and the areas shall be marked accordingly.

All unsound areas of concrete should be marked clearly. Removal is typically performed using pneumatic chipping hammers. The use of chipping hammers more than 15 pounds is typically avoided to reduce excessive damages and micro cracking.

### 4.2 Repairing masonry cracks

Follow the procedure below to attend isolated cracks. It is recommended to chip of the whole area and re plaster with bonding agent in areas where multiple cracks are observed.

- Identifying the cracks and their depth.
- Cutting concrete in V-shaped
- Chipping off the hardened plaster to the extent of the crack depth
- Clean with wire brush and clean water
- Make bonding slurry with "Mastercast 141" or equivalent bonding agent and apply the slurry to the repair area with a clean brush, slurry should be applied only after final cleaning done and washed with cleaned water



- Before the slurry hardens and is in the state of touch dry, mix and apply repair mortar mixed with bonding agent to fill in the cracked area. (for mixing and usage follow manufacturers specifications attached with this report)

#### **4.3 Repairing floor screed and tiling**

- Chip and remove the floor tiles
- Cut the floor screed to provide a "u" groove at every 3-meter span
- Fill the grooves with expansion joint filler compound
- Fill and void and uneven surface in the screed with repair mortar and bonding agent
- Clean the floor screed with wire brush and clean water.
- Apply 2 coats of water proofing on the surface of the screed. Water proofing shall be applied on all edges and cover 300mm vertically on adjoining walls.
- Let the water proofing membrane to cure for 3 days and test the area by ponding. Ponding shall continue for 48 hrs.
- Fix the tiles with an approved EU category C2 tile adhesive to achieve enhanced bonding to the screed.
- Leave a spacing of between 4mm to 6mm grooves between tiles and fill them with epoxy tile grout.
- Repeat the above two points and fix skirting tiles around the perimeter.

#### **4.4 Plumbing works**

- Identify and separate the onsite plumbing networks as per the building schematics.
- Isolate each network and attach a pressure gauge to the end of each plumbing network and monitor the reading for 48 hrs with readings taken hourly.
- Readings with pressure drops indicate a leak in the network.
- Once the network with a leakage is identified, pump water with dye colouring and visually observe to identify the area.
- Replace the damaged pipe and pressure test for 48hrs.



## 5 Conclusion

The building needs to undergo extensive repairs as stated in this report. While many factors contribute to water leaks and seepage into the interior of the building, the severe condition developed in a short period of time suggests that main cause for the leakage is due to a compromised and damaged water pressure pipe embedded in the walls or floor screed.



Prepared by:

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Civil Engineers

Two handwritten signatures in blue ink. The first signature is stylized and appears to be "Hussein Fazeel". The second signature is more legible and appears to be "Ahmed Zuhail Zaeem".

Appendix 1 – (Site photographs)



Damped exterior wall



Water leakage to exterior wall from an internal wall pipe



Terrace floor tiles



Water collected between tiles and terrace screed





Continuous water leakage through the wall and first floor slab



Continuous water leakage through the wall and first floor slab