

Inspection Report

for Ministry of Education, Republic of Maldives

Condition Assessment Report for Hulhumale Preschool

Company Project ID no. 20011

Epoch Associates Pvt. Ltd.



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1. Introduction

Epoch Associates Pvt. Ltd. was engaged to perform an assessment of the 02 Storey Building of Hulhumale Preschool, Chanbeylee Magu, Lot 11417, Hulhumalé, in the Republic of Maldives by the Ministry of Education.

The visual assessment identified a number of defects within the building. It is recommended that these defects be addressed in the manner outlined hereunder.



Figure 1: Aerial view of Hulhumale Preschool, Google Earth Pro, 2021

2. Project Brief



Figure 2: Hulhumale' Preschool Building

2.1. Facility Description

Hulhumale' Preschool consists of a single 2-storey building with a compound area. The building has a concrete frame structure with a masonry envelope and a steel roof. The 02 Storey high building houses all of the classrooms, restrooms, admin offices and other academic facilities of the School. The building is currently being used as a temporary Flu Clinic and a Vaccination Centre for the Health Protection Agency.

2.2. Incident Summary

As the building had been abandoned for more than a year, the Ministry of Education decided that an overall inspection of the building be carried out and repairs made before the school can be handed over to a 3rd party for operation of the school.

2.3. Scope of work

- Defects affecting serviceability observed throughout the building.
- Recommendations for the rectification of the defects.
- Identification of missing infrastructure for a preschool.

2.4. Limitations

Assessment was limited to visual inspection of accessible areas only. No destructive investigation was carried out during this assessment. As built drawings were not available during the inspection, but a digital copy of the drawing was provided via email at the end of the inspection.

3. Assessment

A site visit was conducted on 29th April 2021 in order to determine the extent of defects on the building. A representative from the client was present and provided information as required.

The assessment took place in the form of a visual inspection of all accessible areas. Detailed descriptions of defects were noted and interior and exterior of the rooms were investigated.

No destructive investigation of any defects was undertaken.

4. Findings

The major defects identified in the building were as follows:



Figure 3: All fans were observed to be significantly rusted and in poor condition.



Figure 4: Water Damage and crack in Walls

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Figure 5: Water Damage and crack in walls.

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Figure 6: Water Damage.



Figure 7: Water Damage Areas.



Figure 8 Water damaged areas.

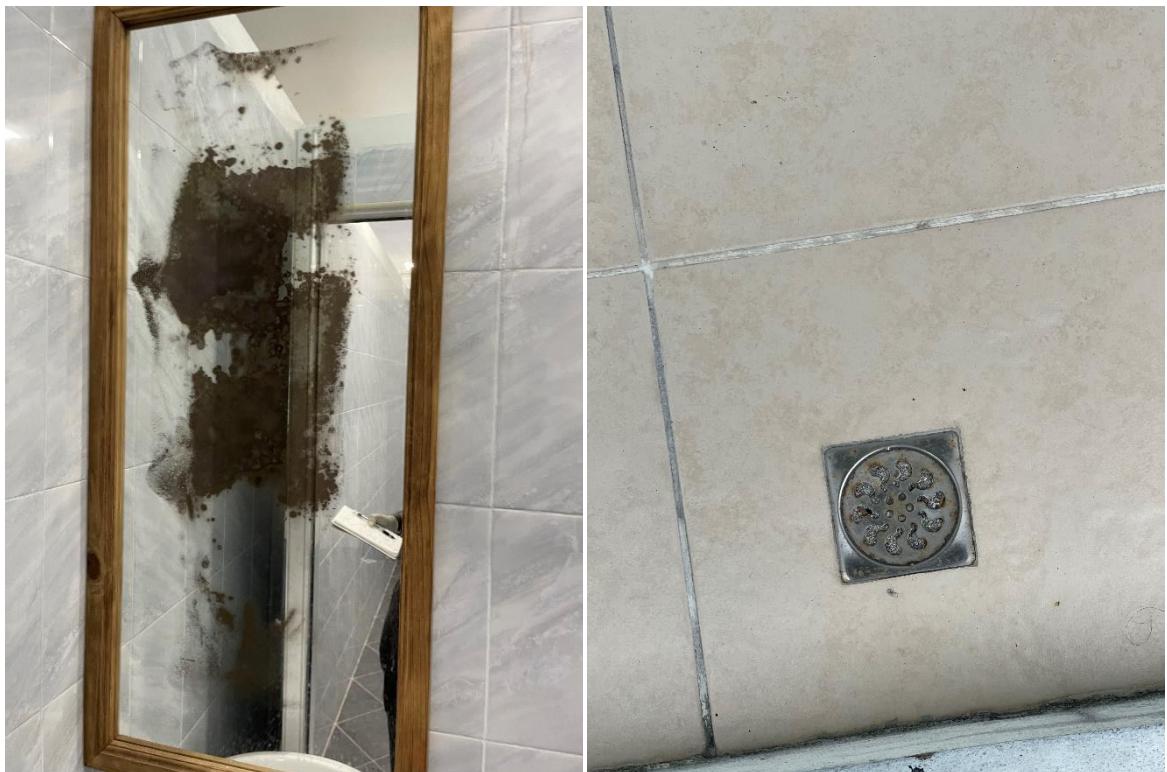


Figure 9: Toilet mirror damaged and compound drain blocked.



Figure 10: Rust on stair railings.



Figure 11: Wall cracks.



Figure 12: Front and Back compound.

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Figure 13: Spaces between the roofs.



Figure 14: Crack damage at building entrance corner

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5. Analysis and Conclusion

5.1. Masonry cracks

With the extent of available information, i.e. where details of the actual masonry construction methodology are unknown, it is felt that the cracks at masonry joints are due to building movement, and inadequate provision of bonding material at the joints. While the defects affect the serviceability of the building and are severe in some cases, it does not affect the structural integrity of the building. Most of these are live cracks and will continue to propagate if not addressed adequately and in a timely manner.

5.2. Water Damage

The water damage was observed to be located mostly within the edge walls near the windows and/or where air-conditioning was installed on walls. Therefore, it may be due to cracks in the walls, or due to improperly sealed AC ducts within the walls. The water ingress may also be due to poor workmanship in installation of the windows, resulting in water seepage through spaces that have not been sealed properly. Hence, these cracks and leaks needs to be fixed before repainting the walls.

5.3. Damaged Toilet Fixtures

Some of the fixtures in the toilets appear to be damaged, therefore, as per Client's recommendation all toilet fixtures, mirrors and drain covers need to be replaced. Furthermore, the drains of the compound area in front of the toilets appear to be blocked with sand (refer to figure 09), therefore these needs to be cleared or replaced based on extent of damage to restore proper drainage.

5.4. Eave Ceiling

During construction stage, eave ceilings have not been installed. Therefore, Client has requested eave ceilings be installed to improve the overall appearance of the building.

5.5. Other issues

Other issues highlighted by Client include lack of disability-accessible toilets, lack of a computer network setup, staircase railing damage, a play area for kids, a reception setup on the ground floor, and remodification of the boundary wall, gate, and noticeboard to make it more kids friendly, and clearing of the school compound areas.

6. Recommendations

All repairs as described below shall be carried out under the instructions/supervision of a qualified engineer. Additionally, it is advised to continue monitoring the repaired areas for a period of six months to ensure the issues have been adequately addressed. Regular monitoring and maintenance should be carried out subsequent to this period in order to prevent, identify and repair similar issues in the future and improve the service life of the building.

All repairs should be conducted while ensuring that the proper safety measures have been taken and after cordoning off of the work area to avoid risk of injury.

6.1. Masonry cracks

In order to remedy the cracks at concrete to masonry joints and masonry to masonry joints at room corners, we recommend the following:

- Chipping the defect to the full depth of the crack in a V-shaped groove.
- PVC chicken mesh should be placed at the joints. The surface of the concrete should be prepared prior to placement of chicken mesh through roughening up the surface by chipping.
- Filling in the chipped surface with a plaster composed of a mortar using a flexible mortar improver/repair mortar such as Sika Latex or equivalent.

For isolated cracks in masonry, the above methodology may be used without placement of chicken mesh.

6.2. Cracks on structural members

Where the cracks have formed along the edge of plaster or where the plaster has delaminated, we recommend the following:

- Plaster should be chipped off until completely sound plaster is reached or until the surface of concrete has been reached
- Concrete surface should be chipped mildly/roughened so as to provide a suitable surface for plastering
- A PVC chicken mesh should be placed at the joints between concrete and masonry
- Plaster should be applied with a bonding agent such as Sika Latex or equivalent

Where concrete cover has delaminated, we recommend the following:

- Prop the beam and surrounding slab area
- Chip off loose concrete or delaminated surface until sound concrete has been reached
- Repair with a concrete repair mortar including a suitable bonding agent such as Sika Latex or equivalent

Where rusted reinforcement is found in cases of concrete delamination, we recommend the following:

- Prop the beam and surround slab area
- Chip off concrete until sound reinforcement is located
- Remove corroded reinforcement and replace with sound steel, ensuring adequate lap to steel is provided

Repair with a concrete repair mortar such as Sika MonoTop-352NFG or equivalent with a suitable bonding agent.

6.3. Water Damage

CEMGUARD PC 400 or an equivalent cementitious waterproof coating should be applied on the surfaces before re-applying wall sealer and paint, after repairing the water leaks. The surfaces need to be thoroughly cleaned of loose particles and dust before application of the chemical. If these are applied without fully repairing the water leaks, the underlying issue will not be resolved, and water damage may reoccur in the near future.

Ensure that the source of water seepage is identified and resolved before applying the coatings and repainting. Check the windows, AC for any leaks and the walls for any crack that may cause water seepage and rectify accordingly (for cracks please follow items 6.1 and 6.2).

6.4. Other Works

The following works additional works are to be carried out, as per client's request.

- Replace all toilet fixtures, mirrors and drain covers, and any damaged door locks and handles.
- Clear of sand or Replace (based on extent of damage) the compound drains.
- Install eave ceilings and corridor ceilings for all parts of the building that do not have ceiling.
- Construction of 02 disability access toilets (1 for kids and 1 for staff) in the compound area in front of the existing toilets.
- Installation of computer network for the entire building as per client's requirement (drawings to be provided separately).
- Replace the damaged railing of the staircase.
- Install a play area setup on the designated area in the original drawing of the building (Ministry to share play area requirement).
- Install a reception setup in the ground floor lobby area next to the staircase.
- Modifying the boundary wall height, installation of a digital notice board and gate modifications (drawings to be provided separately).
- Repainting the entire building, boundary wall, railings (where applicable), any metallic surfaces that have been painted before, all floor areas where floor paint has been applied before.
- Clean and clear the entire compound area around the building and fill with thoroughly washed and dried local white sand (up to a depth of 100mm or walkway height).
- Replace all the fans in the building with new 52-54" fans of brand approved by the Ministry and their consultants.
- Replace any damaged switches and sockets with new ones of a brand approved by the Ministry and their consultants.
- Replace the exhaust in the pantry.
- Install flashings between the spaces between roofs (figure 13).
- Install a shading net over the 2 main compound areas and play area.