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STRUCTURAL INSPECTION,
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FEBRUARY 2022

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STRUCTURAL INSPECTION

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REVISION SCHEDULE

Rev No.	Description of Amendment	Prepared By	Approved By	Date
-	Original Issue	M Malcolmson	G Christie	Feb. 2022

1. INTRODUCTION

1.1 The purpose of this report is to assess the structural condition of the premises. A recent NHS Grampian property appraisal report identified cracking throughout and advised further investigation was required.

1.2 The inspection consisted of a visual examination of the interior and exterior of the property. Unless specifically noted, finishes were not disturbed nor was any subsoil investigation or inspection of buried foundations carried out.

1.3 We have not inspected any parts of the structure which are covered, unexposed or otherwise inaccessible and therefore we are unable to report that any such part of the property is free from defect.

2. EXISTING BUILDING DESCRIPTION

2.1 Reference to historical maps indicate the building would have been constructed in the early 1960s' as a 'Gospel Hall'. It is understood the building was converted to its' current use in the 1990s'.

2.2 The building is constructed in masonry external walling with a slate finish pitched roof and with timber stud internal partitions. The roof trusses are of a raised ceiling tie type. The building is generally of a rectangular footprint but has small extensions to each side at the entrance end. The building is single storey and has a suspended timber ground floor construction assumed to be supported on sleeper walls within the building.

3. OBSERVATIONS AND PHOTOGRAPHS

3.1 Numerous cracks, both horizontal and vertical can be seen on all elevations. The rear (West) gable wall shows least cracking, but some hairline cracking is evident in the harled and painted finish thereon. Both the side elevations show numerous horizontal and vertical cracks, and the feature stonework (East) entrance gable shows cracking/open masonry joints to each end of the gable wall.

3.2 The roof appears to sag over the small extensions to each side towards the building frontage.

3.3 The floors internally are seen to slope from the centre of the building down to the sides.

3.4 There are several areas where cracks and tears are evident within the building at the meeting of walls and ceilings.

3.5 The external cracks show evidence of historic repair but have since re-opened. None of the elevations have masonry movement joints built in.

3.6 Access was not taken to the roof space, but the roof structure was observed from an access hatch near the main entrance. The roof structure is of simple construction, consisting only of a raised ceiling tie spanning between rafters. There are no internal timbers to the roof structure. The rafters have the appearance of sagging between the ridge and ceiling tie points.

3.7 It is understood that the car parking adjacent the main entrance has in the past suffered from some subsidence at the surface. This is thought to have been the result of subsoil washout by defective drains. Although repaired, some further settlement is apparent.

3.8 Reference to publicly available geological information suggests the building could be founded on a sandy subsoil, which would be susceptible to the washout of fines under the influence of defective drainage pipework.

Photographs.



East entrance gable.



Open joints southeast side.



Lateral movement southeast side.



Joint cracking east gable.



Open joints northeast side.



Open joints northeast side.



Open joints northeast side.



North elevation.



Cracking to west end.



Cracking to west end.



Cracking of side extension east end.



West gable elevation.



South elevation.



Cracking to west end.



Cracking to south elevation.



Cracking to south elevation.



Cracking to east end.



Cracking of side extension east end.



Internal view of roof structure.



External view of sagging roof.

4. CONCLUSIONS

4.1 The extensive cracking to the external elevations and the evidence of tearing and cracking in the internal finishes is strongly suggestive of ongoing structural movement in the building.

4.2 The roof timbers although not checked by calculation appear to be overstressed and are deflecting as a result. This is potentially placing some outward thrust on the wallheads.

4.3 The slope of the ground floors and the cracking pattern of the East entrance gable would suggest that the side elevations are dropping relative to the central portion of the building.

4.4 Historic crack repairs which have since re-opened indicates that movement of the walls is ongoing.

4.5 Anecdotal evidence regarding local subsidence of the adjacent car park, combined with reference to online soil condition information suggests the building foundations may be on a sandy subsoil.

4.6 Several of the cracks present are located coincidental with inset metal bracket supports for rainwater downpipes. It is concluded that the corrosion of these metal brackets is causing expansion of the metal and opening the cracks further. Whilst this is detrimental to the wall it is not considered to be the main reason for cracking being present.

4.7 Horizontal cracks in a building of this type of construction have been known to result from the corrosion of wall ties. The inner face of the feature entrance gable is common blockwork, and this suggests a cavity wall construction type which would have metal wall ties.

4.8 The vertical cracking along the side elevations could be simply the result of the lack of any movement joints in the building to cater for thermal expansion and contraction in the masonry. However, taking all the above together, we would conclude that the building is potentially suffering from an ongoing settlement of the foundations. It is anticipated the extensive cracking is a result of a combination of the settlement of foundations, the lack of movement joints in the masonry, the possible thrust from inadequate roof structure and the corrosion expansion of metal rainwater goods support brackets and metal wall ties across the cavity. Given the occurrence of the adjacent car park settlement, it is possible defective drains are influencing the ground below the foundations.

4.9 In order to verify the above, it would be necessary to have the foundations exposed for investigation and the drainage surveyed for condition. In addition, some inspection of the wall cavities to observe the condition of any wall ties present.

4.10 Best case would be some defect of the drainage is causing loss of support in the subsoils. However, given the extent of the defects it would seem unlikely this alone could be responsible for the cracking evident. Even assuming the foundations are satisfactory, there would be a reasonable amount of work in simply repairing cracks and making good masonry open joints and replacing defective wall ties. It is considered likely some augmentation of the roof structure would also be necessary were the building to be made good and some levelling of the ground floor may also be necessary. It is thought quite possible that repairs to the building would not be economically viable given that as it stands it is understood to be no longer fit for purpose and in need of refurbishment and possible extension.

Signed Michael Malcolmson
Dated 14/02/2022