Structural Engineering Appraisal Report

Project No. 20438

Plumpton Pavilion,
King George V Playing Field,
Plumpton Green
Lewes
BN7 3DP

Client: Plumpton Parish Council

14th May, 2024

Pottinger Design Engineering

Pottinger Design Engineering

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1. Project Introduction

The client is seeking understand the structural condition of the existing building at the below address, to better assess its suitability for future development:

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The property consists of 4 distinct areas where the site has evolved and been added to over time. All areas are at ground floor level and constructed in timber framing supported on brick piers on shallow concrete strip foundations.

The building is used as a sports pavilion for several teams, and a preschool during the week. However, the client is concerned about the material condition of the existing building, and there is a need to expand the preschool facilities beyond what the current layout can provide.

2. Desk Study

2.1 Development History

Sketch 20438-SK001 shows the 4 separate areas of the current building, which has been added to over its history. Building 1 indicates the original pavilion building, which now contains the kitchen and toilets. Building 2 was then added and contains the main social area and bar. Buildings 3 and 4 were the latest additions, with Building 3 containing the preschool room and team changing rooms and Building 4 being a flat roof infill structure linking access between the different structures. It is understood that numerous parts of the structural additions were constructed in re-used elements from other developments.

2.2 Site Geology

Based on a preliminary desk study of the information available on the British Geological Survey website, it is understood that the site is underlain with clay deposits over a clay/mudstone bedrock. No borehole records were available for the location.

3. Structural Investigation

3.1 Introduction

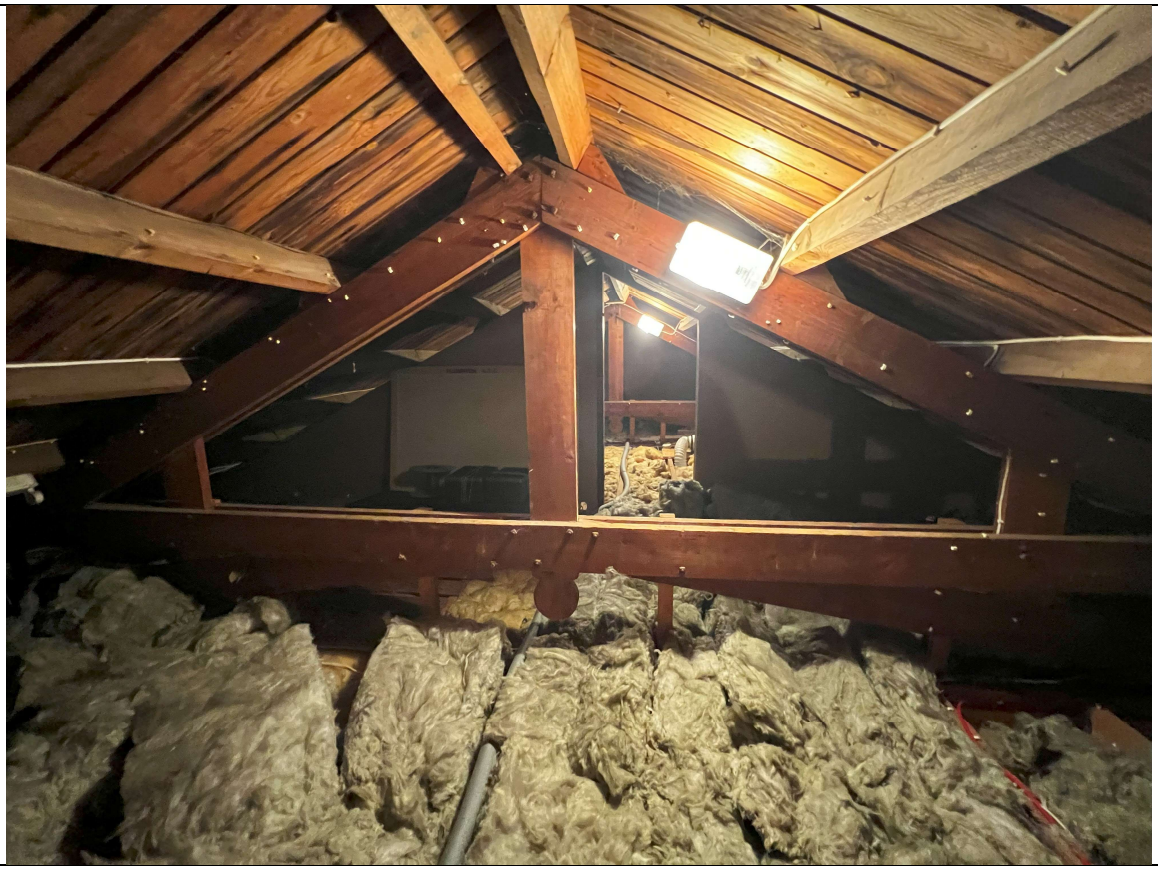
The property was inspected on 30th April 2024. The weather conditions were dry and sunny.

The property was visually inspected internally and externally from ground level, with ladders used to access the loft space where possible. Localised areas of cladding were removed externally to expose the timber framing, and a trial pit excavated to expose a typical foundation. The newer composite cladding was not removed to expose the structure behind due to concern over being able to remove the panels without causing damage.

Sketch 20438-SK001 shows that areas inspected, with 3 hatches used to access loft spaces, the trial pit location, and locations of the 2 areas of removed cladding.

3.2 Hatch 1 Observations

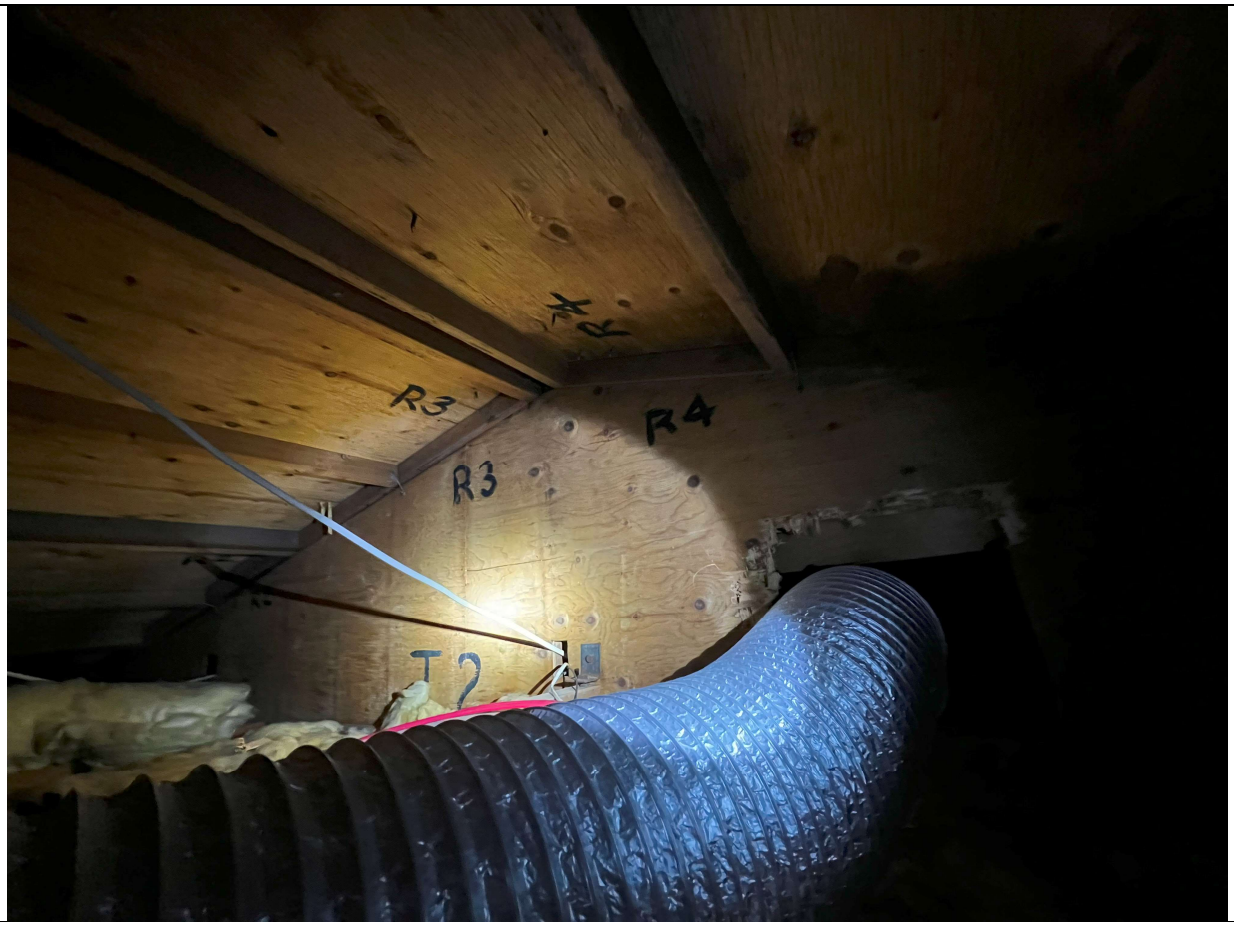
Hatch 1 provided access to the roof space of Building 1, which was constructed with timber purlins and ornate king post trusses. Structurally the roof was in good condition, with no significant defects observed.



Building 1 Roof Structure

3.3 Hatch 2 Observations

Hatch 2 provided access into the roof space of Building 2, which is constructed timber purlins on plywood trusses. Numerous services holes have been made in the plywood trusses. Otherwise, the structural elements appeared in good condition.



Building 2 Roof Space

3.4 Hatch 3 Observations

Hatch 3 provided access into the roof space of Building 3, which is constructed in timber purlins with timber modified queen type trusses. The structural elements were observed to be in good condition. However, numerous penetrations were observed in the gable end facing the cricket, providing a possible route of ingress for insects to attack the timber, or the ingress of water.

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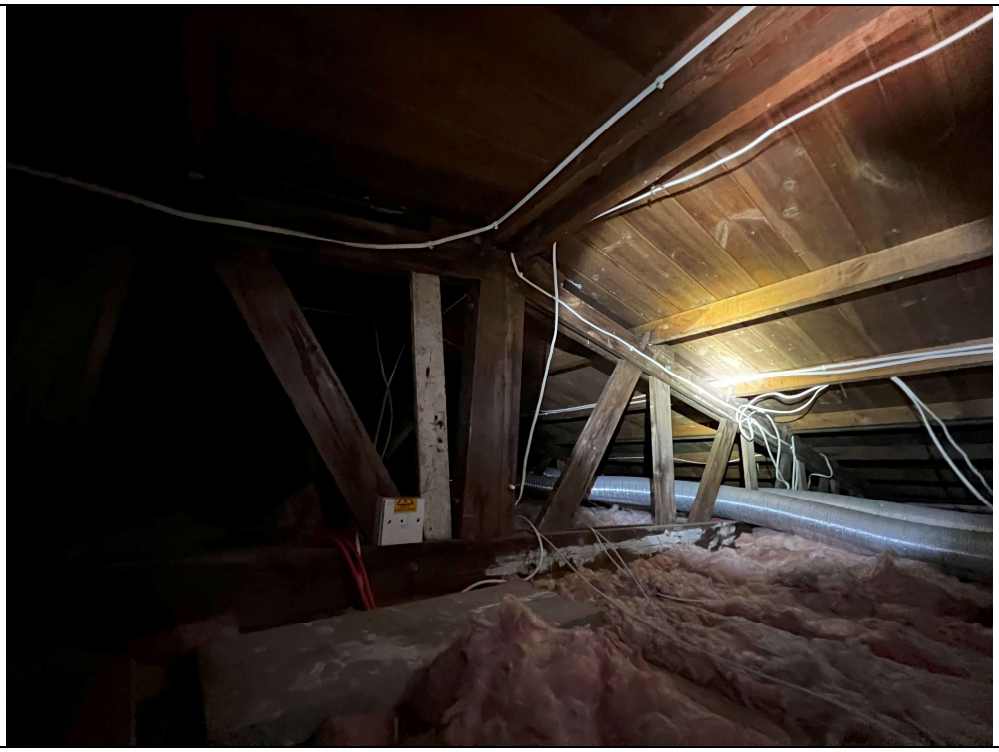
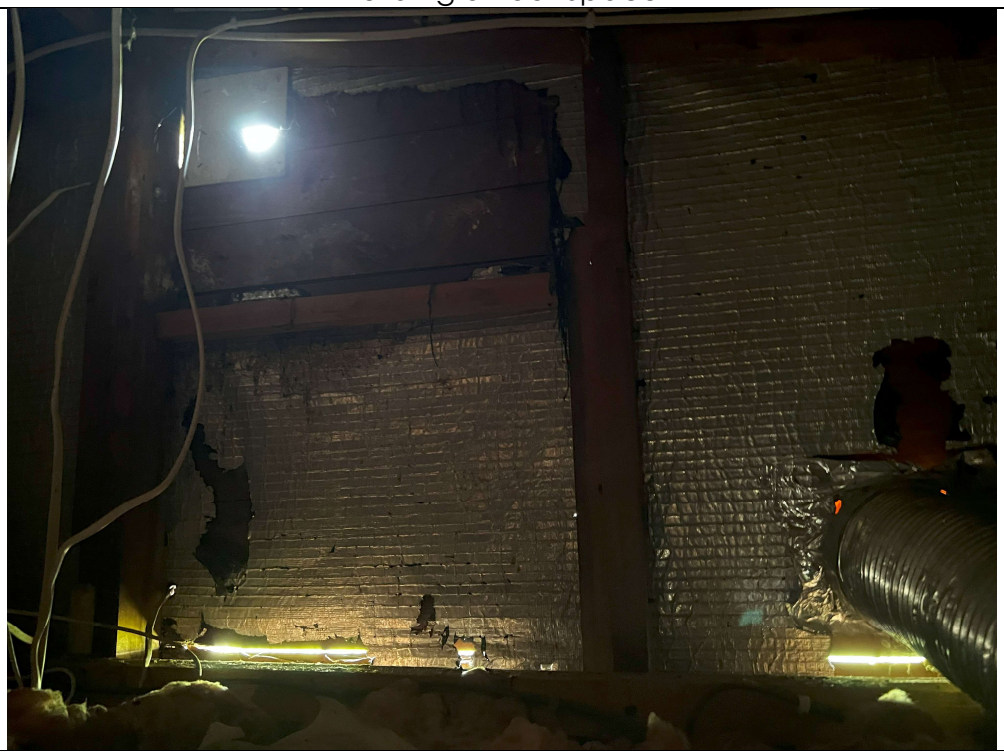


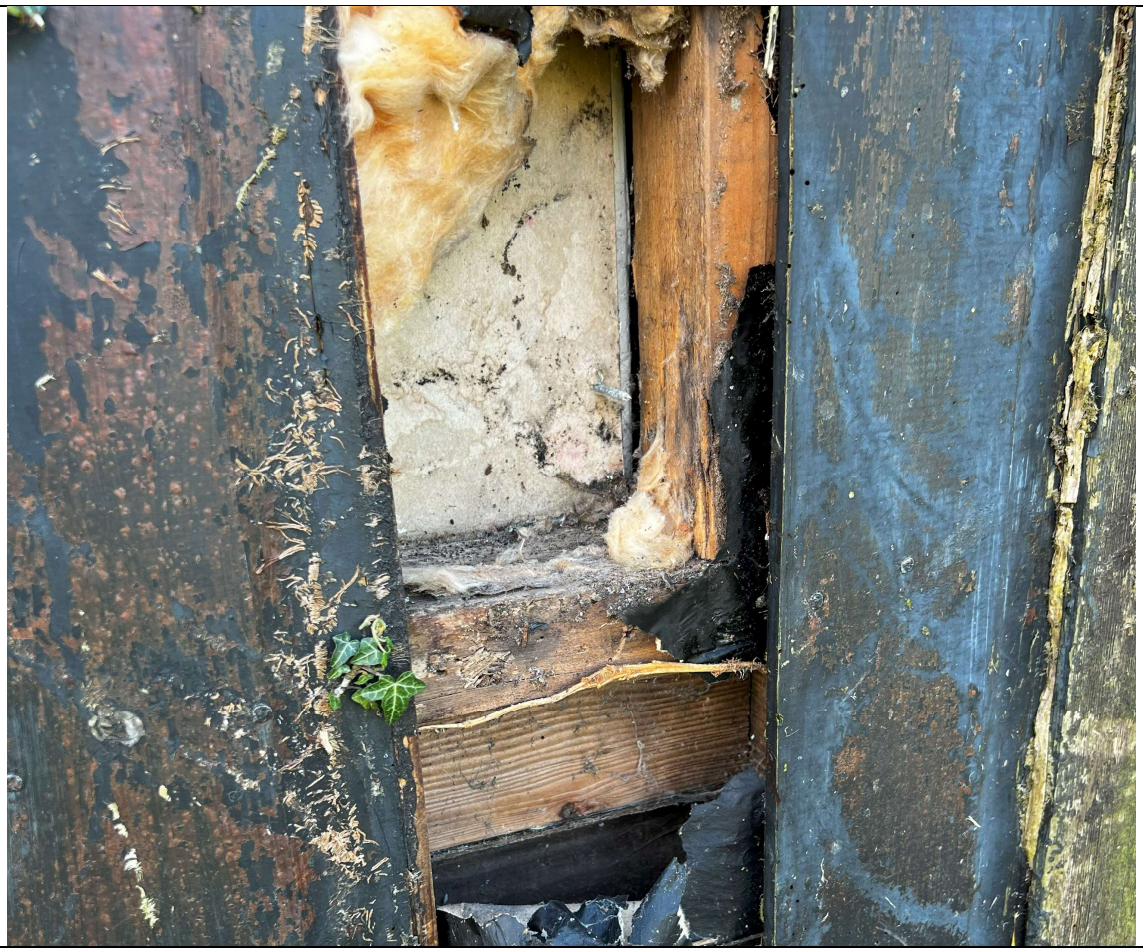
Building 3 Roof Space



Building 3 Gable End

3.5 Cladding 1 Observations

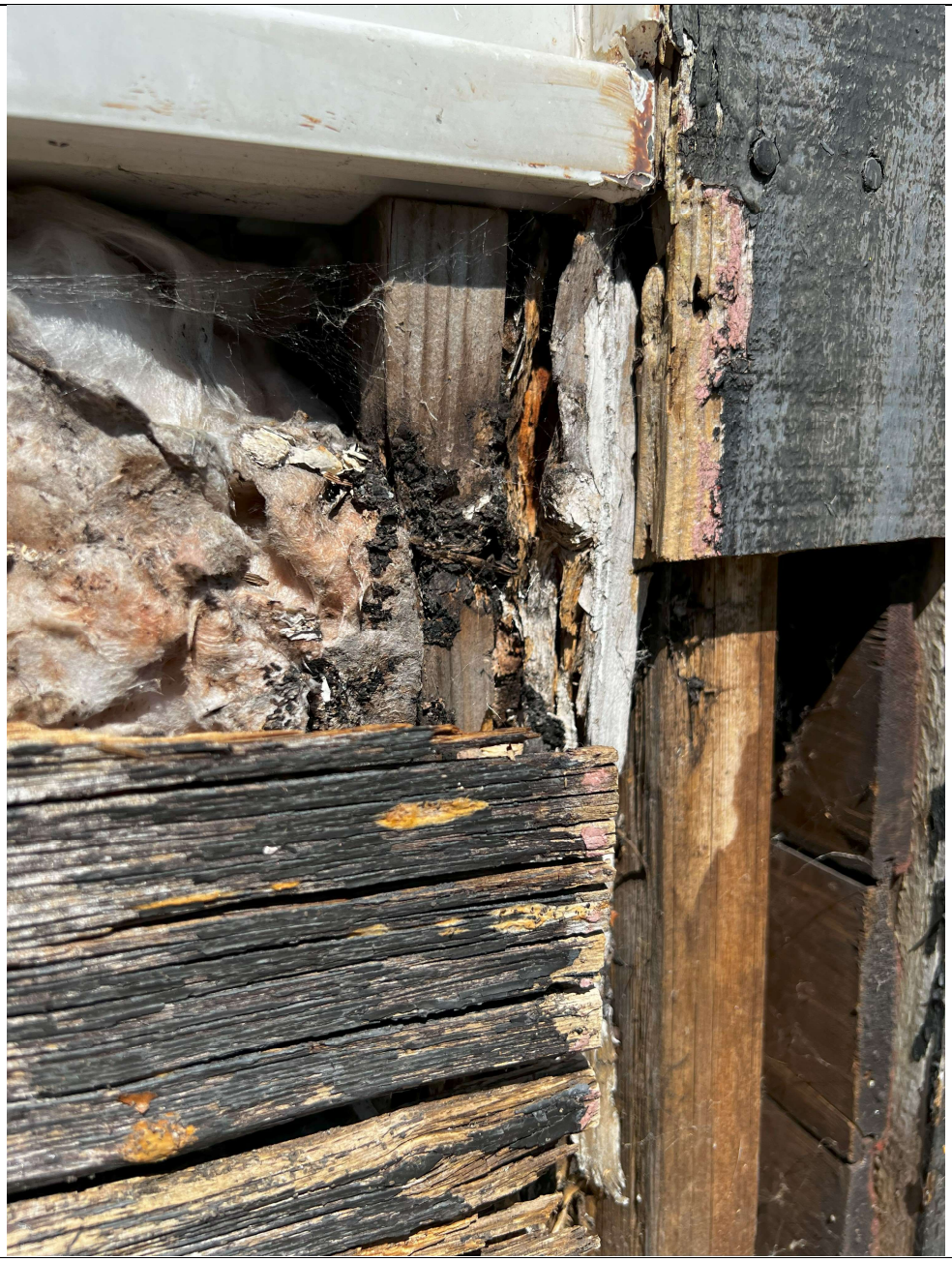
The timber cladding removed at the area noted as 'Cladding 1' was observed to be significantly rotten. Where removed, the loadbearing timber stud walls behind also were observed to be significantly rotten.



'Cladding 1' Rotten Timbers

3.6 Cladding 2 Observations

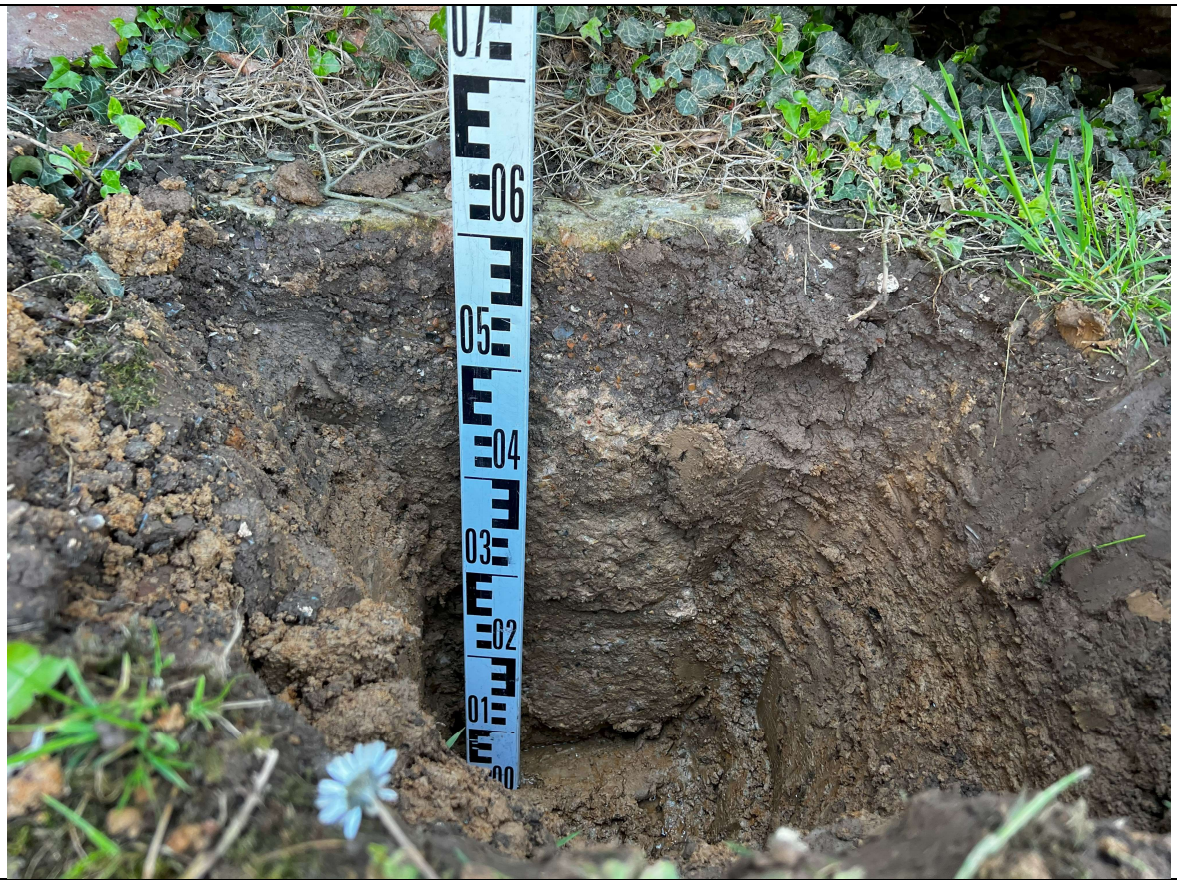
The timber cladding removed at the area noted as 'Cladding 2' was also observed to be significantly rotten. Again, where removed the loadbearing timber stud walls behind also were observed to be significantly rotten.



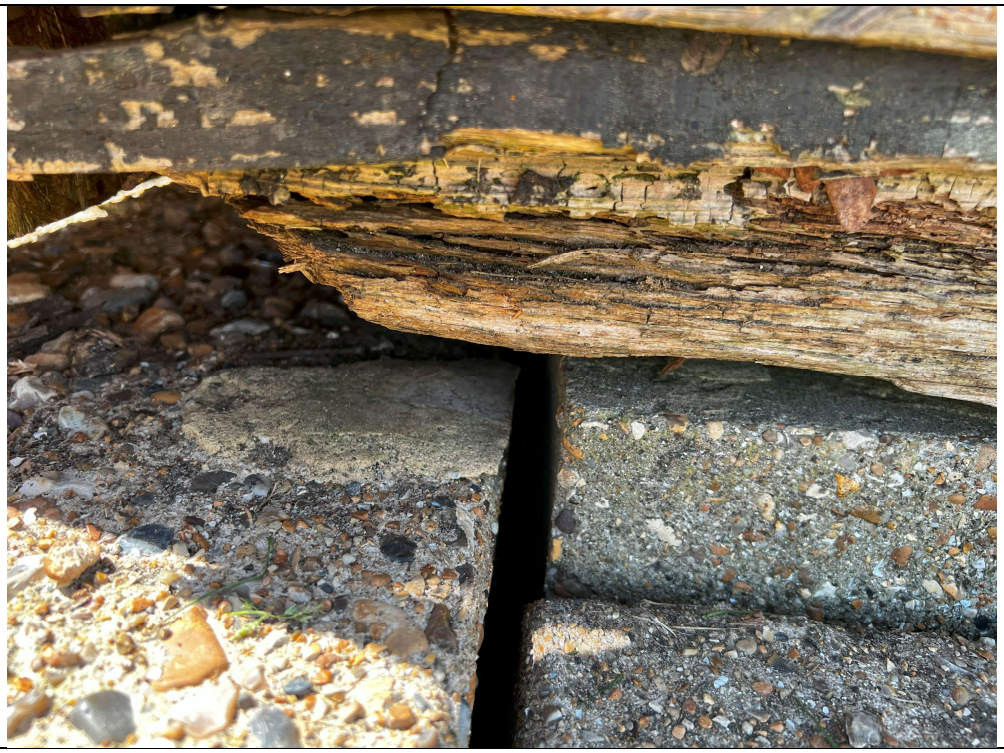
'Cladding 2' Rotten Timbers

3.7 Floor Structure and Foundation Observations

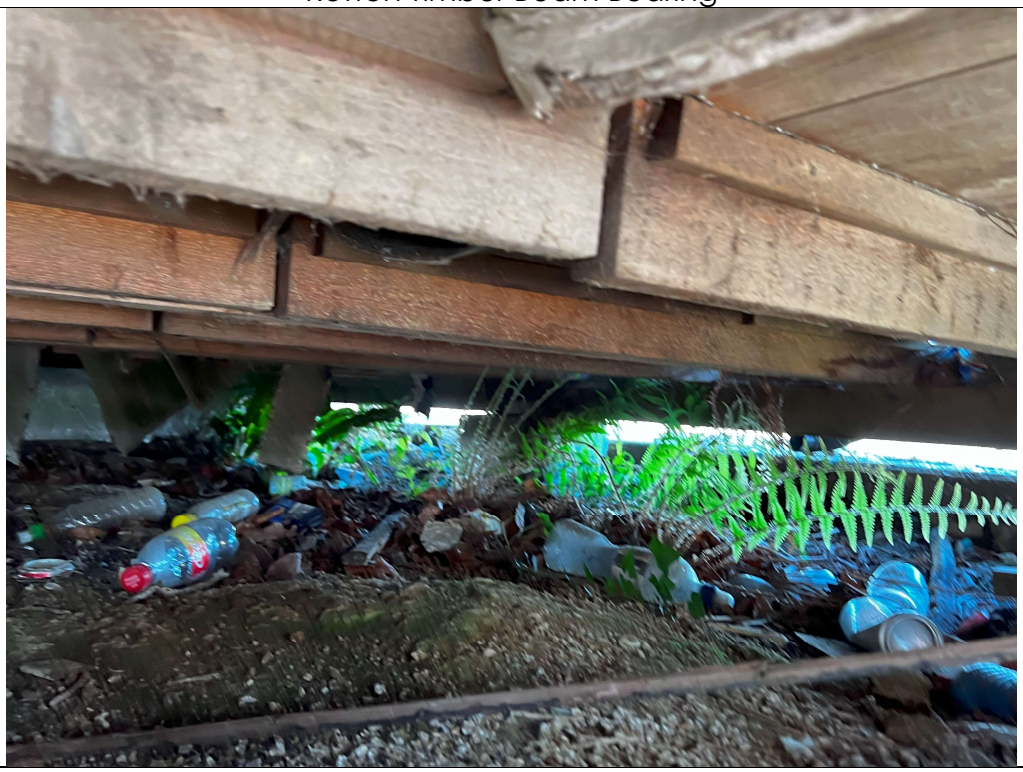
The floor construction consists of the timber joists supported on timber beams. These beams are in turn supported on brick piers built on concrete strip foundations. Trial pit 1 exposed a foundation depth of 600mm below ground level, founding in a sandy clay soil. Several of the supporting timber beams were observed to be rotten at bearing locations. The end bay of timber floor joists in Building 3 (nearest the playing field) appeared to be incorrectly installed such that there are two separate joists abutting each other mid span with no structural connection.



Trial Pit 1



Rotten Timber Beam Bearing



Incorrectly Installed Floor Joists

4. Conclusions and Recommendations

4.1 Roof

The roof structures appear generally in good structural condition overall. Strengthening may be required to the plywood trusses where large service holes have been cut. The penetrations in the gable end of Building 3 should be sealed to prevent the ingress of insects and water.

4.2 Loadbearing Walls

The timber studwork where exposed was found to be significantly rotten. It is understood that the timber behind the new composite cladding was repaired/replaced during the recladding works, but the remaining timber cladding has now largely failed and allowed the timber studwork behind to rot and need to be replaced.

4.3 Floor Structure

Timber beams, where rotten, will need to be replaced. It was noted that the adjacent ground level nearest the skate park does not provide sufficient protection to the beams from splashing/puddles etc. so would need to be lowered or another form of moisture protection installed. The incorrectly installed floor joists will require some form of strengthening or connecting detail to be installed for them to adequately span between beams.

4.4 Foundations

The soil was observed to be a sandy clay, but without laboratory testing it is not possible to confirm the volume change potential (which dictates the required footing depth). However, from what was observed the foundation depth would need to be at least 750mm below ground level, and possibly as deep as 1.5m below ground level. Any future structural alterations which sought to reuse the existing footings would therefore require some degree of underpinning to comply with current building regulations.