St Martin in the Field, Structural Report

Project number: P21104
Site location: Cnr Dyson & Vista Streets,
Kensington, WA 6151

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The observations, conclusions and recommendations in this report are based on visual examination of the exposed structural elements at the time of visit. There may be conditions that were not visible that could affect the conclusion and recommendations. The report was prepared for the addressee and represents the best judgement of the author given the information at the time of writing. Use of this document for any purpose not agreed to in writing by Quoin Consulting is prohibited. Any use of this report by a third party or reliance upon decisions made in response to or in any way influenced by this report are the responsibility of such third party.

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1. Introduction

Quoin Consulting were engaged by Rosie Dixon of Elberton Property to undertake an inspection of the buildings on the site at St Martin in the Field Church in Kensington. Located on Vista Street the lot extended from Dyson Street to the southwest to Brandon Street in the northeast and contained four main buildings: the church itself (St Martin's), an earlier timber framed hall (Durbridge Hall), an amenities link containing toilets and kitchen facilities and a corner shop that was being operated as an Op Shop. The inspection was to determine the existing structural condition of the three buildings considering the possibility of their repurposing as residential accommodation for a development to be constructed by Elberton Property.

2. Site/Building Description

Below is an aerial view of the site locating the buildings discussed in the report:

Aerial View courtesy of Nearmaps

The buildings on the site were constructed as follows:

1. St Martin's – Cavity wall construction with red face brick internally and externally and an exposed timber framed roof and corrugated iron roof sheets. Limestone block foundations for the main walls and a suspended timber ground floor structure on brick stumps.
2. Durbridge Hall – Timber framed structure with corrugated iron roof sheets on timber stump foundations.

3. Amenities Link – Part cavity brick wall and timber framed structure providing a link between the church and the hall with a reception, toilets and a kitchen.
4. Corner Shop – Part rendered and painted cavity brick structure and a timber framed roof with corrugated iron roof sheets. There was a steel framed cantilever awning roof above the shop front wrapping around the corner that was tied back to the masonry walls with steel rod ties built into the brickwork.

3. Documentation Provided

The following documentation was provided to assist with the report:

1. An original lot layout of the church from 1953 which shows Durbridge Hall on Lot 13 and the church on Lot 14 (no number).
2. Detailed architectural drawing of the proposed church dated 1953 drawn by D. Smit.
3. Original drawings of the link structure prepared by Modern Home Improvers dated 1988, drawing nos 1-3 and a specification
4. Feature survey of the entire site by MNG, drawing no 103792-DE-001-A
5. Site layout prepared by A&A MacLiver architects, drawings no SK05 showing the proposed residential units for the development.

4. Inspection Observations

The inspection was limited to areas and components easily visible and accessible. No crack measurements, invasive investigation, destructive opening-up or materials testing was undertaken as part of this inspection unless noted otherwise. This report is based on observations made within the limits of the inspection and areas accessible without use of specialist access equipment.

Photos referred to in this report can be found in Appendix A.

4.1 Church

4.1.1 The external masonry was generally in good condition, though there were some areas of mortar fretting occurring on the southeast (refer photo 01), southwest (refer photo 02) and northeast (refer photo 03) elevations and some damp staining on the southwest elevation (refer photo 02).

4.1.2 The exposed limestone footing blocks were in good condition where visible with no signs of movement or erosion (refer photo 04). The front entrance step footing blocks were stained with organic matter and the concrete slab was cracked in places (refer photo 05). These blocks did not extend below ground level and were undermined on the southwest edge, with an open joint at the junction with the main building footing blocks (refer photo 06).

4.1.3 The eaves boards between the final two buttresses on the northwest elevation were missing (refer photo 07) exposing the ends of the trusses in this location which were in good condition (refer photo 08). The gutter connection was also exposed which discharged into a rainhead and then into the downpipe (refer photo 07).

4.1.4 There were some minor cracks above some of the windows on the southeast elevation (refer photos 09 & 10).

4.1.5 The retaining wall of the narrow planter against the front wall had failed and was leaning forwards (refer photo 11).

4.1.6 There were signs of repointing having taken place within the church on the southwest wall, with darker mortar used in the pointing (refer photo 12), above the main entrance door (refer photo 13) and at the doorway into the amenities link (refer photo 14).

4.1.7 The steel lintel above the main entrance door was corroding (refer photo 15).

4.1.8 The internal masonry was generally in very good condition (with some repointing as above) and the ceilings showed no signs of damage (refer photos 16 & 17).

4.2 Durbridge Hall

4.2.1 The roof sheets were in fair condition with some peeling/fading of the paint finish (refer photo 18). The timber barge boards were severely weathered.

4.2.2 A large section of the gutter on the southeast elevation of the hall had rusted through and collapsed (refer photo 19).

4.2.3 The front of the building was subsiding in the northwest and southwest corners of the entrance visually lower than at the doorway (refer photo 20). The floors within the small kitchen and the cupboard to left and right of the doorway seemed to slope towards the corners.

4.2.4 The timber stumps, bearers and joists were in good condition when viewed from the perimeter of the building (refer photo 21).

4.2.5 The weatherboard was weathered with some damage to localised boards from long term exposure (refer photo 22).

4.2.6 Downpipes around the building were corroding and in need of replacement around the building (refer photos 22 & 23), with some discharging directly onto the ground (refer photo 24).

4.2.7 The paint was flaking from the (likely) asbestos wall and ceiling sheets (refer photos 25).

4.3 Amenities Link

4.3.1 This structure was already expected to be demolished and had no heritage value, being of late 1980's construction timber frame. Therefore, no detailed observations were made of this area.

4.4 Corner Shop

4.4.1 The former residence portion of the shop (to the southwest) was not inspected as this was due to be demolished as part of the development.

4.4.2 The ceiling appeared to be sagging when viewed from the rear of the shop (refer photo 26).

4.4.3 There was a minor crack in the wall above the entrance door (refer photo 27).

4.4.4 The awning ties were corroding, and the masonry was cracked around the embedded plates holding the ties into the walls (refer photos 28 & 29).

4.4.5 The downpipes at each end of the awning were discharging directly onto the ground/footpath (refer photos 30 & 31).

4.4.6 There was cracking and damp damage along the base of the northeast elevation (refer photo 32).

5. Discussion and Recommendations

5.1 Church

5.1.1 While the church was not showing significant damage to the building and could be readily repaired where it was, the change of use from a 'Place of Worship' to a pair of residential units would trigger the requirement to upgrade the structure to conform to the current National Construction Codes for Class 1 buildings (Dwellings). This includes the requirement to upgrade the building to meet current Australian Standards for the proposed class of use. With the building being divided into two separate dwellings, there will need to be a fire wall separating the units, which doesn't allow any structural items to penetrate through.

5.1.2 The maximum height of the building (from the existing drawings) from the top of the footing blocks (which is above the existing ground level) is 100 brick courses or 28'0" (refer Fig 1 below). This equates to just over 8.5m which, when added to the additional height from the top of the footing blocks to the ground, triggers the requirement in AS1170.4: Earthquake Actions to design the building to Earthquake design category II. This would require significant upgrades to the all the joints between various elements of the building (eg floor to wall, rafters/trusses to wall etc) and an assessment of the strength of the masonry walls under lateral earthquake loads, as well as Wind loads.

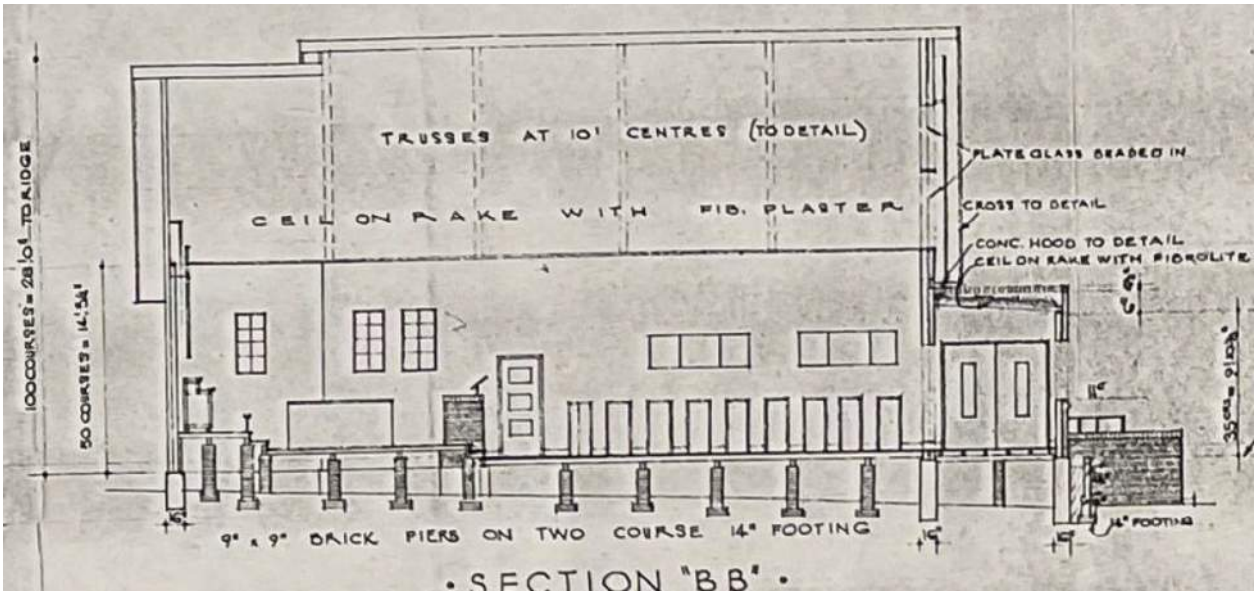

Fig 1 – Roof Height

5.1.3 The floor under the dais has been raised by using extended brick piers to lift the floor bearers and joists (according to the drawing, see Fig 2 below). This would mean that the floor would have to be partially demolished and then reconstructed to be at the same level as the remainder of the floors, cutting down the brick piers.

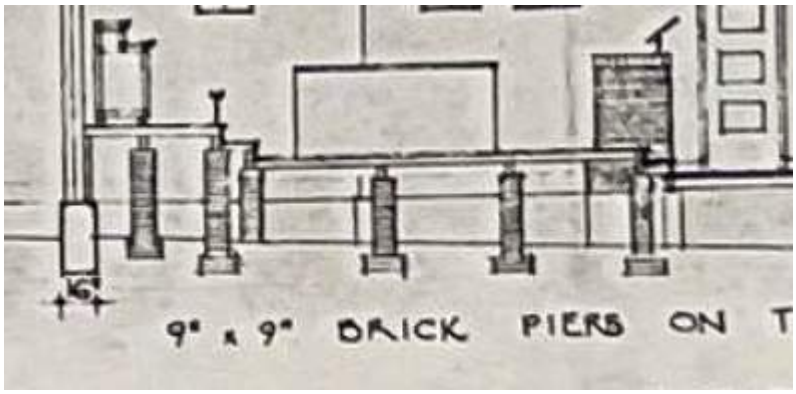

Fig 2 – Dais floor construction.

5.1.4 Despite the height of the roof, the steepness of the pitch is not ideal for creating the mezzanine floors that are required to make the spaces liveable. The head room is limited in the mezzanine space leading to an undesirable living space. This has been explored by the architect in detail.

5.1.5 The trusses are of an unusual style being scissor type and, while adequate for the current roof loading condition, may require strengthening when additional dead load is added to them to create ceilings suitable for dwellings and have sufficient insulation to meet the Energy Efficiency requirements of the NCC.

5.1.6 The foundations are not designed for a 2-storey structure and the floors would need to be

checked to ensure they are capable of taking the applied residential loads from AS1170.1. Internal walls would require support on doubled up joists and the upper floor would need to span across the full width of the room or be supported at mid-span from a new column and footing. The existing ground condition is not known but construction methods employed in the 1950's did not usually adequately compact the ground. This would potentially trigger the requirement to underpin the footings using micro-fine grout injection, an expensive process.

5.1.7 In our opinion the cost to upgrade this building to meet the requirements of the NCC would outweigh the cost of demolition and construction of new, purpose-built dwellings.

5.2 Durbridge Hall

5.2.1 This structure was in reasonably good condition, however, would not easily be converted to dwelling units and is not being retained for reuse within the development.

5.2.2 If the building was going to be retained there are several areas that would require upgrades to ensure they meet the requirements of the NCC. The cladding to all elevations internally and externally should be removed to ensure that sufficient insulation can be installed to meet the Energy Efficiency requirements of the NCC. The ceiling and wall cladding sheets internally, appear to be asbestos cement sheets which would require specialist removal and disposal at a suitably licensed tip.

5.3 Amenities Link

5.3.1 This building is to be demolished and there is no likelihood of reuse as dwellings. There is little benefit to the development in trying to reuse this cheaply constructed, modern timber framed extension.

5.4 Corner Shop

5.4.1 The majority of this building was expected to be demolished, with some thought that the shop front and facade could be retained as part of the new corner dwelling.

5.4.2 To achieve this the façade walls would require propping during construction to ensure that they do not become unstable. The length of time this would need to be supported is unknown. The cost of this propping can be high, with very little benefit to the development.

5.4.3 To stabilise the wall, microfine grout injection could be used, however this is expensive. Dampness in the walls would likely increase as any dampproof course present in the wall degrades further, leading to a damp and unhealthy environment within the living space.

5.4.4 The existing awning has damaged the façade masonry where it is connected by the tie backs. It is proposed to remove the existing awning and replace with a new lightweight fabric awning. If it was retained, the steelwork of the original awning was not galvanised and would require sand blasting and painting using a suitable external grade paint.

5.4.5 In our opinion there would be little economic benefit in retaining the wall and awning in its current condition. It would be cheaper to demolish the wall and awning and build a new wall that is designed to support all the additional loads applied it with adequate footings and improved ground conditions. The appearance of the wall can be matched to the existing and a new or refurbished existing awning could be attached if this is desired.

6. Conclusion

6.1.1 The existing buildings on the site are of mixed construction, of different ages and in varying conditions. The benefits of retaining them for heritage reasons is outweighed by the cost of upgrading them to meet current codes and the potential for future issues with the properties that would be undesirable to future owners. Demolition and construction of new buildings would be a

more economic approach, using a design that is sympathetic to the original by using similar materials in the construction.

7. Closure

We trust that this report meets your current requirements. Please contact the undersigned should you have any queries.

for **Quoin Consulting**

Martin Silk, *MEng (Hons), MIEAust, CPEng, NER*
Principal

Appendix A - Photographs

Photo 01 – Fretting mortar, southeast elevation

Photo 02 – Fretting mortar and damp staining, southwest elevation

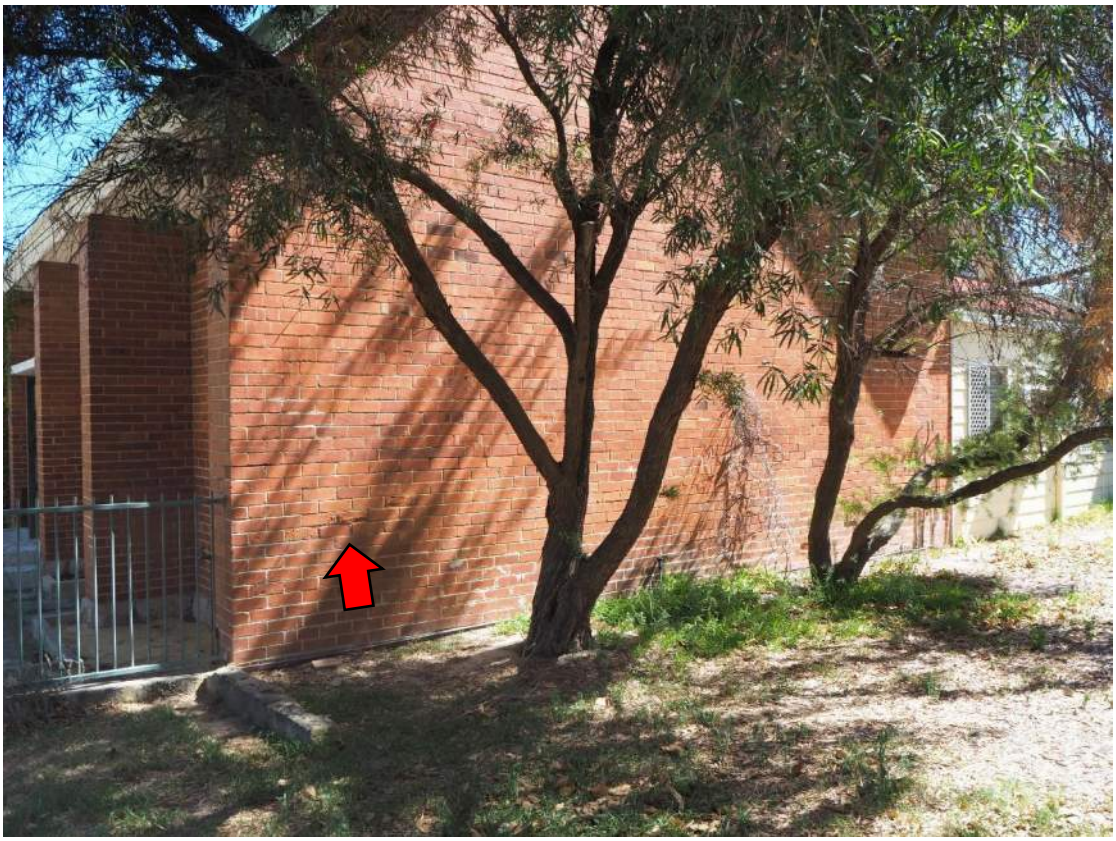

Photo 03 – Fretting mortar, northeast elevation

Photo 04 – Example of limestone footing blocks in good condition

Photo 05 – Entrance steps weathered, and concrete cracked

Photo 06 – Step footing blocks undermined and crack opening up between them and the original footing blocks.

Photo 07 – Missing eaves boards. Note connection between hidden eaves gutter and downpipe rain head.

Photo 08 – Roof timber appeared in good condition.

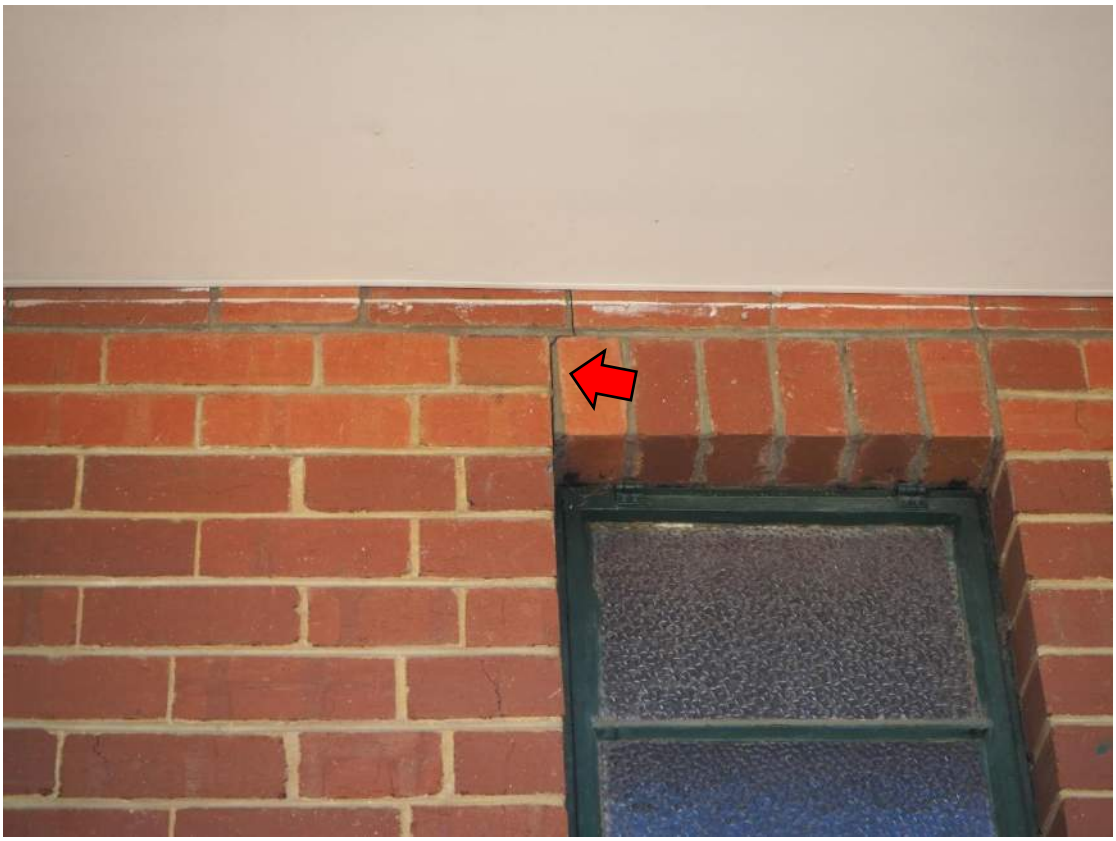

Photo 09 – Small crack in lintel above window

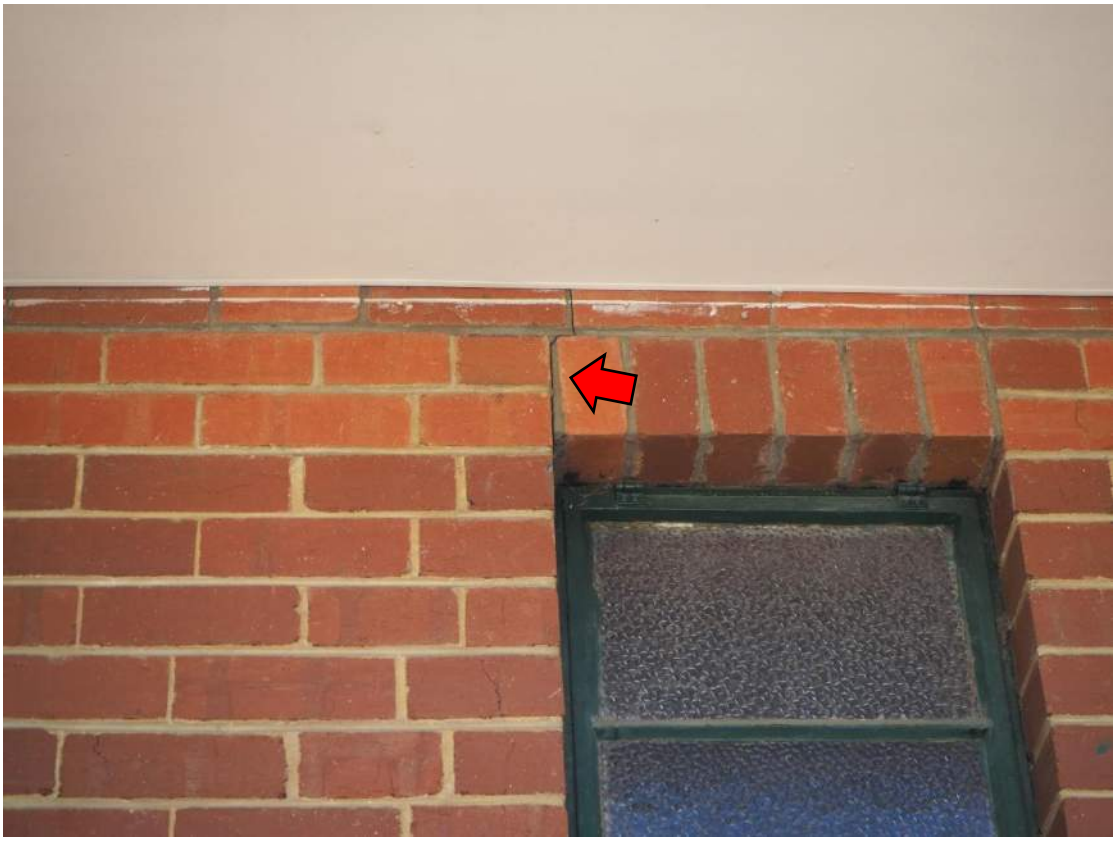

Photo 10 – Small crack in lintel above window

Photo 11 – Planter bed retaining wall has failed. Also note the fretting brickwork

Photo 12 – Different coloured pointing above doorway.

Photo 13 – Different coloured pointing above doorway.

Photo 14 – Different coloured mortar over doorway.

Photo 15 – Corroding lintel over doorway

Photo 16 – Church hall ceilings in good condition

Photo 17 – Church hall walls and ceilings in good condition.

Photo 18 – The roof sheets were in fair condition with some fading. Note the severe weathering of the barge boards on the facia.

Photo 19 – Corroded and collapsed gutter, southeast elevation.

Photo 20 – The sides of the front entrance structure were sagging

Photo 21 – The floor timbers appeared in good condition.

Photo 22 – The timber weatherboard was badly weathered in places and the downpipe was corroding and discharging directly onto the ground.

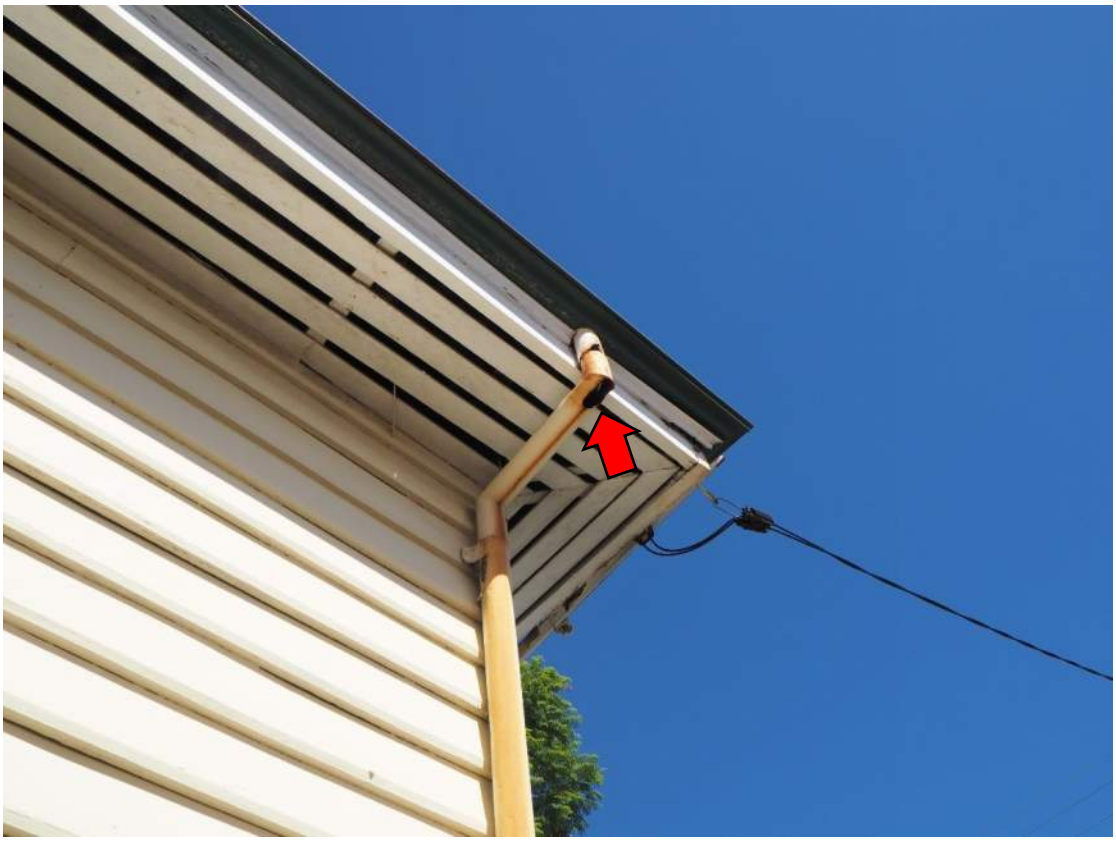

Photo 23 – Severely corroded downpipe.

Photo 24 – Downpipe discharging onto the ground

Photo 25 – Internal paintwork on ACM(?) sheets in poor condition.

Photo 26 – Ceiling sagging in corner shop

Photo 27 – Minor crack above door to corner shop.

Photo 28 – Crack in parapet caused by awning tie. Awning tie corroding.

Photo 29 – Cracks in parapet caused by awning ties. Awning ties corroding.

Photo 30 – Downpipe discharging directly onto the ground.

Photo 31 – Downpipe discharging directly onto the ground.

Photo 32 – Cracks and damp damage to base of wall.