HaworthMcCall CONSULTING
t. 01273 617117 www.haworthmccall.co.uk

Report Title	**Response to Sussex Surveyor's Report**
Project Number	**1733**
Site Address	**Burgess Hill Park Centre RH15 8ET**
Date	**30/11/2022**
Author	**Brendan Haworth**
Checked	**Des McCall IStructE MICE**
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1 Introduction

Haworth McCall (HMC) is a Civil and Structural engineering consultancy with offices in Brighton and Belfast.

We received an initial enquiry from Sussex Surveyors and then an instruction to inspect the building from Steve Cridland, Chief Executive Officer Burgess Hill Town Council.

We visited the site on Tuesday 15th November 2022. The weather at the time of our visit was windy with showers.

The purpose of the visit was to inspect the building at several locations that were identified in Sussex Surveyors Building Inspection Report dated August 2022 as having potential structural defects.

We met Steve Cridland on site, but he did not accompany us during our inspection.

Contractor Woodmans Construction were in attendance to "open up" for our inspection.

2 The Brief

Sussex Surveyors (SS) report highlighted the following for our inspection:

Table 1

SS Item №	Element	Description
3	Main roof	Suspect roof timbers
17	Main roof	Suspect roof structure and resultant displacement of masonry at high level
19	Front and rear gable walls	Cracks in render and masonry
22	Window east side sub-cill	Cracked
28	Render bands	Cracks in render and brickwork
46	Art store wall	Cracks
49	1st Floor	Concerns about structural integrity
50	Gym floor	Concern about supporting structure's integrity
51	Office 1 & 2	Steel beam bearing and sagging plaster ceiling

During the inspection we identified other issues which are described in more detail in **Section 5** below.

3 Description of the Building

The property is a detached, two storey building, believed to have been constructed in 1872. Numerous extensions have been added over the years, most of which are believed to have been added in the 1960s. Floors are a mix of suspended timber, suspended concrete, and solid concrete.

The site plan opposite confirms that the building is orientated so that the front elevation is facing nominally south. A photograph of the front elevation is at the report cover-page.

Ground and first floor plans are at Appendix A

4 Observations

Our observations for each of the items listed in Table 1 follow below. For the less significant defects we have made a recommendation within this section of the report.

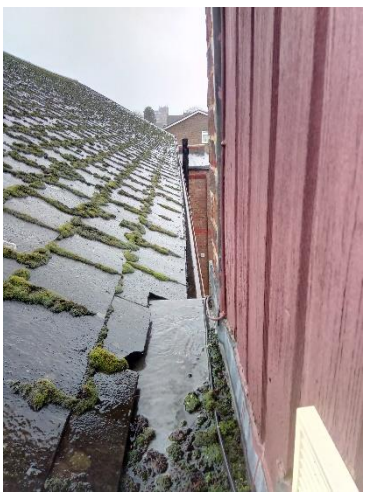
More serious structural defects and other structural issues that we noted that are not recorded in Sussex Surveyors' report are discussed in **Section 5**

4.1

SS Item №	Element	Description
3	Main roof	Suspect roof timbers.

We gained access to the high-level hatch above the gymnasium floor and were satisfied that the roof timbers which were visible from that location are in good condition. See photograph opposite. It was not possible to gain access further into the roof space beyond standing in the hatch-opening. This was due to lack of head-space and excessive amounts of mineral wool at the opening.

We also inspected both east and west roof slopes from outside on the flat roof at the rear of the main building. We did not measure the alignment of the roof but, we could not detect the undulations referred to in Sussex Surveyor's report. See photographs of East and West roof slopes viewed from the rear of the building towards the front of the building. East on the left, West on the right.



4.2

SS Item №	Element	Description
17	Main roof	Suspect roof structure and resultant displacement of masonry at high level.

The main roof structure is a series of king post, curved collar-beam trusses with wall-posts on corbels. Each truss has an eaves-level horizontal metal tie-bar with vertical steel hangers from the curved collar beam – see photograph on the left. The trusses support purlins which in turn support rafters. It is likely that the shallow curve of the collar-beam necessitates the horizontal metal tie-bar. All the visible trusses, apart from the one at the very rear of the gymnasium (opposite end to the stage) appear to have been fitted with replacement tie-bars, vertical hangers, connection straps, fixing bolts and tensioning nuts, The component parts are from what look like recent fabrications and current hollow section. Replacement tie-bars have been fitted approximately 125mm above their original position. See photograph above that indicates the original tie-bar mounting holes. There is what appears to be the original tie-bar fitted to the king post truss at the rear of the gymnasium (opposite end to the stage). Although it was only inspected from floor level, its fittings seem to be in good condition. It is therefore not clear why replacement tie-bars were installed to the other trusses or why they were fitted at a slightly higher level. It is possible that new tie-bars were fitted prior to removing the original ones.

An opening was cut in the plasterboard to inspect the roof timbers at eaves level at a point mid-way along the gymnasium on the west elevation. All timbers appeared to be in good condition with rafters at that location from sawn timber that is probably less than 20 years old. See photograph opposite.

SS Item 17 continued……..

Spacing of the king post trusses indicated that there should be a truss located near the front of the stage. However there did not appear to be a truss at this location as the horizontal tie-beam, wall-posts corbels and curved collar beam were missing. This is the location where Sussex Surveyors identified the displacement of masonry at high level on the west elevation.

At the next anticipated truss position (at the back of the stage) only the horizontal tie-bar was visible. This matched what we believe is an original tie-bar at the opposite end of the gymnasium mentioned previously.

The photograph opposite shows the tie-bar at the rear of the stage area. The curved collar-beam, wall posts and corbels were missing at this location.

4.3

SS Item №	Element	Description
19	Front and rear gable walls	Cracks in render and masonry

Cracks in the gable walls were noted but considered to be minor and not structurally significant.

We recommend Heli-bar reinforcement is installed in bed-joints across the cracks in accordance with Heli-bar recommendations. Badly damaged brick units should be cut out and replaced.

4.4

SS Item №	Element	Description
22	Window east side sub-cill	Cracked

The brick arch over the door opening directly adjacent to the window had displaced down by approximately 10mm and the surrounding masonry had been re-pointed. It is likely that the cracked sub-cill is related to the movement of masonry at this location.

We recommend cosmetic repairs to the cill and on-going monitoring at future routine maintenance inspections.

4.5

SS Item №	Element	Description
28	Render bands	Cracks in render and brickwork

The render was hacked off to reveal a joint between original and more recent construction. There is a concrete beam behind the render band (photo on the right) and the crack coincided with the end of the beam. Ceiling tiles were removed at first floor level; access was limited but nothing structurally significant was noted. The crack does not indicate anything structurally significant and is likely to be reflective cracking resulting from a joint between recent and original construction. No further action required except to repair the render band incorporating a movement joint.

4.6

SS Item Nº	Element	Description
46	Art store wall	Cracks

It was noted that heating or water supply pipes have been installed recently in this area and the crack on one side of the wall had been filled and painted since Sussex Surveyors issued their report. It may be possible that drilling through the walls to install pipes contributed to the formation of the crack. The crack (approximately 10mm wide) on the opposite side of the wall to the repair, remained open. Ceiling tiles were removed on the floor below to reveal a beam and block floor below the cracked wall with beams spanning perpendicular to the cracked wall. There was no evidence of structural movement in the vicinity therefore we recommend that the crack is pointed up and monitored during routine maintenance inspections.

4.7

SS Item Nº	Element	Description
49	1st Floor	Concerns about structural integrity

Openings were created in the plasterboard at various locations at ground floor ceiling level to expose the structure. This revealed in most cases relatively new steelwork which was not a cause for concern.

However, the RSJ referred to in item 51 below, at ground floor ceiling level (below the gymnasium), appears to extend into the rear of the building beyond offices 1 and 2, into the open plan seating area. There are two timber posts nominally 125mm square in section and approximately 2.8m tall that appear to be propping the RSJ. This is an unusual way of supporting a steel beam and without further examination to check how these timber posts are connected to the floor and RSJ above, they could be at risk of being dislodged due to accidental impact.

Further investigation is recommended to understand what the RSJ is supporting and if the timber posts are critical.

4.8

SS Item №	Element	Description
50	Gym floor	Concern about supporting structure's integrity

During the course of our inspection, we did not see anything in respect of support to the gymnasium floor that was a cause for concern.

4.9

SS Item №	Element	Description
51	Office 1 & 2 Office 038 and 019 on the floor plan	Steel beam bearing and sagging plaster ceiling

Masonry around the bearing of the steel beam and padstone has lost some mortar. A part section of sagging plasterboard was cut away at ceiling level. There were no defects noted in the floor structure above which supports the ceiling plasterboard.

We recommend that the beam is supported with a temporary prop and the lose bricks and padstone are re-set in fresh mortar.

5 Comments

5.1 Gymnasium Roof

It is not clear why all but one of the tie-bars has been replaced and set at a slightly higher level. In the photograph opposite, the pair of holes below the horizontal steel bracket are we believe the original tie-bar bracket bolt-holes.

It is not clear why two trusses above the stage area were removed and it was not possible to determine what structure, if any, has been installed to replace those trusses.

Above the stage area there are two horizontal down-stands projecting approximately 500mm from ceiling level.

Opening-up through the plasterboard to inspect one down-stand, revealed a pair of timbers 50x150 (estimated) spanning across the gymnasium, with a single 50x100 (estimated) vertical timber hanger at mid span which, extended up to the apex of the main roof. The side walls of each down-stand were formed from 50x50 timber battens and plasterboard. See photograph opposite.

It is not clear what the pair of down stands were intended for. However, scaffold tubes pass through the side walls of both down-stands and attached to the scaffold tubes are several stage lights. The scaffold tubes appear to be bearing onto the plasterboard which is an unsatisfactory means of support.

6 Conclusion & Recommendations

6.1 Conclusions

The majority of structural defects identified in Sussex Surveyor's report are minor in nature and relatively straightforward to resolve. However, they should be checked again during on-going routine building inspections.

The important structural issue is the effect that removing two king-post roof trusses above the gymnasium has had on the stability of the roof and the main supporting masonry walls. It is clear that some movement has occurred in the masonry where one truss has been removed but it is not clear if that happened at the time of the truss's removal or is in fact on-going. It was not possible during the site visit to establish what structure, if any, has been put in place to replace the support originally provided by the two trusses which have been removed.

6.2 Recommendations

1. We recommend that more opening-up to allow a thorough and detailed examination of the rear portion of the roof above the stage area is commissioned. This should be done as soon as practically possible, and any structural interventions and repairs completed before the building comes back into use.

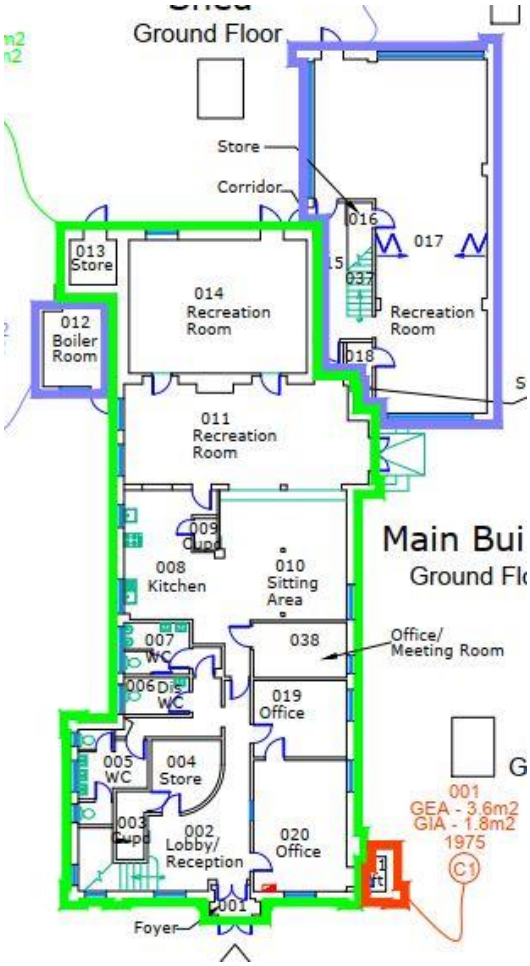
2. The scaffold tubes above the stage that carry lights should be taken down and if required, a more robust and appropriate means of mounting and supporting stage lights should be installed.

3. Further investigation is recommended to understand how the timber posts are connected to the floor and RSJ in the ground floor open plan seating area

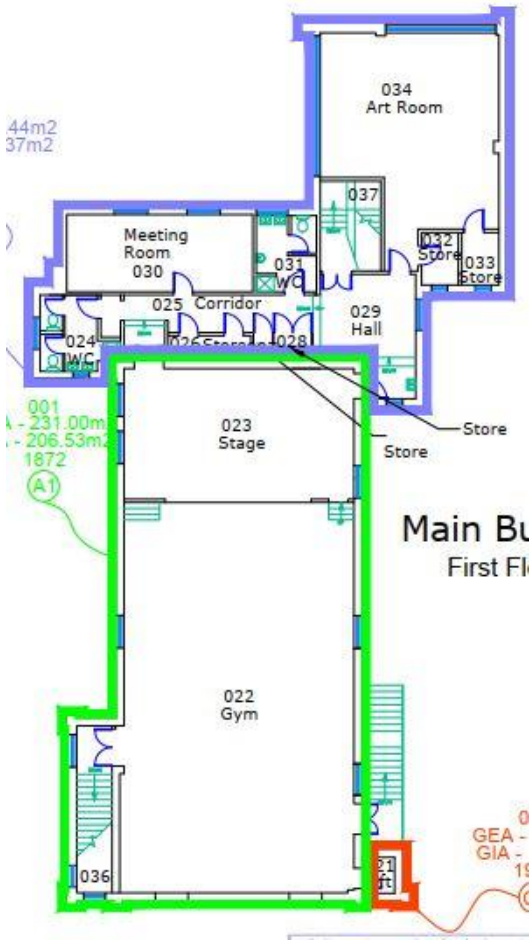
4. We recommend that the RSJ running through Office 038 at ground floor level is supported with a temporary prop and the lose bricks and padstone are re-set in fresh mortar.

5. An exclusion zone below the displaced masonry on both sides of the building should be erected to prevent anyone entering the area where falling masonry might land.

Appendix A



Ground Floor Plan



First Floor Plan