Structural Café Closure Report

Rose Café, Graves Park, Sheffield S8 8LJ

PC06414
V0_02
03/08/22
Capital Delivery Service

Sheffield City Council

Document Controls

Document Approval			
Version Number:	V0_02		
Prepared by:	Technical Manager	Date:	03/08/22
Checked by:	Delivery Manager	Date:	03/08/22
Approved by:	Sean McClean – Head of Service	Date:	03/08/22

Issue Record			
Version	**Circulation List**	**Date Issued**	**Format Issued**
02	Nathan Rodgers, Ruth Bell	04/08/22	Electronic

Revision History	
Version	**Nature of Revision**

Contents

1 Introduction

This report is issued to support the decision to temporarily close Rose Café at Graves Park in the interests of public safety.

This is as a result of a joint inspection carried out between the Author and, Senior Architect, Sheffield City Council Capital Delivery Service on the 20th of June 2022 with subsequent report following on the 28th of June 2022.

A Building Defects Survey had also been commissioned to be undertaken by Rider Levett Bucknall (RLB) to enable feasible options to be considered by Senior Architect. This survey was carried out on the 5th of July 2022 and their physical condition survey (final) was received by Sheffield City Council (SCC) on the 12th July 2022.

In their report RLB have reported that the main condition change into the **Category D – Bad [Non-operational or about to fail]** was for the roof since they carried out a survey previously in 2018. This was **NOT** referring to the roof structure which was not surveyed by RLB due to it not being accessible. The ceiling hatch is at a high level over the main entrance, and the café operators would have to close the café to allow access for the inspection.

Note also that the Author could not access the roof void to carry out an inspection due to the same reasons.

Further timber surveys to justify the safe use of the building were requested to the Author but were not felt necessary as justified in this report.

2 Café Condition

The Rose Garden Café was built in 1927 and is a detached single storey timber framed structure with a brick built flat roof extension (formerly toilets) now used as a kitchen and store. A toilet block extension was added at a later date. The main roofs are pitched and finished in plain clay tiles. The gable walls are solid masonry.

The timber frame has been subject to historic and significant distortion. A previous Building Defects Survey undertaken in 2018 lists the overall condition of the Cafe as **'Poor'** and recommended major repair works to roofs, external walls, windows and building services. The report also highlighted that '*the timber framed structure forming the Rose Garden café has been subject to historic and significant distortion. Whilst no evidence of recent instability was apparent,* ***prior*** *to recovering the main roof, further investigation required by Structural Engineer to ensure all movement is complete'*

The 2022 RLB Building Defects Survey had not been received at the time of the inspection carried out by the Author. Once received this noted the roof element (only) as going from a 'Poor' originally in 2018, to being in a 'bad (unsafe)' condition.

Further clarification between Senior Architect with RLB noted that the reference to the bad condition of the roof was for the roof finish, timber fascia's and rear flat roof additions visually inspected. An internal survey had not been undertaken in the roof space. The costs in the RLB report for the roof were for re-tiling only and did not include any strengthening works required to the roof or replacement of rotten purlins; rafters; ceiling joists and roof trusses which would not be known until the roof was stripped.

After further survey requests were made to establish if strengthening works could be carried out to the roof. it was concluded by the Author that a further survey in the roof space would not gather any more information than already known; i.e. the roof structure is showing signs of bulging of the soffit beams both sides of the main entrance, sagging on both elevations and the dormer windows are leaning backwards into the roof on both sides.

Any works to replace the roof finish would require significant remediation and temporary propping of the existing roof structure if it was to be maintained in its current condition. As the front elevation walls are also bulging and leaning out in a similar way to the roof, they would also require similar remediation and temporary propping works during any refurbishment. The condition of the front wall foundations is also currently unknown and may require significant underpinning if the walls were to be rebuilt.

At this point a low-level refurbishment option which could be undertaken quickly (within 12 months) was considered carrying out strengthening to the roof and replacement windows.

The following concerns were raised: -

- The existing windows are in a very poor condition, are rotten and leaning and bowing out both vertically and horizontally. It would therefore be difficult to achieve window replacement without additional support, i.e., a structural steel frame.

- The front elevation could tilt further if the roof tiles were removed as it is thought that the dead weight of the roof is preventing the front elevation from collapsing.

- Also, as reiterated, the café building is generally in a poor to bad condition and installing new windows into a building, if at all possible, would not resolve the stability issues of the building and in fact could make it worse as the timber window head will be structural and more weight would be added with replacement double glazed units than what is there at present.

At this point it was considered no longer a feasible option for the building to be refurbished without substantial alterations and without rebuilding most or all of the property.

The Author was requested to establish the state of the wooden frame of the roof and front elevation to devise a more accurate risk of collapse in the interest of public safety.

3 Risk and Safety Issues

The following surveys were considered by the Author and Senior Architect at the time but were rejected by the Author on the grounds as stated: -

1) Timber Survey

A timber survey to determine the strength of timber to the timber framed front elevation; windows and roof timber support structure could be carried out.

In order to carry out the roof inspection the café would need to be closed to enable scaffold to be constructed to access the roof hatch. The roof space would also require boarding out to allow access. And a pigeon survey would also be required as bird entry is obvious.

This was discounted as boarding out the structure for access also adds weight to the roof which is in a bad condition. This alone could cause a collapse. It is unlikely that the truss feet or rafter feet will be evident for inspection. There is also concern that any boarding placed for access could be covering rot or split timbers which makes it unsafe for anyone inspecting the roof from a falling from height perspective.

This survey would not give any more information than what is already known – the windows, soffits and timber columns to the front elevation are rotten.

2) Tilt Survey

From the BRE Digest 475 Tilt of Low Rise Buildings publication, tilt to the front elevation is within the 1/100 limit where remedial action should be taken. If tilt reaches the 1/50 limit the building is regarded as in a dangerous condition and remedial action to demolish the building is required urgently. Monitoring the tilt would be a long term exercise for a minimum of 1 year to get an idea of if the building is moving in a cyclic manner associated with seasonal changes in water content of the soil.

This was discounted as survey pins could not be fixed to anything decent on the building due to the rotting soffit beam and columns and would prove pointless to monitor over a period of time if they are unlikely to be there.

Of an important fact to note the building was redecorated 3 years ago. New cracking has appeared to the column tops internally and along the wallplate level where there is now a considerable 15-20mm gap. This indicates that the building is still on the move.

3) Weather Damage Survey

The Author could visit site and visually check over the structure immediately after intense weather such as torrential rain, heavy snowfall, and wind gusts greater than 38mph.

This was discounted as café users could already be in the building when intense weather commences and the safety of the occupiers is then compromised.

4) External Roof Survey

This would be an intrusive survey stripping back part of the roof to inspect the truss and rafter feet and condition of the timber frame at wallplate level. In order to do this the café would need to be closed for safety reasons and as the front access will be restricted with scaffolding. The column locations will also need rake propping in case the removal of the roof load leads to movement in the columns.

This was discounted due to the fact that the front elevation is tilted to such an extent that it will become unable to support the roof in the future. The refurbishment proposals also included for a new access and new bi-fold doors thereby involving removal of the front elevation of the building which would result in a supporting steel frame being installed in place. It would be difficult tying back a sagging and bowing roof to a new structure and it is likely that most of the roof members will require replacement.

4 Safety Conclusions

1) The front elevation of the building is leaning and has continued to move. It is highly likely that any further lean between 1/100 and 1/50 could leave the roof unsupported resulting in disproportionate collapse of the whole structure.

2) The roof is bowing and sagging on both elevations and without carrying out extensive strengthening works will continue to split/crack and rot due to water ingress which again will lead to progressive collapse of the structure.

At a meeting between the Author and Nathan Rodgers, Head of Facilities Management, Sheffield City Council regarding safety risks associated with this building on the 27th July 2022, the following was discussed:-

a) How long could the building remain open in its current condition
b) What could be done to the building to make it structurally safe while a scheme to replace it is progressed.
c) What strengthening works could be carried out in the short term to keep people safe.

The Author's responses were as follows:-

a) It is impossible to predict if the building is going to last a few weeks, months, or years. Although it is the roof structure that is classed as unsafe, the roof effects other parts of the building such as the front elevation where it is evident roof spread has taken place. The rotten condition of the front elevation also causes concern as this is supporting the roof.
b) It is not possible to predict how far the front elevation will tilt before progressive collapse occurs. Factors such as the condition of the timber truss and rafter feet will only be clear if/when the roof is stripped. Intense weather conditions could set off the progressive collapse of the building at any time.
c) The Author would need a better understanding of strengthening works involved which could only be established by free uninterrupted access into the café and kitchen area.

It was agreed at the meeting to close the building with immediate (temporary) effect to allow the Author to carry out any further visual surveys to determine what (if any) strengthening works could be carried out.

The Author met with representatives from Facilities Management, Parks, and a the Café on site on 28 July 2022. The safety aspects were discussed and the Author inspected the property internally now it was vacant.

Results of this inspection concluded:-

- Outward movement had taken place to the front elevation since the café was decorated 3 years ago. Cracks were evident to the column tops at wallplate level and there was a 15-20mm gap between the wallplate and roof structure.

- A propping scheme to make the structure safe would involve a scaffold frame internally taking the form of a ‘crash deck’ to stop any debris falling from the roof through the ceiling into the café below. And this will include the propping of all the truss ends at both sides. Raking props could then be installed to the columns on the front elevation to act as a buttress. (Not required at the rear as the flat roof building is buttressing this side). This was discounted on site as the props would be installed against the front entrance restricting access; and the rear props would all fall within the serving area making it impractical to use the counter serving area or access the kitchen area behind. It would also raise concerns from café users as the propping system would be unsightly and on show.

- Taking out the safety aspect of café users now the café is empty, a roof void inspection could now take place but it is unlikely that the extent of damage will be seen in the roof as this is usually only obvious when the roof tiles are stripped. And as reiterated before as the front elevation needs replacing so will the roof structure as it is bowing and sagging and no longer in line with the front elevation.

- Roof tiles had slipped into the valley on the front elevation, and a large patch of tiles were about to dislodge on the rear elevation. This damage was not present during the initial Structural Survey undertaken by the Author and have happened over a period of 1 month. Further concluding that the roof structure is unsafe and has deteriorated further.

- The question was also raised by Nathan Rodgers and the café operator of keeping the kitchen in operation if the rest of the café was closed. The kitchen is in a flat roof (concrete) extension to the rear of the building. The Author had already considered this but, as there is no way of knowing when the adjacent attached structure will become unsafe, and due to the dislodged tiles in this area about to slip from the main roof, safe use of the kitchen cannot be guaranteed.

5 Safety Recommendations

Short term

The building is to remain closed until further notice as there is no indication when the building if/will fail.

- The kitchen could remain open but an internal roof support scaffold and external raking props to the columns would still need to be installed to make the café safe and allow the free use of the kitchen. In this instance you could install debris netting beneath the ceiling instead of a crash deck if there is no entry by the public/café operators. You are almost carrying out works for the café to remain open in doing this and probably not a cost effective way to just to keep the kitchen open. There is also concern of the dislodged tiles which could fall and miss the flat roof and hit someone entering the building. Some kind of debris netting would need to be installed to prevent this to the rear elevation roof.

- It is considered that the toilet block circa 1984 is an independent structure and is not dependant on the café structure for support. These toilets can remain in use.

Long Term

If the building is to be kept and refurbished the following surveys should be done as a matter of course:-

- A full topographical survey of the structure to enable a 3D model to be formulated and load paths to be determined.

- An external localised roof strip to view the rafter feet; wallplate and truss feet to get a feel if the whole roof structure is to be replaced or just elements. The column that is immediately below the area to be stripped is to be propped to prevent outwards movement while doing this. However, sag and bow of the roof is now long established and it would be detrimental and almost impossible to work with what is there bearing in mind the age of the building. And especially if the front elevation is being opened up to receive bi-fold doors. There is a likelihood of bespoke timber connection details needing to be carried out to the trusses.

Please refer to the Author’s further recommendations in Section 5) of the Structural Inspection Report dated 28/06/22 and for photographs of the café.

If you require further assistance, then please contact the author.

Technical Manager – Structural & Civil Engineering
Capital Delivery Service, Sheffield City Council, Zone 1, Level 3, East Wing, Moorfoot, Sheffield, S1 4PL.