

Rose Garden Café Front Wall File Note

Purpose of document	To provide a file note summarising the findings and recommendations of the ADEPT structural report and Monaghans building survey with the aim of sharing knowledge to allow discussion and a common understanding of all commissioned professional advice thus far.
Key question from FoGP	‘Can we make the building safe in a temporary way to allow removal of scaffolding and for the café to open in much greater capacity ahead of full restoration and refurbishment works?’ – CD noted that the Community Ownership Fund advised that any money spent ahead of a bid being successful cannot be funding matched.
Prepared by	Rebecca Nixon, Project Manager, Capital Delivery Service
Reviewed by	Nathan Rodgers, Head of Services – Facilities Management
Purpose of issue	Updated draft for comment following meeting on 30/11 with Alan Nock, Chris Hill, Ernest Brewin, Caroline Dewar, Nathan Rodgers and Rebecca Nixon
Date	04/12/23

The table below asks a series of questions about the front wall and references any relevant information from the ADEPT Structural Report and Monaghans Building Survey alongside some initial notes for discussion.

Question	Structural Report on Existing Building ADEPT Civil & Structural Consulting Engineers 17 th April 2023 (Rev. P4)	Building Survey Monaghans – Building Surveying Services February 2023 (Rev. A)	Notes/comments
Is the condition of the front wall further distorting?		‘there is no evidence of the front wall moving...only exception to this is the Closure Report which reported cracking at wall plate level.’ (p.2-3) Closure Report: ‘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.’ (p.7)	CH - we agree that there are no obvious signs of progressive movement. But remedial work is a sensible precaution. RN to see if photos are available.

<p>Is the distortion to the front elevation historic or ongoing movement?</p>		<p>'The café operators and users of the café, when asked during our visits, indicated the movement has been apparent for some time in their memory.' (p.3) 'The first official reporting of distortion appears to be the report commissioned in 2018 but it may have been apparent earlier but not reported.' (p.3) 'Report No.2 by Rider Levitt Bucknall dated 5th July 2022 confirms 'no evidence of recent instability was apparent' and there appears 'no signs of recent structural distress'. This report suggests the distortion is as a result of historic movement' (p.4)</p>	<p>CH - we would argue it is historic.</p>
<p>How much is the wall tilting by?</p>	<p>'The survey results are represented with several cross-section drawings through the front wall showing a lean of 2.1 – 2.9 degrees. The wall is shown to lean by approx. 160-208mm at roof truss support level.' (p.6)</p>		
<p>Is the wall tilt acceptable and is it considered dangerous?</p>	<p>'The wall tilts were measured at between 2.1 - 2.9 degrees and with reference to BRE 475 would classify the building as in a dangerous condition and with reference to BRE 251 would suggest partial or complete rebuilding is required.' (p.7)</p>		<p>Who are BRE? BRE is the Building Research Establishment. 'BRE is an independent, research-based consultancy, testing and training organisation, operating in the built environment and associated industries' Building Wiki</p>
<p>What is the relevance of BRE Digest 475?</p>	<p>'Whilst the café building structure and foundation type is not strictly covered within the scope of BRE Digest 475 this document gives guidance on acceptable limits for the tilt of walls to low rise buildings built off raft foundations. The document suggests that wall</p>		<p>CH - BRE 475 is not a relevant reference document to assess the RGC. This document refers to movement of raft foundations, the RGC has a brick footing.</p>

	tilts more than 1.1 degrees would classify the building as in a dangerous condition.' (p.7)		As per CH comment – it was noted by AN that BRE 475 is not relevant for the RGC. Once a structural engineer is appointed for further design work all relevant reference material to be reviewed.
What is the relevance of BRE Digest 251?	BRE Digest 251 refers to damage of low-rise buildings showing as cracking and distortions to walls and gives a classification of damage based on recorded observations from least severe category 0, representative of hairline cracking, to category 5 noted as structural damage which requires major repair work involving partial or complete rebuilding. There is comment that vertical deviations more than 1/150, or 0.4 degrees, are undesirable and walls leaning noticeably would represent category 4 damage, whilst walls leaning badly are requiring shoring would represent category 5 damage.(p.7)		
Why is the wall leaning?	'The foundation investigation showed the front wall to have shallow foundations within a made ground material and this is likely to be a contributory factor to the lean of the front wall.' (p.7) 'As noted in the previous report the geometry of the roof construction will result in some horizontal thrusting on the support walls and coupled with an inadequate foundation has resulted in the observed leaning of the wall.' (p7)		CH - most likely a design defect, with the large trusses overloading the small masonry piers, resulting in roof spread and 'bending' the top of the wall outwards.

<p>What further investigation is recommended?</p>	<p>'It is expected that some distortions will be present in the existing timber roof trusses as they have spread to accommodate movement in the front wall and the trusses may not align with the rebuilt front wall or it be feasible to reset into place. The roof trusses would need further inspection to determine whether they are suitable for reuse, to review any distorted geometry and any decay to those areas currently hidden such as within the bearing shoes. Potentially the truss shoes could be removed on the front wall line to allow inspection of the embedded timber or there could be the option of specialist micro drilling the shoe and timber to determine any concealed decay in the timbers within the shoe, with inspection to include the rear bearing wall as well, or removal of the trusses to allow inspection at ground level.' (p.8)</p>	<p>'Investigate the construction of the front wall to confirm cavity wall at low level and solid wall with false timber panelling at high level.' (p.12)</p> <p>'Commission monitoring as recommended in the Sheffield City Council Report including fixing tell-tales and monitoring the front wall movement to confirm if the movement is historic or continuing' (p.12)</p>	<p>Noted by EB that the removal of the full height french doors and replacement with low level brick and windows in the 1960's was in response to vandalism.</p>
<p>Can the propping be removed to allow further investigation?</p>	<p>'We recommend that the temporary propping is retained until a scheme for structural repair or demolition is implemented.' (p.8)</p>		<p>Can the scaffolding be modified?</p>
<p>Key limitations to investigations</p>	<p>'Comments are restricted to those elements of the structure which are loadbearing and/or provide stability to the buildings, and to the external envelope. Non-structural items of interior or exterior fabric are excluded, except where deterioration or damage to such items may have caused or may in the future cause, damage to or loss of integrity of the structure.' (p.9)</p>	<p>'The surveyor has inspected as much of the internal and external surface area of the building as practicable but has not inspected those areas which are covered, unexposed or not reasonably accessible from within the site or adjacent public areas.' (p.17)</p> <p>'The surveyor has not undertaken any testing of services, structural or other calculations.' (p.17)</p>	

	<p>‘Comments are restricted to those elements of the structure which were readily available for visual inspection and exclude all items or elements which were covered in any way by, for example, fittings, fixtures, carpets, floor coverings, furniture, stored goods or plaster/finishes etc. or any items which are buried. Some limited opening up of the structure and exposure of foundations took place.’ (p.9)</p>		
<p>Recommendations for design solutions</p>	<p>‘The extent of movement measured in the front wall is not considered structurally acceptable and rebuilding the front wall with new foundations is recommended. The rebuilt wall could incorporate steel framing to provide suitable support to the roof. Rebuilding the wall with a reinforced inner leaf such as a ‘Stepoc’ blockwork wall may be an option.’ (p.7)</p>	<p>‘If the movement is worsening, consideration should be given to remedial works which could range from 1) forming permanent buttress’s to the front wall through to 2) rebuilding the front wall. Consideration could also be given to fixing restraint ties subject to engineers advice. (p.3) Permanent buttresses could be designed architecturally in brickwork and timber to be a feature and have the advantage they will be external and cause no disruption to the café operation. (p.11)</p>	<p>CH - appointment of a structural engineer, with experience in heritage and structural repairs.</p>

The following table takes the above recommendations from ADEPT Structural Report and Monaghans Building Survey and drafts some initial thoughts for discussion. Note: pros/opportunities, cons/constraints drafted by Rebecca Nixon and Nathan Rodgers who do not have structural engineering professional qualifications. All design solutions require further design development by qualified professionals.

Possible design solution	Source	Pros / Opportunities for review	Cons / constraints for review	Comments/Queries
'Rebuilding the wall with new foundations The rebuilt wall could incorporate steel framing to provide suitable support to the roof.'	Recommendation ADEPT Structural Engineer	<ul style="list-style-type: none"> Wall could be rebuilt using similar technology so appearance remains the same Wall could be rebuilt to incorporate original features such as full height french doors – note that these would need to be protected from vandalism and include shutters for example. Modern improvements can be incorporated at the same time Roof support would be provided 	<ul style="list-style-type: none"> Expected to be the most expensive solution Loss of historic elevation 	
'Rebuilding the wall with a reinforced inner leaf such as a 'Stepoc' blockwork wall may be an option'	Option for further exploration ADEPT Structural Engineer		<ul style="list-style-type: none"> As above Reduction on footprint of building 	
External permanent buttresses	Options for further exploration Monaghans Building Surveyor	<ul style="list-style-type: none"> Cause no disruption to internal operation of café Could be designed architecturally in brickwork and timber to be a feature Could be a less expensive option in comparison to replacing wall Modern improvements such as internal insulation of walls can still be incorporated. 	<ul style="list-style-type: none"> Subject to structural engineer advice Causes disruption to external of café, including requirement for re-working of ramp Potential for buttressing to block views and daylight for café users Change appearance of café 	
Rebuilding the front wall		As per ADEPT rebuild wall notes above	As per ADEPT rebuild wall notes above	

Fixing restraint ties			<ul style="list-style-type: none"> • Subject to structural engineer advice 	CH - Clarity needed on this. Restraint ties fixed back to what?
CHA - Sketch option 1 Partial re-build and new internal steel goal-post to restrain the wall and support the trusses.	Chris Hill Architects	<ul style="list-style-type: none"> • Cheaper than other options above. • Minimal visual impact on exterior of wall. • Minimal impact on internal areas. • External ramp could be retained. • Can incorporate new insulation. • Historic fabric retained. 	<ul style="list-style-type: none"> • Will require alteration to scaffold. • Subject to careful Structural design input. 	
CHA - Sketch option 2 New masonry piers / buttress to restrain the wall and support the trusses.	Chris Hill Architects	<ul style="list-style-type: none"> • As above. 	<ul style="list-style-type: none"> • As above. • May reduce internal area of cafe (depending on size of buttress). 	

CARE Registered engineers in Sheffield

- According to the register there is one engineer on the [Conservation Accreditation Register of Engineers](#) working at [Alan Wood & Partners](#) in Sheffield.
- CH: Lucy Newport at The Morton Partnership is also a CARE Engineer.

Summary of all surveys commissioned for reference:

Survey Title	Author	Survey Date	Revision	Scope	Identified Risks
Physical Condition Report	RLB	Oct 2018		Determine physical condition of existing café and WC buildings, outlining building defects	- Bowing and distortion to structural frame with roof sagging and front elevation leaning out observed
Physical Condition Report	RLB	Jul 2022			- As above but with deterioration due to water ingress and concerns raised with the regards condition of the timber structure
Structural Cafe Closure Report	CDS	Aug 2022		Provide information on the existing café condition, risk and safety issues and provide safety conclusions and recommendations	- The building is to remain closed until further notice as there is no indication when the building if/will fail. - If the building is to be kept and refurbished additional surveys should be done as a matter of course.
Roof Slab Reinforcement Investigation Report	UKA / ADEPT Civil and Structural Consulting Engineers	Nov 2022		Determine the condition of the flat roof to the rear of the cafe and recommend any remedial works	- Noted as no imminent issues with the flat roof to the rear of the café.
Drain Survey Report	G.P. Drain Surveys / ADEPT Civil and Structural Consulting Engineers	Nov 2022		Inspect the existing drainage, determine condition and recommend any remedial works	- Highlights some minor drainage remedial works to be undertaken.
Timber Damp Condition Report	Timberwise / ADEPT Civil and Structural	Jan 2023		Inspect the roof timbers, determine condition and recommend any remedial works	- Observed timber decay from the early stage of a wood boring insect in roof timbers.

	Consulting Engineers				<ul style="list-style-type: none"> - Recommends some further treatment of the roof timbers.
Geotechnical Site Investigation	ARC Environmental / ADEPT Civil and Structural Consulting Engineers	Feb 2023		Determine existing foundations	<ul style="list-style-type: none"> - Confirms that the original wall is not based on stable ground and any future works should be founded min 500mm below.
Building Survey	Monaghans Building Surveyors	February 2023	A	Carry out a building survey report of the Rose Garden Café	<ul style="list-style-type: none"> - 'If the movement is worsening, consideration should be given to remedial works which could range from 1) forming permanent buttress's to the front wall through to 2) rebuilding the front wall. Consideration could also be given to fixing restraint ties subject to engineers advice.'
Measured Tilt Survey	Terra Measurement / ADEPT Civil and Structural Consulting Engineers	Mar 2023		Measure the tilt of the existing walls	<ul style="list-style-type: none"> - This survey confirms a lean beyond that which is acceptable when reviewed against criteria.
Structural Report on Existing Building	ADEPT Civil and Structural Consulting Engineers	Jan 2023	P1	Carry out a structural inspection and programme of further specialist inspections.	<ul style="list-style-type: none"> - This report confirmed the dangerous condition of the café structure and recommended follow-on surveys.
		Feb 2023	P2		<ul style="list-style-type: none"> - Appendix F Updated. Roof Slab Reinforcement Investigation Report, Drain Survey Report , Timber Roof Survey and Timber Damp Condition Report and Geotechnical Site Investigation added.
		Apr 2023	P3		<ul style="list-style-type: none"> - This report provides an update on the further surveys undertaken.
		Apr 2023	P4		<ul style="list-style-type: none"> - 'The extent of movement measured in the front wall is not considered structurally

					<p>acceptable and rebuilding the front wall with new foundations is recommended. The rebuilt wall could incorporate steel framing to provide suitable support to the roof. Rebuilding the wall with a reinforced inner leaf such as a 'Stepoc' blockwork wall may be an option.'</p>
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