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RDC Marton Civic Centre Structural Reassessment

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CONFIDENTIAL



Site Report

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Disclaimers and Limitations

This report ('**Report**') has been prepared by WSP exclusively for Rangitikei District Council ('**Client**') in relation to "Marton Civic Centre – Structural Reassessment" ('**Purpose**') and in accordance with the 5-P1538.PP RDC Marton Civic Centre Short Form Agreement dated 31 March 2023. The findings in this Report are based on and are subject to the assumptions specified in the Report. WSP accepts no liability whatsoever for any reliance on or use of this Report, in whole or in part, for any use or purpose other than the Purpose or any use or reliance on the Report by any third party.

Introduction and Project Understanding

In 2019 WSP conducted a Detailed Seismic Assessments (DSA) on four buildings located at 304-318 Broadway, Marton. The buildings form part of the Marton Civic Centre. Rangitikei District Council (RDC) has invited WSP to reassess these buildings to ascertain current state, any further degradation since the DSA, and to provide a summary of the risks that the building is offering to the general public safety.



Figure 1. Aerial view of the existing buildings at the Marton Civic Centre



During the 2019 assessments all buildings were assigned a 15%NBS (IL2) rating and as such considered Earthquake Prone.

Table 1. 2019 Detailed Seismic Assessment report

Building	%NBS (IL2)	Critical elements
Cobblers A and B	15%	Parapets, ornaments, chimneys
Davenport Brothers	15%	Rear wall piers, parapet, façade ornaments
Abraham & Williams	15%	Façade piers and columns, parapet, chimneys

At this stage we believe a seismic assessment is not required as the lowest attainable seismic score and rating of 15% NBS has already been assigned to these buildings. The DSA undertaken in 2019 was done to the latest NZSEE Guidelines and is still considered relevant.

It is also noted in Table 1 of the original report listed critical risk elements and expected consequence of failure, of which most outcomes could see building element failures and then falling to the footpath and/or road below.

Table 2. Risk and consequence of failure

Risk Element	Potential Consequence of Failure
Front Façade	The masonry on the front façade has the potential to crack and drop small sections of masonry onto the canopy/footpath. Out of plane failure would result in large sections of masonry falling
Parapet	The 1.5m parapets could disconnect from the façade and topple over dropping from a height of 10m onto the footpath below
Chimneys	Chimneys are likely to crack and could collapse, dropping masonry onto the footpath and through the roof/ceiling space
Canopy	Failure of fixings is possible which could result in the canopy losing support, which would lead it dropping onto the footpath below being a significant risk to people around

Recent concerns question the degradation since 2019 and how this may impact public safety as they traverse around these buildings as they are no longer open to the general public.

Scope of Work

Stage 1 – Assessment of Deterioration since 2019

1. Site visit to take current state photos of structural and public safety elements in similar/same positions as 2019 photos were taken.
2. Compare 2019 and 2023 photos to determine any advancement in degradation.
3. Compile findings into a report.
4. Meet with RDC representatives to discuss findings and propose next steps.

Methodology

The methodology for the assessment of all existing structural elements was undertaken in line with the latest applicable sections of the Building Code as outlined by the Building Act of 2004 assessing gravity systems features that can represent risk to people using the footpath and road below.

1 Building Description

1.1 Cobbler B Building

The Cobbler B building was constructed in approximately 1913 on the corner of Broadway and High Street. The two-storey structure consists of 3 course URM (with unreinforced masonry) perimeter walls with large openings at ground level of the street-facing façade, timber roof and floor diaphragm. Internal walls are timber stud with a timber panel lining. The ground floor wall height is 4m and level 1 is 3.5m.

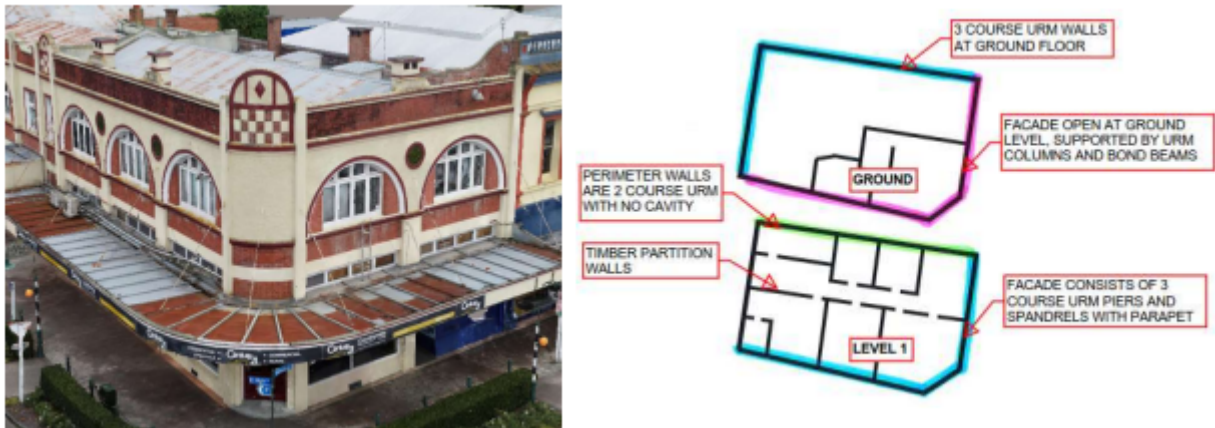


Figure 2. Cobbler A façade and plan views

1.2 Cobbler A Building

The construction of Cobbler A began immediately after Cobbler B was finished being built. It follows the same general design features and methods. The ground floor wall height is 4m and level 1 is also 4m.



Figure 3. Cobbler A façade and plan views

1.3 Davenport Building

The Davenport building was the first of the current buildings to be built. It was finished in 1905. The building consists of URM Perimeter walls with cast iron and timber columns providing support to the floor and roof diaphragms. The ground floor wall height is 4m and level 1 is also 4m.



Figure 4. Davenport façade and plan views

1.4 Abraham and Williams

The Abraham and Williams Building was constructed in approximately 1919. The original building contained URM perimeter walls with timber framed internal walls. The lower level has been altered to be open plan and now contains 5 columns. The floor and roof diaphragms are timber construction. The ground floor height is 4.5m and level 1 is 4m.



Figure 5. Abraham and Williams' façade and plan views

2 Deterioration since 2019

2.1 Canopies for all buildings

From the latest report date, the canopies for the Cobbler-B and the Abraham and Williams buildings have been propped with timber studs, top and bottom plates.

The canopies are constructed from wood with a galvanised steel roof waterproofing layer. Due to water damage by leaks the wood has begun to rot and degrade, compromising the connections and gravity support of the structure. The ties supporting the canopy were steel rods, which are fixed back into the brickwork of the façade at column locations. The connection of each end of the tie was unable to be observed.

Failure of fixings would result in the canopy losing support, which would lead to it dropping onto the footpath below. This has occurred in other locations following previous earthquakes with disastrous consequences.

The remediation short term action for this item would be to prop all not propped canopies in three lines: against the building, mid span and final span. For all propped locations we recommend adding one line of propping structure against the building.

2.2 Water damage for all buildings

During our site visit we found internal areas degraded by water or leaks. The type and condition of the floor and roof beams connections to the URM walls are not fully known but the timber must be preserved from contact with water to avoid them rotting and degrading.

Water damage is affecting also perimeter walls resulting in the loss of mortar in the joints.

Failure of fixings between beams and walls could result in partial building collapses.

The remediation short term action for this item would be to fix leaks and water damage.

2.3 Ivy at Cobbler-A gable end

Our site visit team found a mature Ivy plant attached to the Cobbler-A building gable end. The Ivy can damage the perimeter wall by attacking the mortar in the joints and also weaken the joints and also by adding unnecessary self-weight to the structure. It could also potentially add lateral loads.

The remediation short term action for this item would be to cut the Ivy.

2.4 Concrete beam at the back of Cobbler-A Building

Photos taken and presented in Appendix A indicate that the concrete beam supporting the upper-level floor and roof shows corrosion initiated cracking which could soon lead to spalling of cover concrete and beam degradation.

Even knowing that this beam is inside the building (at the internal patio) a failure may cause damage to adjacent occupied building.

The remediation short term action for this item would be to reinspect the beam six months from our latest site inspection.

3 Conclusion and next steps

Based on our visual inspection the building condition has deteriorated further since 2019 and this now present a higher risk to occasional building occupants, those passing nearby and to vehicles parked under or adjacent to them.





The remediation short term actions are indicated on each of the deterioration observed items description.

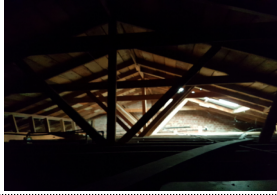



As suggested in the Offer of Service Stage 1 Scope we recommend meeting with RDC representatives to discuss these findings and the recommendations of our Structural Engineers in order to minimise risk to public safety of these buildings.

Appendix A

Photo Report

SL no	Element	what to look for	2019 Photo	2023 Photo	Comments
1	COBBLER-B building	The Cobbler B building was constructed in approximately 1913 on the corner of Broadway and High Street			We had no access to the ground floor rooms. From the outside we concluded that the ground floor has the same use and the building had no internal significant degradation since the 2019 report
1.1	URM columns with infill walls	To check the condition of the URM columns			No significant degradation since the 2019 report was noted
1.2	Deterioration of underside of canopy	Take pictures to see the extent of rust on the members			The canopy is now propped with timber studs, top and bottom plates on the south façade
1.3	Parapets and ornaments	See the conditions of the parapets Any cracks ?			No significant degradation since the 2019 report was noted
1.4	Brick and mortar condition check between cobbler 1 and 2	The existing ones did not have any cracks or degradation so need to check if there are new issues with these			No significant degradation since the 2019 report was noted
1.5	Painted external URM wall next to access way	To check the brick conditions. There was deterioration to the portions exposed to water			No significant degradation since the 2019 report was noted



SL no	Element	what to look for	2019 Photo	2023 Photo	Comments
1.6	COBBLER -B Internal walls	To check the condition of the timber walls. These did not have any deterioration during the previous investigation			We had no access to the ground floor rooms. From the outside we concluded that the ground floor has the same use and the building had no internal significant degradation since the 2019 report
1.8	Ground floor internal walls	To check the condition of the altered wall. Plasterboard has been placed over the original timber linings			
1.9	Ground floor false ceiling	Recheck the condition of ceiling timber. There was no degradation mentioned in the previous investigation			
1.10	Ground floor false ceiling	A hole in the ceiling had been created for services. Reevaluate the timber crossing the services.			
1.11	Mezzanine	Alteration here. Check the timber conditions for the mezzanine floor			
1.12	Level 1 Ceiling	The ceiling was rusted and deteriorated in various place. So need to check if the current condition is worse than the previous investigation			

SL no	Element	what to look for	2019 Photo	2023 Photo	Comments
1.13	COBBLER - B Roof structure	Connections were not visible last time so were unable to assess their conditions. Roof timber had some deterioration due to water damage and hence recheck on those.			
1.14	Hor.Timber sarking	Had some damage due to water leakage so we will need to re assess the conditions			
1.15	Sub Floor	The small section visible had signs of water damage			
1.16	Foundation	Did not had much info on fdn due to inaccessibility			

SL no	Element	what to look for	2019 Photo	2023 Photo	Comments
2	COBBLER -A COBBLER-A building	The construction of Cobbler A begun immediately after Cobbler B was finished being built. It follows the same general design features and methods			We had no access to the ground floor rooms. From the outside we concluded that the ground floor has the same use and the building had no internal significant degradation since the 2019 report
2.1	Masonry	Previous investigation indicated the bricks under the window were at fair conditions. Hence recheck for any new cracks or degradation			No significant degradation since the 2019 report was noted
2.2	Parapets and ornaments				No significant degradation since the 2019 report was noted, but we still showing as potential degradation
2.3	Exposed bricks under windows on broadway st	Take picture to see the current status of the exposed bricks and mortar. Take pictures of the URM chimneys both on and off street			No significant degradation since the 2019 report was noted
2.4	External walls	The Masonry was in a fair condition during the previous investigation. To note any change in condition including cracks or loose mortar joints			No significant degradation since the 2019 report was noted, but we still showing as potential degradation
2.5	Washer on wall				No significant degradation since the 2019 report was noted












SL no	Element	what to look for	2019 Photo	2023 Photo	Comments
2.6	COBBLER -A External URM wall	Some loss of mortars in joints was observed. Need to check any further degradations signs			No significant degradation since the 2019 report was noted
2.7	URM wall thickening	Render of the column has spalled due to steel piping corrosion			No significant degradation since the 2019 report was noted
2.8	External chimneys	To check the condition of the masonry to see any visible cracks or deterioration. Construction detailing is unknown and no specific condition has been mentioned in the previous investigation			No significant degradation since the 2019 report was noted, but we still showing as potential degradation
2.9	Cantilevered cobbler A wall, cracks at concrete bond beam	To compare the pics of the bond beam with the previous ones to check for new cracks. Try to make the observation for the cantilever steel member conditions as well			Cracking on concrete beam supporting the walls was notesindications corrosion of main reinforcing bars
2.10	Ground floor URM wall	Built-in timbers conditions and mortar joints to be rechecked			No significant degradation since the 2019 report was noted
2.11	Ground floor timber walls	The condition of these walls was not mentioned in the previous investigation. However, check for any visible degradation in the timbers			No significant degradation since the 2019 report was noted

SL no	Element	what to look for	2019 Photo	2023 Photo	Comments
2.12	COBBLER -A Ground floor false ceiling	Based on previous investigation, the timbers are poorly connected to the diaphragm. So recheck both connections and timber condition			No significant degradation since the 2019 report was noted
2.13	Floor structure	Conditions were not mentioned before, however from the photo they look fairly good. Need to recheck at site. There are bracings at regular intervals			No significant degradation since the 2019 report was noted
2.14	Cantilever beam	2.3m cantilever beam to support mid-section of bond beam and URM wall. Its specific condition was not mentioned in the report			No significant degradation since the 2019 report was noted
2.15	Level 1 Internal walls	Some modifications were done to the wall. To recheck the new timber conditions.			No significant degradation since the 2019 report was noted
2.16	Level 1 Ceiling	Previous investigation did not mention the condition of the timber so will need to check on these			Significant water damage
2.17	Roof trusses	These had some signs of water damage. Connection details were not visible. Hence we need to check the current condition of timber and connection if possible			No significant degradation since the 2019 report was noted

SL no	Element	what to look for	2019 Photo	2023 Photo	Comments
2.18	COBBLER -A Roof sarking	Had some damage due to water leakage so we will need to re assess the conditions			No significant degradation since the 2019 report was noted
2.19	Foundation	Not visible			

SL no	Davenport	Element	what to look for	2019 Photo	2023 Photo	Comments
3	The Davenport building		The Davenport building was the first of the buildings to be built. It was finished in 1905			We had no access to the ground floor rooms. From the outside we concluded that the ground floor has the same use and the building had no internal significant degradation since the 2019 report
3.1		Foundations	Not visible, try to assess			
3.2		Facade walls				Signs of glazing and façade features cracking
3.3		Facade walls	Heavy ornaments above windows and parapet condition			No significant degradation since the 2019 report was noted
3.4		Canopy	Ties condition and connection to the wall			The canopy is currently not propped, No significant degradation since the 2019 report was noted
3.5		Back wall	Check brick wall overall condition, also the rail beam embedded to the bond concrete beam. Check degradation of the mortar joints			No significant degradation since the 2019 report was noted

SL no	Davenport	Element	what to look for	2019 Photo	2023 Photo	Comments
3.7		Ground level walls				
3.8		Ground level columns				
3.9		Level 1 Floor	Check overall condition			
4		Level 1 perimeter walls	Check: Propped beams Timber infill, and Columns reduced sections conditions			
3.10		Main Roof Condition	Check overall water damage at trusses and sarking, also, connections to the walls			

SL no	Element	what to look for	2019 Photo	2019 Photo	2023 Photo	Comments
4	Abraham and Williams					
	The Davenport building	The Abraham and Williams Building was constructed in approximately 1919				
4.1	Foundations	Not visible, try to assess				
4.2	Façade walls	Cracks present above the windows of level 1, below the parapet Heavy ornaments above windows and parapet condition				No further façade degradation since the 2019 report was noted
4.3	Canopy	Ties condition and connection to the wall				The canopy is propped and has signs of water damage. No further degradation of the ties and connections since the 2019 report was noted.
4.4	Back wall	Check brick wall overall condition, also the rail beam embedded to the bond concrete beam				The back wall did not show signs of significant degradation since the 2019 report
4.6	Ground level walls					We had no access to this part of the building. From the outside we concluded that the shop still has the same use and the building had no internal significant degradation since the 2019 report.

SL no	Element	what to look for	2019 Photo	2019 Photo	2023 Photo	Comments
4.7	Abraham and Williams Ground level columns	The original drawings shows the presence of URM and timber internal walls, removed and replaced with 5 columns of unknown construction. The mezzanine at the back is supported by 125 SHS posts				No signs of significant degradation since the 2019 report was noted
4.8	Level 1 Floor	Check overall condition				Water damage is a visible issue in this building, specifically on the north side
4.9	Level 1 perimeter walls	Check: water damage Renovations and wall removals				Water damage is a visible issue in this building, specifically on the north side
4.10	Ceiling water damage					Water damage is a visible issue in this building, specifically on the north side
4.11	Main Roof Condition	Not visible, try to assess				

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