GM DESIGNS LIMITED "Chartered Professionals"
ARCHITECTURAL & STRUCTURAL DESIGNERS

21a The Crescent,
Invercargill 9810,
Southland,
New Zealand.
PO Box 730,
Invercargill.

Phone: (03) 2188910
Fax: (03) 2188910
Accounts: (03) 2187782

Letter of Commentary - Inspection Review

NON TRANSFERABLE

Date: ***26 February 2018***
Client: ***Russell Clouston/Fowler***

Location of Works: ***116 Gore St, Bluff 9814 2 2 BLK I TN OF Campbell town***
Legal Description:
Territorial Authority: ***Invercargill City Council, 101 Esk Street, Private Bag 90104, Invercargill 9840***

J6102 - Site Inspection - 116 Gore Street, Bluff
19 Feb 2018

Configuration Covered by this Commentary:
Consideration of how or if it is practical to strengthen the two buildings 1&2 as discussed by the Heritage Properties NZ in their email of the 19th feb 2018.

Consider the Statement as proposed by the Client and others " What will it take to strengthen the building 1 and 2 to the East side of the "Club Hotel" frontage?

1.0
At this meeting it was pointed out to the owners and others present that to strengthen any building as is required and indicated by the Heritage Properties NZ in their emails. You firstly must define your load paths and further resolve these into structural mechanism that can transfer the loads down to the ground.

This enables the loads generated by the mass from the self-weight of any components in the building to be fixed into a proposed mechanism where all shear loads can be transferred down to the foundations of the building.

2.0
The possible required loading mechanisms could be in the form of steel columns, portals and shear wall diaphragms. The building is made up predominantly of aged soft brick, bound to successive layers in some cases with poor lime mortar where it has aged or shrunk to offer no bond what so ever to the adjacent brick course. These bricks are placed in several arrangements that fail to offer any coherent means of adequate fixing to any structural member.

The walls are made up of bricks, unreinforced concrete, timber with decorative plaster corbels and other facings. These walls show cracking in all planes, horizontally, laterally and vertically such cracking infers they no longer offer any structural integrity throughout the wall. The bricks are failing in their cohesion due to their age and loss of strength, poor or non- existent pointing to now not be able to be harnessed into any adjacent shear load transferal mechanisms other than direct friction due to gravity loads.

These walls (see FIG 1& 2) are past the point where they can be considered to offer any reasonable shear transfer to render themselves collectively as interlinked units outside that of individual bricks which lack structural integrity as is required by walls themselves to transfer such shear loads to adjacent structural mechanisms often in the form of columns.

It is common to strengthen brick walls with the use of structural plaster/render systems with membranes reinforcement using adhesive plaster to the rear brick wall facings to interlink the outer bricks to form a new composite brick shear wall, but the bricks have failed past the point where their make-up can offer adequate shear strength and their stiffness has been compromised so they crumble across the whole front façade. (see photos Fig 6.0).

3.0
It is the writer's objective conclusion that the building if required to be held in its current form will need to be completely demolished and be rebuilt in its entirety along the full frontage facing the highway. Then a new structure could resemble the historical building built from new building components, such as reinforced concrete, polystyrene, new brick backed with concrete reinforcement and held in steel portals accordingly. For this to be undertaken, any historic significance in reality has been lost and such monetary input would be better directed to restore other historic buildings in the area able to fit the criteria where they offer some ability to strengthen as this building does not possess such inherent features to offer any worthwhile practical strengthening solution due to poor structural mechanisms which have been additionally compromised by historic alterations including the removal of internal load bearing walls and poorly interlinked brick walls, where the bricks themselves have now lost adequate compressive and tensile strength to be used reliably in any restoration.

The costs to rebuild these building are very significant and outside any common use on a return basis. Regardless we must now consider if this portion of the building is not actually dangerous in itself as defined within the building act. We consider the cracks within the corbels and parts there of containing individual bricks shall fail all together and

21a The Crescent, Invercargill O www.gmdesigns.co.nz O info@gmdesigns.co.nz O 03 218 8910

fall off the building at some stage. (See the photos of the whole parapets Fig 7.0). We set out the definition in the act within the appendixes. This building could then fall within the Councils sole discretion as to its future and can act independently to issue any demolition or restoration permit accordingly.

We see that an application for resource consent should not be withheld for any such demolition permit application pending in the near future. Adequate consideration and research has been carried out to conclude that this particular building is beyond any restoration due to the loss of the individual strength of component parts to make it a viable solution.

It is of some concern that the Heritage properties and the ICC building division will not take due regard to professional Engineering advice as is required under the act.

Signed by:

For and on behalf of

GM Designs Ltd

Assurances:
The comments expressed in this review are those of the company GM Designs Ltd and are not transferable to any individual person outside the diligence of the companies act statues.

21a The Crescent, Invercargill O www.gmdesigns.co.nz O info@gmdesigns.co.nz O 03 218 8910

Appendix: A

Subpart 6—Special provisions for dangerous, affected, and insanitary buildings
Subpart 6 heading: amended, on 1 July 2017, by section 12 of the Building (Earthquake-prone Buildings) Amendment Act 2016 (2016 No 22).

Interpretation and application

Heading: replaced, on 1 July 2017, by section 13 of the Building (Earthquake-prone Buildings) Amendment Act 2016 (2016 No 22).

121Meaning of dangerous building

(1)

A building is **dangerous** for the purposes of this Act if,—

(a)

in the ordinary course of events (excluding the occurrence of an earthquake), the building is likely to cause—

(i)

injury or death (whether by collapse or otherwise) to any persons in it or to persons on other property; or

(ii)

damage to other property; or

(b)

In the event of fire, injury or death to any persons in the building or to persons on other property is likely.

(2)

For the purpose of determining whether a building is dangerous in terms of subsection (1)(b), a territorial authority—

(a)

may seek advice from employees, volunteers, and contractors of Fire and Emergency New Zealand who have been notified to the territorial authority by the board of Fire and Emergency New Zealand as being competent to give advice; and

(b)

If the advice is sought, must have due regard to the advice.

Compare: 1991 No 150 s 64(1), (2), (3)
Section 121(1)(b): amended, on 13 March 2012, by section 51 of the Building Amendment Act 2012 (2012 No 23).
Section 121(2)(a): amended, on 1 July 2017, by section 197 of the Fire and Emergency New Zealand Act 2017 (2017 No 17)

Appendix B Photo's with commentary of the buildings 1 & 2

21a The Crescent, Invercargill O www.gmdesigns.co.nz O info@gmdesigns.co.nz O 03 218 8910

F 1.0 Historic entries for newer ducts have caused major structural damage which has tired to be fix with insut concrete but the bricks at the interface are crumbling.

F 2.0 Major cracks in unrienforced foundation beams make it difficult to consider any strengthening solution as load paths to the ground have been comprmised.

F 3.0; This is the North wall adjacent to the ICC building, where the outer wall is belived to be a common wall with th eneighbouring building , one can see where the new front shear wall in bricks has been simply butted up to the older wall with not inter linking of the course in adjacent brick placements.The upper phots shows concrete and rubble placement and th elower F4.0 shows the side butting of bricks.

F 5.0; You see the use of timber open lintels above the lower windows which is most unusual as this offers not lateral load lines between adjacent column window breasts.

Fig 6.0; see the weathered bricks adjacent to the uppere windows, there is no strength left in these bricks, the lower brumbling of plasters are significant with bricks being dislodged with weathering an dage which precludes these walls from any structural maintenance or rerofitting of new bricks as the bricks themsleves have lost their inherent strength and no bond at all is left between any courses adjacent.

F7.0; There are numerous complete shear cracks between the upper lintels / parapets to make them ready to topple off and go through the ground veranda to the pavement, wind could well move such large parapets and hence this supports the argument that the building is now dangerous.

Fig 8; The cracking around the decrative corbels is no just through th eplaster but such cracks go right through intot he bricks placement which was poorly build from day one, the numerous cracking means large sections of these plastering features are able to come a drift with continual weathering over time and it is just typical of this whole front facard.

F 9; note the upper corbel cap how it has become dislodged over time, where weather has dislodged the bricks. The lower F 10.0; show the same problems but it whole cap could drop off at any stage.

F10.0 Notice the cracking above the corbel as shown in th egrey painted area, such cracks riddle the parapet allalong the building, these cracks are not just surface deep they extend into the bricks internally.

Fig 11.0; See the vertical shear cracks where the steel bar has been placed to limit future cracking, but unfortunately this will do little to stop cracking continue to plague this whole parapet.

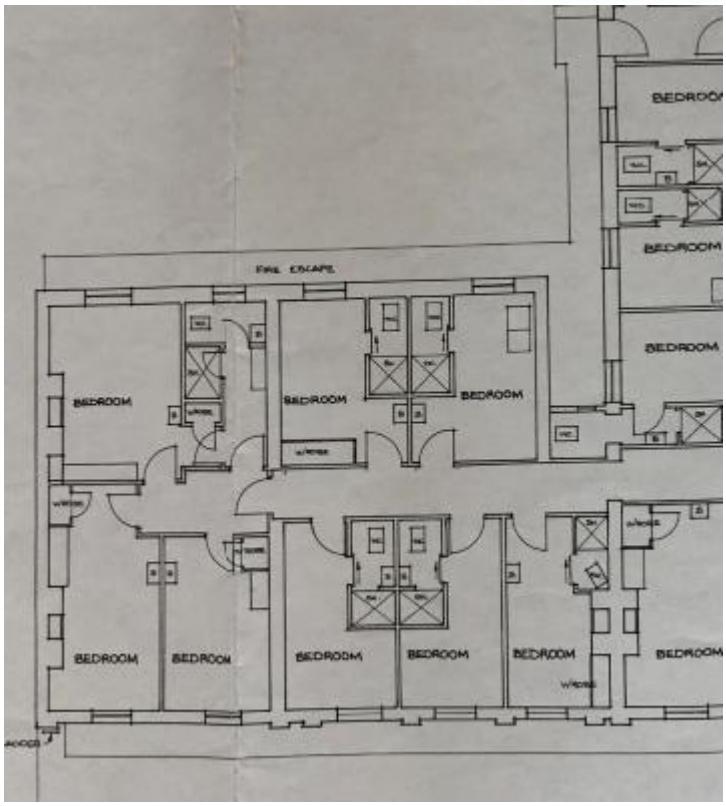
F12; This chimney breast shows how the bricks are not interlocked into the opening and flue which is poorly detailed as there is no strength between these changes, the bricks are poorly cemented together and their quality is not far off rubble as can been seen in a few of them.

F13; Rubble of bricks are shown with poor cemented interlacing to the front bricks, such situations in this building is common.

F14; Note the concrete fix ups with the diagonal shear cracks radiating up from the vertical edges about the concrete. This whole wall has been undermined with its lower removal of the historic internal load bearing wall as can be seen off the original drawings in Fig 17.

F15; Note the horizontal cracking through the lintel

F16; There exists horizontal cracking through the brick courses which results from poor failed mortar and no doubt historical EQ loads exceeding the strength of the in place brick shear walls, or these courses could well have dropped at the similar time the concrete section of the new base lintel was poured. These part concrete lintels as placed in sections through the lower floor will contribute to significant weakening of the whole building.



F17; facing North onto the SHW -Gore Street.

The main internal load bearing wall have been removed and in its place are poorly detailed lintels that have cracks and well simply fall over in any EQ.