S G Butcher,
[redacted]
26 March 2025

Sheryn Scanlan,
Planning Technical Support Officer,
planningadmin@mstn.govt.nz

Dear Sheryn,

I would like to raise an issue further to the error that is the subject of the Minute of the Commissioner dated 25 March.

Other errors exist, although not in the costings report to the Masterton Distict Council but in the structural reports that form the basis for deeming the Town Hall/Municipal Building (Town Hall) to be earthquake prone and, as such, pertinent to the process leading up to demolition.

I would be grateful if you are able to convey these errors to the Commissioner with the request from me if he would be pleased to include this information within the scope of his resource consent review.

The short of it is that having practiced in the field of architecture and with some experience in this type of building, I do not accept the determination of earthquake prone as anywhere near accurate; it is simply wrong.

I do not have the time presently to set out matters in great detail but hope the following may suffice to raise some awareness of inadequacies in the LGE engineering report of 2016. I apologise in advance for any typos, errors or omissions.

Very briefly:

(1) Soil Loadings:

These were changed from Class C to Class D, effectively moving the goalposts - Class D soils make it much more difficult to meet loading requirements under the Building Act.

The Town Hall has been viewed as receiving the full Class D loadings. This is not the correct way of using these loadings.

I refer to the review by Structural Concepts. On p.16, that report "notes" the Town Hall as being very close to the boundary between C and D soils. This is so understated as to be easily overlooked, no doubt because professional ethics prevent Structural Concepts from criticising a colleague, where professional loyality ranks somewhat higher than any duty to a customer or to the public.

That "note" refers to the fact that the LGE engineer, Michelle Grant, has not interpolated the soil ratings, and she should have. Interpolation should be done so that the rating is close to the actual ground conditions rather than at the extreme end of the D category range.

For example, the Wairarapa Hospital is a very short distance away and is classed as being on a class C soil, not class D. In fact the Town Hall should be on Class C plus a small margin, but not the full Class D loading.

As it is, failure to interpolate has literally condemned an otherwise sound building.

The Town Hall is not at risk of failure on a class D soil as it is not subject to the full Class D loadings.

(2) Loss of Gravity Support:

This has been called up on p15 of the engineer's report and refers in part to the area between the two buildings.

The engineer claims this risk without putting any numbers to it. The two buildings that, if not connected in any way (they are), would move independently to each other in an earthquake: sometimes toward each other and sometimes away.

In my experience buildings of this type are likely to move in the order of 30mm in total. Any stringer must be at least 50mm in thickness as no smaller size is available or allowable for this function. So there is no risk of loss of gravity support under design earthquake loads. In addition the buildings are tied and the amount they can move towards each other is limited, so the landing required on any stringer would be in the order or 15-20mm. In short, the landings as they are have a safety factor of more than 2.0, much more than a post earthquake function requirement for a safety factor of 1.3 for a public building.

(3) Brick and Seismic Load:

The system of reinforced concrete columns and beams with brick infill panels is a proven belt-and-braces construction system with ample redundancy and safety factor.

The engineer's report appears in parts to treat brick as a seismic load, for example as Unreinforced Masonry (URM) on p23. This assumes that brick is loading the concrete structure and ignores the contribution of the brick to bracing and redundancy.

As the portal system flexs and moves, the brick will take up bracing loads. At failure the brick ceases to carry the full load and fractures, leaving the portal system to act alone. In practice this means the brick aids the resilience of the portal system, preventing rapid collapse and making a building inherently safe under extreme failure conditions.

In summary:

1 The soil loadings are not as high as claimed due to a failure by the engineer to interpolate loadings,

2 The brick infill on the ground floor should not be treated as adding to loadings on the portal structure but adding redundancy to the bracing system in a way that provides a considerable safety margin under failure conditions of the reinforced concrete portal structure, and

3 There is no risk of loss of gravity support for the floor between buildings, as the differential movement between the two buildings would be much less than the movement range allowed for on the stringer landing provided.

The engineer's report and subsquent reviews have not adequately addressed these issues. I have brought much of this to the attention of the Council to no effect.

My professional opinion based on my years of experience in the building and design industry and the information available to me convince me that the structural review process is unnecessarily biased by cherry picking numbers or leaving then out altogether, and by a failure to appreciate and understand older but proven safe construction methods.

Stephen Butcher (B.Arch, Dip. BS)