

## APPENDIX 6

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Our Ref: 5123-003

Methodist Church of New Zealand  
PO Box 931  
Christchurch 8140

Attention: Greg Wright

**Re: Earthquake Damage Inspection for Durham Street Methodist Church**

Inspection Request By: Graham Ellis  
Building Address: 309 Durham Street  
Inspection Date: 9.09.10

This complex has 4 areas of concern – these are:

- Church
- West 2 storey wing
- Hall
- Aldersgate

**Findings and Recommendations:**

**1. Church:**

The Church construction is from stonework, rubble fill and a coat of plaster on the inside. Openings are framed up with brickwork and plastered.

The Church has undergone very extensive cracking at the east end and exposed construction in the cracks and plaster which has fallen off. The North wall also has extensive cracking and the support corbels for the mezzanine have come away and in some cases fallen off the walls.

**East Wall:**

The front of the church has a high gable wall between the corner box type construction. The gable front is close to collapse and a temporary tie at the top of the parapet provides nominal restraint for the gable wall.

**Recommendations:**Temporary Work

Steel frames to be designed and installed to provide external bracing support for the east wall and the corner walls.

Restoration Work

Remove the inside of the first floor and stairs. Pour new foundations and build structural concrete walls on the inside to provide support for the stone walls.

**North and South Walls**

These walls provide the transverse stability for the church and are buttressed at 3m centres. The buttresses are constructed from unreinforced brick and have provided some restraint against collapse of the walls. There is however extensive cracking in the walls between the buttress

**Recommendations:**Temporary Work

Steel frames to be designed and installed to provide external bracing support for the north wall and ties through to the South wall.

Restoration Work

Remove the timber floor and provide a concrete foundation tie across the Church at every buttress location.

Pour concrete columns up the inside of the piers up to the location of the timber trusses. Spray concrete over reinforcing on the walls between the pier supports.

**West Wall**

This wall is located between the Church and the West 2 storey wing. Alongside this wall is the organ which requires protection and provides restricted access to the wall.

The wall has some cracks at the outer edge but overall is in a fair condition. This wall requires stabilising and will also be required to provide restraint for the organ.

**Recommendations:**Temporary Work

A steel frame to be located either side of the organ and this be tied at the top to the existing roof beams and braced down to the Church floor.

Additional steel work is required at the top to allow temporary support and covering of the organ.

### Restoration Work

This wall is very high and it is proposed to incorporate support for the wall with work in the structure for the West 2 storey wing.

### **Church Ceiling**

The ceiling of the building is lath and plaster. This will have to be removed and replaced with a new diaphragm ceiling of 13mm brace-line Gib

### **Organ**

The Organ will have to be removed to storage while the work in the church is undertaken. The organ will require covering and the support of the covers is expected to be provided by the structural bracing frames.

## **2. West 2 Storey Wing**

This block is adjacent to the west end of the Church and is a two storey building with slate roof and timber first floor.

The roof is supported on the west wall of the Church and the stone west wall.

The first floor is supported by the stone walls and internal partitions. These partitions have contributed towards the support and bracing of this section.

### **Recommendations:**

#### Temporary Work

The west side of this building is adjacent to an access way and the manse. It is proposed to run a new power cable up the driveway to supply Aldersgate.

The temporary work proposed is to move the fence of the Manse over 1m and to build steel bracing frames to support the wall. This frame is to be anchored down to large concrete blocks on the Manse side of the driveway and against the wall.

It is proposed to install three bracing frames and to place horizontal beams between the frames to support the wall at the floor and roof levels.

#### Restoration Work

To support the roof and first floor it is proposed to install two storey steel portals inside the masonry walls and to fix the masonry walls with bolts through the stonework to diaphragms at the roof and first floor levels.

New foundations will be required under the frames.

### 3. Hall

The hall construction has a slate roof supported on tied timber arches at 3m centres. The building has moved transversely and leans to the west by approximately 200mm. This movement has dislodged masonry and the east side has cracked stonework on the west side.

#### **Recommendations:**

##### Temporary Work

Currently the west wall of the hall has been marked with cones and tape to keep persons away from a possible collapse of the wall.

There has been debate about the retention of the hall structure. If the structure is to be retained then the west wall will require bracing at each pier location and the east side of the building propped to hold up the trusses should there be further collapse of the masonry.

##### Restoration Work

If the hall is to be retained then the walls will require strengthening with internal concrete piers which cantilever from a foundation beam under the floor.

##### Conclusion.

I From my inspection of the Church it will require a lot of commitment and money to get the church back to what it has been and with sufficient strength to be approximately 67% of the NBS . The retention of the look of the building

The report prepared on the likely ground under the Church showed that the site is prone to liquefaction.

After consideration of the above I believe that it will be practical and more efficient if some of the elements of the church(proportions, stone façade, windows and timber mezzanine floor). and ancillary building are incorporated into a modern day church.

R D Sullivan  
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