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OLD MUNICIPAL CHAMBERS REPAIR, RECONSTRUCTION & RESTORATION: DEVELOPED DESIGN

ARCHITECT DESIGN REPORT CONSERVATION ARCHITECT HERITAGE ASSESSMENT REPORT

CCL photoCD3, IMG0034
The Christchurch City Council Chambers on
the north-west corner of Oxford Terrace and
Worcester Street, Christchurch ca. 1890.



REASON FOR THIS REPORT

The earthquake damaged Old Municipal Chambers building on the corner of Oxford Terrace and Worcester Boulevard, Christchurch, is to be repaired, strengthened and restored. This report describes the history and cultural heritage significance of the building, its current condition and status, summarises the options considered for its remediation at feasibility study stage, and discusses relevant construction and strengthening processes that could be applied. The scope of the proposed work is described in detail including services and statutory upgrades required.

The effects of the proposed work on the cultural heritage values of the Old Municipal Chambers are assessed against the principles, policies and constraints of each of the ICOMOS NZ Charter 2010, the Conservation Plan and the Christchurch District Plan. The concluding Assessment of Effects on Heritage Values section of the report discusses the proposal that has developed as a consequence of these considerations.

A description of a partial restoration solution is included at the end of the report. This is referred to throughout as the Staged Restoration solution. It would be the first stage of the full strengthening scope of work, and may enable an earlier start on providing sound, long term protection of the building until such time as the strengthening and restoration can be completed.

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1. INTRODUCTION

The Old Municipal Chambers (OMC) was severely damaged in the 2010/11 Canterbury earthquakes and was stabilised and protected until such time as the building is able to be repaired, restored and strengthened. Feasibility concept designs and heritage assessments have been previously prepared for this work to the building following which developed designs and associated reports have been commissioned by the Christchurch City Council for preferred strengthening and restoration solutions. This report has been prepared to assess the effects of the proposed interventions of the preferred developed design solution on the heritage values of the OMC.

The partial deconstruction, stabilisation and protection work of the OMC was controlled by Resource Consents, RMA92017611,

The building is situated on the northwest corner of Oxford Terrace and Worcester Street, the physical address being 159 Oxford Terrace, Christchurch.

The legal description is that parcel of land, Lot 10 DP54196 containing 16 perches (404 m²) or thereabouts situated in the City of Christchurch and is adjacent to Reserve 10.

2. SCOPE OF THE DEVELOPED DESIGN STAGE & REPORT

The Christchurch City Council (CCC) has commissioned the preparation of the developed sketch design *for Option 3, Strengthening to 67%NBS* as described in the feasibility studies and estimates of cost for the repair and strengthening of the OMC and the restoration of its heritage values. The CCC has engaged the following consultants for the concept design options and feasibility study.

Project Manager	Joseph & Associates
Quantity Surveyor	Joseph & Associates
Conservation Architect	Tony Ussher Architect
Structural Engineer	Opus Consultants
Services Engineer	Opus Consultants
Fire Engineer	Enlightened Solutions
Planner	Planz Consultants

The developed design includes the preparation of solutions and estimates for the full repair and restoration of the building and also a partial, first stage strengthening and stabilisation of the building to 34%NBS that enables the removal of the existing external temporary stabilisation structure. This work would be the first stage of the full restoration of the building and replaces the temporary stabilisation structures installed. The building would not be occupiable with this partial restoration solution.

3. OUTLINE HISTORY (summarised from the Heritage NZ list, reference number 1844)

The Old Municipal Chambers building was constructed in 1886-1887 as chambers and offices for the Christchurch City Council. In 1885 a competition was held for its design and was won by Samuel Hurst Seager (1855-1933) with his design adopting the Queen Anne style. This eclectic architectural style is influenced by the brick domestic architecture of Queen Anne's reign (1707-1714), and was revived in Britain during the late nineteenth century. Its combination of red brick, Classical motifs and Flemish architecture was viewed as a consciously secular style particularly suited to domestic and commercial buildings. As Queen Anne houses were built in growing numbers in Britain, the style came to be associated with the progressive ideals of the British middle classes. In Britain the style was rarely used for town halls because it was viewed as too progressive by what were generally conservative local bodies as well as lacking in the civic dignity expected of municipal buildings. The style had not previously been used in New Zealand.

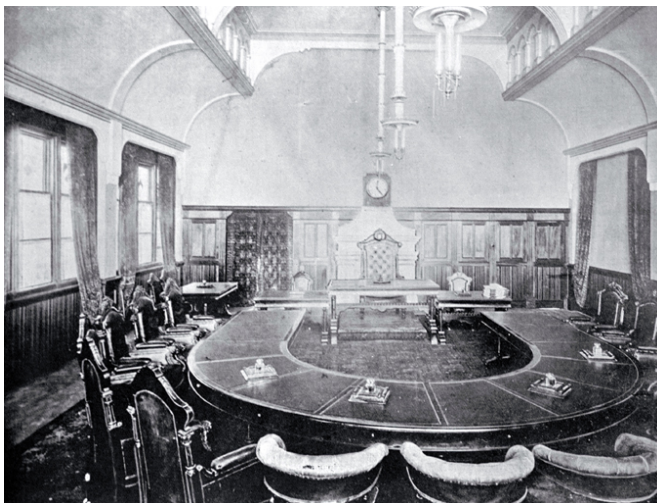
The decision to select Seager's design was, therefore, controversial departing from the use of the neo-Gothic style typically favoured for civic buildings in Christchurch. As a consequence, it was criticised for both the architectural style of its exterior and the plan layout of the rooms. Despite the controversy, construction began in March 1886, but in August of the same year Councillor Andrews called for an independent assessment of the building, claiming it was structurally unstable. Two architects, Benjamin Mountfort and John Whitelaw,

and an engineer, Edward Dobson, inspected the building and found it to be completely safe, clearing Seager's name. Their only suggestion was that the roof of the Council Chamber be strengthened in a different and more costly way. Marisa Wilson, in her paper on the Municipal Chambers, suggests that the above controversy was due to the combination of a young and unknown architect (Seager was in his early thirties) and an unfamiliar style.

The building was officially opened in 1887. It was built with bricks from the Glentunnel Brickworks, and Oamaru and White Rock stone facings. It was decorated with floral terracotta panels, also designed by Seager and fired at the Glentunnel Brickworks. Two terracotta figures, *Concord* and *Industry*, designed by Sir George Frampton (1860-1928), stand in niches on the Worcester Street facade. Frampton was part of the late nineteenth-century 'New Sculpture' movement. The wrought iron gates to the east Oxford Terrace entrance were also designed by Seager.

This three-storey building was used by the Christchurch City Council until 1924, when the council moved into the larger space of Canterbury Hall in Manchester Street. The Canterbury Chamber of Commerce then occupied the building until 1967. After the Chamber of Commerce left the building in 1967 it was used by the Public Relations Office and the Citizens Advice Bureau and then by the Christchurch Information Centre. More recently the building has been renovated to house 'Our City - Otautahi', an exhibition space for shows related to Christchurch's environment and people.

The Heritage NZ list states that *"the Municipal Chambers building is a rare example of a town hall built in the Queen Anne style and it is an accomplished work in the style. It was Seager's first major commission upon returning to New Zealand and provided him with extensive public exposure. His design was a notable departure from the prevailing Gothic Revival architecture of the period. The building is a distinctive feature of the townscape along the Avon River and has historical significance as the centre of city government for over 20 years, and subsequently as the home of the local Chamber of Commerce for over 60 years"*.



CCL PhotoCD 12, IMG0032
Interior of Council chamber, Municipal Buildings,
Christchurch [ca. 1921]

Architect: Samuel Hurst Seager

Samuel Hurst Seager (1855-1933) studied at Canterbury College between 1880-82. He trained in Christchurch in the offices of Benjamin Woolfield Mountfort (1825-1898) and Alfred William Simpson before completing his qualifications in London in 1884. In 1885, shortly after his return to Christchurch, he won a competition for the design of the new Municipal Chambers, and this was to launch his architectural career.

Seager achieved renown for his domestic architecture. He was one of the earliest New Zealand architects to move away from historical styles and seek design with a New Zealand character. The Sign of the Kiwi, Christchurch (1917) illustrates this aspect of his work. He is also known for his larger Arts and Crafts style houses such as Daresbury, Christchurch (1899).

Between 1893 and 1903 Seager taught architecture and design at the Canterbury University College School of Art. He was a pioneer in town planning, having a particular interest in the "garden city" concept. Some of these ideas were expressed in a group of houses designed as a unified and landscaped precinct on Sumner Spur (1902-14). He became an authority on the lighting of art galleries. After World War I he was appointed by the Imperial War Graves Commission to design war memorials in Gallipoli, Belgium and France. In New Zealand he designed the Massey Memorial, Point Halswell, Wellington (1925).

4. BUILDING DESCRIPTION

4.1 Construction & Description – Pre-Earthquake Damage Status

The Old Municipal Chambers building is constructed of mass brick masonry with the brickwork being used and expressed in a very decorative manner that contributes to the exceptional architectural and aesthetic values of the building. The walls are of solid construction with no cavity being present and are generally built in English bond with alternating stretcher and header courses. Wall thicknesses are generally four brick widths or 470mm to the ground floor and three brick widths, or 350mm to the first floor. The walls to the north-west stair are 230mm brickwork, and wall gables have 350mm thick brick parapets to the roof.

Window fenestration has timber windows installed into dressed limestone reveals, transoms and mullions. The stonework provides the structural openings to the windows.

The sub-floor structure is timber with tongue and groove flooring to ground, first and second floor attic floors. The foundation structure is of brick and concrete perimeter foundation with internal brick piers and with piled sub-floor structure to part of the ground floor, and with a basement to the south-west corner of the building. A lift was installed in 1989 incorporating new concrete walls to the lift shaft of the ground floor.

The roof is timber framed with Terracotta clay shingles where visible laid in a decorative pattern. Roofing to areas not normally visible is corrugated iron.

There are six chimneys on the building. Four extend above exterior wall lines and gables, and two penetrate the roof. These two are decorated brickwork with inlaid terracotta tiled patterns, whereas the other four are in a plainer use of brick. The chimneys were strengthened in 1989 by filling the flues with concrete.

Decorative elements are incorporated into the exterior brick clad and façade designs including terracotta figurines, “Industry” and “Concord” by the renowned British sculptor, Sir George Frampton, on the south façade that are of international significance, and terracotta friezes to the south-east corner turret. The brick masonry includes the use of moulded and shaped bricks, bricks of varying colours laid in herringbone pattern and projecting brick string courses, all of which combine to provide a decorative and textural appearance to the walls. The dressed limestone window fenestration dressings, frames, mullions and transoms, and the principal entrance doors to Oxford Terrace are framed by a pair of carved stone “Griffons” that further enhance the aesthetic quality of the facades.

The windows are timber framed and those in the Chamber incorporate coloured leadlight and stained glass windows. The south window of the Chamber has the leadlight window panes directly glazed into the limestone window frames and structure.

Interior finishes are solid plaster render and lath and plaster. The Council Chamber and Library spaces on the first floor have decorated ceilings and the spaces include decorative timber work. Dark stained timber is used for panelling, the balustrades to the stairs, shelving joinery units and the arcade between the Library and Council Chamber.

4.2 Previous Strengthening and Alterations

The building has received some seismic upgrading and strengthening in 1989 that also included the installation of a passenger lift with reinforced concrete walls. Other alterations included removal of walls on the ground floor opening up spaces and insertion of added supporting and bracing structure in place of the removed walls. The west wall and chimney had suffered some subsidence prior to the 2010/11 earthquakes and was stabilised with external steel straps that were connected into the first floor structure. Chimneys were concrete filled.

The 1989 strengthening work included:

- The first and roof space second floors were diaphragmed and were tied to the exterior brick walls.
- Roof ties were installed above the Council Chamber.
- New anchor bolts were provided connecting the roof and brick walls.
- A new basement level to the south-western corner was provided and the wall above was strengthened using 150mm thick reinforced concrete.
- Chimneys were concrete filled.

- Ground floor fireplaces were removed and filled with concrete.
- Steelwork was installed tying the brick chimneys into the building.
- The installation of new concrete shear walls forming the lift shaft.
- The installation of steel angles alongside the chimney on the west elevation to stabilise a lean in the external wall.

Other earlier alterations that are described in detail in the Conservation Plan are summarised below.

- The increase in size of the ground floor appendage to the north-west stairwell in 1913 to provide an additional toilet, and in 1935, the enclosure of the adjacent entry porch to provide a boiler-room. This was later altered to provide further additional toilets.
- The ground floor and south façade were altered in 1970 with the addition of entry doors and an access ramp and steps.
- Significant alterations to the internal configuration, particularly on the ground floor, have changed on a number of occasions with some of the original walls being removed and new ones constructed. In 1970 substantial changes were made to the building.
- In the 1970s, at first floor level, the original Mayor's office was subdivided to provide male and female toilets and a coatroom. The toilet and walls between the two Councillors' rooms were removed and the space converted into one large committee room.
- In 1989 a lift and machine room was inserted into the ground floor 'Typistes' office and the first floor Mayor's office, and a bedroom on the second floor had to be modified to accommodate the lift shaft.
- In 1989 a new basement storage area was created under the southwest corner, with new stair access from the ground floor kitchen.
- The west wall of the Town Clerk's office was replaced with a new timber framed arch and columns.
- The ground floor safes were removed with the 1970 and 1989 alterations and ramps installed to provide disabled persons access throughout the ground floor which was on two levels.

The alterations to the building are discussed in the Conservation Plan and their effects on heritage values are evaluated on a space and elemental basis. These assessments are included in this report in summary form in Section 7. Generally, the effects of the alterations are to significantly alter the form of the ground floor interior spaces with consequent loss of cultural heritage value, and the ability to interpret the original form and function of the spaces. Due to the use of concrete added walls, their removal would be difficult. Reinstatement of removed ground floor walls would be possible due to physical evidence remaining within the building, and from drawn evidence in the form of the original Hurst Seager architectural drawings, and later plans showing the various alterations to the building.

The entrance lobby and stairwell retain their original form and architectural value, with alterations due to the 1970 and 1989 alterations being to the perimeter openings and partitions.

The first floor significant spaces of the Council Chamber and Library retain their original intended form after removal of added partitions, and the stairwell at this level is largely unaltered. The installation of the lift and concrete lift shaft into the first floor Mayor's office has resulted in significant loss of heritage value of this important space, the effects of which are not considered reversible.

5. CULTURAL HERITAGE SIGNIFICANCE

The OMC is of exceptional national significance due to its historical, cultural, social, political and architectural values.

The OMC is listed by Heritage NZ, list number 1844, as a Category 1 place.

The Christchurch Replacement District Plan (CRDP) includes the OMC in its Schedule of Significant Historic Heritage Places as a Group 1 **Highly Significant** place. Items in this group are considered to be of international or national significance, the protection of which is considered essential.

5.1 Conservation Plan

The Conservation Plan by Dave Pearson Architects Ltd was prepared in October 2000.

The Conservation Plan is to be followed in regard to all works to the Chambers and its setting. This is also determined by the ICOMOS NZ 2010 Charter that requires that the conservation of heritage places be based on a conservation plan that identifies the cultural heritage value and significance of the place and that establishes appropriate conservation policies and determines recommended works and practices. In the earthquake disaster environment, best practice conservation policy and practice can be challenging to achieve, but the conservation policy and principles of the Conservation Plan and ICOMOS Charter need to be applied to the fullest extent possible throughout earthquake damage repair, strengthening and remediation work to achieve the best possible outcomes preserving and restoring heritage value.

Assessments of Significance: The significance of the OMC is assessed in the Conservation Plan using the following categories and definitions.

Assessment Categories used in the Conservation Plan for considering heritage value.

Historic: *Elements having historic significance have the ability to demonstrate an association with individuals, ideas or events.*

Aesthetic: *Elements having aesthetic significance can be said to make a contribution to the architectural or aesthetic qualities of the place or its setting.*

Social: *Elements having social significance are able to demonstrate cultural, spiritual, traditional or any other sentiment expressed by a group.*

Scientific: *Elements having scientific significance can provide information as to how the building may have been used. It may also show some particular construction technique of the period.*

The degrees of significance of heritage value are assessed under the following definitions:

Exceptional *Fabric in this category makes an essential and fundamental contribution to the significance of the building.*

Considerable *This fabric is considered to make an important contribution to the overall significance of the building.*

Some *Fabric having some significance makes a comparatively minor contribution to overall significance.*

Not Relevant *Fabric in this category may not have any particular significance, however it allows the building to function.*

Intrusive *fabric consists of accretions that detract from overall significance or obscure fabric of greater value.*

The full account of the Statement of Significance is included in the Conservation Plan pages 46 & 47. Below is a summary of the OMC's significance.

The Municipal Chambers is of historical significance being associated with the development of Christchurch as a city. It was opened in 1887 and was the first and only civic offices constructed by the council. It has associations with significant people including its architect, Samuel Hurst Seager who made a significant contribution to the development of Christchurch architecture. He was known for his use of the English Arts & Crafts style, particularly in his domestic architecture, and also for his move away from the favoured Gothic Revival style of architecture favoured in colonial Christchurch. This is typified in his use of the freer form of architecture typified by the Queen Anne style used in the Municipal Chambers. The building survives today as the only example of the Queen Anne style in the city and has considerable rarity value.

The Municipal Chambers is noted for its decorative elements and the manner in which art is incorporated into its composition exemplified by the two figurines, 'Industry' and 'Concord' in the alcoves on the south façade. The polychromatic brickwork, terracotta tiled roofs, decorative terracotta work, Oamaru stone window surrounds and stained glass windows in the Council Chamber are particularly notable.

The building is part of an important historical precinct that includes its setting on the River Avon, the Worcester Street Bridge and The Canterbury Provincial Council Buildings. The Worcester Boulevard on which it is sited has vistas that are terminated at either end by other Victorian buildings of exceptional significance, Christ's Church Cathedral to the east and the Museum and the Art Centre buildings to the west." This visual connection and grouping is going to be of very great value and importance in the post-earthquake city of Christchurch.

The Overall Rating assessed in the Conservation Plan is that *"The Municipal Chambers building has high historic significance, aesthetic value, social significance and scientific value. Overall, the building is considered to have **exceptional** significance*, meaning that the building makes an essential and fundamental contribution to the overall significance of the place, its context and setting.

The individual element and space evaluations are included in the SCHEDULE OF AUTHENTICITY, SIGNIFICANCE, CONDITION & STATUS in section 7.

6. DESCRIPTION OF THE 2010/11 CANTERBURY EARTHQUAKES DAMAGE & STABILISATION

The OMC were severely damaged in the Canterbury Earthquakes of 2010 and 2011. The CONCEPTUAL STRUCTURAL REMEDIAL OPTIONS REPORT (Draft 4, date 11 July 2016) prepared by Opus Consultants describes the damage to buildings caused by each earthquake event.

The damage to the building fabric is described as follows:

Exterior

North façade

The north façade of the building suffered moderate damage with the exception of the stairwell in the north-west corner (on the right side of photo). The stairwell is discussed under a separate heading.

The principle damage is the loss of the chimney behind the props and ply bandage to the left of the photo and damage to parapet walls to the west gable. The chimney had previously been strengthened by filling the flues with reinforced concrete. The remaining parapets and chimneys adjacent to the north-west stair tower will require deconstruction as part of the permanent repair work.

The walls adjacent to the east and west corners have suffered considerable cracking at the upper level.

The wall is out of plumb vertically, leaning outwards at the top by approximately 35mm at the east and west corners, and 75mm at the centre of the wall. The outwards movement of the wall is greater at first floor level than it is at ground floor level. (Refer to the Opus engineer's report for comment arising from the verticality surveys).

The stone mullions and transoms to the first floor windows have dislodged from one another and from the timber window frame behind



The north façade with the chimney behind the stabilisation structure to the left from which the upper part of the chimney has been removed. The stairwell in the north-west corner partially concealed by the scaffolding.



The displacement of the stone window mullions and transoms is apparent on some windows and the cracking and movement of the brickwork adjacent to the west corner is obvious.

North-West Stairwell

The north-west stairwell is recessed between the north and west facades and contains the stairwell to the upper floors and to the toilets on the ground floor. It is of solid brick masonry construction of 230mm or one wythe thick construction.

The exterior walls of the stairwell were severely damaged in the earthquakes, particularly at first floor level. They have been partially deconstructed to the window sill at first floor level to remove the risk of further collapse of the wall and the roof tiles were removed to lighten the roof load on the walls.

The remaining walls are severely cracked and brickwork has displaced. They have been stabilised by a weighted scaffold bracing structure and ply bandage. However, the damage to this area of the building is severe and the masonry walls will require deconstruction down to ground floor level as part of permanent repairs and strengthening which will require the walls reconstructed in concrete supporting the reconstructed brickwork.

The roofing of the stairwell was terracotta shingles. With the collapse of the walls supporting the roof, the shingles were removed to lighten the weight of the roof and structure bearing on the walls and a lightweight roof of flat galvanised sheet has been provided. The interior of the walls is plaster render that has fallen from the wall masonry.

West façade

The west façade facing the Avon River was leaning towards the river prior to the earthquakes, and this movement had been stabilised as part of the 1989 strengthening and securing work. The out of vertical wall movement prior to the 1989 stabilisation was 180mm, and following the earthquakes this has increased to 210mm. The movement is most pronounced at first floor level.

The north and south ends of the west wall have suffered cracking and partial collapse at the first floor level exacerbated by displacement and partial collapse of the window's stone mullions and transoms supporting the brick masonry lintels. This failure has caused loss of support to adjacent brickwork causing its consequential collapse. The brick lintols above windows have collapsed or been deconstructed. The timber top plate of the wall supporting the timber framed roof structure is severely rotted and will require replacement.



The north-west stair well partially concealed by the stabilising scaffold.

Shear cracking of the brickwork below the eaves level. This area has now been deconstructed. The single wythe 230mm brick wall construction of the north-west stair walls can be seen in this photo.



West Façade following the removal of the leadlight and stained glass windows, stone window mullions and transoms and brick to the lintols.



The south window of the west façade to the Council

The chimney in the centre of the wall has required deconstruction down to eaves level. The west chimney failed at mid-first floor height and in the long term will require further deconstruction. This will potentially affect the stone fireplace surround and mantle in the Council Chamber.

There is moderate cracking near the ground level suggesting there may have been ground settlement towards the north end of the west façade, which is consistent with the geotechnical findings for the site.

The damage and collapse of the limestone window mullions and transoms and masonry lintels has necessitated the removal of the leaded windows to ensure their safe protection. The windows were removed compete with their timber sashes where applicable.

South façade

The south façade has numerous large cracks around the window openings to the Council Chamber. The window to the Chamber is large and has the leadlight and stained glass panes direct glazed into limestone reveals, mullions and transoms. The movement of these was putting crushing pressure on the glass and consequently, as soon as the wall was stabilised and made safe the leadlight panes were removed. The window mullions and transoms also provide some support to the brick masonry gable above, and to stabilise the gable the window mullions and transoms' stonework was stabilised with a steel frame fixed to the stone mullions and transoms. The limestone is in very poor eroded condition and much of the window frame profile has been lost. The limestone window dressings, jambs, sills, mullions and transoms will require reconstruction with new fabric.

The south façade wall has partly separated from the roof and presented large cracks on the east and west facades.

An arcaded area to the east of the principal gable has suffered movement and spreading of the large arch at first floor level, and to two smaller arches at ground floor level. The limestone balustrade to the first floor balcony behind the first floor arch was secured with a mild steel strap behind in 1989 which saved the balustrade from collapse. However, it was found to be unstable and three of the stone balusters and the handrail coping stones had cracked through. To prevent further collapse and damage the balustrade was recorded, deconstructed and is in storage. It is able to be reconstructed.

Chamber suffered from movement of the corner brickwork, and collapse of the stone mullions and transoms and the brickwork to the lintel.



The north end window of the Council Chamber suffered similar damage to the south window and the displacement of the stone mullions and transoms is visible. These have been deconstructed and the stone stored.



The south façade of the Municipal Chambers during the installation of the stabilisation structure. The turret roof and upper floor of the turret have been deconstructed.



The arcaded area of the south façade showing the large upper arch that has spread and cracked, and the limestone balustrade that has displaced causing cracking of some of the balusters and of the handrail coping stones. The balustrade has been deconstructed and stored to prevent further damage.

The south façade includes the two terracotta figurines by renowned sculptor, Sir George Frampton, that are of exceptional significance. The brickwork above and adjacent to these was displaced in the earthquakes, with separation of the joints in the terracotta panels forming the figurines. The bricks to the sides moved away from the figurine panels causing loss of the panels' support. Due to the precariousness of the panels, they were removed to storage as soon as possible to prevent their collapse and loss. Proposals for their reinstatement and restoration include the fabrication of terracotta replicas for installation on the building with the original figurines being stabilised and preserved by a conservator for protected display.



The Figurine, 'Industry', prior to removal showing the displacement of the brickwork securing the panels in place, and after removal. The damaged profiled bricks forming the alcove opening have been recorded and stored enabling the reconstruction of the figurines.



Turret

There is an elaborate three storey brick turret on the south-east corner of the building separating the south and east facades. The turret is faceted and is octagonal in plan form with four exposed external facets. Each of these includes a window at each of the two floors and attic roof space levels separated by brick mullioned corners. The turret is capped with a steeply pitched terrazzo shingled roof. The eaves include a course of ornately decorated terracotta frieze panels and profiled corbel bricks.

The roof structure had been displaced approximately 300mm by the earthquakes, with consequential displacement of the elaborate eaves/lintel frieze detail and rotation of the upper, attic level windows and mullions. The terracotta shingle roof tiles were removed and the timber roof structure lifted and lowered to the ground where it has been protected from the weather. The brick mullions and brickwork to the walls have been deconstructed to the level of the upper attic roof space floor level and the remaining brickwork has been stabilised. The rest of the brickwork to the turret is badly damaged and further deconstruction will be required during the repair process.



The turret to the south-east corner showing the displacement of the roof towards the east.



The top of the brick walls to the turret showing the corbelled brickwork to the eaves and the terracotta frieze panels to the lintels. All has been recorded and stored.

East façade

The damage to the east façade was principally to the north gable that collapsed exposing the attic office space behind. There are decorative carved and dressed stone elements on the east façade including the elaborate stone dormer and oriel window over the entrance and the two carved stone Griffons to either side of it. One of the granite Griffons fell during the earthquakes but it has been retrieved and stored in its damaged state. The other Griffon has been removed to storage. The rest of the decorative limestone stonework to the oriel and dormer windows is relatively undamaged and has been stabilised insitu.

Chimneys

The chimneys were severely damaged at roof level due to lack of support back to the building structure. The chimneys had been strengthened in 1989 by filling the flues with concrete, but without additional support and restraint. The chimneys requiring removal were cut through and removed as complete units as possible.

Roof

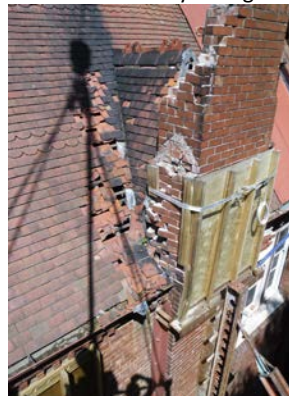
The roof is of terracotta tile shingles with a crenelated terracotta crest tile to the roof ridges and to the gablet roof vents. The most significant damage to the roof was adjacent to the south gable parapet caused by collapse of the apex of the parapet, and adjacent to the chimneys where bricks dislodged and fell. Ridge tiles were dislodged from the gablets and roof ridge. Falling roof and ridging tiles damaged the copper spoutings generally around the building. The removal of the chimneys penetrating through the roof has also necessitated temporary repairs to the roof.



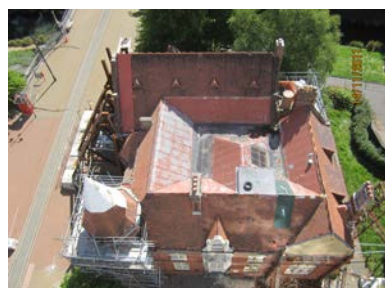
The façade has remained relatively vertical with the most significant movement being adjacent to the turret where the top of the wall has moved outwards by approximately 50mm.



One of the two Chimneys in the east roof with damage to the roof caused by falling masonry



The Council Chamber west wall collapsed chimney.



The roof showing the damage following the February 2011 earthquakes. The turret has displaced, and has had some roof tiles removed, the damage caused by the collapse of the south wall parapet apex has been repaired with the ply protection sheets, and one chimney from the east roof that had partially collapsed has been removed. The chimney to

The turret roof structure and tiles have been removed as described previously.

The timber wall plate to the tops of the brick walls of the turret and west wall have rotted causing the roof to slump and pull away from the parapet flashings. This has caused subsequent water damage and dry rot infestation. There is consequent deterioration of roof framing.

Interior

Inspection of the interior spaces indicates that the ground floor spaces may not be severely damaged due to the added internal concrete structure, whilst the first floor Council Chamber particularly has suffered severe damage to the south and west walls, with collapse of plaster render to these walls. There has also been significant loss of plaster to lath and plaster lined ceilings and internal walls, much of which is coved or formed to curves.

The second floor attic space brick masonry is badly cracked with partial collapse, and lath and plaster ceilings have separation and collapse of the plaster.

The interior of the north-west stairwell is critically damaged structurally and there is extensive cracking and collapse of plaster and brickwork to the interior and onto the stairs.

the north wall on the right of the photo has lost brickwork from the reinforced concrete strengthened flues and in the photo is yet to be deconstructed to eaves height. The roof is tiled with terracotta shingles only where visible from the ground. Concealed areas of roof are corrugated iron.



The ground floor stairwell.



Typical plaster damage to ground floor masonry walls.

The photos below are included to provide an indication of the nature and extent of damage to the interior.



The south wall and window of the Council Chamber pre-earthquakes.



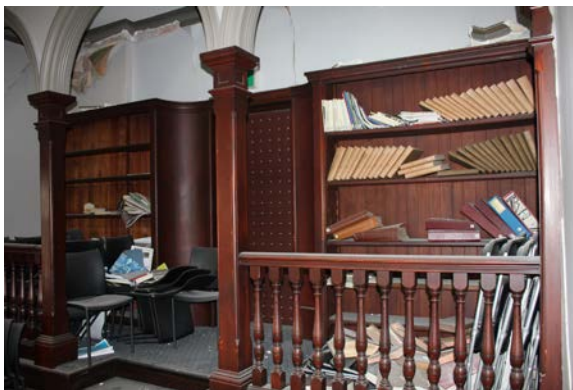
The Council Chamber, south window and wall. The inner wythe of brick collapsed exposing the rear of the figurines either side of the window and the plaster render collapsed off the wall in its entirety.



The fireplace to the west wall of the Council Chamber before the earthquakes.



The partially collapsed fire surround and over mantle of the west fireplace in the Chamber following the February 2011 earthquake.



The upper arcaded area of the Library.



The damaged wall adjacent to the Library arcade balustrade.



North-west stairwell damage and collapsed walls.



Typical lath and plaster ceiling damage to the second floor attic space ceilings.

6.2 Building Surveys

A 3D laser scanning survey was undertaken of the damaged building following the earthquakes.

Monitoring surveys of movement and verticality have been carried out during the period of the buildings stabilisation. Refer to the structural engineer's report for the discussion about the outcomes of the survey and the implications on the repair strategies.

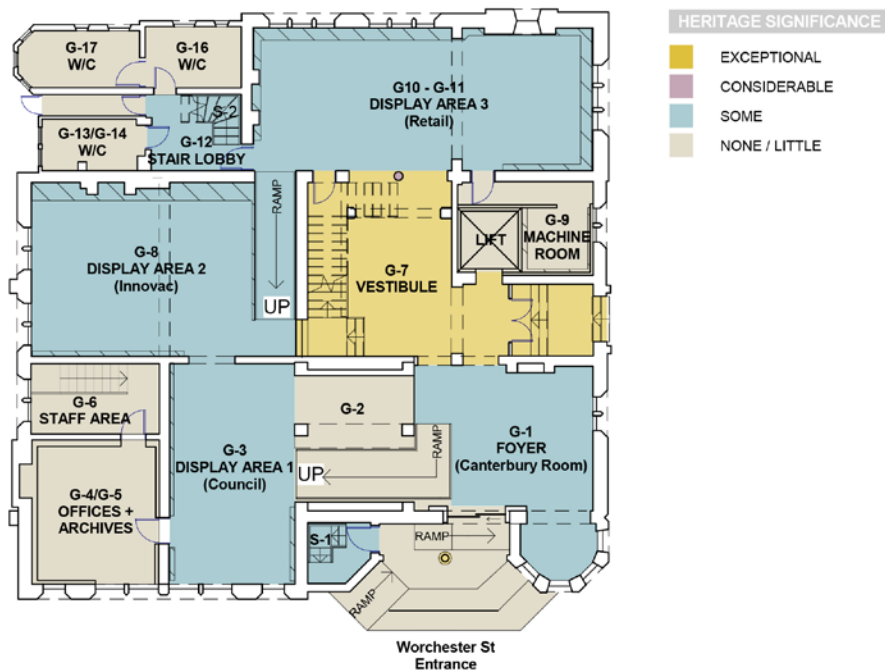
6.3 Heritage Fabric Recording

Due to the OMC' significance, it is desirable and probable that the damaged and removed fabric of the building will be reconstructed and restored to the original pre-earthquake form. For this process the removed fabric and material of the building was recorded and stored for either reuse where its condition allows, or to provide physical evidence for interpretation purposes for reconstruction and fabrication of new elements and fabric.

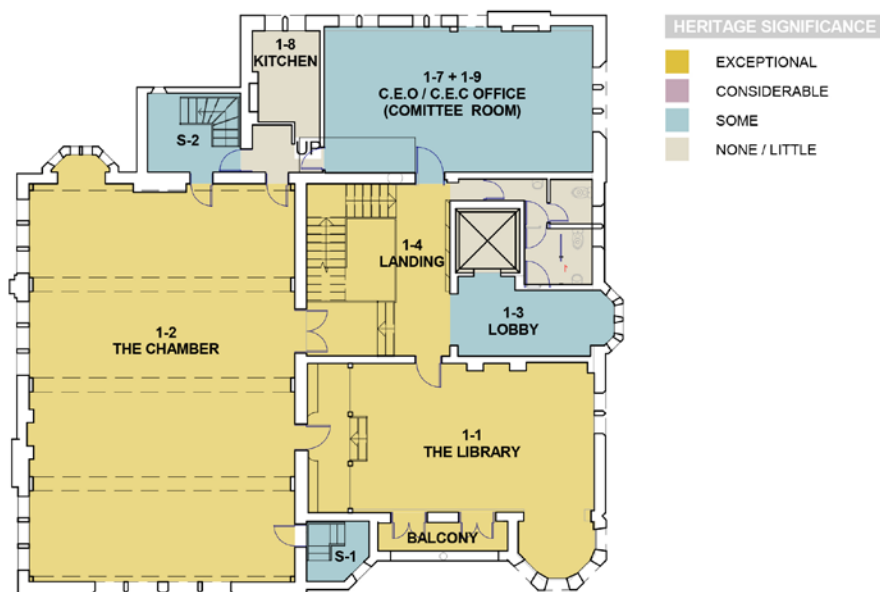
Collapsed fabric was recorded in its found location, and deconstructed fabric in its original and correct location prior to deconstruction. Where the item was a decorative element or dressed stone item with a discrete location it was recorded with its own specific artefact identification reference. Where the material was generic such as common red brickwork, it was recorded by the pallet load for its location within the wall. The recording process was developed by Underground Overground Archaeology who undertook the recording on site, and Tony Ussher Architect. The artefact and pallet id's, found and original locations on the building and storage location were recorded on a Microsoft Excel format with cross referencing to an artefact photographic record maintained by Underground Overground Archaeology. Salvaged material and heritage fabric is generally stored at the Christchurch City Council Pages Road site and warehouse with some fabric being stored on site.

7. SCHEDULE OF AUTHENTICITY, SIGNIFICANCE, CONDITION & STATUS

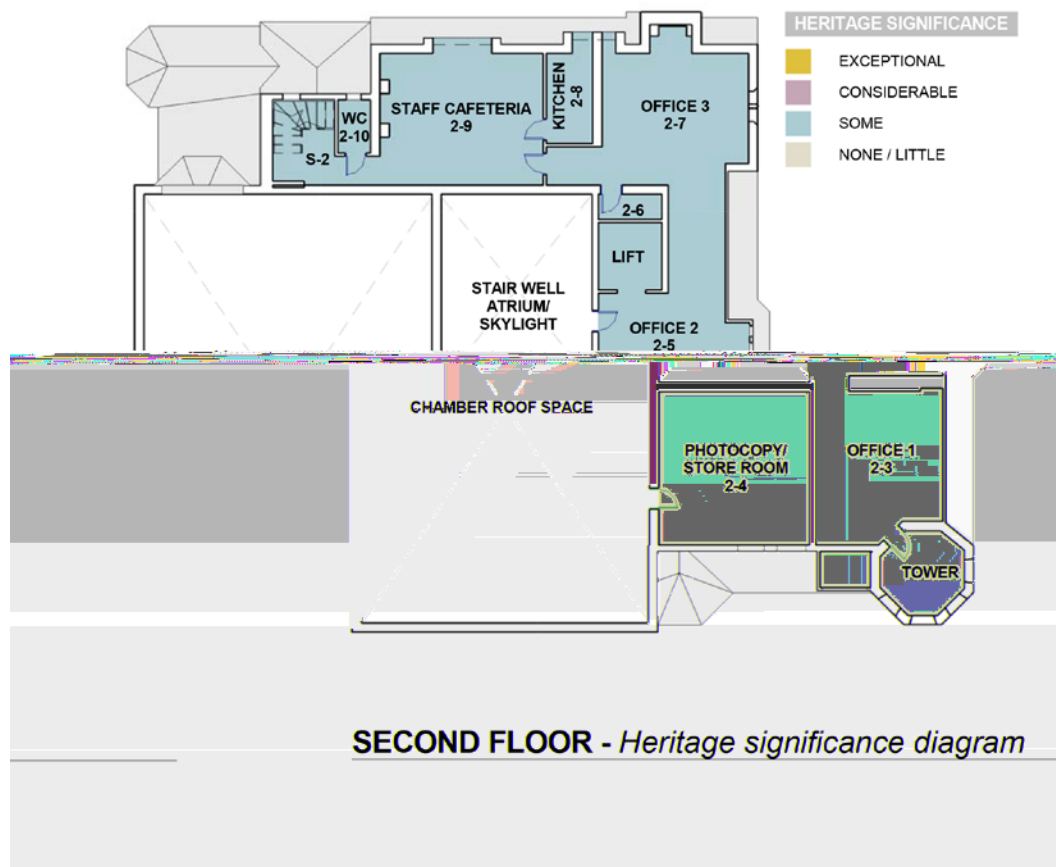
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GROUND FLOOR - Heritage significance diagram



FIRST FLOOR - Heritage significance diagram





NORTH ELEVATION - *Heritage significance diagram*



EAST ELEVATION - *Heritage significance diagram*



SOUTH ELEVATION - *Heritage significance diagram*



WEST ELEVATION - *Heritage significance diagram*

8. OPTIONS CONSIDERED FOR THE REPAIRS, RESTORATION, AND STRENGTHENING

8.1 General Considerations

Given the overall exceptional significance value of the OMC, the retention and restoration of the building including its context and setting is of national importance. The retention of heritage value and its reinstatement where lost is a priority in repair and strengthening processes. However, given the severity of damage to fabric, and in places its collapse, there has been considerable loss of heritage fabric and original technologies, and repair and strengthening processes will require further deconstruction and intervention. Due to the overall exceptional heritage significance of the Chambers, repair and strengthening processes must reinstate the Chambers to its pre-damage exterior and interior architectural form. Where past interventions have resulted in lost heritage value and where uses and remediation allows, consideration should be given to returning elements and spaces to earlier or original forms that restore heritage value.

Despite the damage, the conservation principles of minimal intervention and respect for remaining heritage fabric were considered wherever possible in the repair and strengthening options considered in the feasibility studies. However, the least possible level of intervention that can be achieved is a result of the level of strength required to be attained and the repair and strengthening options necessary to achieve this. Common to all strengthening options were damaged areas of the building requiring deconstruction and reconstruction rather than repair due to the extent of damage and the limitations of their construction and form. Examples are the north-west stairwell walls and the south-east corner turret where the severity of damage and the slenderness of masonry elements require their deconstruction and reconstruction over a structural core. The south wall has severe damage and out of plane displacement of areas of the brickwork, and is compromised strength-wise by the large south window and the slenderness of the brick panels either side which are weakened by window openings and the figurine alcoves. Options considered in the feasibility studies for the retention of this façade included those of repair and partial reconstruction of damaged areas prior to the removal of the inner wythe of the wall for an overlaid concrete wall, versus the deconstruction of the wall and its reconstruction over a concrete wall. Ultimately the level of resilience and strength required determined the level of intervention required.

Verticality surveys show that the building can be considered plumb within the tolerances expected of a building of this age. The exception is the west wall that is out of plumb by 210mm. This wall was 180mm out of plumb following the installation of the 1989 strengthening of the building including structural stabilisation braces for this wall. Due to this stabilisation work, the structural engineer advises that the relevening of the wall is not feasible. Prior to the earthquakes there was no evidence of internal displacement or cracking of interior wall and ceiling linings and finishes and to bring the walls to vertical may have consequential effects on the interior fabric alignment and detailing.

8.2 Summary of the Feasibility Study Options Considered

(refer also to the Matrix of Options Report prepared by consultant team)

Options considered for the repairs and strengthening that are described in the Structural Remediation Options Report of the Feasibility Study are:

- Option 0. Do nothing, leaving the building in its current damaged, stabilised state
- Option 1. Minimal intervention, minimal resilience
- Option 2. As above, but with base isolation: minimal intervention, enhanced resilience
- Option 3. Moderate intervention, moderate resilience
- Option 4. High intervention, high resilience

Common to all options was the repair and strengthening of secondary elements of the building such as the windows' stone masonry and the chimneys. Throughout, the repair and reconstruction of plaster finishes and detailing was similar to all the strengthening options due to the extent of damage and failure, and there were repair requirements common to all strengthening options.

Option 0 was not considered relevant due to the very high Cultural Heritage Significance of the building and the necessity to preserve, conserve and reinstate its heritage values to the fullest extent possible.

Option 1 was considered the minimum work required to repair and strengthen the building to ensure it was above the 34%NBS earthquake prone building threshold. However, it could not provide resilience against severe damage in any future earthquake events. Option 1 repair processes included the repair and stabilisation of cracked masonry, partial deconstruction and reconstruction of failed masonry walls and the installation of localised areas of concrete let into the masonry walls. Structural steel ring beams and roof strengthening structure were required to be installed.

Option 2 strengthening repaired the building with the same level of intervention to the walls and first floor structure, but with the replacement of the ground floor and foundations with a base isolation structure providing very high resilience.

Option 3 strengthened the building to a higher level of resilience using conventional strengthening means by inserting new concrete structural elements to the walls with structural steel wall restraint and roof strengthening elements where these could be concealed. The existing foundations and ground floor structure were retained and strengthened. To achieve a higher level of strength and resilience, this option required more deconstruction of heritage fabric and wall elements for the installation of the concrete walls than option 2.

Option 4 strengthens the building to the highest level possible by conventional means with added concrete structure. In this option most, if not all, walls would require the insertion of concrete structure with the highest level of intervention on heritage values.

Option 3 was the preferred option approved to proceed to Developed Design. This option achieved 67%NBS and is described in Section 8.5 of this report.

8.3 Masonry Wall Repair Processes Considered

Numerous appropriate repair processes and techniques were considered and assessed in the development of the repair and remediation strategies for the building. The structural engineering pros and cons of the options are discussed in Section 7, *Approaches to Repair, Strengthening and Resilience* of the *Structural Remediation Options Report* by Opus Consultants. Comment on the effects of the various processes and technologies on the heritage values of the Chambers are included here.

Fibre Reinforced Plaster/Plastic (FRP)

The installation of FRP requires the removal of the existing plaster surface from the brick masonry and the application of a high strength fibreglass wrap. The plaster rendered surface can be recreated to the same thickness and profile as the original over the wrap.

The limitations of FRP systems are that they can only be applied where they are concealed or are covered by plaster render and cannot be used on exposed brickwork. The process requires the removal of the existing plaster that may have authenticity and/or aesthetic value. However, with the extent of plaster loss and damage to the walls, the application and use of FRP can be achieved with minimal additional loss of original fabric and value, and it is considered an appropriate remediation process to be used. It provides low additional strength, but is proposed where it can be used to add stability to masonry elements not strengthened by other means.

The use of FRP systems has been discounted for inclusion as part of the structural strengthening solutions in favour of repairing the brick masonry to its pre-earthquake condition through re-bedding and mortaring of the brickwork including the replacement of broken bricks. However, it is proposed that Mapei Planitop HDM fibre reinforced plaster be used to minimise cracking risk and to restrain the bricks.

Steel Brick Reinforcement (eg. Helibar)

High strength stainless steel reinforcing bars are imbedded into brick bedding joints or are chased horizontally or vertically into the walls. If placed in the mortar joints, the wall pointing conceals the steel bars. If chased

into the walls, the chases require stopping with repair mortar, and the wall would need to be plaster rendered for concealment. Consequently, there are limitations on the bars' use on exposed brickwork. On plaster rendered walls, the spacing requirements of the bars, whether into mortar joints or chases, would require removal of the plaster render and its restoration with new. However, with the extent of plaster loss and damage to the walls, the application and use of Helibars can be achieved with minimal additional loss of original plaster, and they can be installed horizontally into brick course joints. It is considered an appropriate remediation process in heritage building restoration particularly in the repair and reconstruction of damaged brick walls. It is not considered to be reversible, and has minimal visual effect on visual and aesthetic values of the brickwork.

The use of Helibar type masonry reinforcement has been discounted as being unnecessary and the preference is to repair the brick masonry to its pre-earthquake condition through re-bedding and mortaring of the brickwork including the replacement of broken bricks using traditional brick masonry construction.

Structural Steel Restraints & Frames

Structural steel restraints and frames can be fixed over walls as ring beams or stiffening portal frames, and can be used to connect and brace various elements together such as opposing walls and roof structure. Steel stabilisation frames can be used to restrain and stabilise architectural elements such as stone window frames with the frames being either exposed and face fixed where the stone elements remain insitu, or concealed within the window construction if the stone window masonry is to be removed for repair. For wall stabilisation and strengthening, the steel members or frames are visible and are face fixed over the wall or element. Where exposed, the steel frames are visually intrusive and have adverse effects on heritage value, but they usually connect to the building fabric lightly and are removable with reversible effects. Steel frames in the roof space are concealed and are removable with reversible affects. Consequently, the consideration of the use of steel frames needs to include the evaluation of the effects on the aesthetic and architectural values of the space and building.

Reinforced Concrete Walls/Linings

Reinforced concrete walls can be formed over the face of masonry walls increasing the thickness of the wall, or by removing some of the depth of the wall so the concrete wall can be inserted maintaining the original overall wall thickness. The overlaid walls increase their thickness and intrude into the room/space altering its form. Installation of details such as cornices, doors and windows are altered. Where the space has heritage value, the overlaid walls can have an adverse effect on that value. An advantage of the overlaid walls is that the full thickness of the original wall construction is maintained without loss of original construction and fabric. Where the concrete walls are inlaid into the masonry wall thickness, one or two wythes of the brick construction require removal to enable the added concrete wall to finish flush with the masonry, and the plaster render and detailing reconstructed reinstating the wall to its original appearance and form. The significance and detailing of the stairwell and the principle first floor Chamber and Library spaces supports the use of inlaid walls allowing the original form of these significant spaces to be restored.

Fully deconstructed walls can also be reconstructed by the construction of reinforced concrete walls over which the brickwork is reconstructed. This requires the highest level of intervention and as a process its use is limited to where damage or limitations of the original construction allow no alternatives.

Overall, to preserve as much heritage value as possible, the extent of concrete strengthening walls needs to be critically assessed to keep their requirement and consequent adverse effects to the minimum whilst still achieving the resilience and strength of structure required.

The use of concrete walls is not reversible.

Masonry Wall Grout Injection

The use of grout injection of the voids in masonry wall construction is a proven method of improving the stability of the wall and improving its seismic performance. Typically this is achieved in stone masonry construction with random rubble fill to the cavity between inner and outer wythes where there is poor bonding and filling of the cavity. With solid brick masonry construction, the bricks are fully supported by the bedding mortar for the full thickness of the wall construction and there is no benefit provided by the injected grout.

Post Tensioning

The use of post-tensioning of the masonry walls using steel tensioning cables in drilled ducts cored vertically down the wall thickness has been discounted by the structural engineer as not being suitable for the building due to the slenderness of the walls, their geometry, and the weak mortar strength present.

8.4 Architectural Drawings

The developed design architectural drawings include the following series:

Drawings prefixed	AE	Existing pre-earthquake damage form.
	AF	Developed Design Full Restoration.
	AS	Developed Design, Staged (Partial) Restoration.

The Full Restoration proposal strengthens the building to 67%NBS with statutory upgrading of disabled persons access, toilets, electrical services and supply, mechanical ventilation, and fire protection systems. The building would be code compliant and fully occupiable.

The Staged (partial) Restoration is an interim solution that stabilises and protects the building to 34%NBS and enables the removal of the exposed exterior stabilisation propping structures. The solution includes partial installation of the Full Restoration structure with additional temporary wall stabilisation applied over interior walls. It does not include any restoration of interior fabric such as the walls and ceilings, which would be left in their existing damaged and stabilised state. The completion of the Full Restoration solution following from the Staged Restoration would require minimal back-tracking removal of temporary stabilisation.

8.5 Structural Strengthening: Full Restoration with Strengthening to 67%NBS

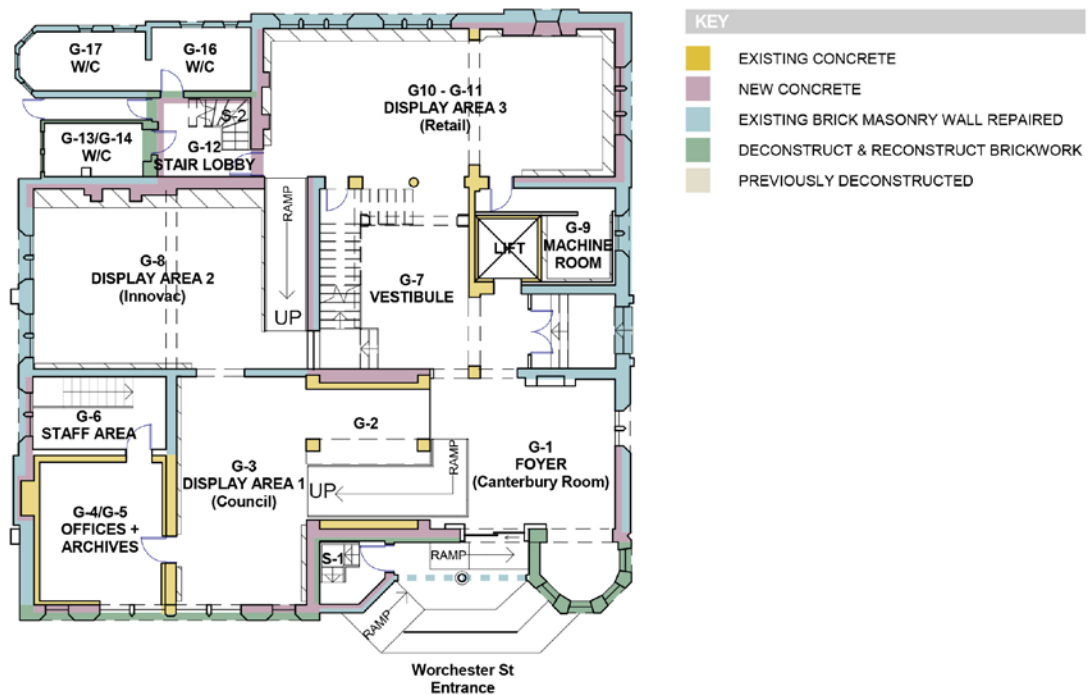
The strengthening proposal is described in Opus Consultants design features report as providing moderate resilience achieving a strengthened level of 67%NBS. The proposal uses conventional strengthening of the existing foundations with added concrete foundation walls and requires a high level of intervention to the brick masonry walls for the insertion of concrete strengthening walls. The concrete walls wherever possible are applied to the interior face of the exterior walls and are inlaid into the wall with strapped and lined and plaster render finishes re-applied reinstating the original form and thickness of the wall. Interior walls have part of the thickness of the wall removed with plaster render finishes applied reinstating the original wall thickness and appearance.

The form of the south wall is a particular weakness with large openings and slender brick elements punctuated by openings and the figurine alcoves. The structural engineer requires the reconstruction of this wall in concrete and the brickwork would be reconstructed to its original form and appearance over this. The north-west corner stairwell would also be deconstructed and reconstructed in the same form of construction.

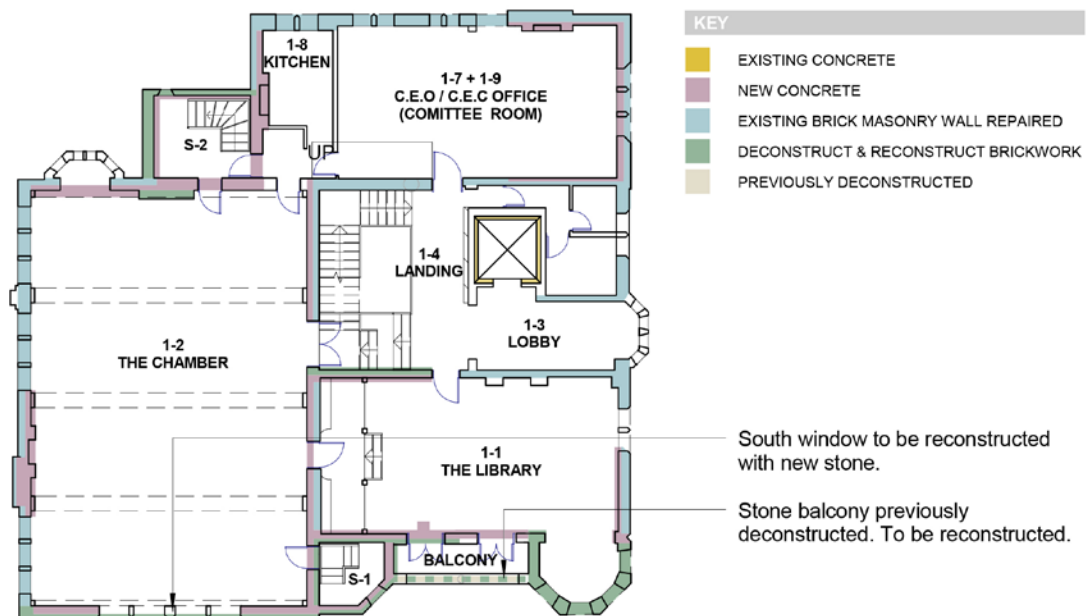
Plywood floor and roof diaphragms are required and these are applied from below to ceilings rather than from above to floors as the diaphragm connections from below affect severely damaged plaster ceilings and cornices that require removal and reconstruction, rather than from above requiring lifting of floors. The diaphragm to wall fixings can also be concealed when installed from below whereas they would be exposed within the spaces if fixed over the floors.

The roof diaphragm installation requires the removal of the clay roof tiles that are in poor condition. The decorative patterning of the roof can be reinstated using new or the original tiles, with replacement tiles being readily available. The tiled roof repair and remediation was a common requirement of all repair and strengthening options considered in the Feasibility Study.

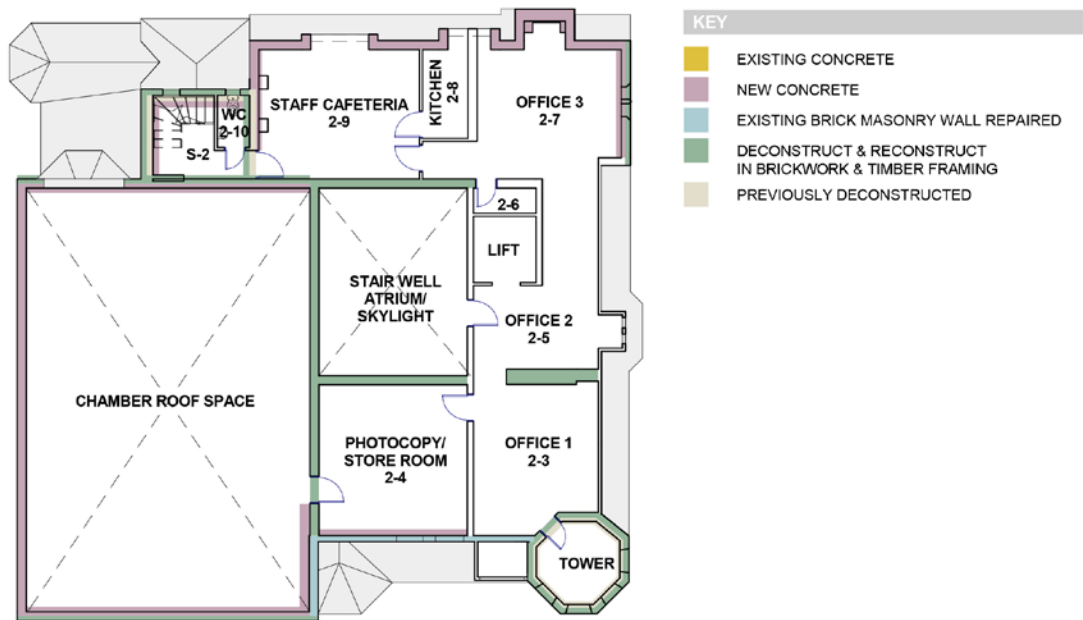
The effects of the repair and strengthening proposal are summarised schematically on the following floor plans and elevations that show the extent of deconstruction and reconstruction required for masonry repairs and insertion of concrete strengthening walls.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN



NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION

8.6 CONSTRUCTION & FABRIC CONSIDERATIONS

Brick Walls

The brick masonry walls are a fundamental part of the architectural expression of the Chambers' Queen Anne style employing the use of decorative terracotta friezes, basket weave patterning of arch infill brickwork and profiled stringcourses. Overall, the quality of the brickwork and its use is of exceptional architectural significance.

The brickwork is damaged with cracking and displacement out of plane, and requires localised deconstruction and reconstruction. The reconstruction of the exterior walls to their original form and aesthetic appearance is essential to reinstate the exceptional heritage values of the Chambers. Consequently, the reconstruction of wall areas and elements will use salvaged or deconstructed bricks, and where wall collapse has damaged these, matching new or recycled bricks will need to be sourced. The brickwork is to be reinstated to the original coursing and bedded in Mapei Antique Alletamento 5-6MPa lime mortar, and pointed to match the original profile.

The pointing on the balance of the facades remaining is not in good repair and should be re-pointed to provide an overall cohesive remediation of the facades. The east entrance porch has pointing struck flush which has been marked with a black line to mimic tuck pointing and this should be maintained and preserved. The main façade walls are lightly weather struck with no faux tuck pointing evident, although this may have been lost through maintenance of the exterior pointing. Repointing should be undertaken to all the building except the east side main entrance porch using Mapei Antique Alletamento 5-6MPa lime mortar. Joints will require deep raking out.

The interior wythe of the walls will require removal where inlaid concrete strengthening walls are required. The affected brickwork is plaster rendered, and the concrete will be finished with plaster render to reinstate the original appearance and form. The concrete will require the use of a water proofing additive in the concrete mix to minimise the migration of salts causing efflorescence. This can be by the addition of silica fume, or agents such as Aquaron 300, and is particularly important on the exterior walls. The proposal requires the reconstruction of the south façade, the north-west stair tower and north and east gable walls over a concrete wall rather than inlaying the concrete wall into the standing brickwork. The concrete walls will require sealing with Megapoxy or other sealant coating prior to the reconstruction of the wall brickwork over the concrete. Mapei Planitop HDM fibre reinforced plaster system.

Figurines

The two figurines, "Industry" and "Concord" on the south façade are considered to be works of art of international significance designed by an important English sculptor of the late 19th century "New Sculpture" movement, Sir George Frampton. They have been described by art historians and conservators as being too significant, important and valuable for them to be exposed on the south side of the OMC. The damaged figurines have been removed by a Conservator and are stored. It has been recommended that the figurines be replicated from moulds taken from the originals in their original terracotta construction with the replicas being installed on the building and the originals being treated to professional conservation and appropriately displayed.

Roof

The terracotta roofing tiles have been assessed by roofing specialists as being close to the end of their serviceable life. The same tile and patterns used are readily available from England enabling the reinstatement of the roof to its original form, decorative pattern and appearance.

The roofing tiles and battens are to be removed to enable the installation of ring beams to the tops of the walls and structural steel ties and braces connecting the walls, all installed above the ceilings in the roof space. The installation of a plywood diaphragm fixed over the roof structure and rafters is also required. The tiled roof will be reinstated to its original form and appearance on new battens and counter battens on roofing underlay fixed over the plywood diaphragm.

The corner turret roof framing is in poor condition with the timber ring beam/wall plate having extensive rot. It will require reconstruction with both new and repair framing to restore its structural integrity.

The roof structure over the Council Chamber has similar deterioration where it bears on the west and north walls and will require evaluation and repair.

The principle to be followed with the framing repairs and strengthening is that deteriorated timbers requiring repair or replacement should be done with like-for-like timber repairs. New added structure not previously present should be modern Pinus or LVL framing. This is to ensure the original structure and its technological value remains identifiable.

Chimneys

The chimneys to the east roof, north wall, east side and the west wall were deconstructed to attic floor or eaves level following the February 2011 earthquake. The chimneys had been previously concrete filled and reinforced and were removed as complete units and stored. The north gable chimney of the Council Chamber and the adjacent west facing gable adjacent to the north-west stair tower require deconstruction along with the adjacent brick masonry gable walls.

The reconstruction of the upper chimneys above eaves or second floor floor level is to be carried out using full bricks erected around a tanked marine plywood wrapped structural steel core, with the lower chimneys strengthened as part of the wall masonry strengthening.

The chimneys included decorative terracotta clay tiles inset into the brickwork and profiled bricks laid to patterns. Effort will be required to remove the brickwork from the concrete filled chimneys for re-use. This will be time consuming and may require the introduction of make-up bricks and moulding and firing of replacement bricks. The decorative tiles should be set on a mortar bed into the brickwork and should be able to be released with minimal risk.

The chimneys' reconstruction will be to their original form, or where this is not possible, to their pre-earthquake form. In the case of the west chimney of the Council Chamber, this was originally an exceedingly tall chimney extending approximately 4-5metres above eaves level. The chimney in the past had been reduced in height to approximately half this height, no doubt due to stability issues caused by the pronounced lean that had developed in this wall. The reinstatement of the chimney to its full height has been considered and remains an option, albeit with structural engineering complications requiring introduction of exposed structural braces back to and penetrating the roof of the Council Chamber. The proposal advanced is to reinstate the chimney to its pre-earthquake form and lower height, but this does not exclude the possibility of its full height reinstatement if the structural problems can be overcome.

Stonework Repairs & Restoration

There are two stone types used on the buildings with andesite used for the entry dressings and griffons, and limestone used for window dressings, transoms and mullions, and the south balcony balustrade. The grey andesite is in sound condition and the only repair required is the reinstatement of the griffons to either side of the entry porch.

Limestone window dressings, sills, mullions and transoms require remedial attention. The transoms and mullions have been joggled out of position by the earthquakes, and in some cases have collapsed. With the exception of the south window to the Council Chamber which is direct glazed into the stonework, the stone mullions and transoms are facings over timber window joinery behind and are secured only by their embedment into the stone dressings at the heads, sills and jambs. It is proposed that all the mullions and transoms be deconstructed and reinstated with stainless steel strengthening members embedded and fixed to their back face where it will be concealed by the timber window frames and be an invisible repair and strengthening solution.

The limestone has surface encrustation and erosion generally. The stone condition needs to be assessed on a stone by stone basis and conservation processes applied. The stone crust requires removal to enable the stone to breathe, and profiles sharpened where eroded. The sill stones are particularly eroded and some may require replacement. Replacement stones should match the coarseness and colour of the original stone.

Repointing is to be with limestone sand mixed mortar.

The south window of the Council Chamber has the lead lights directly glazed into the limestone frame, mullions and transoms. The condition of the stone is generally very poor with considerable erosion of the face and profile and with cracking along stone elements. The window stone was stabilised in place following the earthquake damage with a steel frame fixed over the face of the stone elements that is also providing support for the brick masonry gable above. The window stone work will require replacement in its entirety. Two options have been considered for this. One is to carve new stonework to the original form and secure this in place with an exposed securing steel frame face fixed over the interior of the window tracery, or secondly, to use modern technologies to replicate the stone window tracery using concrete with epoxy/lime sand plaster over to replicate the profiles, texture and appearance of the stone forming a pre-cast self-supporting window unit. This would retain the original form and appearance of the window and the interior form of it to the Council chamber. The modern technology used in its reconstruction would be apparent on inspection.

Timber Windows

Timber windows require detailed assessment for repair action. The east gable window was destroyed and will require a new window to the original form and same timber profiles. The timber windows in space G-8 have been damaged by dry rot infestation and will require replacement to remove the damaged material.

All the sashes require refurbishment and reconditioning of hardware.

Glazing and Leaded Windows

Single glazing will be retained throughout the building following the repairs and strengthening reinstating original stained glass, leaded windows, timber framed windows and detailing, and direct glazing into stone masonry to the south window of the Council Chamber. The leaded windows require repair and restoration of the lead coming and replacement of broken glass pieces. The work will be done by a specialist stained glass conservator.

Lath and Plaster Wall and Ceiling Linings

Exterior wall lath and plaster linings are to remain and be repaired where not required for removal for the installation of concrete inlaid walls. Where concrete walls are installed into exterior walls, the walls are to be strapped and lined with Gibboard linings to the original line. The cavity in the depth of the strapped walls over the concrete walls is required to be insulated so the walls achieve the same thermal performance as the original strapped and lined brick wall construction.

Ground floor ceilings are lath and plaster with repairs where alterations have occurred being with plasterboard. Lath and plaster ceilings are present throughout the first floor and second floor ceilings. Battened down lower ceilings occur in some rooms with evidence of the lath and plaster ceilings being evident around the perimeter.

A structural diaphragm is required to be installed to the first floor structure. Due to the extent of previous interventions to the ground floor and to conceal the diaphragm to wall connections, it is proposed to install this to the underside of the joists replacing the ground floor ceilings rather than on the top of the joists that would require the removal of the flooring in spaces of high authenticity. The ground floor ceilings also require a 30 minute fire rating and this will be achieved by fixing plasterboard linings over the ply diaphragm.

The first floor lath and plaster ceilings are authentic throughout except where altered for the installation of the lift shaft. Generally, the lath and plaster ceilings to the council Chamber are to be repaired and restored, whilst the ceilings elsewhere beneath the second floor spaces are required to be both structural diaphragms and fire rated ceilings necessitating their replacement with plywood with fire rated gibboard linings over.

The ceiling in the Library (space 1-1) has had a concealing plasterboard ceiling installed between the perimeter cornices and the condition of the ceiling behind could not be assessed. However, the ceiling plaster and plaster cornice are in poor repair and will require removal for the installation of floor plane diaphragm wall fixings, repair and restoration using traditional wet plastering techniques, and moulded replacement repair sections

restoring the original technology use and finish. The added lower plaster board ceiling will be removed as part of the ceiling restoration.

The lath and plaster Council Chamber (space 1-2) is an element of exceptional significance. It has suffered severe damage with considerable loss of plaster from the laths and with loss of plaster moulded profiles. The remaining plaster is to be assessed and removed back to sound, the laths repaired and the ceilings and mouldings restored using wet plastering techniques. Moulded profiles will be replicated replicated from moulds of the original.

The second floor lath and plaster ceilings are mainly authentic throughout except where altered for new or removed partitions and the installation of the lift shaft. Generally, the lath and plaster ceilings are in poor condition. The structural engineers require the installation of plywood ceiling diaphragms fixed to the underside of rafters and collar ties and gibboard ceilings will be fixed over the diaphragms. Lath and plaster ceilings to the dormer windows will be repaired and restored.

Evidence of the plaster ceilings will remain with the pattern of the plaster apparent on the joists and rafters, and where laths are able to be retained.

Plaster Render Mapei Planitop HDM

The interior of the exterior walls have either plaster render applied directly to the masonry or concrete where this has been installed, or on timber laths on strapping seen on most areas of the exterior walls. The wall plaster will require repair where damaged or where altered for the installation of concrete structural walls. It is proposed that Mapei Planitop HDM reinforced lime plastering system be used that can span the wall substrate changes, and not modern cement plasters.

Fireplaces

The ground floor fireplaces have been removed and concrete filled, and no evidence of their original form remains. The interpretation of the fireplaces will be formed by creating a simple, unadorned fireplace alcove in the depth of the concrete walls to the original opening shape where evidence of this remains on the altered fireplaces.

The fireplaces in the first floor Library and Council Chamber remain with their ornate plaster over-mantles and tiled surrounds, but have been extensively damaged in the earthquakes with one over-mantle collapsing. The fireplaces will be repaired and restored to their original form. They will not be functioning fireplaces.

Second floor fireplaces are a mix of blocked over fireplaces and cast iron fire registers. Where the fire registers remain they will be restored with their fireplaces but will not be operational.

Stairs

The main stair is of exceptional significance. It will be repaired and restored with no alteration proposed except for a wall mounted handrail. The stair will require the installation of a handrail of complying height and this will be installed to the outside walls of the stair with no adverse effects on the original balustrade. The stair will require dismantling and removal for installation of concrete to the stairwell walls and to prevent damage to it during the construction period.

The secondary north-west stair, S2, is to be re-used and will be reinstated into the reconstructed stair well. Complying height handrails will need to be installed to the outside walls of the stairwell.

The secondary south stair, S1, has been compromised by the installation of the fire sprinkler system. The stairwell walls require strengthening with inlaid and freestanding concrete walls, due to the extent of damage to the brick masonry and the configuration of window openings being a weakness to the integrity of the walls. The stair will require dismantling and removal to enable this work. A consequence will be the need to remove and re-establish the fire sprinkler valve gear temporarily in an adjacent space.

Doors

All the doors in the OMC are of significance. General doors are panelled doors that are stained with shellac or varnish finish in principle spaces, but have been painted within the display and office spaces. The principle door to the Council Chamber is of exceptional significance and includes leadlight panels. The connecting door to the Library has buttoned acoustic padding which should be restored and preserved.

An original connecting door to the north-west stair will require replacement with a new, wider door providing complying disabled persons' access to the Council Chamber, leaving the Chamber highly significant main entrance doors unaltered.

Existing doors generally require maintenance, repair and restoration processes only. A recommendation is that existing painted doors, frames and architraves be stripped of paint and the original stain and shellac finish restored.

Doors on the accessible routes through the building are required to be 760mm clear opening width and preferably 815mm. The doors comply with the exception of the Council Chamber north wall door to space 1-8 and the doors to the north-west stairwell on each floor which are narrow panelled doors. New doors of complying width for compliance with the Acceptable Solutions of NZS4121:2001 *Design for Access and Mobility – Buildings and Associated Facilities* are to be provided matching the design and appearance of the removed doors. The removed doors are to be recorded, labelled and stored allowing restoration at a future date.

New doors are to match the design and appearance of the original doors and are to be constructed in Rimu, with shellac or Danish Oil finish with colour tinting and numbers of coats to match existing colour and finish. New doors are to be date stamped on the hinge stile.

Architraves are timber moulded profiles that are to be retained with their doors throughout the remediation work.

Panelling

The Council Chamber has dado height wainscoting with a vertical patterning around the Chamber. This will be recorded and removed for the repair and strengthening work installation and will be reinstated to its original form on completion. The finish of the timberwork should be confirmed, and if shellac finish, this should be restored. If it is polyurethane finish over the original finish, the panelling will require stripping and refinishing using stain and shellac.

Existing North West Stairwell S2 and Toilets

Toilets are currently located in the ground floor of stairwell S2 in spaces G-13 – G-17. The spaces include the alterations of an original porch and steps that were enclosed in 1913 with a rudimentary wall. The egress corridor from the stairwell between the original toilets, G-16, G-17, and the enclosed area toilets, G-13, G-14, is very narrow. The proposal is to replace the existing toilets which have been assessed in the Conservation Plan as having no heritage value with new in the same location. At the same time the opportunity to widen the corridor to provide safer egress is proposed. The external wall of the enclosed porch area that is assessed in the Conservation Plan as being *not relevant* would be constructed in a more sympathetic and appropriate form to suit the altered corridor and one that accommodates the toilets and egress passage more satisfactorily.

Consideration was given to returning spaces G-13 and G-14 to their open stepped porch form. However, this would require location of the toilets in other ground or first floor spaces which would be an intervention to spaces of higher assessed heritage value.

9. STATUTORY UPGRADING REQUIREMENTS

9.1 Toilets – Statutory Requirements & Upgrading

Existing toilets are provided on the ground floor in the altered north-west stairwell S2, on the first floor adjacent to the lift, and a single toilet is provided at the second floor in the stairwell S2. All are in poor repair.

Although the uses and final occupancy resulting from the uses is not known, the toilet facilities to be provided have been assessed on the previous public display space use on the ground floor, meetings and public assembly on the first floor with occupancy limited to 100 people, and supporting staff offices on the second floor. The occupancy number for the first floor is at a lower limit than an area calculation would allow which is determined by what toilet facilities are able to be accommodated. It is also assumed that the use of the Library and Council Chamber are complimentary rather than both being fully occupied at the same time. Historically, this tended to be the case with the Library serving as a break out and tea space for functions in the Council Chamber, or as a separate meeting room when the Chamber was not being used.

New total toilet facilities provided in the proposal are:

Ground floor: 2 female toilets, 2 male toilets, 1 unisex disabled person's toilet.

First floor: 1 unisex toilet, 1 unisex disabled person's toilet.

Second floor: 1 unisex toilet

9.2 Disabled Persons Access – Statutory Requirements & Upgrading

9.2.1 Existing Situation

Alterations and interventions to the OMC in the past have included facilities to provide access for disabled persons. A summary of the existing facilities provided and their compliance is:

- No car parking is provided.
- There are no kerb ramps on site.
- An existing ramp is provided on the south façade to Worcester Boulevard. This is complying 1200mm width and 1:20 gradient. It has a non-slip plastered surface with the OMC building to one side and upstand to the other. No handrails are provided, but the gradient of the ramp is such that handrails are not required.
- There are two main entrances connecting to the public spaces and lobby of the ground floor. The ramp accessible entrance is through an existing altered opening with automatic sliding glass doors. The original entrance that has high significance values is accessible up a small flight of steps and does not provide compliant wheelchair access. There are no handrails to the two sets of steps at this main entrance.
- Doors on accessible routes comply with the minimum 760mm clear opening width requirement. Some secondary doors are 700mm width. The double doors to the Council Chamber that are of exceptional heritage value, have an overall opening width of 1300mm, but each leaf is 650mm wide, less than the required 760mm clear opening. There is no alternative access to the Chamber that provides compliant door widths or access. The entrance is up a small flight of steps from the stair lobby and provides ambulant disabled access only.
- A lift is provided. Door openings are 910mm complying with requirements. The lift car is 1400 x 1400 which complies.
- The main stair has a tread of 320mm, riser of 155mm and with flights of widths of 1,100 mm and 1,200mm, complying with the dimensional requirements for an accessible stair. Landings comply. The handrail and balustrade are non-compliant, being 800mm high on flights and 920mm high at landings. The stair and balustrade are of exceptional significance value.
- The second floor attic space is on two levels separated by two steps. The lift provides access to the majority of the spaces at that level with an egress stair in the north-west stairwell. This has winders and is non-complying for an accessible stair.
- There are two ramps on the ground floor circulation routes, both of which are approximately 1:10 gradient and are consequently non-compliant.
- There is no compliant disabled person's toilet cubicle.
- Door hardware is predominantly knobs with some doors being double swung.
- There is no compliant signage throughout the building.

9.2.2 Compliance with Acceptable Solutions in NZBC D1/AS1 and NZS 4121:2001

Compliance with Acceptable Solutions in NZBC D1/AS1 and NZS 4121:2001

Refer to the Barrier Free report for the full assessment of upgrading requirements and recommendations.

The upgrading work to provide compliance requires consideration of some solutions on an As Near As Reasonably Possible (ANARP) basis where required as discussed in the Barrier Free report. Consideration of upgrading provisions includes the following:

- Car parking: There is no car parking provided at the OMC site with carparking available on the street and public car parks.
- Lift: The lift is retained and provides wheel chair access to the ground, first and second floors.
- The ramp from Worcester Boulevard is compliant.

Proposed alterations to the OMC providing improvements for disabled person's access could include:

- Handrails to the Oxford Tce entrance steps could be provided as an ANARP solution. However, due to the very high heritage values attaching to the entrance and the original installation of wrought iron security gates of high heritage value, the effects of the installation would be intrusive. An ANARP suggestion is that contrasting tread nosings be provided. However, the Barrier Free report goes on to recommend that as the steps are not part of the accessible route, signage be provided directing people to the accessible entrance on Worcester Boulevard.
- The entrance steps to the accessible Worcester Boulevard entrance require the installation of dual handrails to the centre and a single handrail at the east, turret end. Clear signage that this is the accessible entrance is required.
- One of the modern accessible ramps on the ground floor is able to be altered to achieve the required 1:12 gradient. The constraints of the other ramp which has a 1:10 gradient prevent the upgrading of the gradient of the ramp and the Barrier Free report recommends the use of contrasting colour strips at the top and bottom of the ramp. Complying handrails are to be provided to both sides of the ramps.
- Provision of a platform lift and accessible steps in Space 1-7 will provide disabled person's access to the Council Chamber through an existing doorway in the north wall. The doorway will require widening to achieve the minimum clear width requirements as the existing door is less than the minimum 760mm width required. It is proposed that a new door providing 815mm width be provided.
- Improvements to the existing main stair will include the addition of a compliant handrail fixed to the exterior walls of the stairwell and the installation of complying contrasting tread nosings.
- The alterations to ground and first floor toilets will include an additional disabled person's accessible unisex toilet on both the ground floor and first floor.
- Improvements would include providing complying door hardware to doors on the accessible route, signage and lighting.

9.2.3 Considerations

It is not possible to make the OMC fully compliant with the provisions of NZBC D1/AS1 and NZS 4121:2001, and Section 112 of the Building Act will need to apply. Section 112 states that *"....after the alteration, the building will –*

- (a) comply, as nearly as is reasonably practicable, with the provisions for the building code that relate to –*
 - (ii) access and facilities for persons with disabilities; and*
- (b) Continue to comply with other provisions of the building code to at least the same extent as before the alteration.*

Section 112 goes on to state that the territorial authority may allow the alteration to the building without the building complying with provisions of the building code if the territorial authority is satisfied that –

- 1. if the building were required to comply with the relevant provisions of the building code, the alterations would not take place; and*
- 2. the alteration will result in improvements to attributes of the building that relate to –*
 - (ii) access and facilities for provisions with disabilities; and*
- 3. the improvements referred to in paragraph (b) outweigh any detriment that is likely to arise as a result of the building not complying with the relevant provisions of the building code.*

The alterations to the OMC for their repair, strengthening, reconstruction and restoration will improve the non-compliance of the building for disabled person's accessibility requirements as near as is reasonably possible within the consideration and retention of the building's cultural heritage values.

9.3 Proposals for Electrical Services & Heating

(Refer Opus Consultants *OMC Repairs, Restoration & Report*)

9.3.1 Proposed Electrical Supply and Reticulation

The existing main distribution board is located in fire egress stairwell S2. This is not a compliant location and new locations for main and local distribution boards will be provided on each level in the cavity to the north side of the lift shaft which also provides vertical reticulation. The distribution boards will require access from tenable spaces in the ground and first floors and from a corridor on the second floor.

The reticulation throughout spaces would be concealed within altered walls and in the floor and ceiling spaces. Cabling would be concealed.

The light fitting type will be chosen to complement the heritage values of the significant spaces, particularly the Entrance Lobby and Stairwell, the Council Chamber and Library. The existing wall sconces with up-lights and pendants in original locations will be utilised. The lighting design in other spaces is currently suitable for display and office lighting and has no heritage value. The lighting design of these spaces will need to suit functional requirements when known, but should also consider the effects of the lighting type and location on the heritage value of the spaces.

9.3.2 Proposed for Ventilation and Space Heating

Existing ventilation and heating systems are described in the Opus report. The systems will require removal and replacement to enable the earthquake damage repair and strengthening work.

The Opus report makes recommendations for the ventilation of the OMC. These are:

- Refurbish and use the opening windows to the offices, display spaces and Library for natural ventilation.
- Provide additional mechanical ventilation to the Council Chamber due to its large volume and high occupancy using a ducted system located within the roof space above the Chamber. This would also be used to supply heated air for space heating.
- Provide mechanical ventilation to toilets as required by the NZ Building Code.

Ducted systems and extracts would be concealed with the Council Chamber plant located in the internal roof well area around the stair light-well and will be below the roof ridgeline and not visible except from an aerial view.

The toilet ventilation will terminate through the roof, and in the case of the ground floor toilets the duct cowl would be visible on the single story roofs from the riverbank. The cowl is located below the roof ridgeline, will be seen against the surrounding roof and is located in the position of an existing cowl. In this location it has the least possible visual impact.

The report identifies three systems to be used for the heating of the OMC. These are:

- Radiant low temperature hot water radiators with gas fired boiler located in the basement with the flue concealed in the west wall chimney. Gas is reticulated to the site. This system would be reticulated through the ground floor spaces, the first floor Library and offices, and the second floor offices. Radiators would be modern wall mounted radiators.
- The Council Chamber would be heated using roof mounted package units providing both heating and ventilation. The ductwork would be concealed in the roof space over the Chamber with discharge grilles flush mounted in the lath and plaster ceilings.
- Toilets would be heated using wall mounted electric panel heaters.

Heritage conservation considerations taken into account of in the evaluation of the proposed systems are:

- Adverse drying effects of heated, dry air on the fabric of the building causing drying, shrinkage, and deterioration.
- Radiant heating that heats surfaces is not prone to leakage due to the traditional construction of the building.
- Radiant heating is 'gentler' on heritage fabric than heated air.

Consequently, in considering the conservation of the heritage fabric, radiant heating is generally preferred over heated air options. There are other considerations of cost in use and the nature of the use and occupancy that also require consideration. The effects on architectural and aesthetic values, and effects caused by the installation of the system on the fabric were also to be considered during the selection of the system.

Having considered the efficiency and application of the options and the effects on the fabric of the building and its heritage values, the preferred system for the occupiable spaces except for the Council Chamber is for the installation of a low pressure hot water gas fired reticulated radiator system with wall mounted radiators. The installation of water reticulation pipework will require careful integration into the building with mains runs located in the ground floor sub-floor space, and in the ceiling space above the second floor offices utilising the service room space adjacent to the lift as a vertical riser within the building.

The use of the heated air ducted system in the Council Chamber is recommended as being an efficient way of heating this volume and providing the mechanical ventilation required which cannot be achieved using the existing opening windows. The volume of the space is considered a mitigating factor to the drying effect of the heated air, and humidification can be incorporated into the system.

9.4 Proposals for Fire Protection (Refer to the *Enlightened Solutions Fire Report*)

The implications of the fire safety requirements are:

- The fire sprinkler system installed is to be upgraded and its existing reticulation locations retained. It will require the temporary relocation system out of the stairwell to enable the installation of the strengthening walls and brickwork reconstruction. The temporary location of the sprinkler valve gear and controls would be in the adjacent space G-3.
- 13mm plaster board linings will be required to provide the fire separation between the ground and first floors. Inter-floor ceilings will need to be 25mm thickness, required around penetrations. The existing elaborate lath and plaster ceilings to the significant Council Chamber at first floor level will be retained and repaired. The ceilings in the chamber are not required to be fire rated.
- The existing smoke stop glazed doors and screens installed to the ground floor stairwell and entrance lobby are to be retained.
- The doors to the egress stairwell S2 are to be upgraded at first and second floor levels and re-swung.
- Exit signage will be required at every point of egress that will have some visual effect on the aesthetic values of the spaces but is a life safety and statutory requirement.

10. CONSERVATION POLICY CONSIDERATIONS, CONSTRAINTS

10.1 ICOMOS NZ CHARTER 2010

All work on the building and site is to be guided by the 2000 Conservation Plan and in accordance with the principles and policies of the *ICOMOS NZ Charter for the Conservation of Places of Cultural Heritage Value* updated in 2010. The ICOMOS NZ Charter 2010 requires that all conservation work should be based on a Conservation Plan and that this must identify the cultural heritage value significance of the place, conservation policies, and the extent of the recommended works. The implementation of conservation policy applies to the earthquake damage recovery processes, including alterations required for the strengthening of a building, and the reconstruction of collapsed parts. Reconstruction is a contentious conservation process and is one that will be required for reinstatement of elements of the OMC to its original or pre-earthquake damage form. The conservation processes and principles that are appropriate for reinstatement work required are quoted from the Charter below:

Conservation Principles of the ICOMOS NZ Charter 2010 that are applicable are:

- *Understand the cultural heritage value of the place.*

- *Planning for conservation – all conservation should be based on a conservation plan.*
- *Respect surviving evidence and knowledge.*
- *The minimum intervention necessary to ensure retention of tangible and intangible values.*
- *Recording and analysis of the fabric and place is of importance to understand the place.*
- *New work should be identifiable from original. For repairs and reconstruction this should be subtle. For alterations it can be contrasting but secondary in scale, form and prominence to the heritage item and not compromise its interpretation.*
- *Repairs should be made using materials like-for-like.*
- *Recognised processes of conservation include **preservation, stabilisation, repair, restoration and reconstruction** incorporating new materials or processes, and **adaptation**.*

The Charter states that conservation projects may utilise a range of processes and that where appropriate, conservation processes may be applied to individual parts or components of a place of cultural heritage value. The extent of any intervention for conservation purposes should be guided by the cultural heritage value of a place and the policies for its management as identified in a conservation plan.

The degrees of intervention for conservation purposes defined in the Charter in increasing degrees of intervention are:

- (i) **preservation**, through **stabilisation, maintenance, or repair**;
- (ii) **restoration**, through **reassembly, reinstatement, or removal**;
- (iii) **reconstruction**; and
- (iv) **adaptation**.

Conservation processes applicable to the reinstatement of the OMC are those of **repair, reconstruction, restoration, and adaptation**, and applicable principles are having **respect for surviving evidence and knowledge** and that of **minimum intervention**. These are discussed below.

The principle of minimum intervention is an important conservation principle. The Charter states that “...**intervention** should be the minimum necessary to ensure the retention of **tangible and intangible values** and the continuation of **uses** integral to those values. The removal of **fabric** or the alteration of features and spaces that have **cultural heritage value** should be avoided.”

Commentary: In the repairs and restoration of the OMC, the principle of minimum intervention is being applied to a building that has suffered severe earthquake damage and partial collapse and that has compromised structural integrity. There is a significant component of deconstruction and reconstruction required to remediate the building and enable its restoration to its pre-earthquake appearance and form. The damage is mainly to brick masonry walls which have cracking and vertical and out of plane displacement and with some wall elements having collapsed which requires deconstruction and reconstruction of areas for the restoration of the building. In addition deconstruction of brick wall thickness is required for the installation of added structural wall strengthening elements.

Interior plaster linings suffered major damage and collapse. They will be restored where possible using original technologies. However, statutory upgrading of fire separations between floors and the need for installation of floor diaphragms both dictate the removal and loss of lath and plaster ceilings where upgrading is required. Both the requirements are located so they affect the ceilings only leaving the floors undisturbed.

Repair

The ICOMOS NZ Charter states that *the **Repair of a place of cultural heritage value** should utilise matching or similar materials. Where it is necessary to employ new materials, they should be distinguishable by experts, and should be documented. Traditional methods and materials should be given preference in **conservation** work.*

***Repair** of a technically higher standard than that achieved with the existing materials or construction practices may be justified only where the stability or life expectancy of the site or material is increased, where the new material is compatible with the old, and where the **cultural heritage value** is not diminished.*

Commentary: The fabric of the OMC will be repaired as part of the larger earthquake damage repair, strengthening and restoration project. Significant areas of fabric repair include the replacement of the roof terracotta tiles that are in poor age related condition, and specialist reports recommend their replacement with like-for-like replacement tiles laid to the original pattern.

Interior plaster render wall finishes and lath and plaster wall and ceilings that are not affected by the strengthening systems installation of fire protection upgrades will be repaired using modern plaster systems applied with the original technologies. The repairs will be to a technologically higher standard that will improve the future resilience of the building whilst minimising the loss of construction technologies to the fullest extent possible, albeit, this being high due to the statutory upgrading requirements. Evidence of the original construction will be retained.

Restoration

The ICOMOS NZ Charter defines restoration as *The process of **restoration** typically involves **reassembly** and **reinstatement**, and may involve the removal of accretions that detract from the cultural **heritage value** of a place.*

***Restoration** is based on respect for existing fabric, and on the identification and analysis of all available evidence, so that the cultural heritage value of a place is recovered or revealed. Restoration should be carried out only if the cultural heritage value of the place is recovered or revealed by the process.*

Restoration does not involve conjecture.

i. Reassembly and reinstatement

***Reassembly** uses existing material and, through the process of **reinstatement**, returns it to its former position. **Reassembly** is more likely to involve work on part of a place rather than the whole place.*

Commentary: The exterior fabric of the walls requires either areas of significant deconstruction as seen in the south façade, turret and north-west stairwell, or localised deconstruction to enable the integrity of part of a wall to be reinstated and restored. Where localised repairs are possible, the reassembly will use like for like traditional technologies. Where strengthening is required, new added structure will require the reconstruction of the brickwork using the original salvaged material over the new structure or by inlaying the new structure into the modified brick masonry walls. Both introduce new or modified construction technologies.

The interior restoration of lath and plaster, plaster render and plaster decorative elements will require repair or removal and replacement of damaged material with new plaster utilising modified original technologies.

Reconstruction

The ICOMOS Charter defines reconstruction as: ***"Reconstruction** is distinguished from **restoration** by the introduction of new material to replace material that has been lost.*

***Reconstruction** is appropriate if it is essential to the function, **integrity**, **intangible value**, or understanding of a **place**, if sufficient physical and documentary evidence exists to minimise conjecture, and if surviving **cultural heritage value** is preserved.*

*Reconstructed elements should not usually constitute the majority of a **place** or **structure**."*

Commentary: The ICOMOS NZ Charter identifies reconstruction as an acceptable process, but only where this constitutes a lesser part of the whole. In this context, the reconstruction of walls constitutes a significant reconstruction component of the building fabric, particularly to the south wall, turret and north stairwell, but in the broader context of the OMC it must be considered as being a smaller part that contributes to the overall architectural composition of the building that is fundamental to the expression and understanding of the cultural heritage values of the OMC. These reconstructed areas will require the use of new construction technologies for support structures with the reassembly of the deconstructed brick constructed over these reinstating the original architectural form, detailing and aesthetic value.

Adaptation

The ICOMOS Charter defines adaptation as: *“The **conservation** of a **place** of **cultural heritage value** is usually facilitated by the **place** serving a useful purpose. Proposals for **adaptation** of a **place** may arise from maintaining its continuing **use**, or from a proposed change of **use**.*

*Alterations and additions may be acceptable where they are necessary for a **compatible use** of the **place**. Any change should be the minimum necessary, should be substantially reversible, and should have little or no adverse effect on the **cultural heritage value** of the **place**.*

*Any alterations or additions should be compatible with the original form and **fabric** of the **place**, and should avoid inappropriate or incompatible contrasts of form, scale, mass, colour, and material. **Adaptation** should not dominate or substantially obscure the original form and **fabric**, and should not adversely affect the **setting** of a **place** of **cultural heritage value**. New work should complement the original form and **fabric**.”*

Commentary: The remediation of the OMC will require alterations and interventions from its pre-earthquake form, and is necessary for the building to function and to meet as near as is reasonably possible the statutory requirements applicable. Significant alterations from the current plan form will be the alterations to the ground floor toilets that require the removal of an added exterior wall that is defined in the Conservation Plan as having little significance, giving the opportunity to reinstate this in a form more sympathetic to this part of the building.

Wheel chair access is required to the Council Chamber which is currently elevated three steps above the stair and lift landing level. This can be achieved by the installation of a platform lift in an office space assessed as having some significance and which has no adverse effects on heritage fabric. The installation of the platform lift removes the need to alter the stairwell landing steps and Chamber's doorway that are of exceptional significance.

Interior ceiling linings of the ground floor and some first floor spaces will require alteration with the replacement of existing lath and plaster and plasterboard ceilings with structural plywood diaphragms with fire rated plasterboard ceilings constructed over. This will result in loss of heritage fabric that is severely damaged. Evidence of the lost original linings technology will be retained with the patterning of it apparent on the ceiling and floor structure.

The adaptations will be compatible with the original form and fabric will not result in inappropriate or incompatible contrasts of form, scale, mass, colour, and material. The original form of the affected spaces will remain largely unaltered, if altered at all. There are no adverse effects on the OMC setting.

Reversibility

Commentary: In assessing the consequences and effects of adaptation or other interventions, the permanence or reversibility of the intervention needs to be considered. The adaptation required for the repairs and strengthening of the OMC include interventions to the brick masonry walls and the tiled roof that are not considered to be reversible. However, the interventions are necessary for the retention and remediation of the building.

Alterations for the installation of the platform lift to the Council Chamber, and heating and ventilation systems and other services would be reversible. The sprinkler system is an existing intervention that has an irreversible effect on the floor structure of the building and the upgraded system will utilise the installation and the existing adaptations wherever possible to minimise further irreversible interventions.

Respect for surviving evidence and knowledge

The ICOMOS Charter states that, *“**Conservation** maintains and reveals the **authenticity** and **integrity** of a **place**, and involves the least possible loss of **fabric** or evidence of **cultural heritage value**. Respect for all forms of knowledge and existing evidence, of both **tangible** and **intangible values**, is essential to the **authenticity** and **integrity** of the **place**.*

***Conservation** recognises the evidence of time and the contributions of all periods. The **conservation** of a **place** should identify and respect all aspects of its **cultural heritage value** without unwarranted emphasis on any one value at the expense of others.*

*The removal or obscuring of any physical evidence of any period or activity should be minimised, and should be explicitly justified where it does occur. The **fabric** of a particular period or activity may be obscured or removed if assessment shows that its removal would not diminish the **cultural heritage value** of the **place**. In **conservation**, evidence of the functions and intangible meanings of **places of cultural heritage value** should be respected."*

Commentary: These principles have been considered in the repairs, reconstruction and strengthening of the OMC. The level of intervention to exterior walls is determined by the degree and nature of damage to them that requires localised deconstruction at the minimum level for their repair. Wherever practicable the original construction and technologies remain with structural elements added into this as inlaid walls requiring the removal of part of the masonry wall thickness.

The south wall is compromised by the damage to it and the size and irregularity of openings. The preferred engineering solution is to treat this as a reconstruction of the deconstructed brickwork over a concrete wall. However, the preferred conservation option of repairing and retaining the original construction of the wall through processes of repair and reassembly, and then adding the concrete structure to its inside face has also been considered which would retain much of the wall's authenticity. However, this latter approach is not practically achievable given the compromised structural integrity of the wall and requires future investigation. The same applies to the north-west stairwell walls.

As a consequence of the remediation work, the building will be restored with its exterior form and original fabric repaired or reassembled, and the significant interior spaces restored using the original technologies to the fullest extent possible within the constraints of the damage repair, strengthening requirements and statutory compliance upgrading.

Setting

The ICOMOS Charter states that, "*Where the **setting** of a **place** is integral to its **cultural heritage value**, that **setting** should be conserved with the **place** itself. If the **setting** no longer contributes to the **cultural heritage value** of the **place**, and if **reconstruction** of the **setting** can be justified, any **reconstruction** of the **setting** should be based on an understanding of all aspects of the **cultural heritage value** of the **place**."*

Commentary: The OMC in its riverbank setting is of exceptional cultural heritage value and is of regional and national importance. The remediation and restoration work will ensure this cultural heritage value and contribution to the cityscape remains unaltered.

10.2 Conservation Plan

The principles and policies of the Conservation Plan and the ICOMOS Charter are severely tested following such a catastrophic and destructive event as the Canterbury earthquakes that have caused such wide spread damage to the OMC. However, it is important when considering repair processes appropriate to an earthquake damaged building to apply the same rigour and conservation practice as that applicable to an undamaged building to achieve the best possible outcomes that retain as much of the cultural heritage and architectural significance value of the building. With the building being badly damaged, compromising solutions that may be more readily achievable may have a detrimental effect on or loss of cultural heritage value. The remedial solutions put forward following the fabric and damage assessments have consequently been considered against the Conservation Plan Policies and the ICOMOS Charter Principles.

The Conservation Plan establishes specific policies for the conservation of the heritage values of the OMC. Relevant policies to the post-earthquake remediation and conservation quoted from the Conservation Plan are:

Policy 1.1 *The Municipal Chambers building should have a viable and useful purpose as a means of aiding its survival.*

Policy 2.1 *Significant fabric should be retained as a means of preserving overall significance.*

Fabric that is assessed as being significant contributes to the overall significance of the building and should be retained wherever possible.

- *Exceptional significance. Preservation of these elements is regarded as essential.*
- *Considerable significance. These elements should be retained unless extraordinary circumstances require their removal.*
- *Some significance. These elements should be retained in their present form wherever possible.*
- *Not Relevant. These elements have little significance and generally allow the building to function. They may be retained, providing fabric of greater significance is not obscured.*

Policy 3.1 Work on the building should respect the significance of the individual elements.

Policy 4.1 Where appropriate, consideration should be given to returning the Municipal Chambers building to a known earlier form.

Policy 5.1 New work should respect the original building but should be discernible as such.

Policy 5.2 Material and workmanship for new work should be of a standard comparable with the original building.

Policy 5.3 New works should be reversible wherever possible.

Policy 6.1 Appropriate standards should be maintained whenever work is carried out.

Commentary: In order to maintain the integrity of the building, all work should conform to principles set out in the NZ ICOMOS Charter....

Policy 6.2 Conservation processes and other activities involving intervention should be recorded.

The intent of these policy statements are supported by the definitions of the ICOMOS NZ Charter discussed above.

The OMC is evaluated in the Conservation Plan as being of overall **Exceptional Significance** due to its high historic significance, aesthetic value, social significance and scientific value. Because of the significance value of the OMC, the damaged parts of the building are to be reconstructed and restored to their original pre-earthquake form as far as is practicable having regard to the earthquake damage. Consideration of the statutory strengthening requirements and solutions is also required to be guided by the conservation policies of the Conservation Plan and ICOMOS NZ Charter 2010. As part of the recovery process, removed fabric and material of the OMC has and will be recorded for either re-use where this is feasible or to provide physical evidence for interpretation purposes for reconstruction and fabrication of new parts and fabric.

Constraints arising from the Conservation Plan Statement of Significance that are applicable are:

- *No work should be carried out that removes or conceals evidence of the way the Municipal Chambers may have been formerly used or removes evidence of past events that may have occurred.*
- *No work should be undertaken that reduces the building's architectural value or aesthetic integrity.*
- *No work should be carried out that further removes evidence of the earlier form or plan layout of the Municipal Chambers.*
- *No work should be carried out that conceals or reduces technological evidence such as original construction techniques.*
- *No work should be carried out that alters or removes significant fabric other than where necessary to ensure continued viability or where deterioration has occurred.*

These constraints have been adopted in the consideration and development of repair and strengthening options that will enable heritage value to be retained and restored with the minimum of adverse effects considered possible.

10.3 Christchurch Replacement District Plan

The operative Christchurch District Plans are under review. A decision on the Natural and Cultural Heritage Chapter was released by the Independent Hearings Panel on the 7th October, 2016. The appeal period closed on the 8th November, 2016 and one appeal was received in relation to the objectives and policies. Given this, the heritage rules are treated as operative pursuant to s86F of the Resource Management Act. The rules applicable to this proposal have been assessed against the Natural and Cultural Heritage Chapter. In assessing resource consents for work to heritage buildings the Christchurch City Council needs to consider the proposal against the following criteria.

10.3.1 Heritage Matters - Christchurch District Plan (CDP)

Clause 9.3.5.1 Heritage Upgrade Works, Reconstruction, Heritage Investigation

The Christchurch District Plan (CRDP) includes the OMC in its Schedule of Significant Historic Heritage Places as a Group 1 **Highly Significant** place – Heritage Item Number 415.

The activities proposed for the remediation of the OMC include processes of preservation, repair, restoration, reconstruction, adaptation and strengthening.

The activity status includes the following activities for work to Group 1 buildings as a result of the 2010/11 Canterbury earthquakes:

- Repairs. *Permitted activity where monitored by a heritage professional, otherwise consider as for Alterations.*
- Restoration. *Permitted with heritage professional certification, otherwise Controlled Activity.*
- Deconstruction to enable reconstruction and reassembly of earthquake damaged fabric. *Controlled Activity.*
- Reconstruction. *Permitted with heritage professional certification, otherwise Controlled Activity.*
- Adaptations and alterations. *Restricted Discretionary Activity.* (The definition of alterations excludes repairs, restoration, heritage upgrade works, heritage investigative works and reconstruction which are all separately defined).
- Heritage upgrades works undertaken as part of the overall reconstruction. *Permitted with heritage professional certification, otherwise Controlled Activity.*
- Services upgrading including Electrical, Heating and Fire Protection Services. *Permitted with heritage professional design or supervision, otherwise consider as for Alterations.*

The OMC work includes all of the above activities. Adaptations and alterations required are for repairs, restoration, heritage upgrade works and reconstruction of earthquake damaged fabric and is a result of earthquake damage. The provisions of the Christchurch District Plan, Section 9.3 Clauses 9.3.5.1 apply. These are:

9.3.5 Matters of Control - Historic heritage

9.3.5.1 Heritage upgrade works, reconstruction and restoration

- a. *The form, materials, and methodologies to be used to:*
- i. *maintain heritage values, including integration with, and connection to other parts of the heritage item;*

Commentary: Refer this Heritage Assessment which is to be elaborated to suit the detailed design documentation included in the Resource Consent application.

- b. *The methodologies to be used to protect the heritage item during heritage upgrade works, reconstruction and restoration;*

Commentary: A Temporary Protection Plan prepared by the Conservation Architect is to be included in the Resource Consent application documents.

- c. *Documentation of change during the course of works, and on completion of work by such means as photographic recording; and*

Commentary: A photographic record of the affected areas is to be undertaken by the Conservation Architect prior to commencement of any work, during the works and following completion. Digital copies of the annotated photographic report in both PDF and Word format are to be provided on a USB drive with a folder of the full resolution photographs included in the report and an accompanying annotated hard copy of the report. The photographic record should also include plans for referencing photo locations and orientation. The record should be lodged with the Heritage Team of the Christchurch City Council for their records within the time frame stipulated in the Resource Consent.

- d. *Whether Heritage New Zealand Pouhere Taonga has been consulted and the outcome of that consultation.*

Commentary: Heritage NZ has been consulted during the development of concept option designs at the feasibility study stage including the approved option to proceed to developed design. The site is a place associated with pre-1900 human activity within the central city setting. Accordingly it is considered to be an archaeological site under the Heritage NZ Act 2014.

11. ASSESSMENT OF EFFECTS ON HERITAGE VALUES – FULL RESTORATION

General

The OMC will retain its original form and appearance including the pre-earthquake alterations to the ground floor on completion of the repairs, reconstruction and strengthening work proposed.

Following the catastrophic partial collapse of the OMC, repair, restoration, strengthening and reconstruction processes will be required for its reinstatement to its original overall form. This requires the use of new construction technologies to reassemble and reconstruct collapsed and deconstructed areas of the buildings.

The range of possible strengthening and repair options were considered at the feasibility study stage and presented to the Christchurch City Council. The approved option developed in this proposal strengthens the building to 67%NBS which is also the required aim of the Christchurch City Council as Asset Owner.

The implementation of conservation policy applies to earthquake damage recovery processes, including interventions required for the strengthening of the building, and the reconstruction of collapsed parts. The interventions proposed consider the originality and integrity value of the building's fabric and seeks to minimise adverse effects on original and heritage fabric and as far as possible concentrate effort where in the past modern fabric or interventions have replaced original fabric and where the fabric is of lesser heritage significance value.

The introduction of new construction technologies is required for reconstructed areas and this is an acceptable process within the principals of the ICOMOS NZ Charter 2010, particularly where this enables an otherwise unusable building to have a use. Reconstruction is a contentious conservation process, and the Charter, as described previously, states that ***reconstruction is appropriate if it is essential to the function, integrity, intangible value, or understanding of a place.*** Given the exceptional overall assessed significance of the OMC it is considered that the repairs and reconstruction are appropriate for the retention of the above values.

The consequences of the remedial earthquake damage work on the heritage values of the OMC will be severe in places. Despite this, the best possible outcomes for the building should be sought and the principles of sound conservation practice as defined in the ICOMOS NZ Charter 2010 and the Conservation Plan should still apply. An important conservation principle that has been applied to test repair and strengthening solutions and options is that of minimal intervention. The work considered should wherever possible be the minimum necessary to repair the element or area or that is required to strengthen the building.

Exterior

Foundation and Floors

The ground floor will require lifting for the installation of the sub-floor strengthening and foundation work. The ground floor floor structure has been significantly altered in 1989 for the installation of the lift and in the

south-west corner for the basement and installation of overlaid concrete walls to Office 1. Two ramps have also been installed requiring alterations to the floor.

The extent of remaining tongue and groove flooring has been determined following the lifting of the floor coverings. Floors have been altered by partial lifting of Rimu tongue and groove flooring for the installation of structural strengthening structure and brackets c1989 and the fire sprinkler system and services. Floors have been made good by relaying lifted boards or by insertion of particle board patches. It is proposed that where further intervention and removal of floor boards is required, that they will be lifted in full lengths for re-use in their original locations. Consequently, the loss of further original fabric will be kept to the minimum possible with the flooring being reinstated to its existing form. Particle board patches will be replaced with Rimu tongue and groove flooring matching the existing profile.

The strengthening of the existing foundations is not exposed to the exterior. There is minimal effect on the existing foundations and brickwork and no change in the appearance of the foundations. Consequently, there is no loss of aesthetic or architectural value.

Walls

The corner turret and north-west stairwell walls have both been partially deconstructed and their remaining walls and elements are severely damaged. Due to their form and construction, they both require complete deconstruction prior to their reconstruction using reassembly of salvaged fabric.

The principle south gable and wall and adjacent stair require deconstruction due to the severity of the damage with cracking and displacement of the wall masonry which is further compromised by the size and configuration of wall openings.

The deconstruction and reconstruction of the brickwork to these walls over a reinforced concrete structural wall is a major intervention that is intrusive on heritage values. However, the reconstructed walls using reassembly of original salvaged bricks and fabric will contribute to the restoration of the architectural form of the building and its aesthetic values mitigating the adverse effects on overall heritage values.

These processes and outcomes also apply to the reconstruction of the north-west stairwell, west chimney, north wall gables and the collapsed east wall gable.

The turret requires deconstruction of the remaining brick masonry and limestone window dressings and the masonry will be reassembled over a structural steel frame with the structure set into the corner mullions of the turret and the floors. The turret will be reconstructed to its original aesthetic and architectural form using processes of reassembly of the elaborate brickwork and limestone dressings around the introduced steel structure. The introduction of new technologies that enable the place or component to remain and reassembly of original components that restores the building are acceptable conservation practices.

The application of the concrete to the interior sides of the north, east and west exterior walls will enable the original brickwork to remain to the exterior retaining its integrity to the fullest extent possible. It is considered the minimum level of intervention possible. Where the strengthening walls are constructed by removal of thicknesses of brick and the inseting of the walls, the visual effects on the interior spaces can be minimised, particularly where the walls meet openings and fireplaces. Localised areas of earthquake damaged brickwork will require deconstruction and reconstruction by reassembly of the salvaged bricks using traditional masonry practices and proprietary lime mortar bedding. The strengthened and repaired brick masonry will have plaster render finishes reconstructed where they have collapsed or require removal, and restored where they remain. Construction processes original technologies used in the building's construction are retained. Where exterior walls are strapped and lath and plaster lined, the linings are restored using specialist plasterer. Where the strapped walls are strengthened with inset concrete walls, these wall areas will be strapped and Gibboard lined finished into the lath and plaster walls. Consequently, physical evidence of the original wall construction technologies will remain throughout the building wherever the walls remain in their original mass masonry form.

Areas of the interior masonry walls will require the installation of concrete walls at both the ground and first floor levels. This will require removal of brickwork to one or two brick wythes of the walls. The walls would

retain their original thickness. The plaster render will be reconstructed over the concrete walls and damaged render to the remaining brick masonry walls will be repaired using proprietary lime plaster restoring the walls to their original form and appearance. As a result of the wall strengthening processes, there will be some loss of technological value and integrity of the original construction, but the loss is principally in the response to and severity of the earthquake damage to the building structure.

The second floor roof space walls are brick masonry of low height at the eaves and with dividing masonry walls on the line of the chimneys. They have been severely damaged with considerable collapse of the walls. The walls are assessed in the Conservation Plan as having *some* heritage value which means the fabric should be retained where this is possible. However, the damage to the walls is such that they will be deconstructed and reconstructed in timber framing of original wall thickness with concrete perimeter ring beams incorporated into the walls at the eaves. Consequently, due to the damage at this level there will of necessity be considerable reconstruction of the walls using different technologies.

Damaged wall areas remaining will be repaired by localised deconstruction and reconstruction of the damaged fabric using traditional and original masonry construction processes using lime mortars and renders. The renders will include reinforcing mesh to further stabilise the brickwork and to control cracking at junctions with sound remaining plaster render.

The wall masonry employs decorative brickwork in the panels over the windows, bull-nosed string courses and at the eaves, with the walls below the eaves of the turret having bespoke terracotta relief panels. Where walls have been deconstructed, the decorative elements have been recorded and stored and will be reinstated. These processes will also apply to areas requiring further deconstruction.

Roof

The tiled roof cladding to the Council Chamber will require removal and probable like-for-like replacement for the installation of the ring beam to the top of the Council Chamber walls, repairs to the timber roof structure, for the installation of steel roof space bracing structure and for the installation of a plywood roof plane bracing diaphragm. The roof and tiles have suffered damage from falling masonry from collapsed parts of the south parapet and by the movement of the west chimney and its partial collapse. The tiles are also at the end of their serviceable life. The roof will be reinstated to its original form and pattern with the original salvaged tiles or like for like replacements and there will be no loss of heritage value. The roof tile replacement is cyclical maintenance in the life of the building.

Chimneys

Collapsed and removed chimneys will be reconstructed to their original form and appearance retaining their aesthetic value, albeit with the introduction of new technologies with the reconstruction of the brick masonry around structural steel cores using full thickness bricks. The existing chimneys were previously brick filled which may make the salvage of the bricks from the concrete cores difficult. The decorative tiles and profiled bricks are a priority to be salvaged for re-use. If necessary, make up bricks can be introduced for the chimneys' restoration.

Chimneys will be restored to their original form and height, except for the west wall chimney which is proposed to be reinstated to its known pre-earthquake form and height. This chimney was originally exceedingly tall extending above the eaves approximately five metres. The reinstatement of the chimney to this height has been considered in the development of the repairs, strengthening and restoration proposals, but has consequences on the adjacent west wall areas that would require extension of the concrete strengthening walls either side and stabilisation using exposed roof braces back into the roof structure. A further limitation is the degree to which the chimney and west wall lean outwards. The reconstruction of the west chimney will enable the chimney to be plumbed to a more vertical position with the out-of-plumb walls either side stopping into it. The reconstruction of the chimney to its original height, if this is pursued in the future, would require sourcing of supporting photographic evidence in addition to that already available.

Stone Window Dressings and Timber Windows

The limestone window dressings, sills, mullions and transoms are in varying degrees of condition. Those on the east façade are eroded with thick encrustation, particularly the sills and lower sections of the mullions. These

eroded stones and earthquake damaged stones will require replacement with stones cut to the original profile and pieced into the remaining stone elements. Serviceable stones will require restoration by a stone mason by spliced in repairs, re-surfacing of the stone by light scraping to remove scale and encrustation with sanding to tighten the surface. These are recognised maintenance and restoration processes and are part of the limestone's life cycle on the building.

Limestone mullions and transoms on the north and west facades have been displaced by earthquake shaking and where vulnerable have been removed or stabilised. All the mullions and transoms are to be removed and modified by chasing the back, concealed side of the stones for the installation of the stainless steel stabilisation frames. These are fitted between the stone facings and the timber window joinery and are not visible. There will be no adverse aesthetic effects from the installation, and the mullion and transom stones will be secured against further movement and damage.

The timber window joinery will require removal for the installation of the stone window dressings' stabilisation frames. While removed, they will be restored by a specialist joiner prior to re-installation. This work is maintenance and restoration work and will preserve the original window joinery into the future. The repairs will retain as much original material as possible with the emphasis on spliced piece repairs rather than replacement of deteriorated components. There are no adverse effects arising from this work.

Council Chamber South Window

The very poor condition of the limestone window joinery requires its complete replacement. The stones are cracked along their length and are badly eroded. Following the earthquakes, the damaged stone window elements were stabilised with the installation of a steel section stabilisation frame fixed over its inside face. This enabled the removal of the leadlight panes by a glass conservator. The glass is of high heritage significance value while the stone was in a damaged and deteriorated condition and was treated as a sacrificial element.

Two options for the reconstruction of the limestone window frame were considered, the first being its reconstruction in like-for-like stone replacement with a structural steel stabilisation frame fixed over its interior face which would be exposed to the Council Chamber. The second was to fabricate a new frame from pre-cast concrete with plaster render mixed with crushed limestone or Ngapara white sand. This frame would be self-supporting.

The proposal is that the limestone frame be reconstructed using new technologies of modern lightweight concrete with crushed limestone/plaster render finish which will match the original profiles and colour. The window would be self-supporting without the need for stabilisation frames exposed across the exterior or interior of the window.

There will be loss of originality of the limestone frame construction and technological value, but the introduction of new technologies will enable the interior architectural form of the Council Chamber which is assessed as being of *exceptional significance* to be aesthetically restored without the need for the introduction of an exposed steel structure to support what would be a new stone frame replicating the original.

Oriel Windows, North and East Walls

The two limestone oriel windows have not suffered any damage. They are to be repaired and restored as required.

The limestone oriel window masonry will be secured back to the strengthened building with concealed stainless steel fixings and embedded rods.

Oxford St Entrance, Porch Floor and Gates

The entrance porch floor, steps and gates are to be retained unaltered by the strengthening work. Conservation processes will be those of stabilisation, protection and maintenance.

Reassembled and Reconstructed Elements

Balcony: The south balcony limestone balustrade that is assessed as being of *exceptional significance* that was recorded and deconstructed will be reconstructed using the original balusters and cappings. Some were

damaged beyond repair, and new balusters carved to the original profile will be required. The reassembly is restoration work with positive effects.

Figurines: The two figurines, “Industry” and Concord”, set into alcoves in the south wall, are of exceptional significance being executed by an internationally renowned sculptor who was influential in the Arts and Crafts Movement in England. They are considered works of art that should be displayed in the protected environment of a gallery or museum. The figurines were exposed to the elements and were deteriorating as a result. They were also at risk of collapse from their alcoves on the south façade and were removed and processed for storage by Mark Whyte, a stone conservator and sculptor. The proposal is for a specialist conservator to make moulds of the terracotta figurine panels from which replicas can be cast, and that these replicas be installed on the building. The originals should be conserved by a conservator and stored for protected display. The replication of the figurines is supported by the ICOMOS Charter where the process ensures retention of heritage value. There will be loss of integrity with the removal of the figurines from their original setting on the building, but they are preserved for the future protection and display. If they were reinstated on the building, they would remain exposed to the elements and vandalism.

The replicated figurines installed in the reconstructed and reassembled alcoves on the south façade will maintain the architectural form and aesthetic values of the OMC.

Turret friezes: The turret terracotta frieze panels were deconstructed and stored. They will be reassembled in the reconstructed turret contributing to the restoration of the architectural and aesthetic values of the OMC.

Griffons: The andesite griffons to each side of the formal Oxford Terrace entrance were removed after the earthquakes and stored. They will be reinstated into the repaired wall structure restoring the entrance to its original form.

Interior

Plaster

Throughout, the interior plaster render and lath and plaster finishes to significant spaces are damaged or collapsed and will require repair and/or reinstatement with new fabric using like-for-like repair processes where not required to be removed for the installation of strengthening and fire rated linings. There will be some loss of technological value and originality but aesthetic value will be maintained. The ground floor and first floor ceilings with the exception of the Council Chamber ceilings and the Entry lobby and stairwell, are altered throughout and will require replacement with structural plywood diaphragms and fire rated plasterboard ceilings. This does not affect the stairwell ceiling roof light.

The lath and plaster ceiling in the Chamber is elaborate in form and detailing and is of *exceptional significance*. It has been extensively damaged throughout the space with loss of plaster from the laths and damage to the decorative mouldings. The lath and plaster and plaster mouldings will require extensive repair and reconstruction as part of the restoration processes. The interior of the Chamber and Library would be restored to their original appearance and form with no loss of aesthetic value but with some loss of technological value due to the interventions for the installation of the concrete and steel strengthening structures into walls and ceilings.

Some, but not all, exterior walls are strapped with lath and plaster linings. Where not required to be removed for the installation of concrete walls, the plaster to the lath and plaster walls is to be repaired and restored. Adjoining concrete walls will be strapped and gibboard lined retaining the soft lining feel provided by the wall cavity.

Where walls are solid plaster rendered, this will be repaired, restored, or removed for re-rendering restoring the original technology and finish used. The plaster will be a proprietary lime plaster system incorporating a reinforcing mesh.

Leadlight and Stained Glass Windows Restoration

All specialist glass is to be restored by a glass conservator. The leadlight panes were recorded and removed by Graham Stewart, stained glass conservator.

Stairs, Doors, Panelling,

Door widths are required to be minimum 760mm, preferably 815mm where these are on the accessible route. Affected doors are those from each floor into the north-west stairwell and from the Council Chamber to the disabled persons platform lift in space 1-7. The doors are framed and panelled doors. The new doors would be constructed from Rimu to the original design and be date stamped on the hinge stile edge to identify them as new.

Removed doors and frames that are of heritage significance should be recorded, labelled, protected and stored that would allow them to be restored to their original location should this be possible in the future.

Disabled Persons Access Upgrading

Society's expectations are that buildings, particularly buildings serving a public function, are accessible to all people. The existing building configuration and provisions for disabled people have been met in part with past alterations and where these past interventions can be utilised they have been retained. The existing provisions include the accessible ramp to the Worcester Boulevard entrance, provisions of ramps throughout the ground floor, the provision of a disabled person's toilet that is of non-compliant size, and the installation of a passenger lift.

The Barrier Free New Zealand Trust has prepared a report assessing the building's compliance and making recommendations on best practice, compliant and As Near As Reasonably Possible (ANARP) solutions. The effects of the options on the cultural heritage values of the building have been considered in determining the appropriate adaptations to be made to make the building as compliant and accessible as possible without loss of heritage value.

A summary of the implemented recommendations with a comment of their effects is as follows:

- The entrance ramp is compliant and no action is required. It is noted that the existing ramp and step configuration compromises the design of the balcony arcade column base and if alterations are proposed for other reasons, consideration should be given to restoring this concealed heritage fabric to view.
- The two interior ground floor ramps are of non-compliant gradient. One is to be reconfigured to provide the compliant 1:12 gradient. This requires an intervention to non-heritage fabric and has no adverse effects.
- The passenger lift is an existing intervention and no alterations effecting heritage fabric are proposed.
- A first floor platform lift is to be installed into space 1-7 providing access to the Council Chamber. This work is in a modified area of the building and would be removable. The effects of its installation would be reversible.
- There are two main toilet facilities, one on the ground floor and the other on the first floor. Both are to be replaced with new facilities and will include a disabled person's toilet cubicle in each providing facilities on both the ground and first floors. There is no adverse effect on heritage fabric and values as a consequence of the alterations.
- The existing corridor is 900mm wide. This needs to be increased to 1,200mm wide. The corridor partition wall is an added timber framed partition which, due to the earthquake damage to the second floor, requires deconstruction. The partition will be reconstructed in the required location with no adverse effects on heritage values.
- Door openings are required to be a minimum of 760mm wide, although an opening width of 810mm is preferred. Doors on the accessible route that are less than the minimum width are the egress doors into the north-west stair tower and from the proposed platform lift in 1-7 into the Council Chamber. The doors are to be replaced with doors of complying width. Those into the stairwell will be installed into new walls while that into the Council Chamber will require enlargement of the existing opening and alterations to the wall wainscoting. The new doors should match the four panel design of the doors removed and be fabricated from Rimu. The doors should be date stamped on the hinge side stile. The removed doors should be recorded, labelled and stored for possible future re-installation.

There will be effects on the heritage fabric of the chamber, but the upgrading work is a statutory requirement that will enable the building to be accessed and used by non-ambulant disabled persons.

- Hardware to doors on the accessible route will require alteration to lever furniture. How this can be achieved will need to be assessed on a door by door basis to ensure loss of heritage value is minimised.
- Complying international disabled and direction signage will be provided. This will be free standing at each entrance and installed as required by NZS4121 in interior spaces. The signage is necessary for the functioning of the building and will be reversible.

Services Upgrading

Electrical Services

The electrical, ventilation and heating systems installation are modern interventions necessary for the compatible use of the OMC. The ground floor spaces were used for interpretation display purposes prior to the earthquakes, and in the absence of clear direction of future uses, lighting has been selected for this purpose. It will be suspended display lighting that lightly connects to the building and will have minimal adverse effects. The installation will be reversible. Lighting design in the significant Library, Council Chamber, main stairwell and entrance will use the original plaster uplighter sconces and existing pendant fittings fitted with modern LED luminaires. This will be supplemented by concealed lighting. Second floor lighting will be recessed lighting appropriate for modern office use.

The lighting systems and fittings are selected to complement the aesthetic values of the spaces and to be reversible.

Heating and ventilation

Heating and ventilation systems are appropriate for the use of the spaces as well as being environmentally suitable for the integrity of the heritage fabric. Exterior mechanical plant will be concealed from view having no adverse visual effects on the building. Except for the Council Chamber which will be heated by a ducted heating and ventilation system located in the roof space, spaces are heated with wall mounted radiators. Reticulation of the mains pipework will be via the sub-floor space and the roof space with range pipework being reticulated to radiators within the strengthened area of the walls wherever possible. Concealment within strapped walls may also be possible, but where concealment is not possible without chasing into original brick masonry walls it would be acceptable to expose the pipework over the walls. The installation would be reversible with minimal adverse effects on heritage fabric, but with some effect on aesthetic values. However, radiant heating is entirely suitable and appropriate for masonry heritage buildings and is the preferred heating option.

Fire Protection Systems

The existing fire sprinkler system will be upgraded to comply with the alterations and compliance requirements. There will be minimal cumulative adverse effects as a result of the upgrading requirements, and any intrusive adverse effects need to be considered against the high level of protection the system provides to the building and its heritage fabric.

Egress signage needs to comply with the requirements of the Building Code and the locations will take account of heritage values.

Existing glazed fire separation partitions to the stairwell will be retained and there will be no change in the effects on heritage value.

Toilets Upgrading

The toilets on the ground floor are in poor repair and are assessed in the Conservation Plan as having *little significance*. The toilets on the first floor are a modern intervention being inserted into the space behind the lift shaft that was formed in part of the former Mayor's Office. Both are heavily modified spaces.

The toilets are inadequate in design and numbers provided for compatible uses and the proposal is to upgrade the toilets within the constraints of the spaces they currently occupy. There will be no loss of heritage value and the toilets enable the building to have a use.

Conclusion

Assessment of Effects – Full Restoration

The earthquake damage repair and strengthening requirements have influenced how the OMC can be remediated and restored. The repairs and strengthening processes proposed are required if the building is to be retained and be able to be used, and the degree of intervention on the heritage fabric is considered necessary for this is to be achieved. Retention of fabric and original technologies has been considered and implemented throughout the repair, strengthening and statutory upgrades design, and where original fabric is able to be retained it is repaired and restored using the original, traditional technologies. The strengthening processes require the introduction of new technologies and the use of these is limited to the areas of new work wherever possible.

The upgrading of the fire sprinkler system utilises the existing installation locations and reticulation wherever possible minimising further adverse interventions. The fire sprinkler system will provide the best possible protection to the building and its heritage values.

The electrical, ventilation and heating systems' installation are modern interventions necessary for the compatible use of the OMC. The installations will be reversible.

A consideration when interpreting intervention outcomes against the conservation principles of the Conservation Plan and ICOMOS NZ Charter 2010 policies is that the strengthening requirements and processes for a damaged building which has severe loss of structural integrity differ from those that can be achieved when strengthening the building in its undamaged state. The damage to the exterior and interior fabric of the OMC is such that the repair processes require a significant level of deconstruction and reconstruction which is not preventable. The level of strengthening processes and methodologies required result in additive interventions to the damage repair processes and both need to be considered in determining what is appropriate for the building and its future protection. An important factor when considering the level of intervention required to the masonry walls for the insertion of the concrete wall structures is that the level of intervention is similar to the degree of deconstruction and reconstruction required for the repair of the earthquake damage alone.

In conclusion, the level of repair, reconstruction, restoration and strengthening work proposed is considered essential for the fundamental contribution the OMC makes to its city-scape context, to the European history of establishment and settlement in the city, and to enable it to have compatible public uses. Overall, the positive outcomes of the proposal, even with its high level of intervention to heritage fabric, outweigh the negative effects of the proposed changes necessary and the implications on the cultural and heritage fabric of the city if the building were lost.

12. DESCRIPTION AND CONSIDERATION OF THE STAGED RESTORATION SOLUTION

Reason for the Staged Repair and Restoration Option

The staged restoration solution is proposed to provide partial strengthening of the OMC to 34%NBS that will enable the removal of the temporary stabilisation and propping structures and allow public access into the building. The proposal is a lower cost option than the full restoration that provides long term protection to the building and its fabric until such time as full strengthening and restoration can be completed. The staged solution is a partial installation of the structural strengthening included in the full restoration solution proposed. It will not be occupiable or usable following the staged restoration work.

Staged Restoration: Scope of Work

The work required is shown on the Architectural AS series drawings and Opus Consultants structural engineering reports.

The work includes:

- The removal of the terracotta clay roofing tiles and battens and the installation of temporary corrugated coloursteel roofing. The roof over the Council Chamber requires the installation of a plywood diaphragm installed over the rafters with the temporary roof installed over.
- Install structural steel frames within the roof space of the Council Chamber.
- Repair of rotted roof framing and wall plates.
- Deconstruct brick chimneys and partially deconstructed brick chimneys to 2nd floor floor level.
- Removal of limestone transoms and mullions to the windows. The installation of 17mm treated plywood “templates” over the windows to protect the timber window joinery exposed following removal of the stone dressings. The plywood is to be painted and polycarbonate screens fitted over the entire window flashed into the opening.
- The deconstruction of the brick masonry south wall and gable including the south windows. New concrete foundations and wall are to be constructed and are to be left unfinished in their raw state. The window openings are to be fitted with temporary steel frames with clear polycarbonate sheet fitted over.
- The deconstruction of the first floor masonry to the south stair S1 retaining a single wythe of brick to the ground floor. The inlaid brick walls are to be constructed to the inside of the ground floor brickwork with the concrete above this level being left exposed in its raw state.
- Deconstruction of the turret to and including the ground floor, retaining the foundations. The south and west walls of the turret over all floors is to be infilled with timber framing clad with vertical corrugated coloursteel on both faces. The exposed foundations at ground floor floor level are to be temporarily framed and floored with Butynol on a plywood substrate.
- Deconstruction of the west chimney full height down to the ground. The Council Chamber fireplace that is significantly collapsed is to be completely deconstructed. A new concrete wall the width of the chimney is to be constructed and left exposed in its raw state for future reassembly of the brickwork over it.
- Deconstruction of west wall brickwork and bond beam above the Council Chamber window lintols and construct a new concrete bond beam that is to be left exposed unfinished in its raw state.
- Deconstruction of the gable to the Council Chamber north wall and construction of a new concrete wall that is to be left exposed unfinished in its raw state.
- Deconstruction of the north-west stair tower walls full height including the dismantling and removal of the stair. The work includes the removal and strip out of the ground floor toilets and existing electrical distribution boards. Construct new concrete walls that are to be left exposed unfinished in their raw state ready for future brick claddings.
- Deconstruction of the west gable wall to spaces 1-7 and 1-8 to second floor floor height and construction of a new concrete wall that is to be left exposed unfinished in its raw state.
- Removal of the east gable temporary protection to second floor floor height and construction of a new temporary timber framed wall clad in vertical corrugated coloursteel cladding.
- The construction of timber framed stabilisation walls over the face of interior brick masonry walls. The framing is not lined.
- Recommissioning of existing first floor toilets.
- Provision of temporary electrical supply and base lighting.

- Maintenance and recommissioning of the fire sprinkler system. The sprinkler valve gear located in the south stairwell S1 needs to be relocated temporarily into space G-3 with its reinstatement in stairwell S-1 being part of the full restoration work.

The interior plasterwork will not be repaired or restored as part of the staged restoration work and will remain in its damaged state.

Staged Restoration: Statement of Effects

The staged restoration achieves a halfway holding position that secures and strengthens the building so it is no longer an earthquake prone building. The stabilisation bracing and propping currently installed removed and the cordon fences around the building can be removed returning the footpaths and riverbank reserve to public use.

An assessment of effects on cultural heritage values is not included as the effects of the deconstruction and installation strengthening walls and structure form part of the full restoration solution and assessment. However, the OMC will have concrete walls exposed to strengthened exterior walls, and where temporary timber walls are exposed to the gables and void left following the deconstruction of the corner turret, these will be clad in coloursteel. The roof will also be coloursteel corrugated roofing rather than the terracotta tiles. The overall appearance will be of a stabilised and unfinished building that will be unsightly, but the building will be protected to a high standard until its final full restoration. The solution is a means to an end.