

Valued but broken:

RECONSTRUCTING DAMAGED BUILT HERITAGE.

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A thesis submitted in
fulfilment of the requirements for the degree of

Master of Architecture (Professional)

Victoria University of Wellington

2013

Heritage buildings are an important element of our urban environments, representing the hope and aspirations of a generation gone, reminding us of our achievements and our identity.

When heritage buildings suffer damage, or fall into disrepair they are either met by one of two extremes; a bulldozer or painstaking repair. If the decision to conserve defeats the bulldozer, current heritage practice favours restoration into a mausoleum-type monument to yesteryear. But what if, rather than becoming a museum, these heritage buildings could live on and become a palimpsest of history? What if the damage was embraced and embodied in the repair?

The Cathedral of the Blessed Sacrament on Barbadoes Street, Christchurch is the case study building for this thesis. Suffering damage in the Canterbury earthquakes of 2010 and 2011, the Cathedral sits in ruin waiting for decisions to be made around how it can be retained for future generations.

This thesis will propose a reconstruction for the Cathedral through the analysis of precedent examples of reconstructing damaged heritage buildings and guided by a heritage framework proposed in this thesis. The employed process will be documented as an alternative method for reconstructing other damaged heritage buildings

ABSTRACT

First and foremost I would like to thank Penny Allan for her guidance and wisdom that was a tremendous support during the preparation of this thesis.

Thank you to David Kernohan whose Heritage Conservation Architecture course at Victoria University sparked my interest in Heritage Conservation and for kindly giving up his time to review the design proposed in this thesis.

My parents for their patience, support and love. For always believing in me and this thesis.

Finally my church family, thank you for constantly asking me how my thesis was going - it motivated me to finish.

ACKNOWLEDGEMENTS

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INTRODUCTION & METHODOLOGY



‘May we learn how to direct and enrich our future by using wisely the heritage of our past...’¹

BISHOP BASIL MEEKING

¹ Extract from Bishop Basil Meeking’s opening message at the Cathedral of the Blessed Sacrament’s Centennial Celebrations on May 10, 1987. Bishop Meeking was the 7th Bishop of Caterbury, consecrated in the Cathedral of the Blessed Sacrament on June 3, 1987.

O’Meeghan, Michael. *Held firm by faith : a history of the Catholic Diocese of Christchurch*, Christchurch, Catholic Diocese of Christchurch, 1988.

Photo: Webb, S. F., *Photograph of the Cathedral of the Blessed Sacrament, Christchurch, circa 1910*. Alexandra Turnbull Library, ID: 1/1-019470-G.



INTRODUCTION

In the current approach to heritage conservation, buildings are commonly preserved as a mausoleum to an era or occupant of significance. Architect Peter Eisenman views this type of preservation as the reduction of history 'to a form of nostalgia, and it reflects an unacknowledged anxiety toward the present.'¹ Such preservation lacks flexibility and sustainability beyond a few individual heritage buildings.

Preservation of heritage buildings is an important issue in the wake of the Christchurch earthquakes, which destroyed, or at least damaged the majority of Christchurch's heritage buildings. The argument for economy and safety is fuelling the bulldozers that are clearing the way for a new, brighter and safer Christchurch. The heritage industry needs to think outside of the box if Christchurch's most significant heritage buildings are going to be apart of the city's future. Author Bruce Ansley said that Christchurch's future needs to be approached with the same depth of 'courage, determination and style of their forebears 150 years before, then perhaps in another century and a half people might be celebrating their new heritage with the same depth of emotion as this generation mourned the loss of the old.'² This doesn't mean that we should give up on the city's heritage, but that we need to view it's future with courage, determination and style that will see it's great buildings into the future.

Christchurch's damaged Catholic Cathedral, the Cathedral of the Blessed Sacrament has been chosen as the case study building to which the proposed design process will be applied. This building is recognized as a 'Nationally Significant' building through its Historic Places Trust registration as a Category 1 historic place.³ The application of the proposed design process to the Cathedral will provide a precedent example of the application of this process as well as providing

an alternative proposal for the reconstruction of the Cathedral.

MY INTEREST

My interest in this topic arose out of a desire to see heritage building considered organically; for changing ownership and uses to be allowed to add an 'architectural layer' to a building's history. This view sees heritage architecture existing as a social palimpsest rather than a monument, representing each occupant and use, and continuing to adapt as its history continues to be written. This need for an 'organic' approach to heritage architecture was raised by Architect Ian Athfield,⁴ who fought to have his work-in-progress property classified as 'organic heritage' so that he could continue to grow and evolve it, free from the restrictions of current heritage registration.

METHODOLOGY

This design research thesis proposes a process for the reconstruction of damaged heritage buildings. This process is applied to a notable case study building to test the process and to provide a precedent of its application.

This thesis contains research in two areas: the first relating to the case study building and its history, and the second relating to theoretical and precedent approaches to heritage reconstruction. This data shapes the proposed process and its application to the case study building.

Six precedent approaches were selected and researched to determine the 'intervention tactic' employed by the precedent architect. These tactics were then applied to the case study building through design and evaluated for their success. The learning from the testing of the precedent's 'intervention tactics' informs the approach that is then applied through design to the case study building.

The layout of the design-research process is as follows:

- Review of Heritage Practice Literature.
- Analysis of Precedent Examples.
- Analysis of Case Study Building.
- Application of Precedent Methods to Case Study Building.
- Application of chosen Design Strategy to Case Study Building.

PROCESS

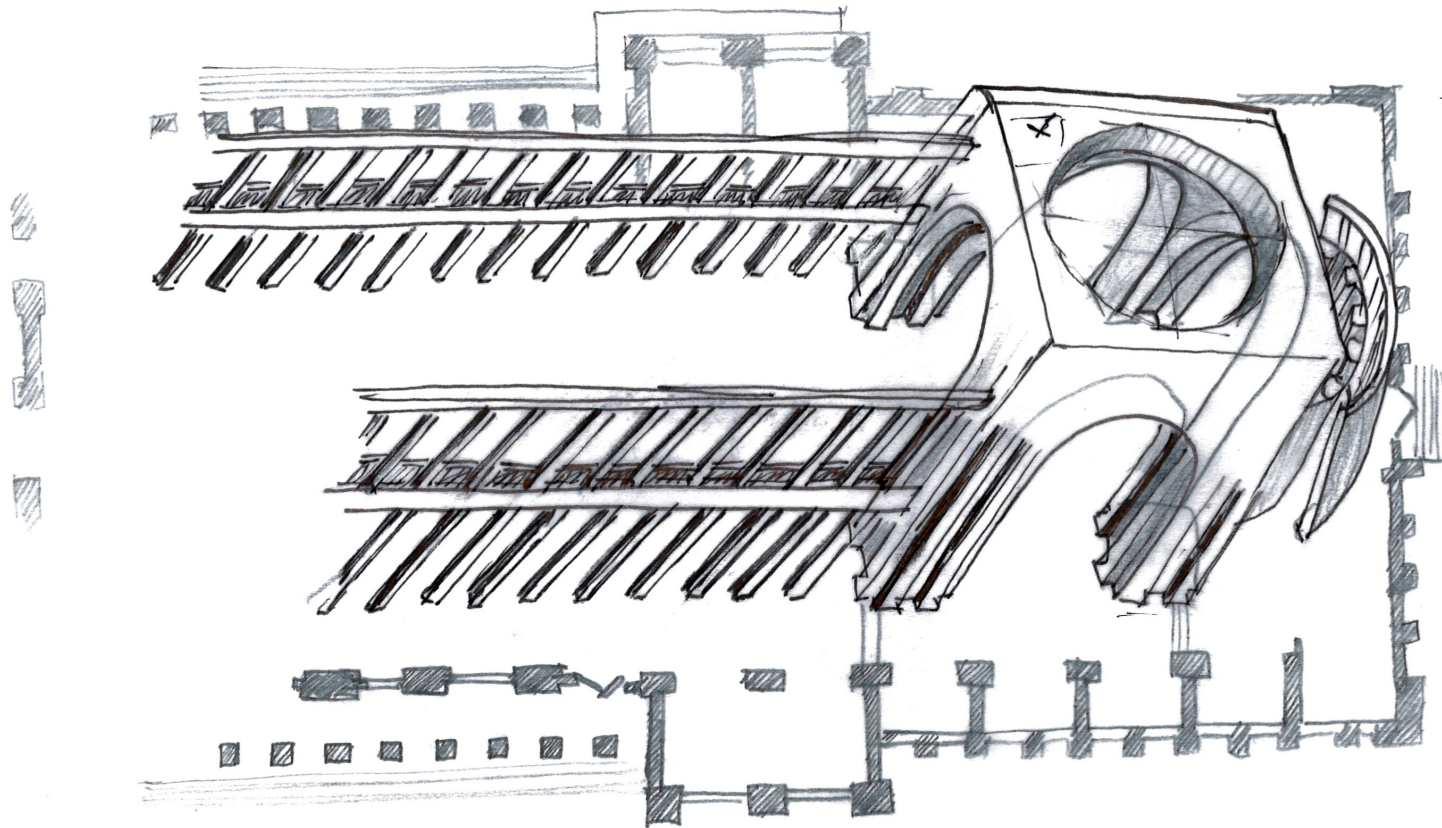
This thesis proposes a process to guide the reconstruction of damaged heritage buildings. This process is outlined below and demonstrated through the sections of this thesis.

- HERITAGE INVENTORY.⁵
 - Establish buildings history
 - Establish significance: Assess for Historical, Social, Aesthetic & Scientific significance.⁶
 - See *Case Study Building* for example assessment of significance.

The Heritage significance of the damaged building must firstly be researched and understood as to inform the following steps of the process. The New Zealand Historic Places publication 'Guidelines for preparing conservation plans' provides a clear guide for assessing the buildings significance against the categories of historical, social, aesthetic & scientific significance.⁷

- TABULATION OF HERITAGE FABRIC.
 - See *Proposed Heritage Framework* for categories.

The 'Guidelines for preparing conservation plans' also includes a tabulation system for the categorisation of a building's heritage fabric. The *Proposed Heritage Framework*, suggested by this thesis, uses these categories and proposes a level of intervention that would be appropriate for each category. This creates linearity between the processes of categorisation and intervention,



Colonnade & altar of the Cathedral of the Blessed Sacrament determined to be fabric of 'High significance.'

whereby the assessor can see the recommended action for a level of tabulated significance.

- ANALYSIS OF PRECEDENT STRATEGIES.
 - Testing of precedent strategies for appropriateness of use on selected building.

The selection of a range of precedent examples of similar heritage interventions provide a range of differing strategies that can be analysed and learnt from in informing the heritage intervention. The criteria through which the precedents are selected must align with the heritage building requiring intervention.

- DESIGN APPLICATION OF PROPOSED INTERVENTION.

The intervention is proposed having been shaped by the evaluation and learning from the precedent examples applied within the parameters of the *Proposed Heritage Framework*.

OUTCOME

This thesis produces a design process to guide heritage interventions into damaged heritage buildings. This research fills a need within heritage practice by providing an alternative means of addressing damaged heritage buildings. It also provides an alternative means of approaching the damaged heritage fabric in post-earthquake Christchurch. Outside of the Christchurch context the significance of this thesis is to provide an alternative means of addressing damaged heritage buildings. It is envisaged that this process would be a tool employed by heritage architects and local government when addressing damaged built heritage.

The design process and case study are tailored specifically for the New Zealand context to inform and guide the heritage community. The research includes international precedents and theories, which were analysed for their

appropriateness. The analysis of the case study ensures the findings are relevant to the proposal's objective. Despite being tailored for a New Zealand perspective the results could be adapted or used as a case study example for overseas applications.

LIMITATIONS:

The limitation of this thesis is that it has been developed related to a specific case study that results in a degree of site specificity. The case study is necessary for the testing and application of the thesis and it serves as a precedent example to support the proposed thesis. The process is transferable, however its application in a separate context will require consideration to the effect of the case study building on the processes formation. It is limited however by factors such as that the case study building retains its use, so the process does not address issues of adaptation of use. This thesis proposes a process for the reconstruction of damaged heritage buildings, which is largely communicated through its application to the case study building.

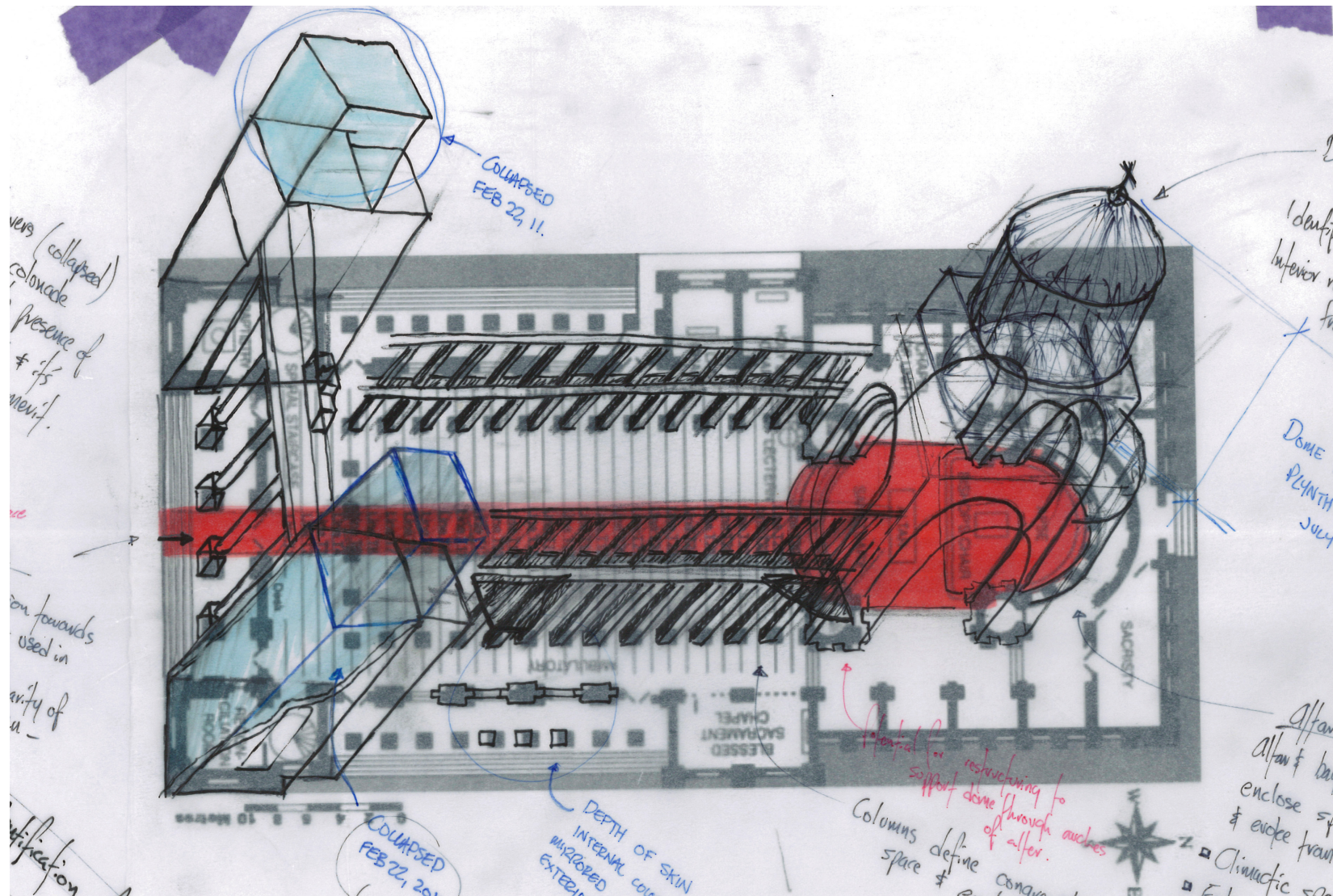
HERITAGE FRAMEWORK

In this thesis the Heritage Framework expands on the tabulation process recommended by the New Zealand Historic Places trust in their 'Guidelines for preparing conservation plans' document. The distinction is that this framework proposes an appropriate range of intervention options for each level of significance. This gives linearity between the processes of categorisation and intervention, whereby the assessor can see the recommended action for a level of tabulated significance. This is important when addressing damaged heritage buildings, as per the hypothesis. The Framework scales the question of whether an element is of such significance that its conservation is critical to maintaining the overall significance of the building.

The framework consists of a tabulated scale of significance that should be awarded to elements or spaces of the building based on a thorough historical analysis by a heritage professional. Each category of significance prescribes an appropriate intervention method for an element of that significance. For example, an element of 'High Significance' is of such significance to the overall building that it should be conserved, or if damaged repaired or reconstructed to recreate the historical significance of the space.⁸

FRAMEWORK CATEGORIES:

1. HIGH SIGNIFICANCE – Element or space is Importance to the overall significance of the space.⁹
 - a. Conserve
 - b. Repair
 - c. Reconstruct
2. SIGNIFICANT - Element or space is of importance.¹⁰
 - a. Conserve
 - b. Repair
 - c. Reinterpret
3. SOME SIGNIFICANCE – Element or space with some or attributed significance as apart of the whole.
 - a. Conserve (if possible.)
 - b. Reinterpret
 - c. New Work
4. NO SIGNIFICANCE – 'Element or space is of little or no Importance, but does not detract from the heritage significance of the place.'¹¹
 - a. Reinterpret
 - b. New Work / Replace
5. NEGATIVE SIGNIFICANCE – 'Element or space actively detracts from the heritage significance of the place.'¹²
 - a. Remove
 - b. New Work / Replace



Sketch showing 'High significance' and 'Significant' fabric of the Cathedral of the Blessed Sacrament.

HERITAGE FRAMEWORK APPLICATION PROCESS

Process for applying and considering the Heritage Framework proposed in this thesis.

1. Assess for Cultural Heritage Value (Categories of historical, social, aesthetic & scientific significance.)
2. Establish heritage value of elements or spaces using the Heritage Framework categories.
3. Determine what is of such significance to the building that it must be preserved or rebuilt if lost.
 - a. Fabric is of such significance that buildings heritage value would be lost/diminish without it.
 - b. In rebuilding/repair – fabric would still need to be distinguished as new work.
 - c. This deserves the ultimate protection as they unique and significant element that makes this building what it is.
4. What original fabric can be saved/retained?
 - a. Either in original condition or with repair/ propping/supporting structure.
5. Stabilise damaged or dangerous fabric.
 - a. Collect information from removed fabric to enable future rebuilding.
6. Consider lost fabric.
 - a. Can the materials be reconstituted in new work?
 - b. Can it be represented through the new work being built to the same form/mass?
 - c. Consider its importance.
 - i. If 'High Significance' – restore and reconstruct if possible out of original materials.

- ii. If 'Significant' or less
 1. Repair and restore if possible.
 2. Reinterpret or replace with new work.

7. New work (alteration/adaptation of use/ reconstruction) should always be to improve the buildings functionality, safety or usability.
 - a. Must give a new lease of life.
 - b. Look for opportunities to reuse original fabric.
 - c. Architectural boldness is encouraged. Add a new layer to the architecture and the buildings history.
 - d. Be distinctive as new work against original fabric.
 - i. Through the use of time stamping or setbacks.

DEFINITIONS:

- CONSERVE: retention of existing fabric stabilised to protect from decay.
- REPAIR means to mend or replace with original or similar materials.³⁰
- RECONSTRUCT: returning a place to a known earlier state and is distinguished from restoration by the introduction of new material into the fabric.²⁷
- REINTERPRET: recreating an element as a new gesture with reference to the original fabric. Needs to be distinct as new and not original fabric.
- NEW WORK / REPLACE: replacement with a new building / element that may reference the overall significance but should not try to mimic heritage fabric. Needs to be distinct as new and original fabric.

ENDNOTES

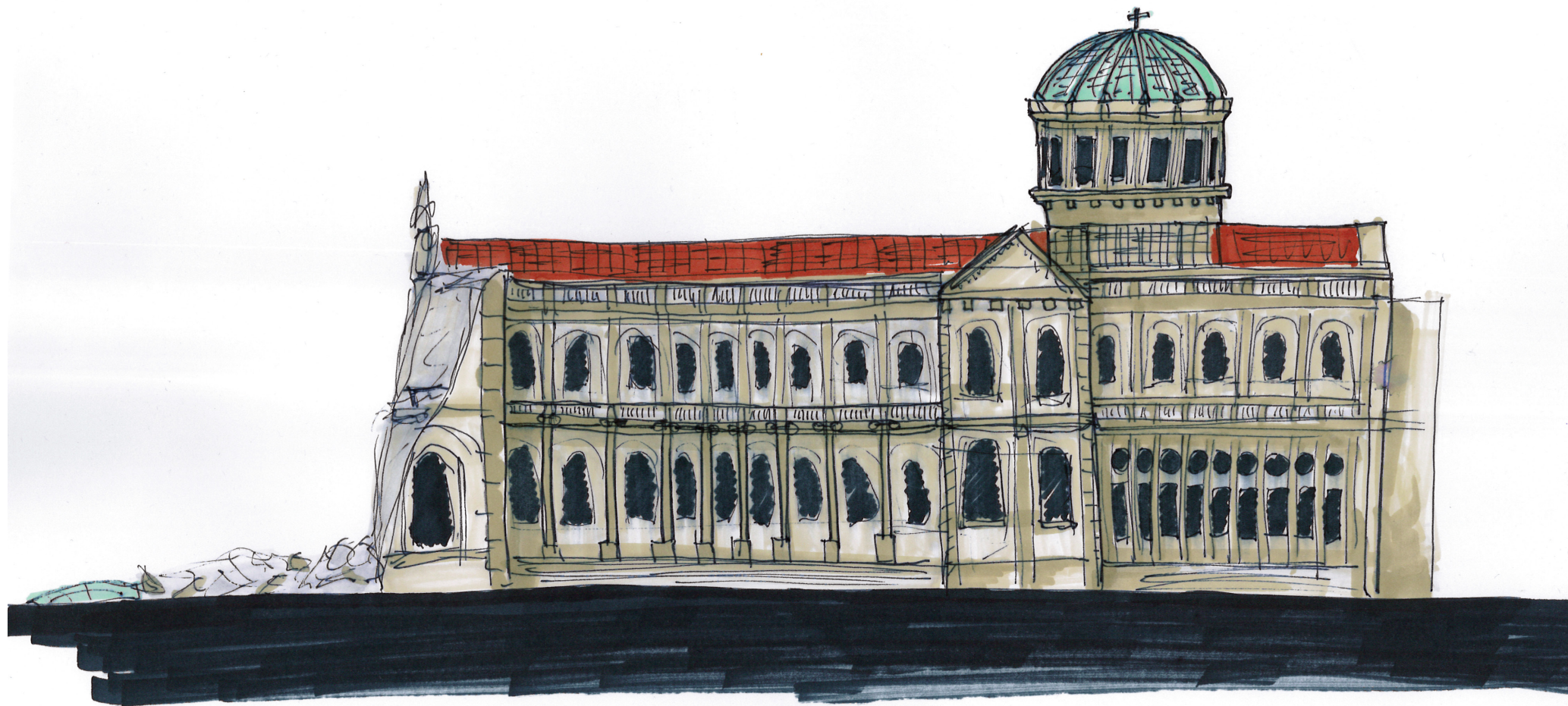
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5. *A Heritage Inventory usually exists as part of a Conservation Plan for Registered Historic Places. The conservation plan for the Cathedral of the Blessed Sacrament was being prepared at the time of the February 2011 earthquakes.*
6. Bowron, Greg and Jan Harris, *Guidelines for preparing conservation plans*, Wellington: Historic Places Trust, 2000.
7. Ibid.
8. *If heritage fabric of high significance is destroyed, the feasibility of reconstruction should be assessed due to the loss of an element significant to the overall building. Reconstruction may not be the best option for the building.*
9. Bowron, 2000.
10. Ibid.
11. Ibid.
12. Ibid.

LITERATURE REVIEW

‘New Zealand is a comparatively young country with little history...
But if recent history isn’t valued and preserved, how can it become ancient history?’¹

DAVID CLARKE, HISTORIAN & MUSEUM DIRECTOR, ARROWTOWN, NEW ZEALAND.

¹ Numaguchi, Annabelle. The butcher, the baker, the history-maker. Bette Flagler, (ed.) Heritage New Zealand, New Zealand Historic Places Trust, Summer 2011, pp13.



The objective of this thesis is to propose, document and apply through design a process for reconstructing built heritage. This literature review looks at the topic of heritage significance, its history and argument, and at heritage practice. The heritage context discovered in this chapter will shape the decisions made in this thesis when applied or critiqued in the formation of the process and application of reconstruction to the case study building.

HERITAGE SIGNIFICANCE

The recognition of heritage sites and buildings as significant elements of our built environments and nation's identity is today a 'universally embraced ideal.'

¹ This recognition arose out of the debates of the 19th century's 'Scrape' and 'Anti-scrape' approaches to the restoration or conservation of England's historic Gothic churches. However, only in the latter half of the 20th century, with the formation of the New Zealand Historic Places Trust in 1954 through an act of Parliament, did New Zealand have a heritage advocacy group.²

The strive to 'perpetuate a sense of place, tradition and culture'³ is the key drivers behind the preservation of heritage in New Zealand; which contribute to defining and shaping us as a nation. Identifying, conserving, interpreting, and protecting our heritage, as expressed through our unique build environment, is fundamental to our understanding of who we are, and to the development of a sense of national identity. In the Urban Design publication, 'Shaping our Places' by the New Zealand Institute of Architects it is stated that 'heritage is a fundamental aspect of our developing sense of national identity. Preservation of the past and creation of the future must become a matter of deliberate design, not chance.'⁴

An identifier of who we are, what we have achieved and where we have come from, heritage architecture is a key part of our urban environments and national identity.

Artist and author William Morris wrote that it is our duty to hand down our heritage to future generation, otherwise we are robbing those who come after us.⁵ Thomas Fisher argues that if this is how we value the past, then through conservation we 'must believe in the value of the future and of leaving something behind us.'⁶

HERITAGE CONSERVATION HISTORY

Heritage Conservation rose to prevalence in 19th century England through the Scrape and Anti-scrape debate where architects and scholars had divided themselves into two camps over how to best care for medieval and renaissance church buildings. The two groups, the Conservationists and Preservationist produced writings on what they determined to be the appropriate and correct means of intervention into these historic buildings.

The Conservationists were led by Augustus Welby Northmore Pugin (1812-52) who was pro the restoration of historic buildings. Pugin was a founding member of the Cambridge Camden Society who established the Camdensians Principle which stated in the *Ecclesiologist* periodical (1842) that 'to restore is to revive the original appearance lost by decay, accident or ill-judged alteration.'⁷ The Conservationists sought to 'whether from existing evidences or from supposition recover the original scheme of the edifice as conceived by the first builder, or begun by him and developed by his immediate successors.'⁸ They placed value upon the purity of the original scheme and through restoration, desired to conserve the original scheme.

In the *Ecclesiologist* in May 1847 the Cambridge Camden Society published its 3 types of restoration; destructive, conservative and eclectic.

- Destructive; being the preservation of no fabric, adapting it to meet needs as historically applied in urban environments or developing nations
- Conservative; being the process where the heritage

fabric is kept in its entirety.

- Eclectic, indicated as the Society's preference; involves restoration and remodelling.⁹

The preservationists rebuked this approach, viewing heritage buildings, as Sir George Gilbert Scott (1811-1878) wrote in '*A Plea for the Faithful Restoration of our Ancient Churches*' (1850) as being 'more valuable in their present condition, however mutilated and decayed than with any, even the slightest degree of restoration.'¹⁰

John Ruskin (1819-1900) was a key proponent of the Preservationists; known today for his book '*The Seven Lamps of Architecture*' (1849). He was also the founder of the first heritage fund, the Society of Antiquaries. Ruskin described their responsibility to historic buildings to preserve them, 'from the ravages of time or negligence, without attempt to add to, alter or restore.'¹¹ He described restoration as being 'the most total destruction which a building can suffer, accompanied with false descriptions of the thing destroyed.'¹² Ruskin opposed restoration, however declared that it was only permissible when serving the purpose of protecting the heritage fabric from further damage, saying that 'anything beyond this is untrue in art, unjustifiable in taste, destructive in practice, and wholly opposed to the judgement of the best archaeologists.'¹³

Ruskin did not oppose interventions into heritage fabric that were distinctly new. The preservationist believed that 'the life of the whole, that spirit which is given only by the hand and eye of the workman, can never be recalled' in the restoration of a heritage building. They did not oppose distinctly new interventions, saying that 'another spirit may be given by another time, and it is then called a new building.'¹⁴

The extensive damage to the case study building, the Cathedral of the Blessed Sacrament, makes the application of either the Conservationists or



Concept drawing by author.

Preservationists theories problematic. To conserve the Cathedral through restoration would involve a considerable amount of reconstruction based on the original scheme. Sufficient data does exist to inform restoration, however the restored fabric would lack the authenticity of the original and the reality that it is an impossibility to restore to the original state must be accepted. To preserve without intervention would be to preserve the Cathedral as a ruin. New interventions to restore the Cathedral could be done in a way that reflects the old, but possesses its own distinct character. Nora Greer writes that a 'sense of harmony can be achieved through replication, contrast or a combination of both.'¹⁵

HERITAGE CONSERVATION PRACTICE

Heritage practice in New Zealand is shaped by the advocacy and guidelines of the New Zealand Historic Places Trust and by the New Zealand Charter of the International Council for the Conservation of Monuments and Sites (ICOMOS). New Zealand's heritage industry is in a constant battle against the plague of demolition driven by economics, safety and a lack of understanding of heritage value. David Clarke, museum director and historian acknowledges that 'New Zealand is a comparatively young country with little history', but questions, 'if recent history isn't valued and preserved, how can it become ancient history?'

The aim of heritage conservation is preservation for perpetuity, to be able to pass these buildings on to 'future generations, which residents and visitors alike can 'read' as a well edited text.'¹⁶ The ICOMOS New Zealand Charter states that the purpose of conservation is 'to care for places of cultural heritage value'¹⁷ so that these buildings can be appreciated, teach us our past, provide context for our communities and provide contrast in our modern world through creating a 'continuity between past, present and future.'¹⁸

Osbert Lancaster, cartoonist and art critic highlights

that where 'there are degrees of value and economic necessity frequently imposes a choice.'¹⁹ In the context of the Christchurch earthquakes, a significant proportion of Christchurch's heritage has been destroyed or lost. Questions of importance, cost and safety are found on both sides of the debate to save or replace. The biggest argument against building new is the fear that new buildings will never be as good as the old. In the post-earthquake context we have already seen nationally, new pressure to make heritage buildings safer. Wellington Heritage Consultant Michael Kelly worries this may tip the balance away from preservation, "you can see a scenario where some buildings may be lost due to a climate of fear."²⁰ There becomes a 'difficult trade-off between safety, cost and heritage that could mean fewer old buildings are preserved,'²¹ but those that are saved would be to a much better standard.

In a post-disaster situation, heritage practice involves precise methods of stabilisation, recovery, recording and storage of the damaged heritage fabric, as recommended by international guidelines. The rationale behind these procedures, which were applied to the case study building, the Cathedral of the Blessed Sacrament, is to maintain as much original fabric and information about that fabric until the future of the site and building can be determined by heritage professionals.²²

Every heritage building is unique and presents unique challenges and requirements for conservation. Jonathan Glancey states that every heritage building deserves individual treatment, that it is a virtual impossibility to generalise heritage buildings.²³ Glancey believes that heritage generalisation can only attempt to outline and fulfil the 'negative role of saying what on no account may be done.'²⁴ The hypothesis of this thesis challenges this as it seeks to define a process to guide such heritage interventions through a relevant framework. The danger of making generalisations is an important factor for consideration in the forming of this process and for

guiding its evaluation.

TYPES OF CONSERVATION

- PRESERVATION means maintaining the fabric of a place in its existing state and retarding deterioration.²⁵
- RESTORATION means returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.²⁶
- RECONSTRUCTION means returning a place to a known earlier state and is distinguished from restoration by the introduction of new material into the fabric.²⁷
- ADAPATATION means modifying a place to suit the existing use or a proposed use.²⁸
- STABILISATION means the protection from processes of decay, except where decay is appropriate to their value. Although deterioration cannot be totally prevented, it should be slowed by providing stabilisation or support.²⁹
- REPAIR means to mend or replace with original or similar materials. Repair of a technically higher standard than the original may be justified where the life expectancy is increased, the new material is compatible with the old and the cultural heritage value is not diminished. New material should be identifiable.³⁰
- NEW WORK means a new element of building that is distinct from the original. New work should be kept to a minimum retaining as much original fabric as possible and be compatible with long term conservation of heritage place.³¹
- FACADISM means the preservation of only the frontage of a heritage building with a new building behind. Facadism is a frowned upon approach in the eyes of heritage architects, acknowledged as a last resort. In the post-disaster context, facadism allows for aesthetic and the preservation of the

character of streetscapes, whilst allowing modern redevelopment behind.³²

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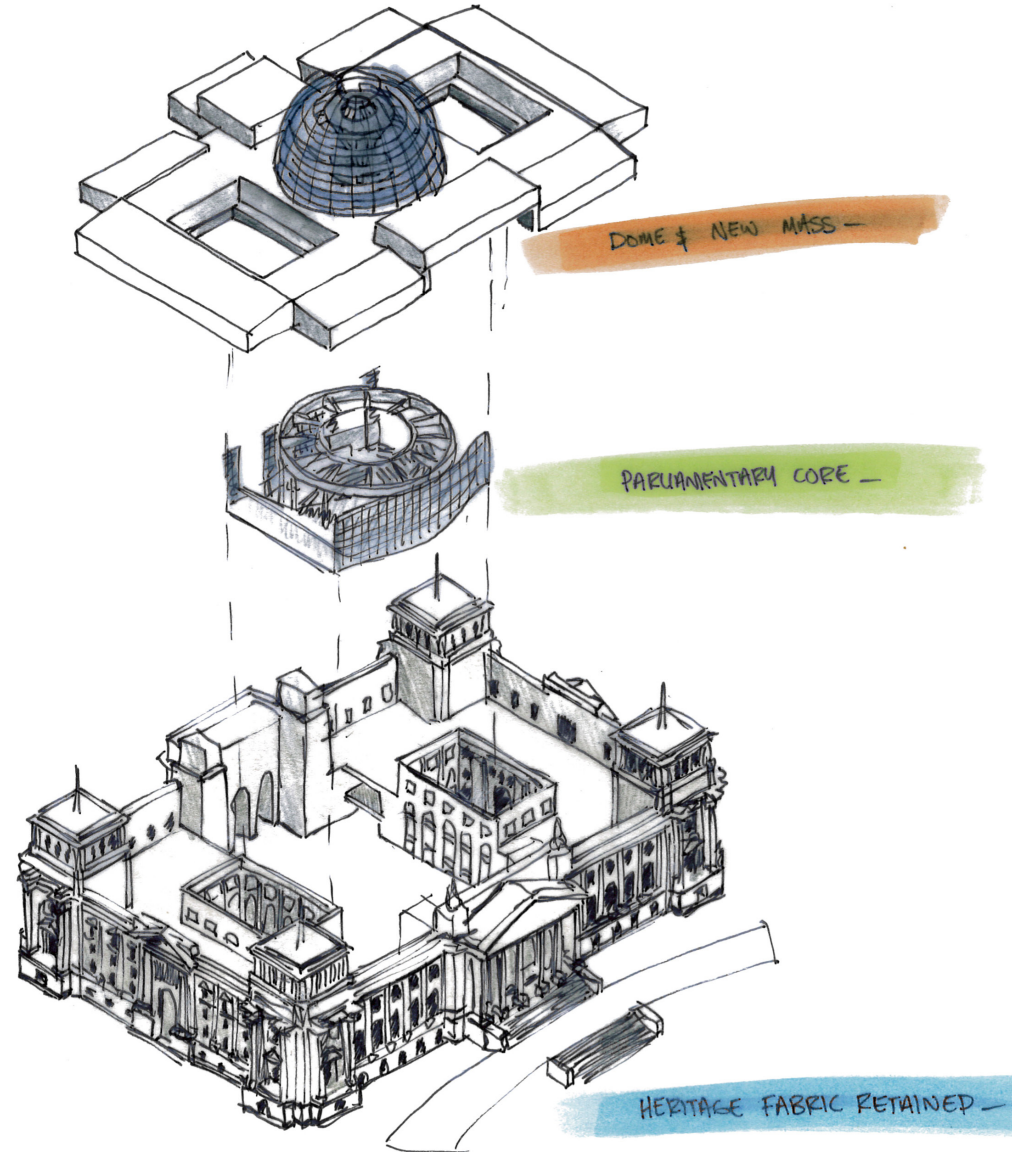
PRECEDENTS



‘If city authorities went about the task with the courage, determination and style of their forebears 150 years before, then perhaps in another century and a half people might be celebrating their new heritage with the same depth of emotion as this generation mourned the loss of the old.’¹

BRUCE ANSLEY, AUTHOR.

¹ Ansley, Bruce. Christchurch Heritage: A Celebration of Lost Buildings & Streetscapes, Christchurch: Random House, 2011, pp10.
Photo: Photograph of High Street, Christchurch, circa 1929. Christchurch City Libraries, ID: CCL PhotoCD 9, IMG0042.



Photographs from: Schulz, Bernhard. The Reichstag: the Parliament Building by Norman Foster, Munich: Prestel, 2000.

PRECEDENTS

This section analyses six notable examples of a heritage intervention in order to determine the ‘intervention tactic’ employed by the architect. Each tactic will be explored against the Case Study Building in Chapter 5, *Design Experiments*. These experiments will inform the suitability of each tactic for use in the intervention on the Case Study Building in Chapter 5, *Application*.

The precedent projects for analysis are:

- Reichstag, Berlin, Germany – Sir Norman Foster.
- Hamar Cathedral Ruins, Norway – Lund & Slaatto Arkitekt.
- Coventry Cathedral, Coventry, England – Sir Basil Spence.
- Hamar Bispegaard, Norway – Sverre Fehn.
- Museo Di Castelvecchio, Verona, Italy – Carlo Scarpa.
- Kaiser Wilhelm Memorial Church, Berlin - Egon Eiermann.

These notable international examples were selected through the following filter of three criteria;

1. Building is recognised as a ‘significant’ heritage building,
2. Building has suffered physical damage and required intervention,
3. Intervention embodies the building’s history.

For each precedent, a brief history will be provided; the heritage significance will be identified; and the intervention method and embodiment of heritage value will be described in order to identify the ‘intervention tactic’ employed by the architect.

REICHSTAG, BERLIN, GERMANY - SIR NORMAN FOSTER.

HISTORY

The Reichstag was designed by Paul Wallot and opened in 1894. It became a symbol of German democracy; originally built as the House of Representatives for the German people, it became the home of the Democratic German Republic on its formation on November 9, 1918. During February 1933 a fire in its debating chamber became a symbol of the downfall of democracy and the subsequent rise of National Socialism and Adolf Hitler’s Nazi Party. During World War II, it was used as a medical library with the plan to convert it to a library for a new assembly hall to be design by the Reich architect, Albert Speer. At war’s end in 1945, Soviet victory was marked by the flying of a Soviet flag over the Reichstag.¹

The Reichstag was repaired for use as West-Germany’s parliament in 1961 by Paul Baumgarten. The Reichstag’s dome was not rebuilt; Baumgarten designed a new debating chamber as well as the repair and relining of the building’s walls. October 1990 saw the General Assembly of the Bundestag (German Parliament) meet in the Reichstag after the nations reunification. On December 20, 1990 the first freely elected government of Germany met in the Reichstag.²

An architectural design competition was launched in 1992 calling for designs to renovate the Reichstag into the new home for Germany’s parliament.³

SIGNIFICANCE

The Reichstag is a building whose ‘history is long, rich and layered, intimately tied to German politics and political identity.’⁴ The building is both an architectural monument and a monument to German Democracy. It is significant in the following ways:

- The formation of the German Democratic Republic

was declared from its balcony on November 9, 1918.

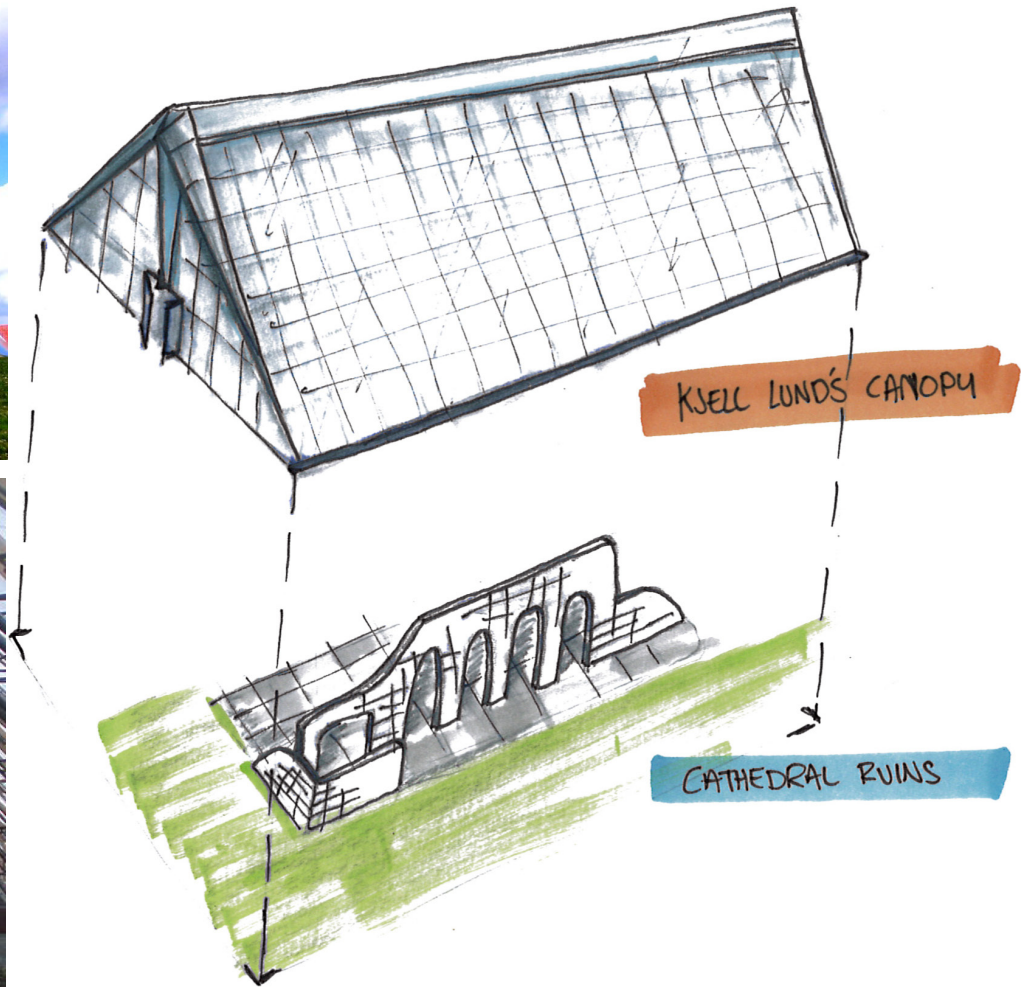
- The downfall of democracy. Unexplained fire of February 1933 has become a symbol of the downfall.
- As symbol of Germany’s defeat by the Soviet Army in 1945, despite the relocation of Hitler’s Government to the Kroll Opera House.
- The existence of graffiti and markings from Soviet soldiers on their taking of the building at the end of World War II.
- As the first meeting place of the reunified German Parliament in 1990.
- Architectural significance as a building by Paul Wallot (1894) and renovation by Paul Baumgarten (1961).
- As an historic part of cityscape and century-old architecture.

INTERVENTION TACTIC

Sir Norman Foster was tasked with renovating the Reichstag to house the new German parliament.

• STABILISATION

The use of asbestos in Baumgarten’s 1960s renovation created the need for his intervention to be peeled away before Foster could start his intervention. The first step of the intervention was the removal of plaster linings used in Baumgarten’s 1960s renovation, which contained asbestos. The peeling away of the layers of plaster aligns with the practice of ‘stabilisation’ in the heritage industry whereby the linings need to be removed to make the building safe. Behind these layers ‘striking imprints’ of the building’s past were revealed; war damage; including graffiti left by Soviet soldiers.⁷ The removal of these layers created the basis upon which Foster based his intervention. Foster considered the building’s fabric discovered beneath the 1960s lining to be the building’s ‘original fabric.’ Despite being damaged from war and graffiti, as well as the conversion work in the 1960’s, Foster’s intervention into this fabric was limited to stabilisation, in accordance with recognised



Photographs from: Hedmarksmuseet (Hedmark Museum), *The Ruins of the Medieval Cathedral*, About the Museum, n.d. Web. 20 Dec. 2012.

practice since the beginning of the century, 'whereby conservation work should be confined to stabilising the existing fabric.'⁸

Foster's intervention tactic emerged as a belief in 'stabilisation,' whereby some fabric might be lost in order to make the building safe. He peeled away layers of the 1960s intervention to provide the basis for his intervention and discovered layers of history on the original walls beneath. He attributed value to this discovered fabric as being the original fabric of the Reichstag, which his intervention would endeavour to preserve.

- **PRESERVATION**

Sir Norman Foster found that 'history still resonated through the Reichstag's fabric and that it should not be swept away.'⁹ He described his task as 'to transform a famous national monument, full of melancholy and stirring memories, into an optimistic symbol both of the new Germany and the new Europe.'¹⁰ The uncovered architectural palimpsest is a record of the building's history¹¹ and has been articulated into becoming a 'living museum of German history.'¹²

The historic graffiti from Soviet soldiers is preserved using a specially developed coating that protects and displays the historic markings. Distinct plaster patches and structural bracing repairs the original fabric, with the new material clearly distinguished by a fine, incised shadow cavity marking the transitions between the old and the new.¹³

- **INSERTION OF NEW WORK**

Foster made two distinct contemporary gestures in his intervention. The first being his installation of a modern Parliamentary Chamber into the heritage shell and his design for the reinstatement of the original dome which signals change on the Berlin skyline.

A new Parliamentary Chamber was inserted into the preserved heritage fabric shell that would satisfy the functional requirements of the modern working parliament. It made no compromise for the heritage fabric, asserting itself as a structure within a structure, bringing function and use back to the Reichstag.

Foster opposed the Building Committee's request to rebuild the historic cupola (destroyed in 1933) seeing it as an 'empty historicist gesture.'¹⁴ Instead compromised to build a contemporary dome that would 'signal change on the Berlin skyline.'¹⁵ The Reichstag's Cupola has become the symbol of the 'new' Berlin and is Berlin's second most visited landmark, attributed to the views visible from within the cupola.

HAMAR CATHEDRAL RUINS, NORWAY – LUND & SLAATTO ARKITEKTER

HISTORY

Hamar Cathedral was the See of the Ancient Catholic Diocese of Hamar established by Bishop Arnaldur (1124-52) on his arrival in Norway in 1150.¹⁶ The Cathedral was built over 50 years and completed in the time of Bishop Paul (1232-52).¹⁷ Originally of Romanesque architecture, it was described as the 'most beautiful and largest church in Norway' with later extensions in the 14th Century made in the Gothic style.¹⁸

After the Reformation in Norway to Lutheranism (1536)¹⁹ the site was renamed Hamarhus fortress and became the residence of the sheriff.²⁰ The cathedral fell into disrepair, culminating with the Swedish army's siege and attempted demolition during the Northern Seven Years War in 1567. On the army's retreat they blew up the bishop's palace and torched the cathedral.

Today the ruins of the Hamar Cathedral form part of the Hedmarksmuseet (Hedmark museum).

SIGNIFICANCE

The Hamar Cathedral ruins are significant in their representation of Norway's historic past. Built in the 12th Century as the Catholic Cathedral for the Hamar diocese, the Cathedral fell out of use after the nation's Reformation in 1536. The Cathedral was torched during the Northern Seven Years War in 1567. The ruin stands monument to the history of Catholicism in Norway, the Reformation and of 12th Century Architecture. In summary, it is significant in the following ways:

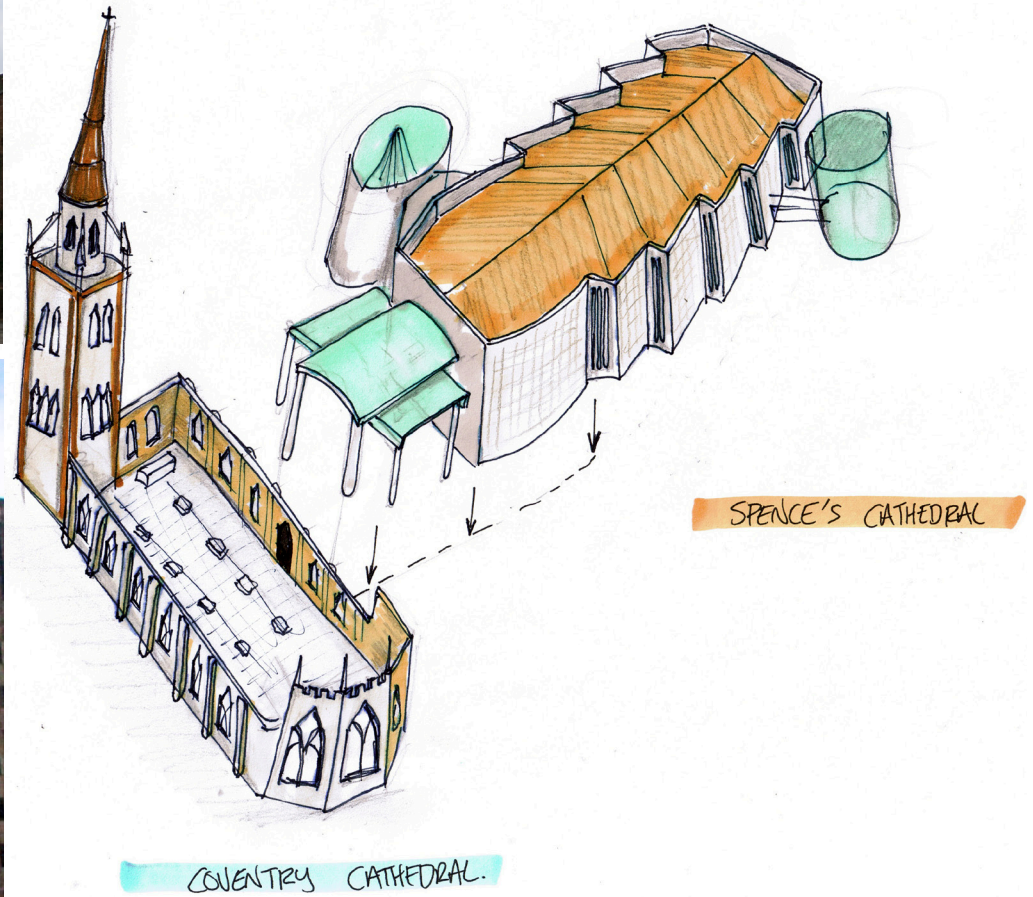
- As part of the establishment and history of Catholicism in Norway.
- As ruins of the pre-Reformation Catholic Cathedral.
- As a representation of the role of Religion in Norway.
- As an example of 12th Century architecture.
- For being torched during Northern Seven Years War in 1567.

INTERVENTION TACTIC

Decay of the ruins due to weathering prompted the Norwegian government to commission a protective structure in 1987. Described as one of the most ambitious construction projects undertaken by the government,²¹ architect Kjell Lund designed a steel and glass covering for the ruins. Completed in 1998 as part of the Hedmarksmuseet (Hedmark Museum) the structure provides a protective casing for the ruins and restored the Cathedral ruins as a functional venue for concerts and religious purposes.²²

- **PRESERVATION THROUGH NEW WORK**

The Cathedral was not restored by Lund; his intervention provides a steel and glass enclosure that restores functional use to the ruined cathedral whilst protecting the structure from decay due to weathering. The modern protective structure has the grandeur befitting of a contemporary cathedral and celebrates the original historic fabric of the Cathedral, presenting the ruins as



Photographs from: [wikipedia.org](https://www.wikipedia.org/). Used under GNU Free Documentation licence.

a historic museum artefact. The ruins are not modified, but preserved in a structure that celebrates, protects and allows the Cathedral ruins to be again used as a functional church and venue.

COVENTRY CATHEDRAL, COVENTRY, ENGLAND – SIR BASIL SPENCE.

HISTORY

Built in the 15th Century, Coventry Cathedral was originally the Parish Church of St. Michael, the second church to occupy the site. In 1539, the Dissolution of Monasteries saw the See of Coventry and Lichfield move to Lichfield, with the original 1043 Cathedral left to decay.²³ In 1918, the modern diocese of Coventry was created and the Parish Church of St. Michael became the Cathedral.²⁴

On November 14, 1940 Hitler's Luftwaffe heavily bombed Coventry and the Cathedral burned with much of the city.²⁵ The next day, the decision was made that the Cathedral would be rebuilt as a 'sign of faith, trust and hope for the future of the world.'²⁶ A cross of nails from the Coventry ruins is on display in the Kaiser Wilhelm Memorial Church in Berlin.

Architect Sir Basil Spence won the design competition for the Cathedral's rebuild in 1950.

SIGNIFICANCE

Coventry Cathedral has a long history as part of the Church of England. Originally built as a Parish Church, it neighboured the original Cathedral of Coventry that lost its title in the 1539 Dissolution of Monasteries. In 1918, the Parish Church of St. Michael became the Coventry Cathedral on the establishment of the modern Coventry diocese. Bombed in World War II, the Cathedral has become a centre for reconciliation and stands as a monument to peace between England and Germany. It is significant in the following ways:

- As the Cathedral of the modern diocese of Coventry founded in 1918.
- Site with history of the Anglican Church/Church of England since 1043.
- As an example of 15th Century Gothic church architecture.
- As a monument to the damage from World War II bombing.
- As a national monument to peace between England and Germany.
- As a worldwide centre for Forgiveness and Reconciliation.

INTERVENTION TACTIC

Sir Basil Spence designed Coventry's new Cathedral to sit perpendicular to the ruins of the damaged Cathedral. Spence experienced life in the ruined Cathedral that he called the 'pulse of the Cathedral.'²⁷ He didn't see it as a ruined building, but described feeling the 'impact of a delicate enclosure,' not the destroyed timber rafters but the sky as its new vault.²⁸

NEW BUILDING

Spence grafted his new building to the 'hollowed ground' of the old Cathedral, creating one living Cathedral.²⁹ Spence saw his task of designing the new Cathedral as one that would 'stand for the triumph of the resurrection,'³⁰ of the old becoming new, as well as reflecting biblical resurrection.

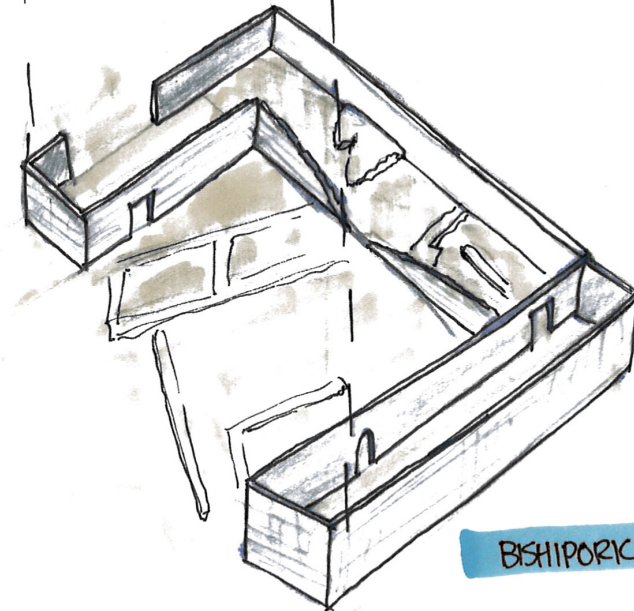
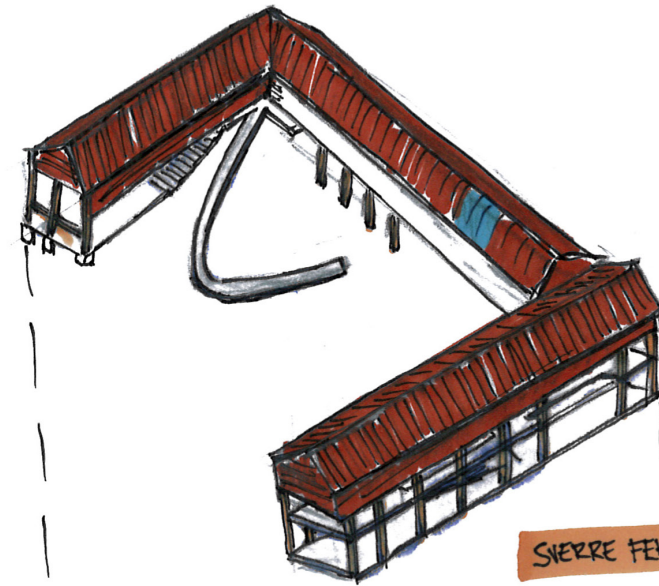
Spence did this by designing the new Cathedral to what he called the same 'blood group' of the old Cathedral. His new Cathedral is built in a similar stone to, and with the scale and grandeur of the original, creating a harmony between the new and old buildings.

The original is preserved as a functional space with the new Cathedral grafted to the ruins by a covered forecourt, separating the body of the new structure that is distinct and yet sympathetic to the original. Spence

'envisaged it as a grafting process: the task being to design the new building that it would grow naturally from the old.'³¹ Spence grafted his intervention to the old Cathedral, creating one religious site rather than two separate buildings. The new Cathedral is distinctly a work of its time, designed in the modern style it is both in contrast and in harmony with the original structure.

PRESERVATION

Spence experienced life within the ruined Cathedral, what he called the 'pulse of the Cathedral.'³² This formed the basis for his approach whereby he preserved it as a living building to which he would graft the new Cathedral whilst being tasked with meeting the needs of the diocese. The intervention into the shell of the ruined Cathedral was limited to preservation and stabilisation through discrete steel bracing to strengthen the structure, waterproofing and lighting. The ruin has been preserved to allow the space to become an inhabitable memorial and sacred space, with the old and new buildings forming one Cathedral.



Photographs from: Fjeld, P. Sverre Fehn: *The thought of construction*. New York, Rizzoli, 1983.

HAMAR BISPEGAARD, NORWAY – SVERRE FEHN

HISTORY

The Hamar Bispegaard is the palace of the Bishop of the See of the Ancient Catholic Diocese of Hamar, which was established by Bishop Arnaldur (1124-52) on his arrival in Norway in 1150.³³ After the Reformation in Norway to Lutheranism (1536)³⁴ the site was renamed Hamarhus fortress and became the residence of the sheriff.³⁵ During the Northern Seven Years War in 1567 the Swedish army blew up the bishop's palace and torched the neighbouring Cathedral. The walls of the ruined palace were later used as part of barns for the farm of Storhamar that were constructed in the 18th or 19th century.³⁶ Archeological excavation between 1947 and 1989 revealed more of the Bishop's residence,³⁷ which is accessible within and protected by Sverre Fehn's exhibition structure completed in 1979. The ruins are site located within the Hedmarksmuseet (Hedmark museum).

SIGNIFICANCE

The Hamar Bispegaard is significant in its representation of the history of medieval Norway. The palace of the Bishop of the Hamar Catholic diocese was built in the 12th Century alongside Hamar's Cathedral. After the Reformation of 1536, Norway was no longer a Catholic country and the property became the residence of the sheriff. The palace was torched in the later Northern Seven Years War in 1567. The ruins are evidence of the history of Catholicism in Norway, the Reformation and of medieval culture. In summary, it is significant in the following ways:

- As part of the establishment and history of Catholicism in Norway.
- As ruins of a pre-Reformation Bishops Palace.
- Cultural significance for the role of Religion in Norway.

- Archaeologically as the site of the Hamar Bishop from 1150 and medieval culture.
- From being destroyed during Northern Seven Years War in 1567.
- As evidence of 18th and 19th century farming.
- Intervention is a prominent work of architect Sverre Fehn.

INTERVENTION TACTICS

Sverre Fehn's intervention responds to the archaeology of Hamar Bispegaard's ruined structures, restoring them with a wooden, pitched-roof structure that stands on top of the ruined walls. Clad with clay tiles and sections of glass tiles to allow natural light, the structure is shaped by the existing ruins and provides a protective enclosure for the archaeology and for the museum's exhibits. Fehn placed a concrete walkway that appears to hover through the building; raised above active archaeological sites it reveals the building's history and accommodates the museums exhibitions.³⁸

Fehn's intervention shows great respect for the ruins through the gentleness of the wooden structure and simplicity of the large glass slabs that enclose historic window cavities.³⁹

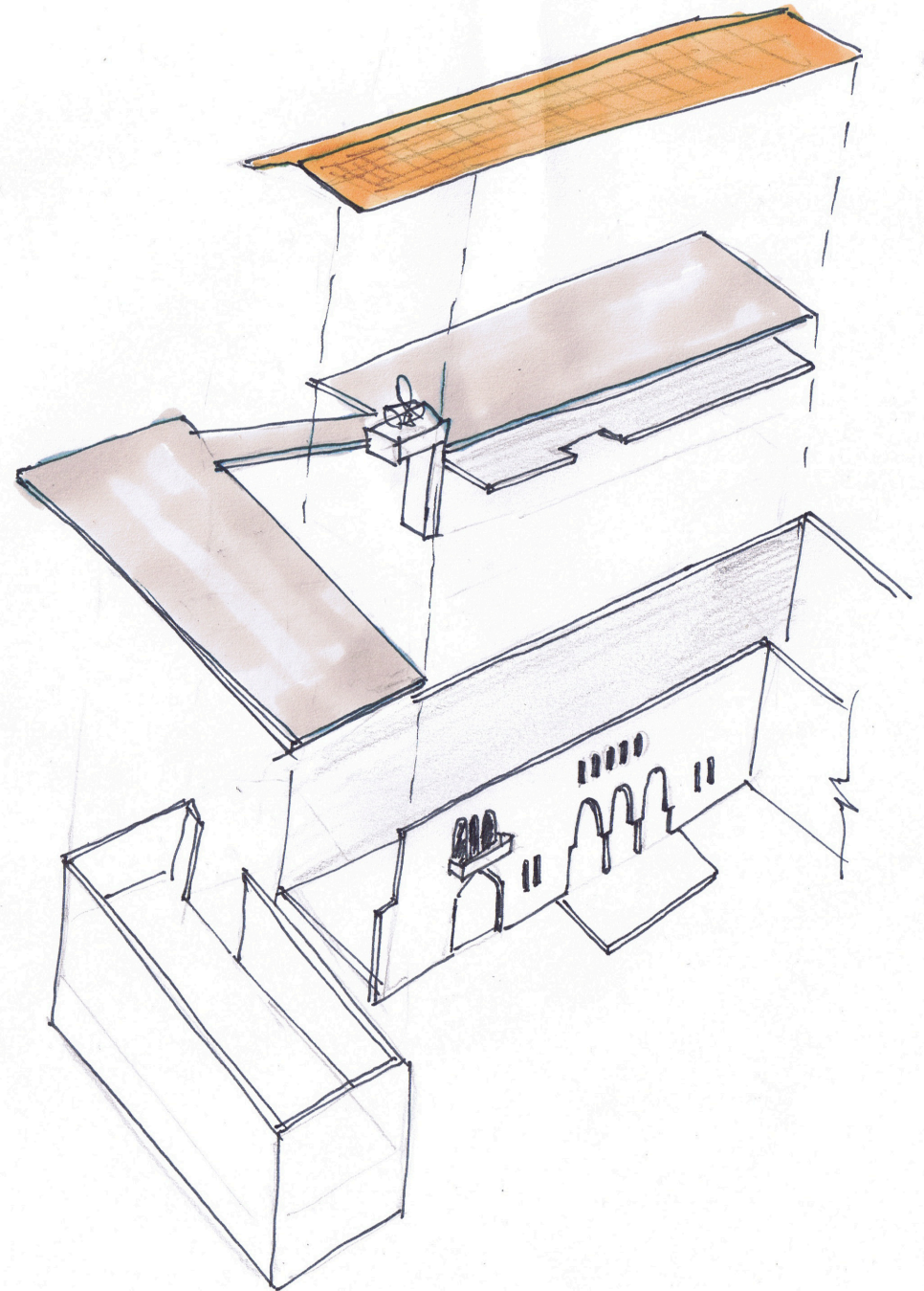
NEW WORK

Fehn's intervention is one of 'power and love'⁴⁰ restoring function to and providing protection for the heritage fabric and the archaeological sites within it. Clay tiled, wooden structure provides a canopy that celebrates the ruins and provides a protective enclosure for them. The canopy takes its form from the parameter of the existing ruined walls; gently resting on top of these partial stonewalls to form their new enclosing roof.

The timber structure rises from the walls, providing a wall structure before forming the pitched roof that encloses the ruin. The timber, red clay tiles and glass used in his intervention are distinct from the historic

fabric, accentuating the historic stonework and distinguish themselves as a new gesture. This aligns with best practice as outlined by the ICOMOS Charter.⁴¹ The form of the enclosure with its pitched roof suggest the original form of the ruins, allowing the site to be interpreted as a museum exhibit itself, providing a look at what the original building's form could have been.

Fehn inserted circulation with concrete walkways that are raised above the ground, appearing to hover through the structure. The raised walkways allow for archaeological exploration within the site to be preserved and continued. This gesture protects the archaeology whilst allowing circulation and the function of a living museum to be introduced into the ruins.



Photographs from: Magagnato, Licisco. *The Castelvechio Museum*, in Francesco, Dalco & Giuseppe Mazzarro, Carlo Scarpa: The complete works. Milan: Electa Editrice, 1984.

MUSEO DI CASTELVECCHIO, VERONA, ITALY – CARLO SCARPA

HISTORY

Castelvecchio is a fortified structure in Verona, Italy that has history as a military structure before its adaptation into a museum in 1923. Built between 1354-1356, on the site believed to be of an ancient Roman Fortress, Castelvecchio was built for Cangrande II della Scala as a castle with defense against both outside invasions and rebellion.⁴² In 1404, the Venetian Republic began using the structure for military purposes, including as a munitions warehouse and in the 18th Century as the seat of the Venetian military academy.⁴³ In 1797, the castle was the site of armed engagements during the anti-French revolt. During the Napoleonic epoch, army barracks were added in neoclassical style and remained in use during 19th Century.⁴⁴

Between 1923 and 1925, city museum director, Antonio Avena and architect, Ferdinando Forlati converted Castelvecchio into a museum. Forlati's intervention included the reconstruction of the swallowtail battlements and the insertion of late Gothic and Renaissance decorative elements.⁴⁵

SIGNIFICANCE

Castelvecchio is a notable building in Verona's history. Originally a fortified palace of the della Scala family, the medieval building represents 14th Century architecture and culture. Until its conversion in 1923 to a museum, the structure had been used for military purposes and was involved in the conflict of the anti-French revolt of 1797. Castelvecchio is significant in its representation of Verona's military and architectural history. In summary, it is significant in the following ways:

- Historically as part of medieval Italy.
- As an example of medieval 14th Century architecture.
- As the site of conflict during the anti-French revolt

of 1797.

- Historically as part of Italy's military history.

INTERVENTION TACTICS

Beginning in 1958, architect Carlo Scarpa began renovating Castelvecchio under the direction of Liciso Maganato. Scarpa reorganised the museum, restored notable historical and artistic features of the building including the removal of false Gothic and classical detailing created in the 1923 adaptation, and added a library and exhibition spaces.⁴⁶ Scarpa worked on Castelvecchio over a 15 year period.

Scarpa's intervention at Castelvecchio was that of peeling and revealing the layers of the building's history and the insertion of functionality into the structure. Scarpa's peeling and detailing of the building's fabric presents its history as a readable artefact. He peeled away one layer at a time, revealing the layers of the architectural palimpsest; allowing the museum's walls to be read as a museum exhibit themselves.

Scarpa was not afraid to graft, he detailed junctions and openings to reveal the layers of the structure acquired over history. His work revealed the castle's historic structure, including the Porta del Morbio, an opening in the city walls dating to the twelfth century.⁴⁷ Liciso Maganato author of 'The Castelvecchio Museum' describes the architecture of Scarpa's intervention as,

*explored through surgical operation and partly built a new, to bind together the scattered limbs to fill the gaps without concealing the wounds of time, suturing the links and revealing the joints.*⁴⁸

Functionality is inserted through modern rendering of exhibition spaces, walkways that link the structure and purpose-built exhibition mounts. Scarpa reconnected elements of the building with raised passage-ways creating what is described as an 'emotionally evocative

spatial sequence.'⁴⁹ These walkways provide a journey through the architecture as well as the museum's exhibit spaces.

Scarpa was not afraid to intervene into the heritage fabric, doing so with respect and craftsmanship. By adding or removing layers, he exposed the flesh of the building's construction and the layers of its history.⁵⁰ In his opening of the southern wall he left every layer and its physical composition in evidence. His approach to architecture is that of working layer by layer as he develops the project. This is evident in his architectural drawings, where 'erasure and addition lay between layers of tracing paper as he continued his exploration, creating a palimpsest.'⁵¹

*The intervention has gained heritage value for being the work of architect Carlo Scarpa. Scarpa was a significant 20th Century architect whose unique approach to design and detailing is celebrated. His adaptation of Castelvecchio is recognised as one of 'the finest examples of museum renovation of post-war Italy.'*⁵²



ORIGINAL CHURCH TOWER.

EIERMANN'S INTERVENTION



Photographs from: Pinkbigmac, Berlin Sights, Berlin, 2013. Web.
<http://berlin.pinkbigmac.com/en/image-galleries/top-berlin-attractions/kaiser-wilhelm-memorial-church/>

KAISER WILHELM MEMORIAL CHURCH, BERLIN, GERMANY – EGON EIERMANN

HISTORY

The Kaiser Wilhelm Memorial Church was designed in neo-Romanesque styling by architect Franz Schwechten. Built in two parts, the upper section was consecrated on September 1st, 1895 and the lower on its completion in February 1906. Kaiser Wilhelm II, Germany's last emperor commissioned the church as a gift to the German people in honour of his grandfather Kaiser Wilhelm I.⁵³ During the Second World War, on November 23, 1943 the church was bombed in an Allied air raid which largely destroyed the building, only the spire and entrance hall survived.⁵⁴

SIGNIFICANCE

The Kaiser Wilhelm Memorial Church is significant for being a gift for the German people from the German Emperor Kaiser Wilhelm II; for being a part of the history of the Protestant Church and as a monument to the air raids of World War II. British World War II pilot Charles Gray who contributed to the 2012 conservation appeal warned that 'the tower has to remain in place as a permanent reminder for future generations of the horror of war.'⁵⁵ In summary, it is significant in the following ways:

- History of the Protestant Church in Germany.
- For being a gift to the German People from Germany's last emperor, Kaiser Wilhelm II.
- As an example of Romanesque revival architecture of the late 19th century.
- As a monument to the damage of World War II.
- As a monument to reconciliation and peace with England.

INTERVENTION TACTICS

Architect Egon Eiermann (1904-1970) designed a new

church that consists of four buildings grouped around the ruins of the original church. Eiermann's original plan was to demolish the ruins, however after pressure from the public, the decision was made to incorporate it into the new design⁵⁶ as a 'memorial to the futility of war.'⁵⁷

• NEW WORK

Eiermann was a functionalist architect whose concern was not about preserving the old but about providing a functional church that would satisfy the brief for a replacement church. The historic tower was preserved as a monument to the past and is flanked by Eiermann's hexagonal tower, creating a dialogue between new and old, pre and post war. Eiermann's church is distinct from the architecture of the original church, treating the historic tower as a monument placed between the new tower and main church building.

The interior of Eiermann's church is where the grandeur, elegance and feeling of transcendence associated with Gothic church architecture is found. The plan of the church is octagonal and flanking the historic tower is a tower of the same language as the church of hexagonal plan that stands 53 metres tall and contains the belfry. Both are constructed out of a concrete honeycomb inlaid with coloured glass,⁵⁸ which in daylight transforms the interior into a beautifully transcendent space.

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CASE STUDY BUILDING



‘ECCE TABERNACULUM DEI CUM HOMINIBUS’

‘Here is God’s dwelling-place among His people.’ ¹

¹ Inscription on the capital of the front facade of the Cathedral of the Blessed Sacrament.

Translation source: Harrington, J. ‘Earth with Heaven United.’ Jubilee Year: Cathedral of the Blessed Sacrament, Christchurch, 1980.

Photograph by author, 2012.

CATHEDRAL OF THE BLESSED SACRAMENT

(Roman Catholic Cathedral of Christchurch)

Barbadoes Street, Christchurch

Designed: 1899

Construction: 1901 – 1905

Opened: February 12, 1905

Client: Bishop John Joseph Grimes SM

Architect: Francis William Petre

Builder: J. & W. Jamieson

Cost: £52,213.

ARCHITECTURE

Francis William Petre, architect, drew for Christchurch's Catholic Bishop John Joesph Grimes SM in 1899 a neo-classical cathedral of basilica plan. Construction begun in 1901 and took 4 years to complete. It was opened and dedicated on February 12, 1905 by Archbishop Carr of Melbourne.

Recognised by John Wilson in 1990 as 'a masterpiece – a jewel in New Zealand's architectural crown,'² the Cathedral's realisation was plagued by a blown budget, supply issues, subsidence of the foundation and the resulting tension between the architect, builder and client.³ Yet, the Cathedral of the Blessed Sacrament is monument to the vision and determination of the client, Bishop John Joseph Grimes SM, to which it was a statement of faith – his resolve was to build a 'temple to the honour of God in their midst'⁴ - and his commissioning of the Cathedral with the limited funds of the diocese, was a significant act of faith in itself. For architect Francis William Petre it is monument to his masterful skill and progressive engineering genius, acknowledged as the crowning work of his career and regarded as one of the finest examples of church and classical architecture in Australasia.⁵ For the builders, J. & W. Jamieson it is monument to their ability, skill and patience. For Christchurch's forebears it was a proclamation of faith and of belonging in the province.⁶

George Bernard Shaw, Nobel Prize winner, critic and political activist, was one of the first to open local eyes to the quality of the Cathedral, describing it as 'original and powerfully drawn' and called it a 'New Zealand Brunelleschi.'⁷ The Cathedral is a building of magnificent massing,⁸ with soaring vistas created by the sheer volume of the Cathedral. Its great dome is prominent in the cityscape, the front towers convey ecclesiastical authority over Barbadoes Street and the great columns reflect the beauty and authority of

classical architecture. The Cathedral is based on the Roman basilica plan, with classical detailing derived from eighteenth century French precedents. Petre broke with the basilica convention in one respect; the copper-clad dome is sited above the sanctuary instead of the crossing of the nave and transepts. Petre believed this added theatre to the altar, bordered by double height arches.⁹

EXTERIOR

The Cathedral stands tall, proud and with authority on its Barbadoes Street site. Its two copper roofed bell towers, statues and cross atop the façade, and the double storey portico with Corinthian columns present an important building to the world.¹⁰ The influence that shaped Petre's Cathedral are said to come from two Cathedrals; the Cathedral of Notre Dame in Boulogne-sur-Mer¹¹ and St Vincent de Paul in Paris.¹² Petre was exposed to both of these Cathedrals during his training in Europe with Benoit Haffreingue and the interior colonnades and twin front towers of St Vincent de Paul and the placement of Notre Dame's dome over the sanctuary are suggested to have influenced the design of the Cathedral of the Blessed Sacrament.¹³ Petre's dome, likened to that of St Paul's, London,¹⁴ is suggested to have been a means of giving 'his cathedral a more ecclesiastical air which he may have thought necessary in a country where the classical style was relegated to civic buildings rather than churches.'¹⁵

INTERIOR

The Cathedral's interior is one of grandeur and majesty produced by sheer volume.¹⁶ The interplay of light on the colonnades and arcade of the sanctuary, gives beauty to the interior, one that evokes transcendence and 'lifts the spirit.'¹⁷ Former architect and now artist Sir Michael Fowler, said the interior spaces are 'suffused with a glorious quality of light, are dramatic and the decoration is scholarly.'¹⁸ Architectural critic, Nikolaus Pevsner, said the interior with its two stories of columns cannot be denied as anything but 'remarkable grandeur.'¹⁹

The interior of the Cathedral is lined with two storeys of Oamaru stone columns leading towards the double height arches that enclose the Cathedral's sanctuary above which light floods through from the dome. The placement of the dome was Petre's break away from the traditional basilica plan, through which its glazing, lets light down into the sanctuary, creating a visual climax within this sacred space. The sanctuary is larger than in Petre's other basilicas due to the need to accommodate larger numbers of clergy for ceremonies.²⁰ The sanctuary is enclosed behind the altar by a semi-circular wall of columns, a backdrop to this architectural stage for Catholic worship to take place.

Petre's handling of geometry and spatial control of the sanctuary is brilliant. The dome rises above four large, double height arches, visually supported by ionic pilasters, which enclose the sanctuary. An embossed zinc ceiling contrasts the Oamaru limestone of the buildings structure, introducing a raft of colour with its coffers and saucer domes.²¹ In the book, *New Zealand Art: Architecture 1820-1970*, John Stacpole and Peter Beaven, describe Petre's 'orchestration of classicism' as transporting the 'onlooker direct to Rome.'²²

CONSTRUCTION

The Cathedral was constructed by builders James & William Jamieson²³ of Christchurch over 4 years, from 1901 to 1905. 50 men²⁴ and two, specifically imported steam cranes were employed to see the Cathedral rise from its foundation.²⁵ The completed building measures 210ft (64m) x 106ft (32m) and 135ft (41m) high at the peak of the dome and uses 120,000 cubic ft (3400m³) of stone, 4000 cubic ft (113m³) of concrete and 90 tons of steel. The stonework consists of Mount Somers stone for the plinth and Oamaru stone, sourced from two quarries; Totara Tree and OK, due to the amount required, for the buildings walls and columns. The dome and bell tower roofs are clad in copper and the main roof tiled, all with a timber understructure.



Francis William Petre

27 August 1847 - 10 December 1918

Photograph from: Lochhead, Ian. "Petre, Francis William - Biography," *Te Ara - the Encyclopedia of New Zealand*, 2010. Web. 10 Dec. 2012. <<http://www.teara.govt.nz/en/biographies/2p13/1>>

The Cathedral's walls are faced in Oamaru stone, inside and out with a concrete structural core²⁶ – a characteristic of Petre's²⁷ work whereby the stone acts as a permanent formwork for the concrete structure. This construction method has its origins in a Roman construction method called *opus reticulatum* that dates back to 2000BC.²⁸ The Cathedral was constructed before the development of reinforced concrete, however Petre specified for iron ties to be embedded in the concrete to tie the ceiling and floor to the walls to strengthen the buildings structural bond and to allow for the absorption of energy in an earthquake.²⁹ Sir Michael Fowler praises Petre for his 'innovative sense of structure' and sees him as one of the country's greatest creative artists.³⁰

During construction subsidence of the structure occurred, a lasting blemish resulting in the gallery being out of line around the sanctuaries arches. This was attributed to rainwater compromising the foundations before the Cathedral was closed in and caused a major dispute between architect, builder and client.

ARCHITECT

Francis William Petre, nicknamed 'Lord Concrete,' is acknowledged as the first 'New Zealand-born architect to rise to national prominence'³¹ and was a pioneer of the use of concrete in New Zealand architecture. Petre was born in Petone, Wellington on 27 August 1847 and died in Dunedin on the 10 December 1918.³² Born to one of New Zealand's most prominent colonial families, to which the naming of Petre Bay in the Chatham Islands, Thorndon in Wellington and Whanganui's original name can be traced.³³

EDUCATION

Petre was educated in England; attending the Jesuit institution of Mount St Mary College in Derbyshire from 1856 to 1860, the Royal Naval College, Portsmouth, in 1860–61, Monsignor Haffreingue's College at

Boulogne-sur-Mer and completed his education at Ushaw College, Durham.³⁴

From 1864 he received practical training articulated to Joseph Samuda of London, a prominent shipbuilder and engineer before working for architect and engineer Daniel Cubitt Nicholls who introduced Petre to the latest engineering techniques including the use of concrete.³⁵

CAREER

Petre was both an engineer and an architect; a founding member and secretary of the Dunedin Institute of Civil Engineers and Architects in 1876, a fellow of the New Zealand Institute of Architects on its foundation in 1905, and president in 1907–8.

Petre returned to New Zealand, settling in Dunedin in 1872 employed by John Brogden & Sons as a railway engineer. In this role he supervised the construction of the Dunedin to Balclutha and Blenheim to Picton railways before establishing his own engineering and architect's practice in 1875.³⁶

Petre's first important commission was St Dominic's Priory in Dunedin. Begun in 1877, the multi-storey building stands monument to Petre's engineering skill in its employment of then, - revolutionary concrete construction, and was the largest building of this method in the Southern Hemisphere.³⁷ St Joseph's Cathedral, begun in 1878 on the neighbouring site, was outstanding in its French inspired gothic-revival architecture and established Petre as New Zealand's leading architect for the Catholic Church.

A building of frustration for Petre, St Joseph's stands half built – having taught him a lesson that except for smaller rural churches, Gothic architecture 'could no longer be regarded as viable for the young colony; the cost beyond reach.'³⁸ Sadly, if it had been completed, Petre's design for St Joseph's had the potential to be the

most outstanding example of gothic-revival architecture in New Zealand.

Petre's later work took a dramatic shift from his French influenced, gothic-revival architecture, described by his son B. F. Petre as his first love,³⁹ to classicism's oblong, basilica plans. The shift was not due to the divide between the revival of classicism and gothic, as fiercely under debate in England, but Petre's shift was a factor of cost, scale, earthquake strength and liturgical suitability. In a letter to the Bishop Grimes, the client for the Cathedral of the Blessed Sacrament, Petre writes that, "If you want size, dignity and permanency at a minimum of cost, therefore you must give up the idea of gothic... and take the Roman Basilica as your model."⁴⁰ A lack of finance had been responsible for stopping St Joseph's construction and liturgically, Petre understood the requirement for Catholic congregations to be seated as close as possible to the altar, a wider rather than longer nave was therefore preferable – the basilica plan in which width was less dependent on height was the best solution to satisfy this.⁴¹

The basilica plan was faithfully applied to Petre's church buildings that followed; each with their own original architectural elements. His first departure was St Patrick's Basilica in Dunedin (1894), the exterior of the resulting building is but a shadow of his original drawings, but the highly embellished interior, it's single greatest feature, with embossed Renaissance ceiling becomes a reoccurring feature in later work.⁴²

Several other notable large churches emerge in Petre's new style; St Patrick's Cathedral, Oamaru (1894), where Petre discovered the easily carved native stone, Oamaru Stone, 'a medium suited to his precise touch'⁴³ and which is regularly employed by the architect hereafter. The Basilica (later Cathedral) of the Sacred Heart, Wellington (1899), which established the pattern for his subsequent large churches in Timaru (1910) and Waimate (1913).⁴⁴ Also at Oamaru, Petre made a unique deviation that he

1857 <i>Provincial Government granted land.</i>	1901 <i>(February 10) Foundation stone laid (Cathedral of the Blessed Sacrament).</i>	1980 <i>Jubilee Year to mark 75th anniversary.</i>
1860 <i>Christchurch Mission begun. Chapel Constructed.</i>	1905 <i>(February 12) Completed Cathedral opened & dedicated by Archbishop Carr of Melbourne.</i>	1983 <i>Registered by the Historic Places Trust.</i>
1864 <i>Church of the Blessed Sacrament designed by Mountfort replaces chapel. (Pro-Cathedral).</i>	1915 <i>Death of Bishop Grimes; interment in Cathe- dral.</i>	1986 <i>(November 24) National Ecumenical Service held by Pope John Paul II.</i>
1877 <i>Major additions to church completed.</i>	1916 <i>Marble High Altar installed.</i>	1987 <i>Inauguration of the Friends of the Cathedral.</i>
1887 <i>Diocese of Christchurch established by Pa- pal Brief.</i>	1920 <i>Cathedral debt liquidated.</i>	1997 <i>Establishment of the Cathedral forecourt.</i>
1888 <i>Bishop J.J. Grimes SM enthroned in Pro- Cathedral.</i>	1970 <i>Cathedral Conservation Project begun.</i>	2002 <i>Holmes Consulting prepare report recommending Seismic strengthening of Cathedral.</i>
1895 <i>Cathedral Fund opened.</i>	1974 <i>Interior re-ordering of Cathedral (Warren & Mahoney Architects).</i>	2004 <i>Seismic strengthening of Cathedral.</i>
1899 <i>Bishop Grimes meets architect F.W. Petre at Wellington's Cathedral. Petre later submits plan for basilican-type church.</i>	1975 <i>Conservation Project completed. Cathedral Trust inaugurated.</i>	2005 <i>(February 12) 100th Year Anniversary.</i>
1900 <i>Pro-Cathedral removed to Ferry Road.</i>	1978 <i>Halmshore organ restored and re-dedicated.</i>	

later repeats in the Cathedral of the Blessed Sacrament. He places the dome over the sanctuary rather than the crossing of the nave and transepts, shifting the visual climax of the building, both internal and external to where the worship is focused.

In addition to these churches, throughout his career he designed many notable churches; both large and small, residential and commercial buildings, including E. B. Cargill's Castle (1876)⁴⁵ and Judge H. S. Chapman's Dunedin house (1875), both early examples of concrete construction.

The 'crowning work'⁴⁶ of Petre's accomplished career is the Cathedral of the Blessed Sacrament. Drawn in 1899 and opened upon its completion in 1905, it is regarded as the 'finest church building in New Zealand.'⁴⁷ Despite a strain on relations between the architect and client during construction, the Cathedral was completed without significant modification to Petre's plans. On viewing the Cathedral in 1934, Nobel Prize winning, critic and political activist George Bernard Shaw remarked on the beauty of the Cathedral in which he saw echoes of Renaissance architecture, praising it as 'a New Zealand Brunelleschi,'⁴⁸ New Zealand's own version of the works of the foremost architect of the Renaissance, Filippo Brunelleschi. The largest and most imposing classical church in New Zealand, beautifully complex in its massing and detailing is regarded as Petre's finest architectural work.

HISTORY

In 1857 the Canterbury Provincial Council made a grant of land for use by the Roman Catholic Church. Despite being the first Christian's in Canterbury,⁴⁹ the provinces Anglican bias saw the Catholic's relegated to Barbadoes Street near the industrial yards, as opposed to the central city land afforded to the Anglicans.

In 1860 the Catholic Church began their mission from the Barbadoes Street site where the Cathedral stands today. Opening in October 1860 the small wooden chapel was pre-fabricated in a builder's yard and carted to the site by horse and dray. It measured 24ft (7.3m) x 18ft (5.4m) and cost 75 pounds. On May 29th 1864 the 500 seat Church of the Blessed Sacrament was blessed and opened. Originally designed by the Architect of Canterbury, B. W. Mountford,⁵⁰ the church became too small for the growing Catholic population and through 1876-1878 the church was greatly enlarged to 800, then again to 1000 seats.⁵¹ The Church of the Blessed Sacrament became the pro-Cathedral upon the establishment of the Diocese in 1887 by Papal Brief.⁵²

John Joseph Grimes was ordained in 1869 by Archbishop Whelan of Bombay and was appointed to be Christchurch's first Bishop in 1887 by Pope Leo XIII.⁵³ Bishop Grimes had the vision of a grand Cathedral for the province and launched in 1895 a Cathedral Fund. After meeting Francis William Petre, New Zealand's leading Catholic Church architect, Petre was asked to and submitted drawings of a Cathedral for Christchurch to Bishop Grimes in 1899. To make way for the Cathedral the pro-Cathedral was pulled aside to Ferry Road by traction engines (in New Zealand's largest move by that time.)⁵⁴ After the opening of the new Cathedral in 1905 the pro-Cathedral was deconsecrated for use as classrooms. Its stained glass windows by French artist Nicolas Corin that were installed in 1891, were moved to the Cathedral in 1910. The pro-Cathedral was demolished in 1921.⁵⁵

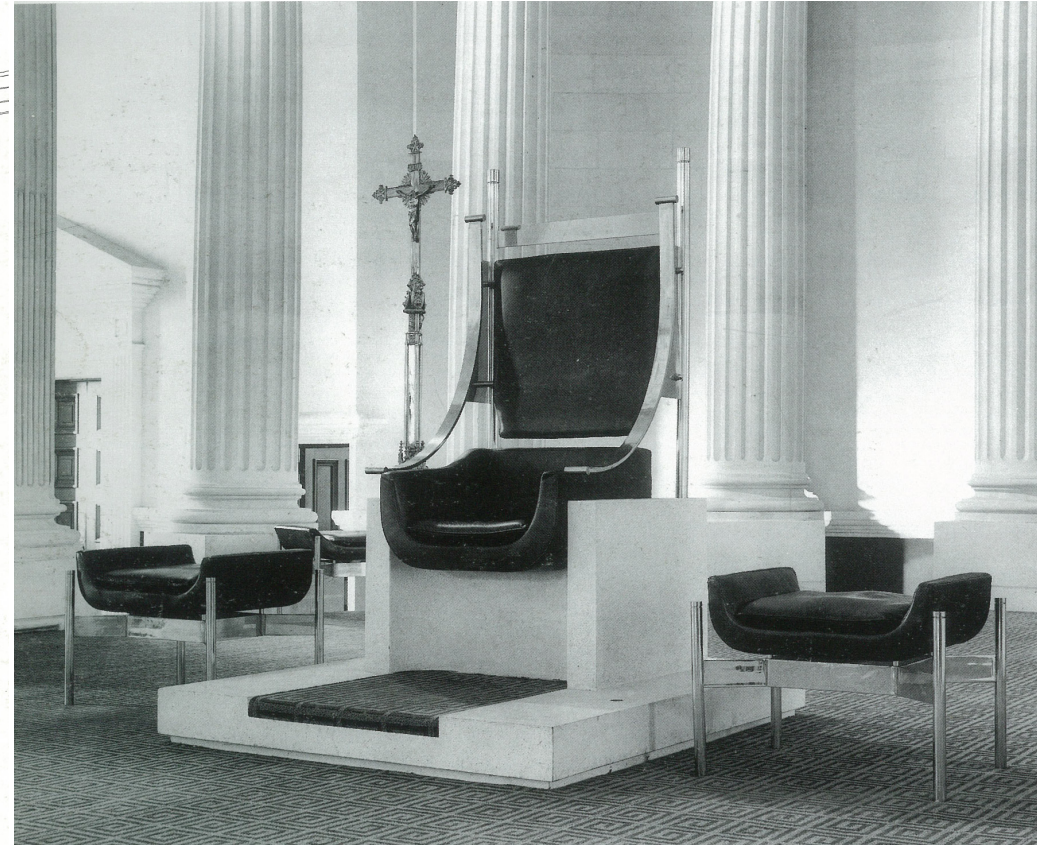
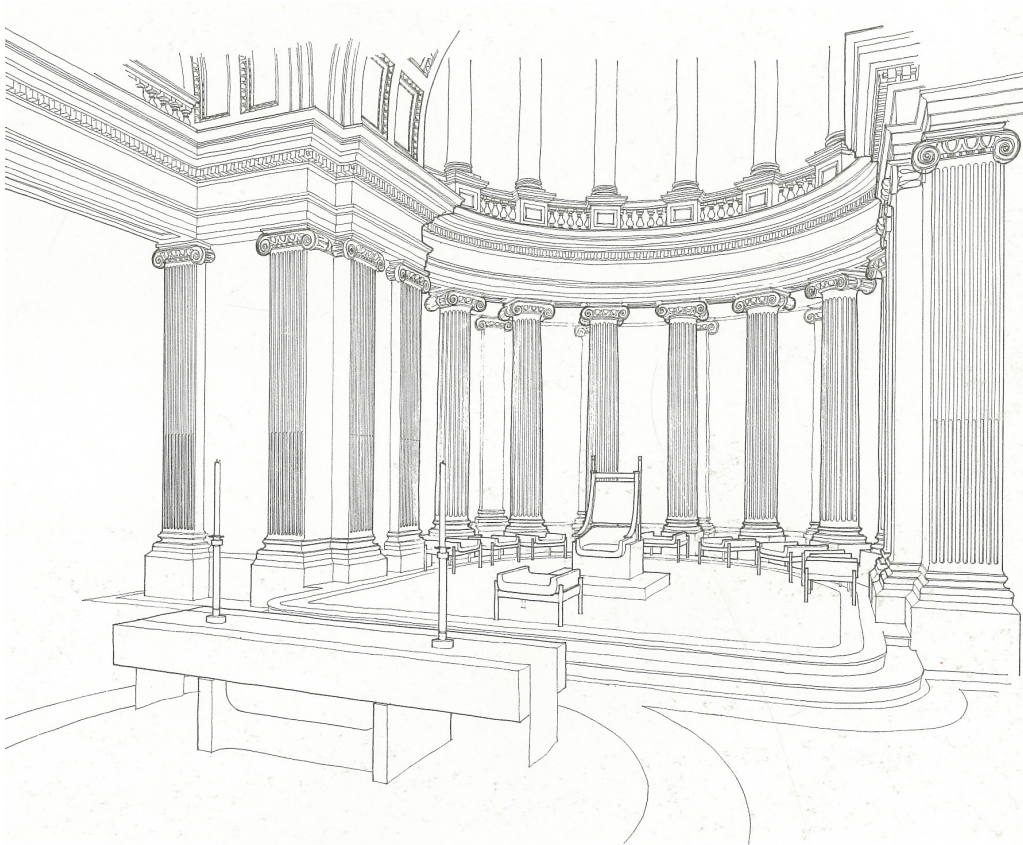
The foundation stone of the Cathedral of the Blessed Sacrament was laid on February 10th 1901, and dedicated⁵⁶ and opened on its completion in 1905 by the Archbishop of Melbourne, Dr. Thomas Carr, on February 12th. The Cathedral is the mother church of the Roman Catholic Diocese of Canterbury, Westland and the Chatham Islands, and its construction was a

unifying force between the various groups that made up the diocese; working class, businessmen, landowners and professionals, largely Immigrants from Ireland or Scotland. The Cathedral stands as a monument to the faith, courage, generosity and determination of Bishop Grimes and his people.⁵⁷ During the opening ceremony, Bishop Grimes refers to the Cathedral as the 'fruit of the hard earnings of the poor... generous to a sacrifice of their well-won pounds, their shillings and their pence.'⁵⁸

Bishop Grimes had a hard task of fund raising to pay for the Cathedral whose budget seemed to ever increase. Bishop Grimes travelled around parishes and even to the Vatican raising funds. Financial reprieve came from Premier Richard Seddon who sponsored and guided the *Roman Catholic Bishop of Christchurch Empowering Bill* through parliament which allowed Bishop Grimes to seek a loan for completion of the Cathedral on it's becoming an act of parliament on October 13, 1904.⁵⁹ The Cathedral's debt was liquidated in 1920.⁶⁰

The Cathedral has had a number of Bishops over the decades; Bishop Grimes who saw the Cathedral become a reality was interred in the Cathedral after his death in 1915. M. J. Brodie became the Cathedral's Bishop in 1916; P. F. Lyons in 1944, E. M. Joyce in 1950, B. P. Ashby in 1964, D.W. Hanrahan in 1985, J. B. Meeking in 1987, J. J. Cunneen in 1996 and most recently B. P. Jones in 2007, the current Bishop of the Diocese.⁶¹

Other significant events in the Cathedral's history include the inauguration of the Cathedral Trust in 1975, Jubilee Celebrations to mark the Cathedral's 75th anniversary in 1980, the Cathedral's registration as a Category 1 Historic Place by the New Zealand Historic Places Trust in 1983, National Ecumenical Service held at the Cathedral by Pope John Paul II on November 24th 1986, inauguration of the Friends of the Cathedral in 1987 and the Cathedral's Centennial Celebrations to mark it's 100th Year Anniversary on February 12th 2005.



Interior re-ordering and furniture by Miles Warren.
1974.

PHOTO: Sourced from: Warren, Miles. *Miles Warren: An Autobiography*. Christchurch: Canterbury University Press, 2008, pp80.

On September 4th 2010, an earthquake, the first of many to strike the Christchurch region, shook the Cathedral. The Cathedral's doors were closed for public safety, and having received significant damage in the following earthquakes and aftershocks, it is now unknown when the Cathedral will be reopened.

See 'Post-Earthquake Condition/Intervention' for more information on the Cathedral Post-Earthquakes.

PREVIOUS INTERVENTIONS

1960 – Installation of Under Floor Heating

1970 - Cathedral Conservation Project

By 1970 the Cathedral's exterior was plagued by peeling and discolouration of its ornate Oamaru stone from decades of neglect and exposure to the pollution from the nearby gas works and rail yards. Damage to the building's stonework was first identified in 1910, when A. & S. Luttrell Contractors identified 400 stones with decay.⁶² In 1966, a letter regarding concern for public safety was received from Christchurch City Engineer, Peter Scoular, which sparked the 1970's conservation project based on a conservation report prepared by Powell Fenwick & Partners.⁶³ A programme of cleaning and repair was initiated by Bishop Brian Patrick Ashby to ensure the conservation of the Cathedral for future generations. Over a 5-year period, decades of damage from pollution and soot was cleaned off, with badly deteriorated stones replaced by the Cathedral's stonemason, Jim Cormie. The Cathedral was restored to pristine condition.

1974 - Interior re-ordering of Cathedral.

Distinguished architect and leader of the "Christchurch School" of architecture,⁶⁴ Sir Miles Warren of Warren and Mahoney was commissioned to reorder and refurbish the interior of the Cathedral to meet the needs

of liturgical renewal; the requirements of the modern Catholic congregation as stipulated by the Second Vatican Council.⁶⁵ The Second Vatican Council called for a closer liturgical relationship between clergy and congregation in new Catholic architecture – a stipulation which Peter Shaw in his book *A History of New Zealand Architecture* states resulted in 'vandalism' of churches by 'poorly conceived notions' of the council's stipulation; Warren's work on the Cathedral of the Blessed Sacrament, however he saw as a 'notable exception.'⁶⁶ Rob Yule, Moderator of the Presbyterian Church of New Zealand, described the work undertaken as the Cathedral having been 'swept clean of religious clutter,'⁶⁷ revealing the beauty of Petre's design.

Warren oversaw the removal of an accumulation of side chapels, the removal of a balustrade that surrounded and cut off the sanctuary from the congregation, and the removal of the high altar, an addition in 1916, chosen by Bishop Grimes. The Cathedral's pews were also replaced with individual, stackable chairs to give flexibility to the interior layout of the cathedral.⁶⁸ Warren designed for the Cathedral a presidential chair, a new altar and pulpit and a new chapel.⁶⁹ His additions were of a modern, stripped neo-classical style, yet clearly of it's time. Large in scale, befitting the mass of the Cathedral they were constructed from cream-coloured terrazzo, black leather and brass.⁷⁰

These changes; both the removal and additions to the Cathedral's interior were met with opposition from within the congregation. Decades on however, Warren's refurbishment has become a celebrated part of the Cathedral's architecture. His additions have become apart of the Cathedral's history, gaining heritage significance through their part in the architectural portfolio of Sir Miles Warren and through their representation of the development of the Catholic Church in New Zealand.

1978 - Halmshire organ restored and re-dedicated.

1997 - Establishment of the Cathedral forecourt. 1997 saw the establishment of a paved forecourt to formalise and improve the Cathedral's frontage.⁷¹

2001 - Upgrade of Under Floor Heating

2002 - Holmes Consulting prepare report recommending Seismic strengthening of Cathedral. During the Cathedral's construction subsidence occurred misaligning parts of the structure, which was attributed to saturation of the soil around the foundations. By 2000, evidence of continued settlement was apparent through cracks and rising damp in some of the structure.⁷² In consultation with Sir Miles Warren, appointed as Consultant Architect for the Cathedral after undertaking the 1970's refurbishment, Holmes Consulting Group was asked to prepare a programme for strengthening the building without detriment to its intrinsic beauty. The objective of which was to guide an intervention to see the Cathedral brought up to modern building safety standards for the protection of the public and to see the Cathedral into the future.⁷³

The Holmes report identified problematic soil underneath the Cathedral, finding 'stream and swamp mud underlain by inter-bedded gravels and marine silts.'⁷⁴ These underlying soils are likely to enhance horizontal shaking and would be prone to liquefaction during an earthquake.

2004 - Seismic strengthening of Cathedral.

In 2004 Holmes Consulting Group were tasked with undertaking the strengthening proposed in their report. The cost to undertake the work was substantial however deemed necessary for public safety and for the retention of the buildings heritage fabric.⁷⁵ Speaking of the conservation efforts, Bishop John Cuneen said that 'another generation were not found lacking in the courage or generosity. And so, a cathedral for our



Pro-Cathedral being moved by traction engine to Ferry Road Site
Circa 1900.

Photograph from: The Weekly Press, Christchurch, 6 Jun. 1900, pp63. Image. Christchurch City Libraries Photo Collection 22 Img00802

time is being handed down to future generations in all its beauty.⁷⁶ Like the refurbishment of 1970-75, the earthquake strengthening of the Cathedral begun in 2004 was a bold yet necessary step to see the Cathedral handed down to the next generation.

The following interventions were undertaken by contractors C. Lund & Son to strengthen the Cathedral:

- Main dome strengthening - structural securing of the dome and its integration with the remainder of the structure.
- Development of a concrete diaphragm at mezzanine level - reinforced concrete overlay to distribute horizontal seismic forces.
- Dowelling of parapet balustrades and steel bracing of decorative statues and crosses atop the façade.
- Strengthening of vertical columns by coring and grouting of vertical steel in every second column in the gallery.⁷⁷

SIGNIFICANCE

The Cathedral of the Blessed Sacrament was added to the register of the New Zealand Historic Places Trust on 7 April 1983; recognising the Cathedral as a Category 1 – Historic Place,⁷⁸ a building with ‘special or outstanding historical or cultural heritage significance or value.’⁷⁹

In Section 23 of the Historic Places Act, The Historic Places Trust proposes four categories for assessing the cultural heritage value of a building; historical, social, aesthetic and scientific value.⁸⁰ These categories are assessed for their heritage value in a Heritage Inventory contained within a Conservation Plan. The Cathedral does not have a Conservation Plan Carole-Lynne Kerrigan, Heritage Consultant at Opus International Consultants was tasked with preparing one, however halted due to the earthquakes of 2011.⁸¹

For the purpose of this thesis the author will assess the Cathedral by the four categories outlined in Section 23 of the Historic Places Act stating any possessed cultural heritage value under each category.

HISTORICAL:

- Site of the development of the Catholic Church in Christchurch. Site originally of Catholic Mission Chapel, B.W. Mountford designed church and pro-Cathedral.
- Vision of Christchurch’s first bishop, Joseph Grimes SM saw the Cathedral become a reality.
- The cathedral is the mother church of the Roman Catholic Diocese of Canterbury, Westland and the Chatham Islands since 1905.⁸²
- Significant part of Christchurch’s cityscape since 1905.
- Designed by distinguished architect Francis W. Petre and recognised as the crowning work of his career.⁸³

SOCIAL:

- Spiritual home of the Roman Catholic Church of Canterbury-Westland and the Chatham Islands
- Construction unified the various groups that made up the diocese: working-class Irish and Scottish immigrants, and English came together to fund its construction over a century ago. The Cathedral gave them a sense of belonging and identity in the province.⁸⁴
- Place of worship, concerts and funerals for generations – a part of life for Canterbury’s Roman Catholic community.
- Bishops enthroned and entombed in Cathedral.
- Roman Catholic Cathedral for the Roman Catholic Diocese of Canterbury, Westland and the Chatham Islands. Significant in terms of the Catholic Church in New Zealand.

AESTHETIC:

- Regarded as an architectural treasure⁸⁵ and as one of the finest examples of church architecture in Australasia.⁸⁶
- Scholarly classical detailing. Regarded as the finest neo-classical building in New Zealand.⁸⁷
- Unique architectural form taking a French influenced, neo-classical approach to the basilica plan. Likened to St. Vincent de Paul, Paris and St. Paul’s, London.⁸⁸
- Architect Petre’s deviation from the traditional basilica plan by shifting the dome to give height and drama to the sanctuary.
- Unique construction with Oamaru stone facing inside and out, acting as a permanent formwork to the concrete structural core.⁸⁹
- Architectural form is one of grandeur produced by sheer volume. The interiors majesty comes from its volume, rows of flanking columns and soaring vistas.⁹⁰

SCIENTIFIC:

- Building of substantial size for 1901-05 measuring 210ft (64m) x 106ft (32m) and 135ft (41m) high, requiring 50 men⁹¹ and two, specifically imported steam cranes to construct the Cathedral.⁹²
- Innovative construction of walls: Oamaru stone facing inside and out, acting as a permanent formwork to a concrete structural core.⁹³ This technique is a signature of architect Francis William Petre.
- Use of reinforcing before reinforced concrete was common practice. Iron ties embedded in the concrete to tie the ceiling and floor to the walls to strengthen the buildings structural bond and to allow for the absorption of energy in an earthquake.⁹⁴
- ‘Noted for its construction technology, craftsmanship and masonry techniques, the Cathedral has been described as one of the finest examples of church architecture in Australasia.’⁹⁵ The Cathedral is



significant for its architectural excellence.

- A monumental building unparalleled in New Zealand, which remains as a monument to the influence of English architecture, the Church of England and the New Zealand church on the development of colonial New Zealand. William Morris, artist and writer, in an 1877 letter, didn't see churches like the Cathedral of the Blessed Sacrament as 'mere ecclesiastical toys, but sacred monuments of [a] nation's growth and hope.'⁹⁶
- Cathedral's inclusion in a millennium publication by the International Institute of Architects entitled: —World Architecture 2000: A Critical Mosaic.
- It has been the Cathedral of the Roman Catholic Church of Canterbury, Westland and the Chatham Islands since 1905. The Cathedral holds significance to generations of Catholic New Zealanders; 'thousands have worshipped in it; made their way to it in times of joy, sorrow or need.'⁹⁷ The Cathedral reflects their customs, beliefs and conveys part of the thousands who have entered its doors or stopped outside to admire its architecture.

The Cathedral of the Blessed Sacrament in 1983 was recognised by the New Zealand Historic Places Trust to have 'special or outstanding historical or cultural heritage significance or value' by the trust's addition of the Cathedral to its register as a Category 1 Historic Place.⁹⁸ After the earthquake of February 22nd, 2011, Earthquake Recovery Minister, Gerry Brownlee echoed this significance by identifying it as one of a few architectural icons that he saw worthy of being rebuilt.⁹⁹ The above analysis of the Cathedral's history against the New Zealand Historic Places Trusts criteria for assessing cultural heritage value reflects the recognition awarded to the Cathedral by the Trust in 1983 and Brownlee's sentiment.

Regarded as one of the finest examples of church architecture in Australasia,¹⁰⁰ the Cathedral has heritage significance for its unique and distinctive architecture;

acknowledged as the crowning work of architect Francis William Petre, for being the dream of Christchurch's first Bishop, Joseph Grimes, and for being the spiritual home for the Roman Catholics of Canterbury, Westland and the Chatham Islands since 1905. As William Morris, English artist and writer, wrote of England's Cathedrals in 1877, which is true of the Cathedral of the Blessed Sacrament, these 'ancient buildings that are not mere ecclesiastical toys, but sacred monuments of the nation's growth and hope.'¹⁰¹

POST-EARTHQUAKE CONDITION

SEPTEMBER 4, 2010

On September 4, 2010 at 4:35am a magnitude 7.1 earthquake struck Christchurch city.

The doors of the Cathedral were closed for public safety - pending inspection by an engineer to determine the extent of damage and to guide further re-strengthening. Jamie Lester, Opus structural engineer described how there were 'a few blocks that are coming a wee bit loose'¹⁰² but concluded that the Cathedral could definitely be repaired. The damage of the September 4th earthquake was determined to be minor - having not damaged the stain glass windows - but identified the need for further re-strengthening.

DECEMBER 26, 2010

On December 26, 2010 at 10:30am the largest of a number of aftershocks, a magnitude 4.9 earthquake struck Christchurch city.

Still closed from the September 4th earthquake, the Cathedral received further, visibly evident damage from the Boxing Day aftershocks. Cracking and displacement became evident in the Cathedral's structure, most notably between the stones of the plinth that supports the dome. Bracing of the dome's structure, to encircle it and brace

its load to the ground looked like the necessary next step.¹⁰³

FEBRUARY 22, 2011

On February 22, 2011 at 12:51pm Christchurch city was struck by a devastating magnitude 6.3 earthquake that caused severe damage and claimed 185 lives.¹⁰⁴

The February 22nd earthquake caused the front towers of the Cathedral to collapse; the belfry and dome of the north tower and the entire south tower collapsed, leaving only the façade's cross and angels keeping vigil.¹⁰⁵ A number of stained glass windows were broken, and significant cracks in the masonry up to 150mm wide appeared around the dome's supporting structure and in the southern facade.

The full extent of the damage was not known, as the building was declared unsafe for assessors to enter. From an external assessment engineers found serious damage to the structure supporting the dome and feared that it and the entire east wall was in danger of collapsing towards the neighbouring school if another strong earthquake were to strike.¹⁰⁶ It was decided that the Cathedral's dome would need to be removed.

JUNE 13, 2011

On June 13, 2011 Christchurch city was struck by further large aftershocks: the largest a magnitude 6.3 earthquake at 2:20pm.

The June 13th earthquakes struck while contractors were preparing to deconstruct the already battered Cathedral's dome. They witnessed the dome 'wobbling like jelly'¹⁰⁷ as the earthquake exacerbated the cracks in the supporting structure. The June aftershock increased the damage and strain on the dome's supporting structure, increasing cracking up to 500mm wide and meant that there was now no choice but to demolish part of the rear section of the buildings as well as remove the dome.¹⁰⁸



POST-EARTHQUAKE INTERVENTION

The Cathedral of the Blessed Sacrament was left in a 'precarious state'¹⁰⁹ after being battered by a number of significant earthquakes in 2010 and 2011. Severe cracking in the supporting structure of the Cathedral's dome has made it unstable and likely to collapse in another strong earthquake. Under significant 'time pressure,' Heritage Consultant, Carole-Lynne Kerrigan of Opus International Consultants led a process of 'Forensic deconstruction' whereby the Cathedral's dome would be deconstructed with every part catalogued to enable rebuilding.¹¹⁰

The initial plan was to lift the copper clad, timber-framed dome off in one piece using New Zealand's largest crane.¹¹¹ Preparations for this deconstruction were underway when the June 13th aftershocks occurred. These aftershocks exacerbated the existing cracks and the weight of the dome had been found by engineers to be pushing its support structures outwards.¹¹² This highlighted significant danger for contractors working on the Cathedral. The decision was made to deconstruct the dome from above, with greater distance between the contractors and the structure, and to cut it into sections as opposed to lifting it in one piece.

Deconstruction of the dome was chosen to prevent the building from future damage and so that the dome could be removed safely with as much information collected about the building as possible.¹¹³ The condition of the dome's structure meant that the dome could fall at any point – such a collapse would cause significant damage to the building and poses a major public safety risk. To deconstruct the dome aligns with 'best practice methods' of the heritage profession as recommended in Section 7 of the ICOMOS (International Council on Monuments and Sites) New Zealand Charter. Section 7 recommends where a place of cultural heritage value is at 'risk from any natural process or event... appropriate action to

minimise the risk should be undertaken.'¹¹⁴ Kerrigan's deconstruction of the Cathedral is minimising the potential damage to the Cathedral if the dome were to collapse. Deconstruction will stabilise the buildings fabric, allowing closer examination of the damage to inform decision-making around the Cathedral's future.

Every part of the Cathedral salvaged from the rubble or removed during the stabilisation is photographed, has its location recorded, is allocated a unique code¹¹⁵ and is logged onto a database so that each fragment of masonry, wood or copper sheet, can be traced with the intention of being put back or used as a template for reconstruction Paul McGahan of the New Zealand Historic Places Trust says this painstaking process of salvage and documentation is to 'keep options for any future rebuild as open as possible.'¹¹⁷ Kerrigan says it's a complicated and expensive process, but if 'we don't take the time to prepare the groundwork for possible restoration then we will never be able to do it later on.'¹¹⁸

APRIL 2011

On April 12 the Cathedral's bells weighing a combined 3660kg were removed from the rubble atop the northern tower and were placed into storage.¹¹⁹

JUNE 2011

The aftershocks of June 13th resulted in a change of strategy as to how the dome would be deconstructed. The decision was made to 'work from above and dismantle piece by piece.'¹²⁰

First analysis of interior by iPad controlled toy helicopter with camera. The footage revealed that the columns supporting the nave were vertical and doing their job of supporting the structure. This was a positive discovery, as this means repairing the structure has greater possibility when there is still a functioning load bearing structure.¹²¹

JULY 2011

New Zealand Defense Force unmanned robot with camera enters Cathedral to further inspect the structure.

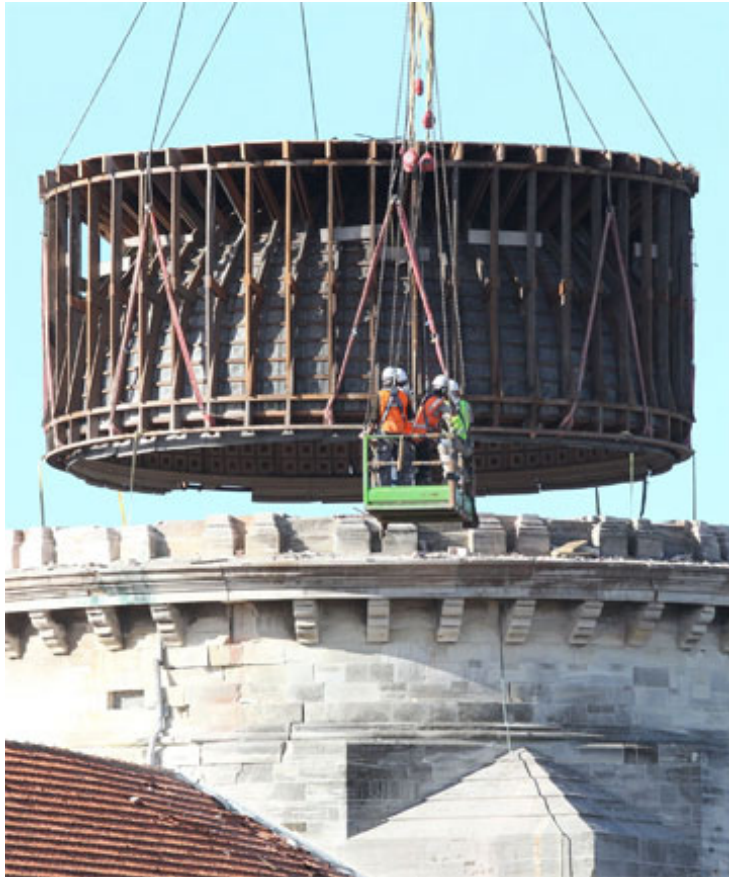
JULY – AUGUST 2011

Stabilisation of the Cathedral through the deconstruction of the dome and rear structure begins. The dome's copper is removed before its timber structure is removed in four sections. Supported by a specifically designed steel ring the internal dome is lifted out 'virtually undamaged.'¹²² Loose sections of the structure; the front of the northern tower and the rear of the building are pulled down.

A number of shipping containers are stacked against the Cathedral's walls, with hay bails between to protect and brace the Cathedral while decisions are made about its future.

The post-earthquake intervention has cost the diocese \$3million dollars to deconstruct the damaged parts of the Cathedral, catalogue the elements and transport them for storage.¹²³ Lance Ryan, chair of the Cathedral Management Board, estimated that restoring and improving the cathedral would exceed the initial estimates and could now cost in excess of \$100 million dollars.¹²⁴ The future of the Cathedral hangs on feasibilities and cost, with a conclusion on its future likely in 2013.

Parishioner Robyn Bascand doesn't think the Cathedral will stay in ruins, but that a phoenix will rise and the restored building will be 'more amazing because of its battered past and because of the faith of all the people who put all of their heart and soul into seeing it rebuilt.'¹²⁵



Photographs from: Catholic Diocese of Christchurch, *Conservation of the Cathedral*, 2012. Web. 10 Jan. 2013. <<http://www.chch.catholic.org.nz/?sid=2720>>

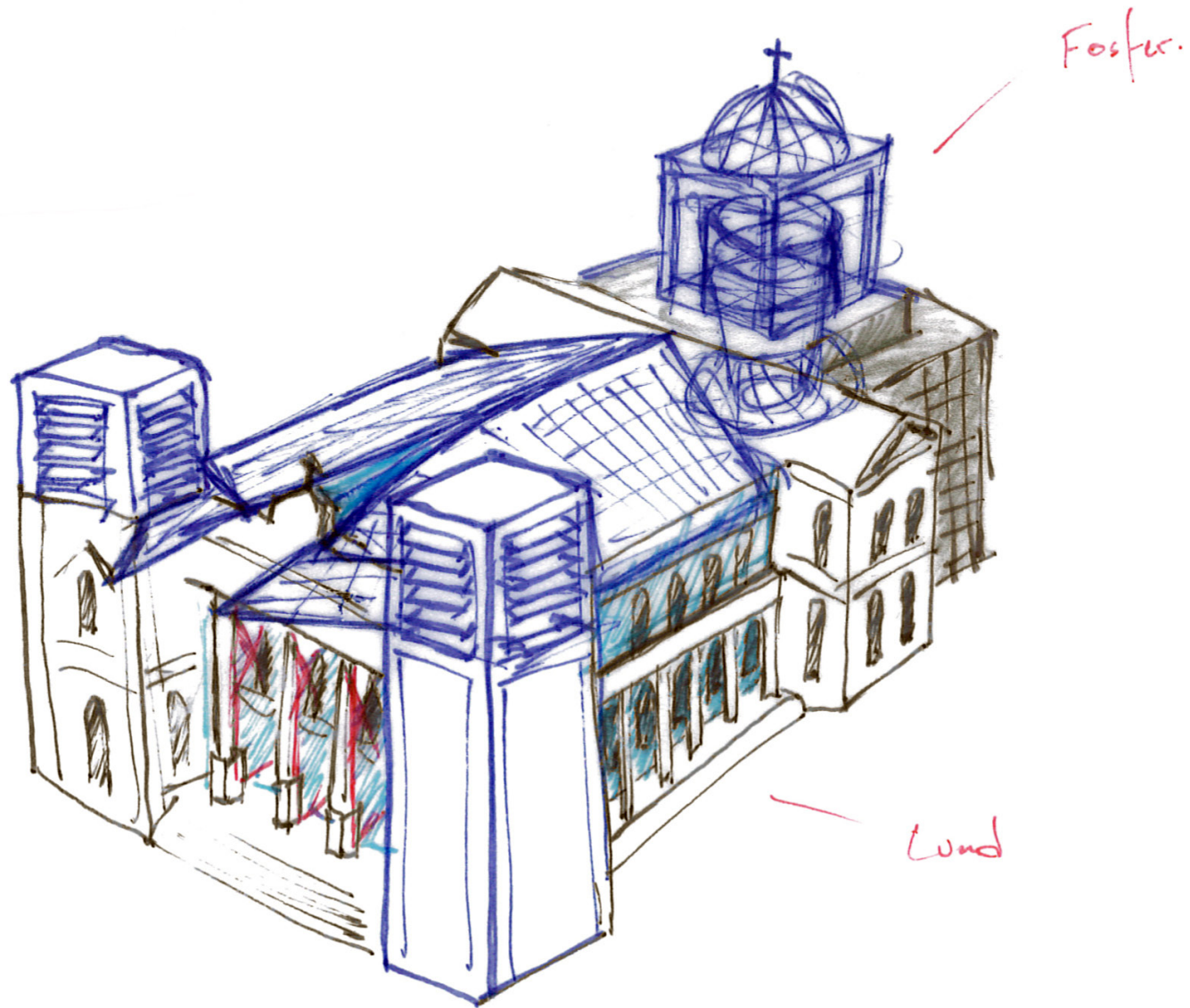
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DESIGN EXPERIMENTS



Foster.

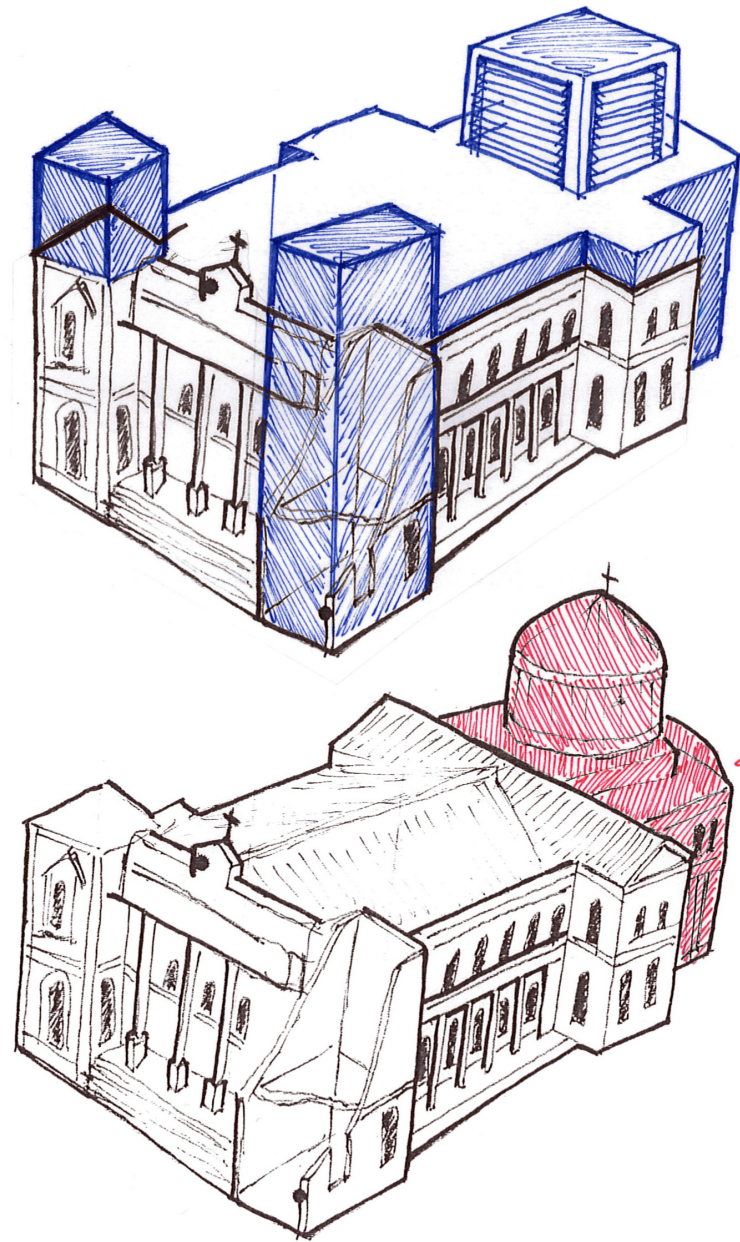
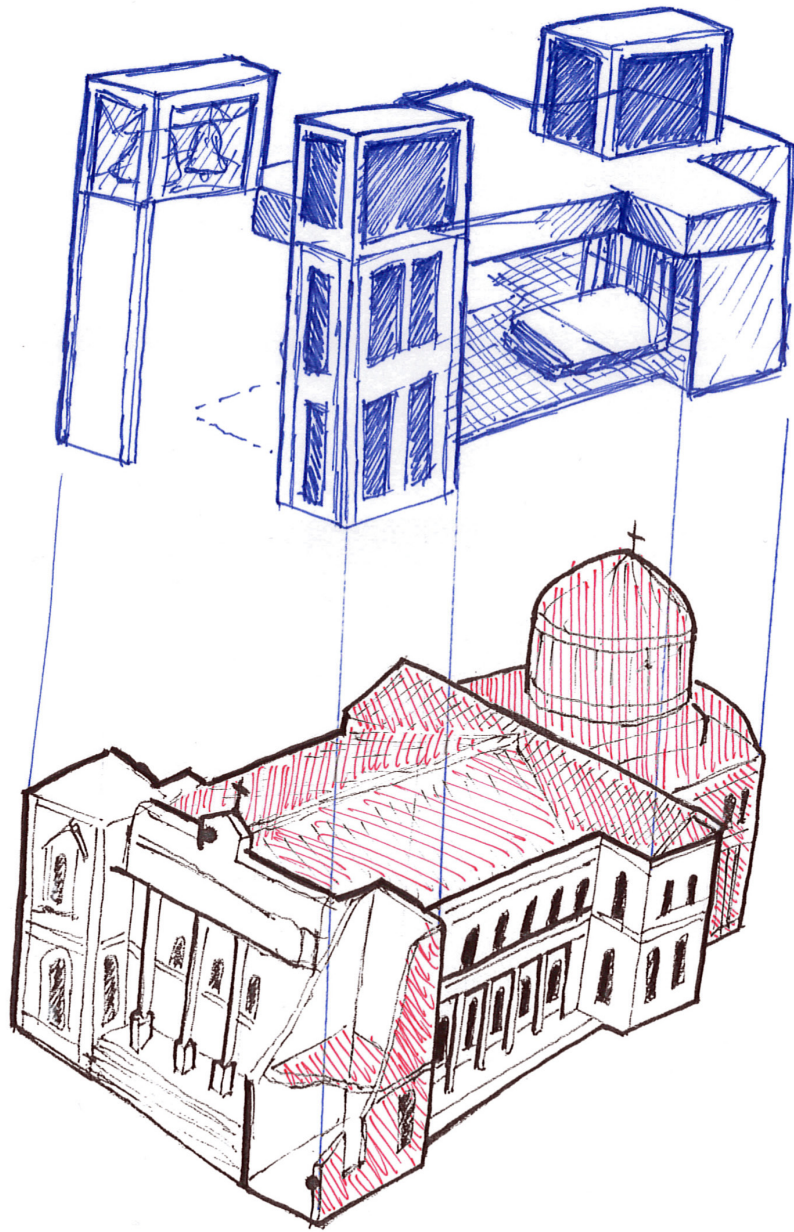
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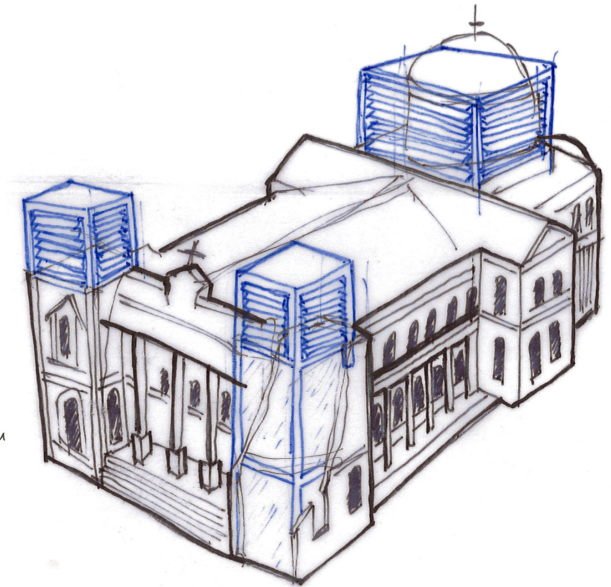
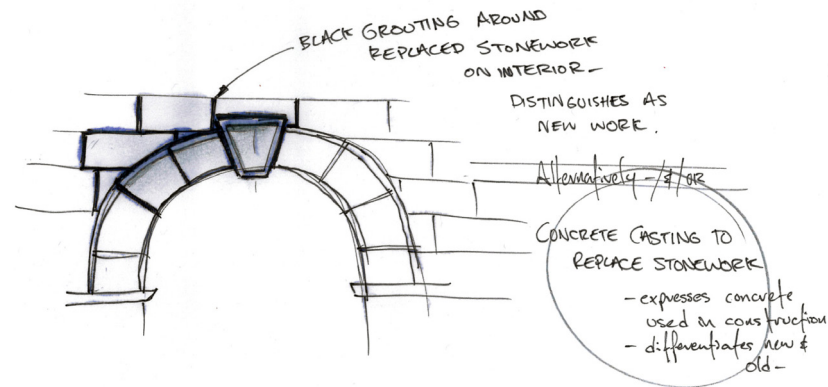
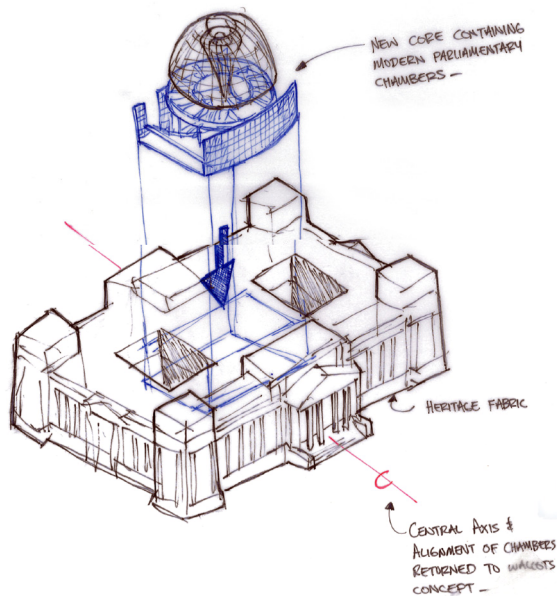
‘In another age people would have repaired it using best practice.
They would have just replaced a stone with a new one and that would have become apart of its history.’¹

JEREMY SALMOND, CONSERVATION ARCHITECT.

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DEMOLISHED
JULY 2012.



This Chapter applies the intervention tactics identified in Chapter 2, *Precedents* to the Case Study Building. These tactics are explored through sketch and diagrams, and evaluated for what did and didn't work in terms of their suitability as an intervention method for use on the Case Study Building.

REICHSTAG, BERLIN, GERMANY - SIR NORMAN FOSTER.

Summary of intervention tactics:

- Peeling = stabilisation
- Revealing history
- Attributing value
- Patching and bracing
- New indicated by a shadow cavity
- Reinstating original grid/layout
- New work that is distinct
- Conceptual *modus operandi* driving the intervention

Foster inserted into the historic shell of the Reichstag

a modern, working parliament. This experiment tests this, by exploring how the deconstructed fabric of the Cathedral could be replaced by a new building that accommodates the functional requirements of the Cathedral's altar. The insertion of a new altar and dome structure would allow for the integration of contemporary facilities. Placing a new enclosure and dome structure into the ruins works as a method of reconstructing this significant element.

If the altar area of the Cathedral could not be conserved, the insertion of a new structure to enclose the ruins and make the Cathedral functional would be a feasible option. This intervention is dependant on the amount of original fabric that can be conserved.

The new dome and towers are distinctly new and not gestures to the original. Their square form is experimentation with the form that they could take to be distinctly different and make change on the skyline whilst still embodying the old.

The marking between new and old with a shadow cavity in the Reichstag's repair could be adopted for the repairs that will need to be made into the Cathedral's fabric. A distinct mortar could be used to distinguish reconstruction and repair from the original, undamaged fabric.

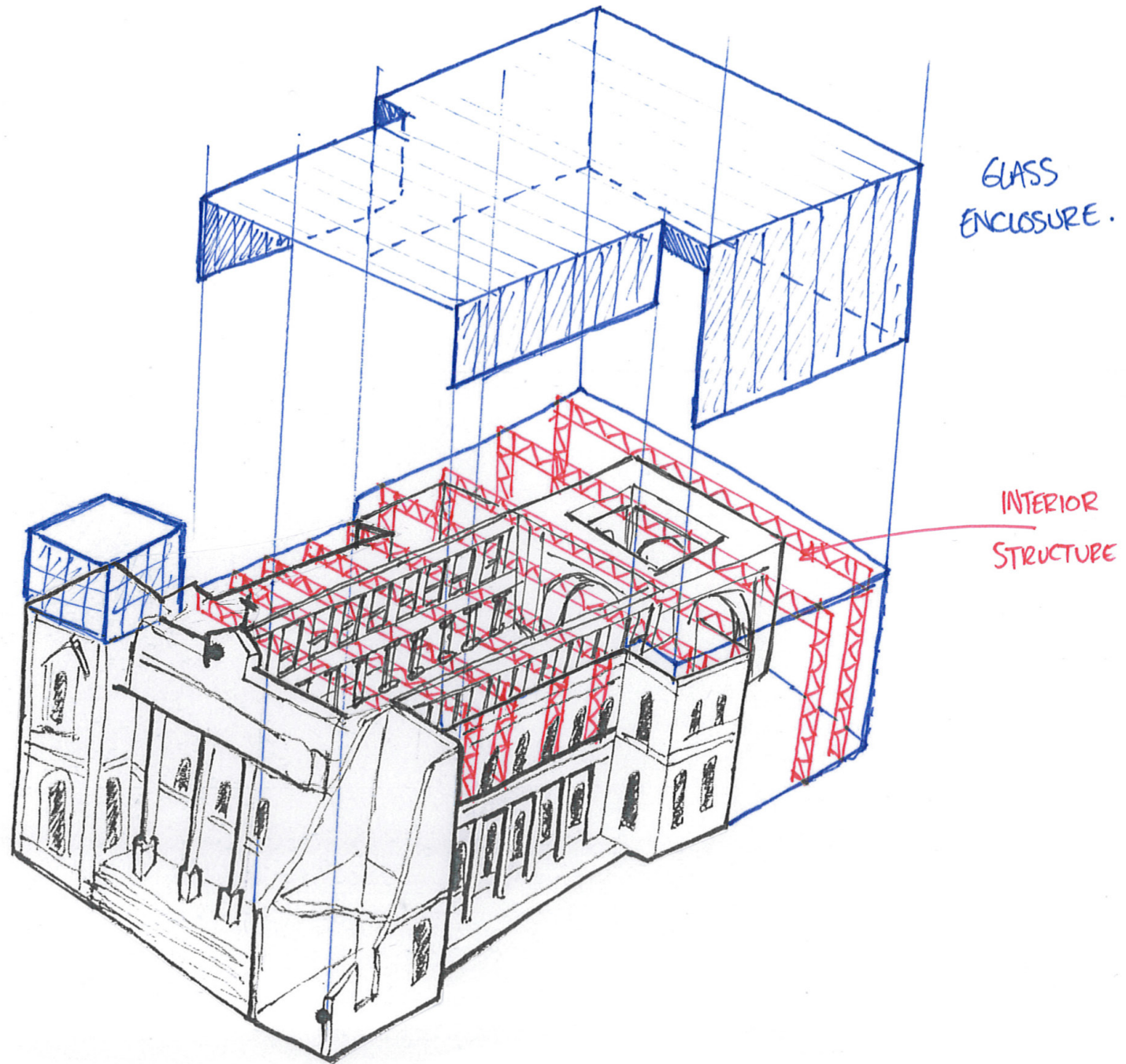
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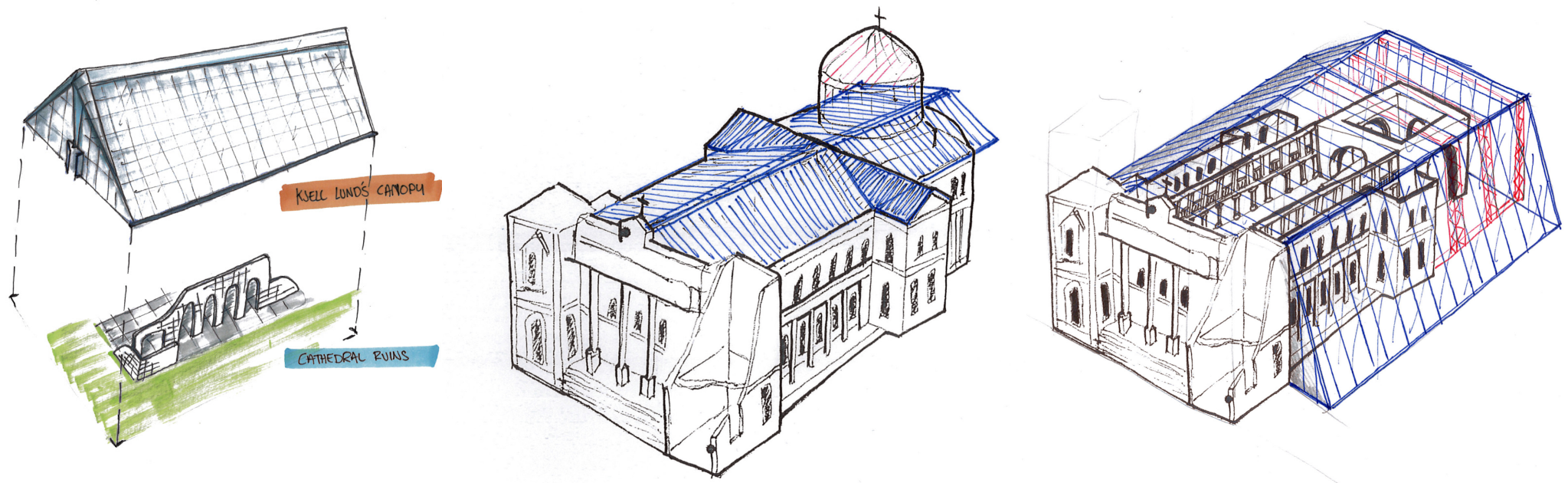
What worked?

- Insertion of enclosure at rear of Cathedral
- Reinterpretation of dome and towers
- Distinction between new and old fabric

What didn't?

- Insertion of functional space without loss of fabric of 'high importance.'





HAMAR CATHEDRAL RUINS, NORWAY – LUND & SLAATTO ARKITEKTER

Summary of intervention tactics:

- Preservation through new work
- Bracing
- Enclosure
- Distinctly a new work.
- Restoration of function: new cathedral out of the old.

Lund's intervention protects and reinstates function to the ruins of the Hamar Cathedral. His gesture makes no intervention into the physical heritage fabric but provides protection and enclosure with a steel and glass structure that spans over the ruin.

The testing of this with the Cathedral of the Blessed Sacrament the enclosing structure could be applied to and over the heritage fabric to provide an enclosure similar to the original composition.

This method strips key architectural and historical elements from the buildings form. To enclose the structure and not replace the dome would strip the Cathedral of its grandeur and personality. The enclosing structure could however include a raised section as a gesture to the original dome.

The experimentation with Lund's intervention tactic explores the reconstruction of the Cathedral using a glass enclosing structure. The structure encloses the deconstructed rear section and provides an alternative enclosure to that of the original damaged roof. The sketch includes the suggestion of integrating the structure of the enclosure into a bracing structure that serves a dual role by stabilising the Cathedral's fabric.

This approach can be applied as a simple roof structure that rests upon the Cathedral (similar to Sverre Fehn's Hamar Bispegaard) or as an enclosing structure that contains either the rear or entire structure.

Lund's gesture glorifies the ruins of the Cathedral and preserves them as a museum artefact. This approach could be adopted as an intermediate gesture while decisions are made regarding the Cathedral's future.

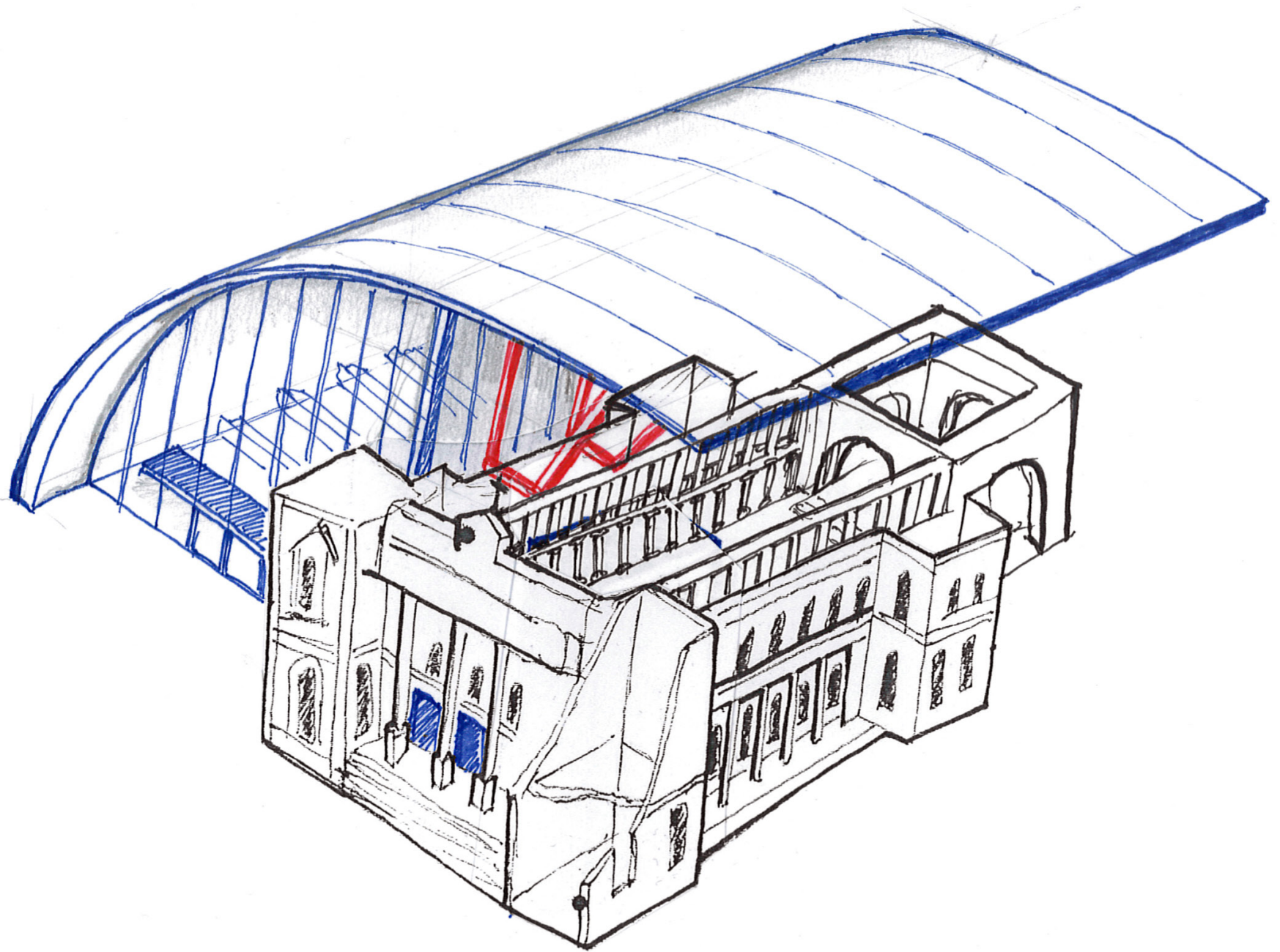
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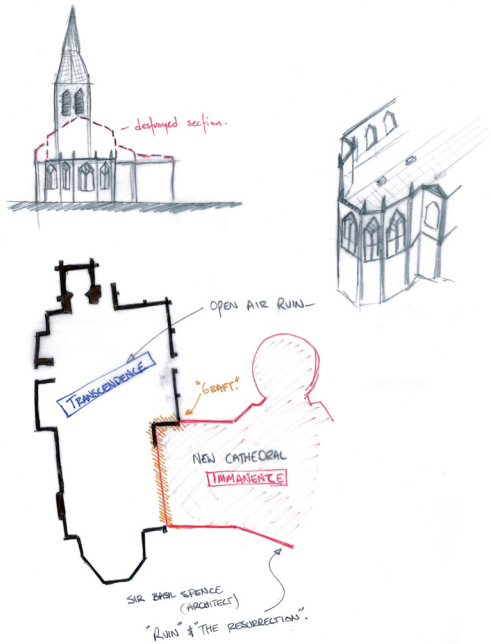
What worked?

- Encloses Cathedral
- Enclosure that reveals significant interior elements

What didn't?

- Lacks simplicity of Lund's gesture
- Changes nature of interior due to glazed enclosure



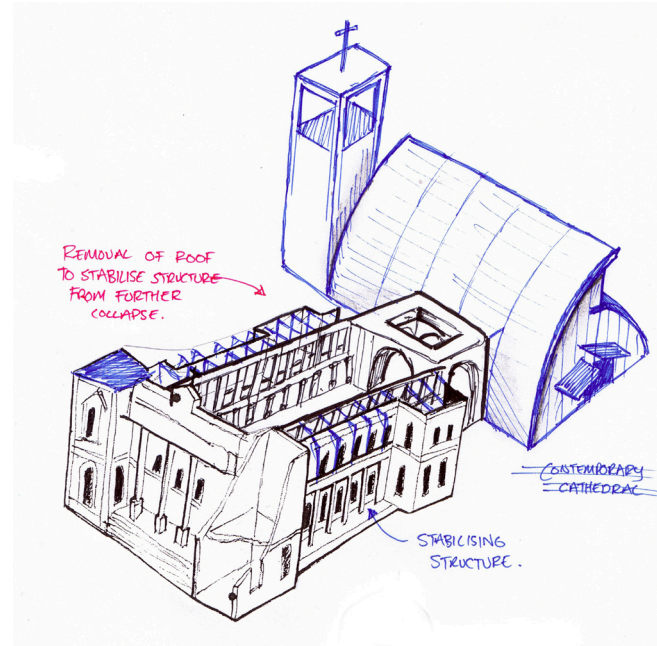


COVERTY CATHEDRAL, COVENTRY, ENGLAND – SIR BASIL SPENCE.

Summary of intervention tactics:

- Grafting old to new
- “Blood group”
- Materiality
- Preservation as a living ruin
- Bracing

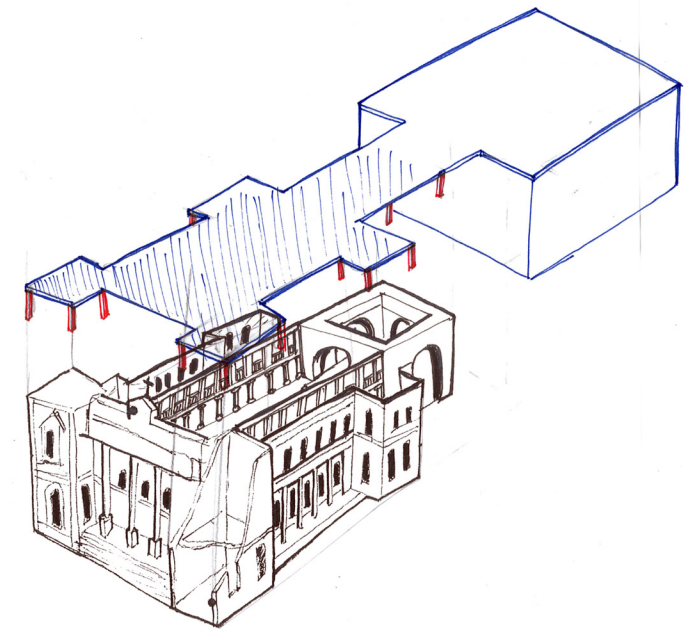
Basil Spence experienced what he described as the pulse of the old Coventry Cathedral and chose to preserve it and build his new Cathedral beside it. His design appears to graft the old to the new Cathedral. Spence designed the new Cathedral to be of the same ‘blood group’ as the old. His new Cathedral is constructed from a similar stone, and despite the distinctly different architectural language, his Cathedral has the boldness and grandeur of the Gothic Cathedral’s ruins. Spence’s intervention preserves the old as a ‘living ruin’



with the new building interweaved with the old. The testing of this explores how a new structure could relate to the old. The new structure using Spence’s approach should be connected to form one Cathedral and the experimentation also includes the new building protecting the old. The sketches of this explore a new building that reaches over the ruined Cathedral. This gesture is not new overpowering old, but the new Cathedral reaching the height and scale of the deconstructed elements of the original cathedral. This experiment explores whether the new building could re-establish the scale and presence on the streetscape and cityscape formerly possessed by the old Cathedral.

The new building could arch over the ruin to enclose it, in doing so provide protection for the ruin and also begin to form one building out of the two.

Key difference between Spence’s approach and that of Egon Eiermann (page 83) is the relationship between new and old. Spence grafts his new Cathedral to the



old, they are interwoven and architecturally share what Spence calls a blood group. Eiermann’s gesture is one of juxtaposition, a stand off between new and ruin.

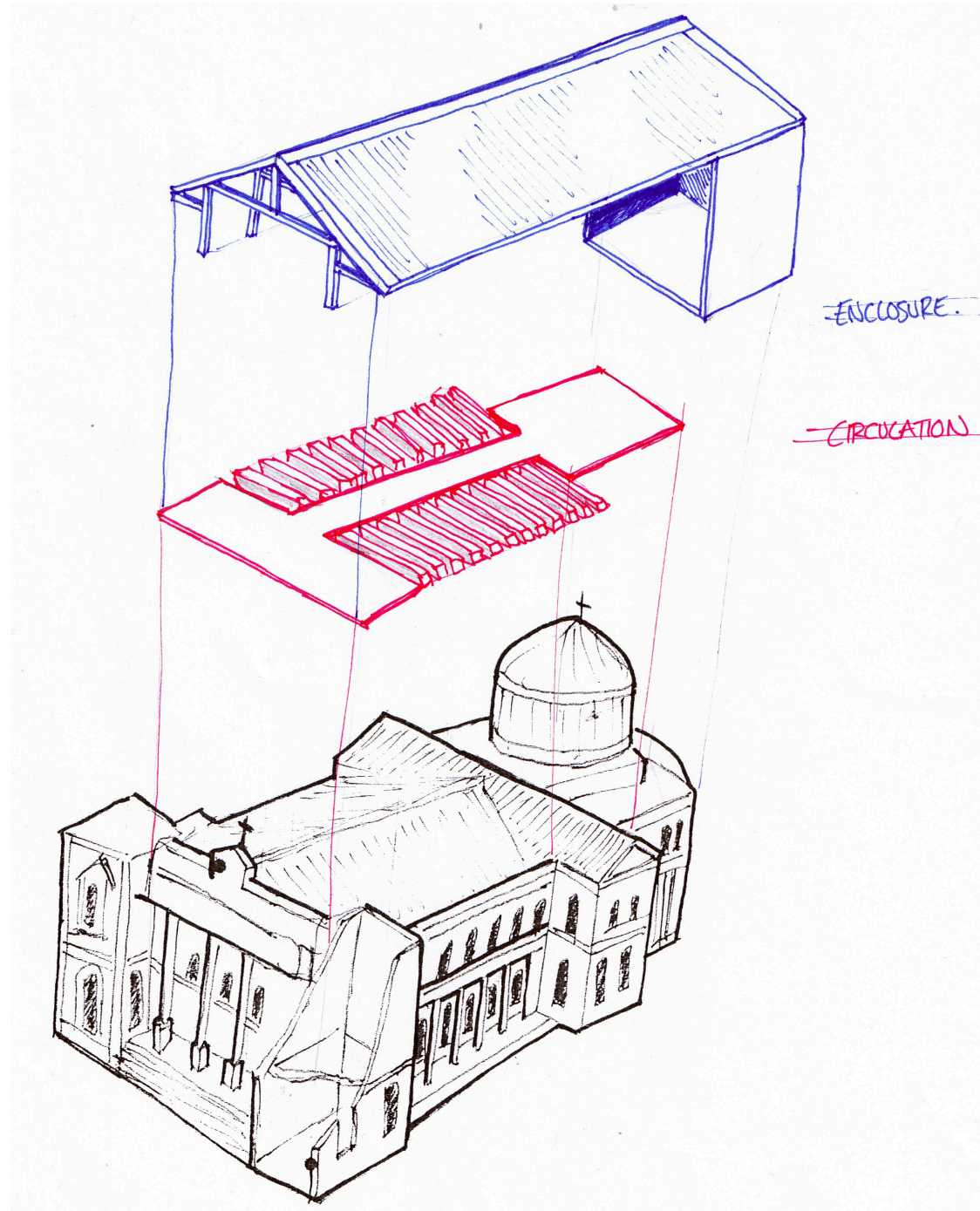
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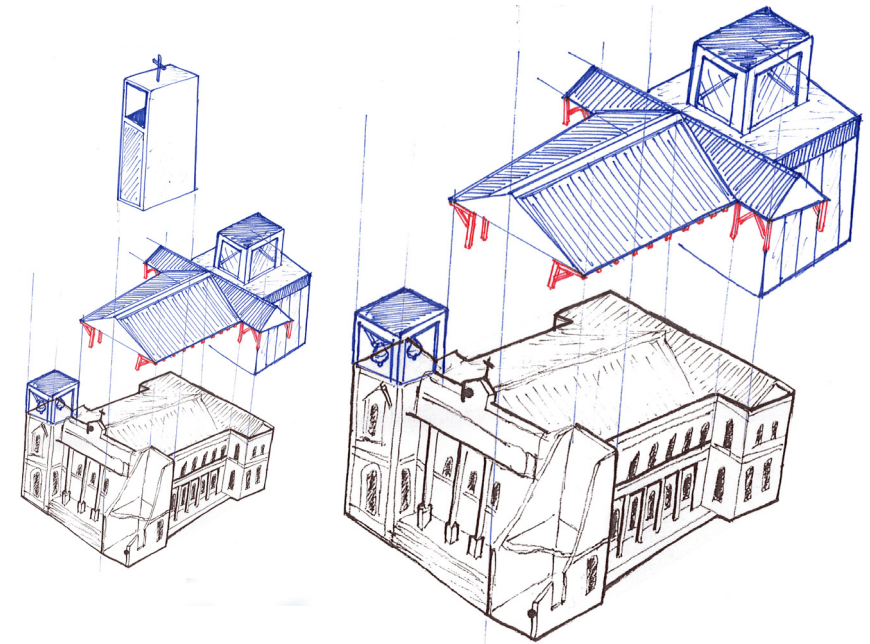
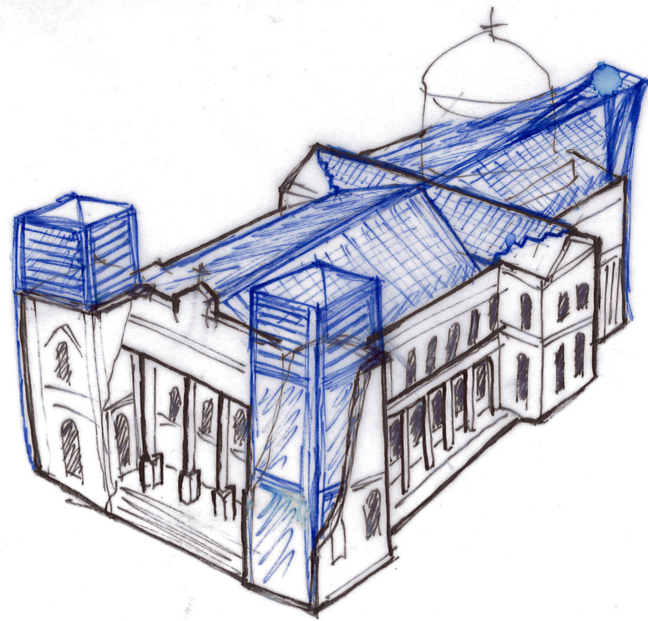
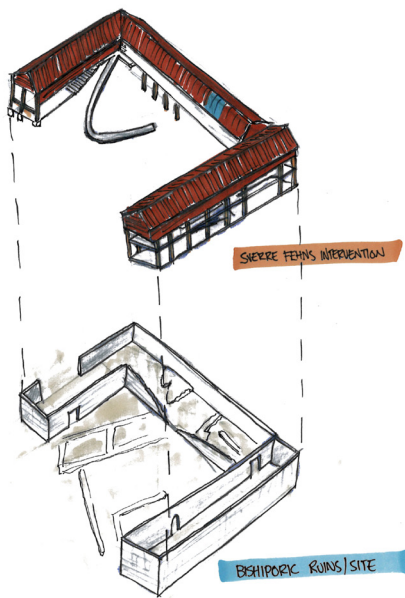
What worked?

- Relationship between new and old to form one Cathedral

What didn't?

- Original Cathedral appears secondary
- Loss of grandeur to new building
- Scale of Cathedral complicates the usability of the ruin compared to Coventry.





HAMAR BISPEGAARD, NORWAY – SVERRE FEHN

Summary of intervention tactics:

- Archaeology
- Respect
- Placement of enclosure
- Form from outline of ruins
- Glass slabs enclosing windows
- Adds function
- Inserted circulation – allows archaeology to continue below

Sverre Fehn's intervention creates a functional museum by placing on the ruins a structure that replicates their form and encloses the structure. Circulation is inserted on concrete walkways that rise above the archaeology of the site preserving the archaeological exploration at ground level.

Fehn's architectural gesture of placing the new structure

in a way that appears to rest on the historic fabric and it's distinct, independent structure is an approach that would be appropriate for the reconstruction or reinterpretation of elements of the Cathedral – particularly the belfries. The structure of the 'placed' enclosure could have the duality of supporting the Cathedral's fabric as well as supporting the new enclosure.

Fehn's intervention interprets the ruin of the Bispegaard providing a gesture to the form that the historic buildings could have taken. The Cathedral's form is still held in people's recent memory, which means that the application of a tactic for placing an enclosing gesture on to the structure would need to resemble the form of the original fabric.

The experiments explore the placement of a distinctly new enclosing structure upon the ruins that would allow the Cathedral to be reused. The sketches also propose the insertion of a new circulation layer that is a distinctly new floor and seating that would provide a platform for

viewing the 'archaeology' of the Cathedral's interior.

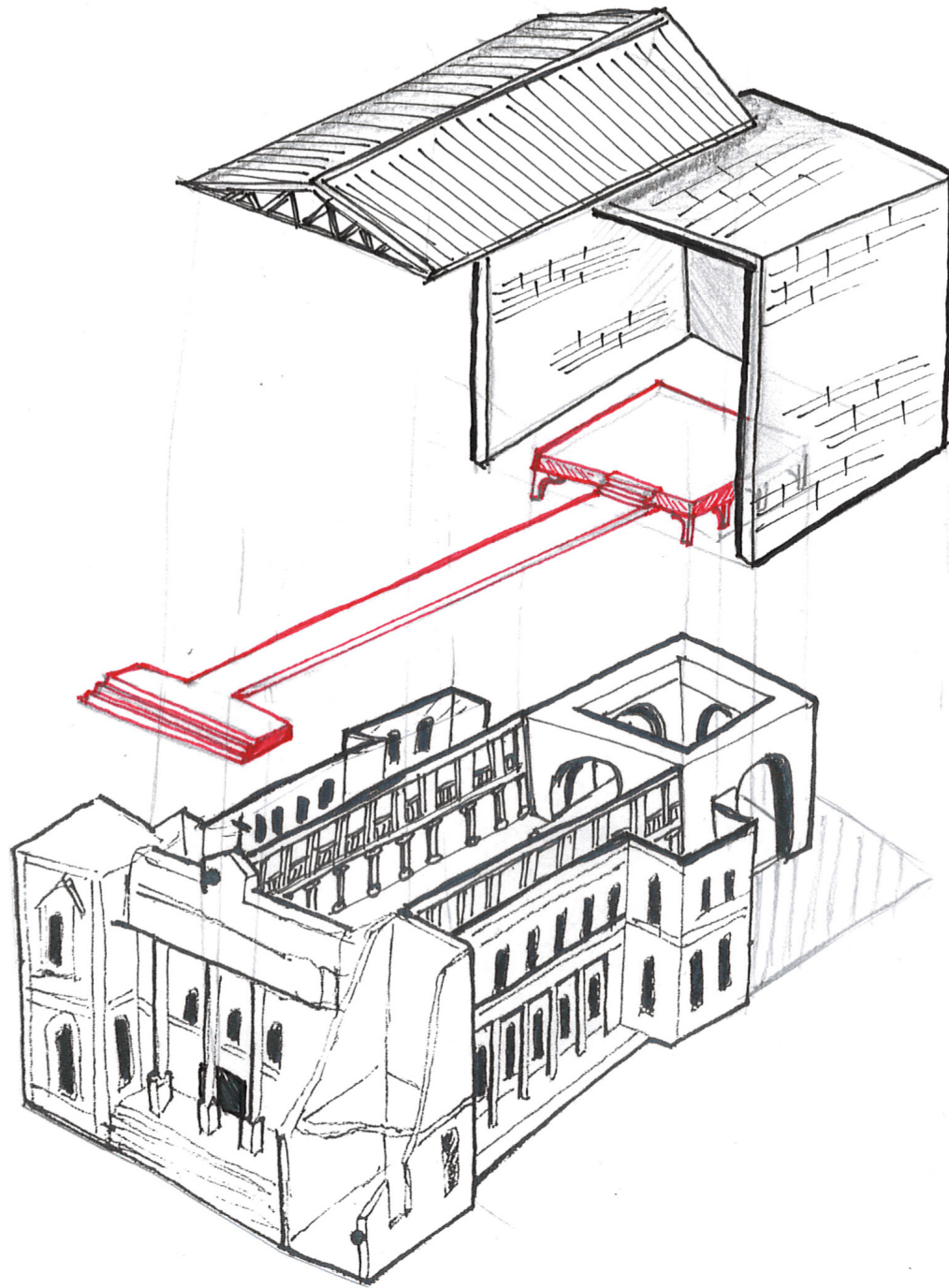
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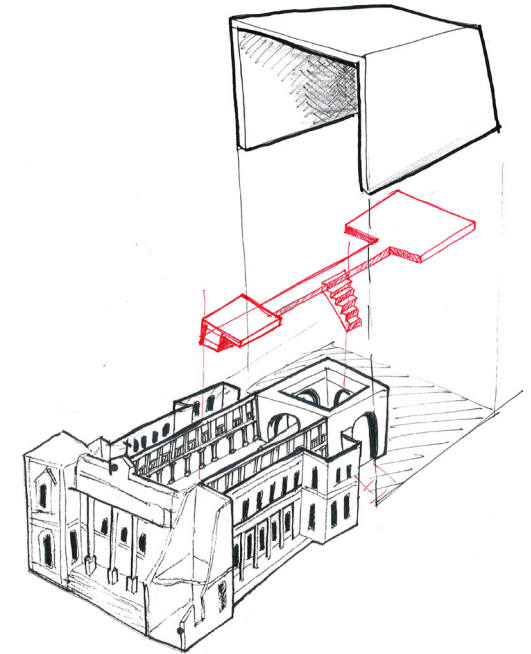
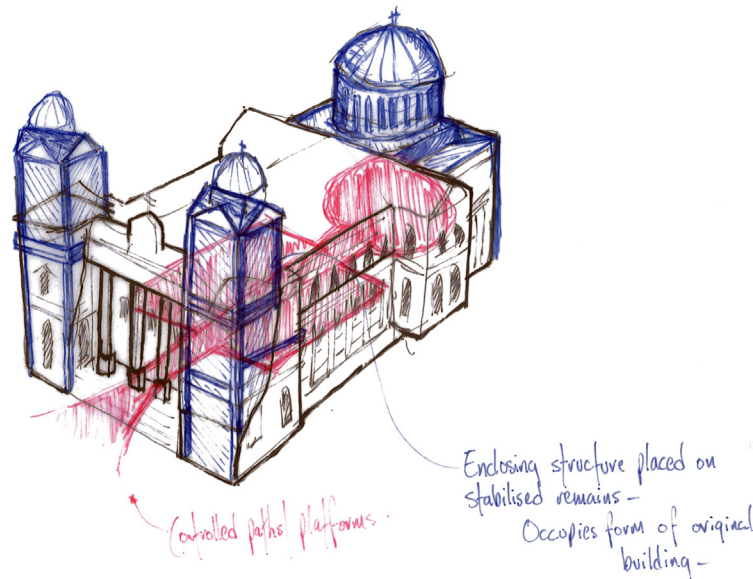
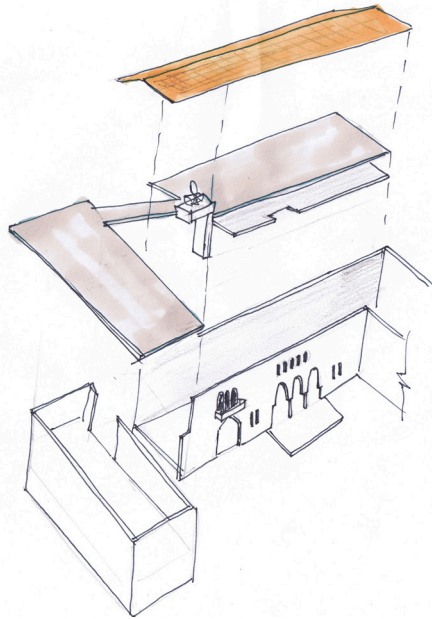
What worked?

- Simple enclosure
- Insertion of circulation platform to create engagement between new and old.
- Structure that rests upon ruin

What didn't?

- Simplicity lacks grandeur and presence of original design





MUSEO DI CASTELVECCHIO, VERONA, ITALY – CARLO SCARPA

Summary of intervention tactics:

- Grafting
- Peeling and revealing – so the history is readable
- Reflection
- Inserted circulation

Scarpa's intervention at Castelvechio was that of peeling and revealing the layers of the building's history and the insertion of functionality into the structure. Scarpa's peeling and detailing of the building's fabric presents its history as a readable artefact. He peeled away one layer at a time, revealing the layers of the architectural palimpsest; allowing the museum's walls to be read as a museum exhibit themselves.

The design experiments address enclosure, circulation, roof and the Cathedral as layers that compose the intervention. The circulation provides a controlled route

along which the layers of the intervention are revealed. The façade is not reconstructed in this experiment. The intervention begins with the circulation walkway that reveals a new roof and rear enclosure. The circulation includes a raised altar space. These elements fit around or inside the colonnade and arches that make up the Cathedral's heritage fabric of 'high significance.'

Scarpa's intervention at Castelvechio was undertaken over a fifteen year period. The intervention into the Cathedral could be approached in a similar, periodic manner. The initial intervention would need to consist of the enclosure and stabilisation of the structure. After this the Cathedral could be reconstructed element by element, evolving as a heritage palimpsest.

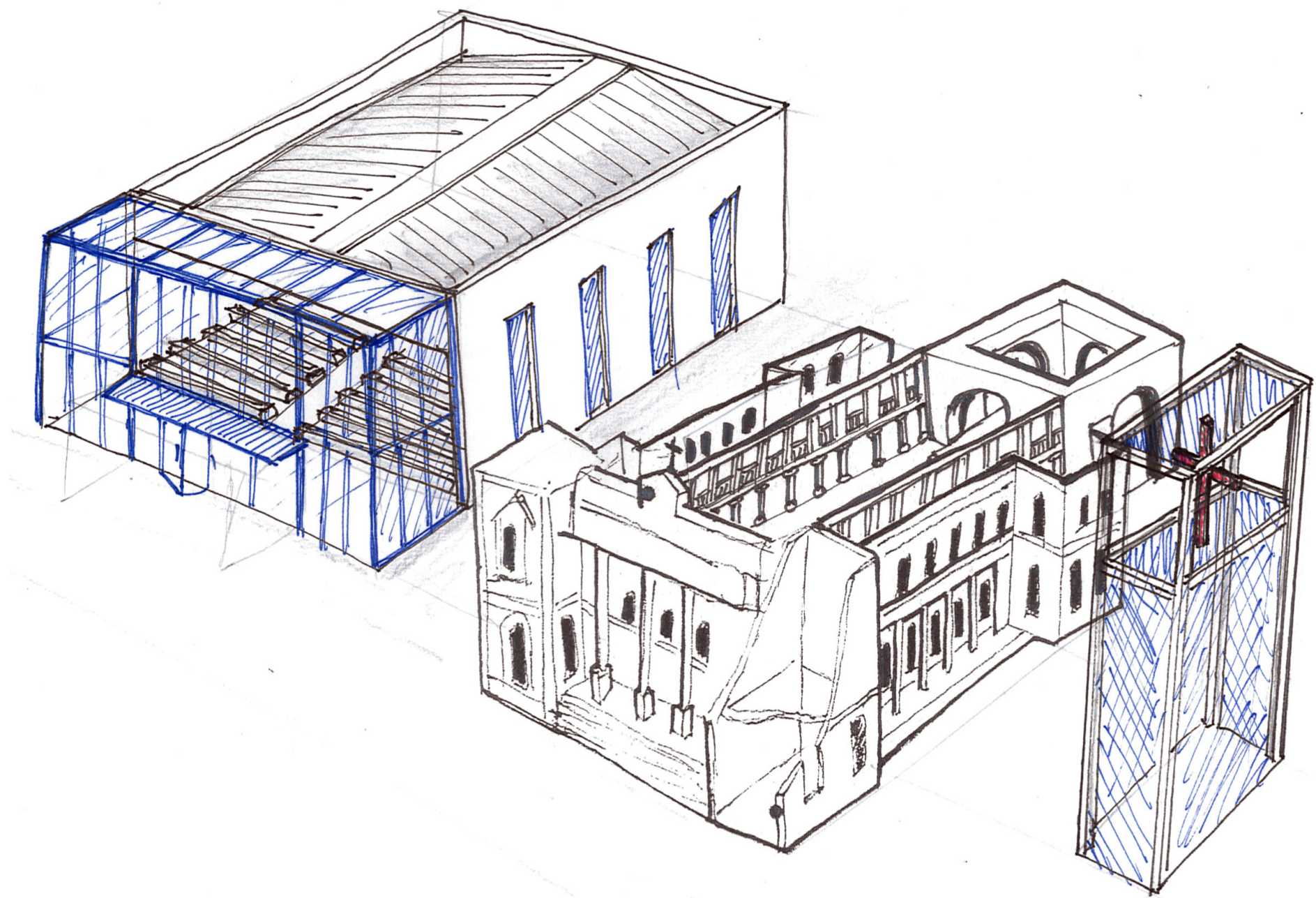
EXPERIMENT SUMMARY:

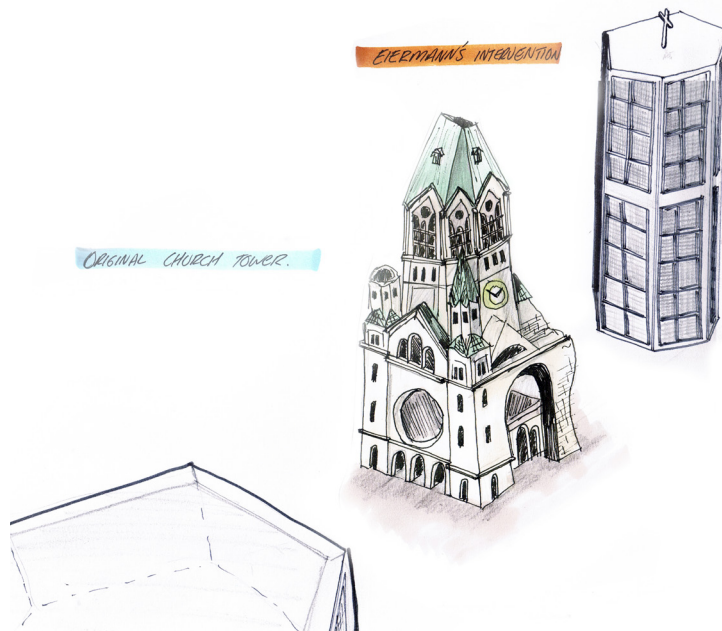
What worked?

- Simple enclosure
- Layering of intervention
- Treatment of fabric as a palimpsest

What didn't?

- Confusing to distinguish between layers.
- Dialogue should be between new and old rather than layers





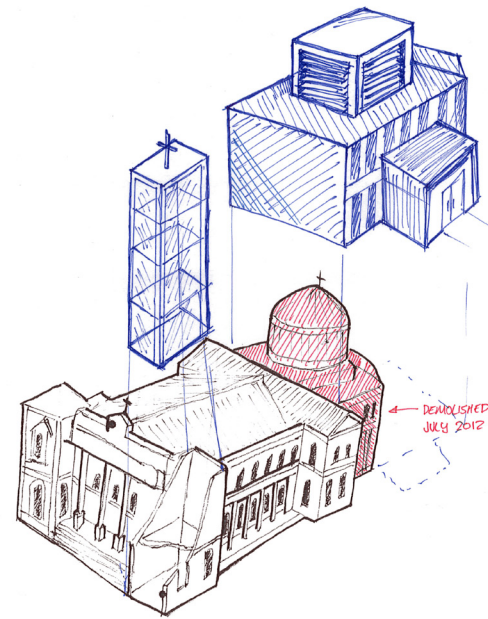
KAISER WILHELM MEMORIAL CHURCH, BERLIN, GERMANY – EGON EIERMANN

Summary of intervention tactics:

- New work
- Non-intervention
- Reinterpretation

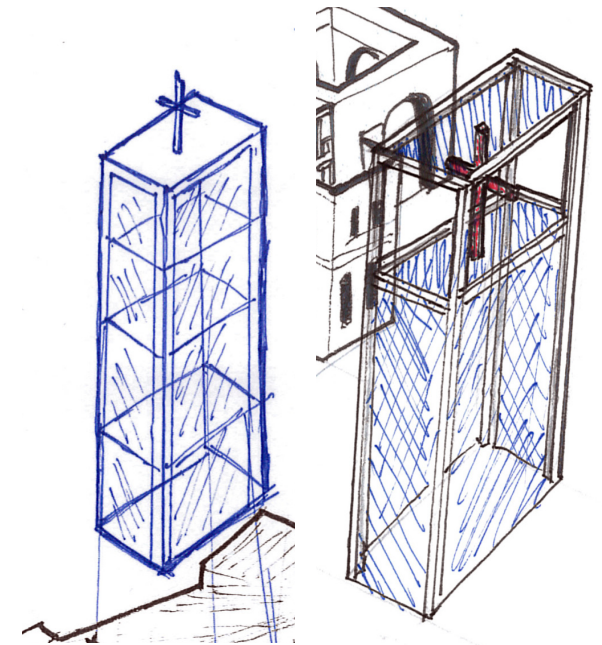
Egon Eiermann did not intervene into the fabric of the damaged Kaiser Wilhelm Church because his motivation as a functionalist architect was to provide a functional church, rather than to restore the old.

His new building stands in contrast to the ruined tower of the original church. Eiermann's church consists of four buildings; the main church building, bell tower and two auxiliary buildings. The main building and the bell tower are on opposite sides of the ruined original tower. Eiermann's new church reinterprets the elements of the traditional church through a new tower, nave and altar.



The design experimentation with this approach treats the Cathedral as if it was preserved as a heritage object amid a new church building. Unlike Basil Spence's intervention, it is not about grafting the two into one Cathedral, but about opposing gestures. Eiermann's scheme did complement the original church through its massing and transcendent lighting. Its presence and scale mirror that of the original church and the interior's transcendent lighting through the honeycomb structure is a modern interpretation of the greatest of Gothic stained glass.

Eiermann's intervention tactic could be appropriate if the decision is made to preserve the Cathedral as it is for future reconstruction with a new building to meet the functional needs of the diocese built along side.



EXPERIMENT SUMMARY:

What worked?

- Old standing independent beside new building.

What didn't?

- Tension between old and new.

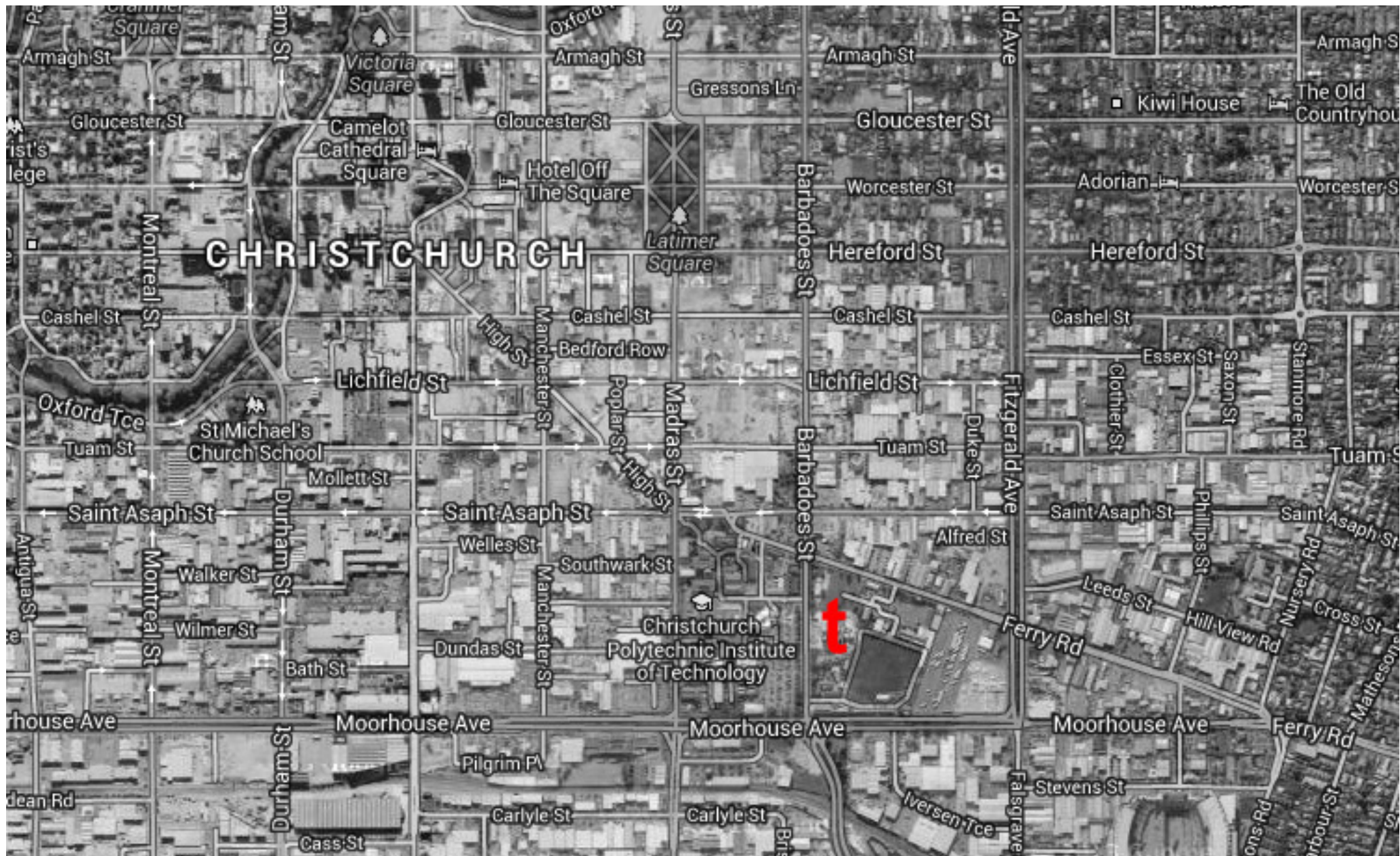
APPLICATION



‘My hope is that there is the will to rebuild it so that it can be made strong again.’¹

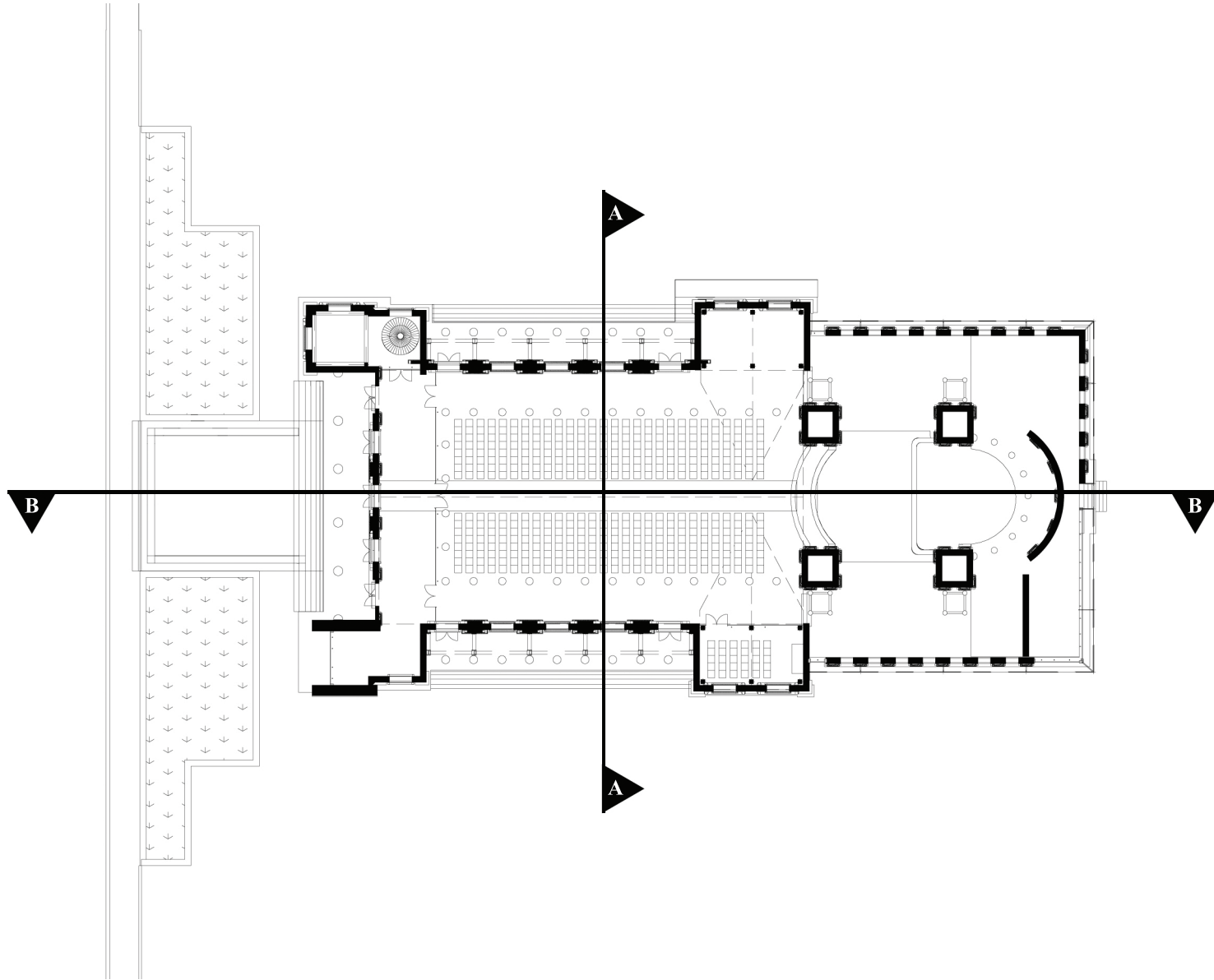
SIMON PASCOE, ARCHITECT & PARISHIONER.

¹ Architect Simon Pascoe, ‘My Favourite Building,’ Hansen, Jeremy (ed.), HOME New Zealand, April/May 2011.

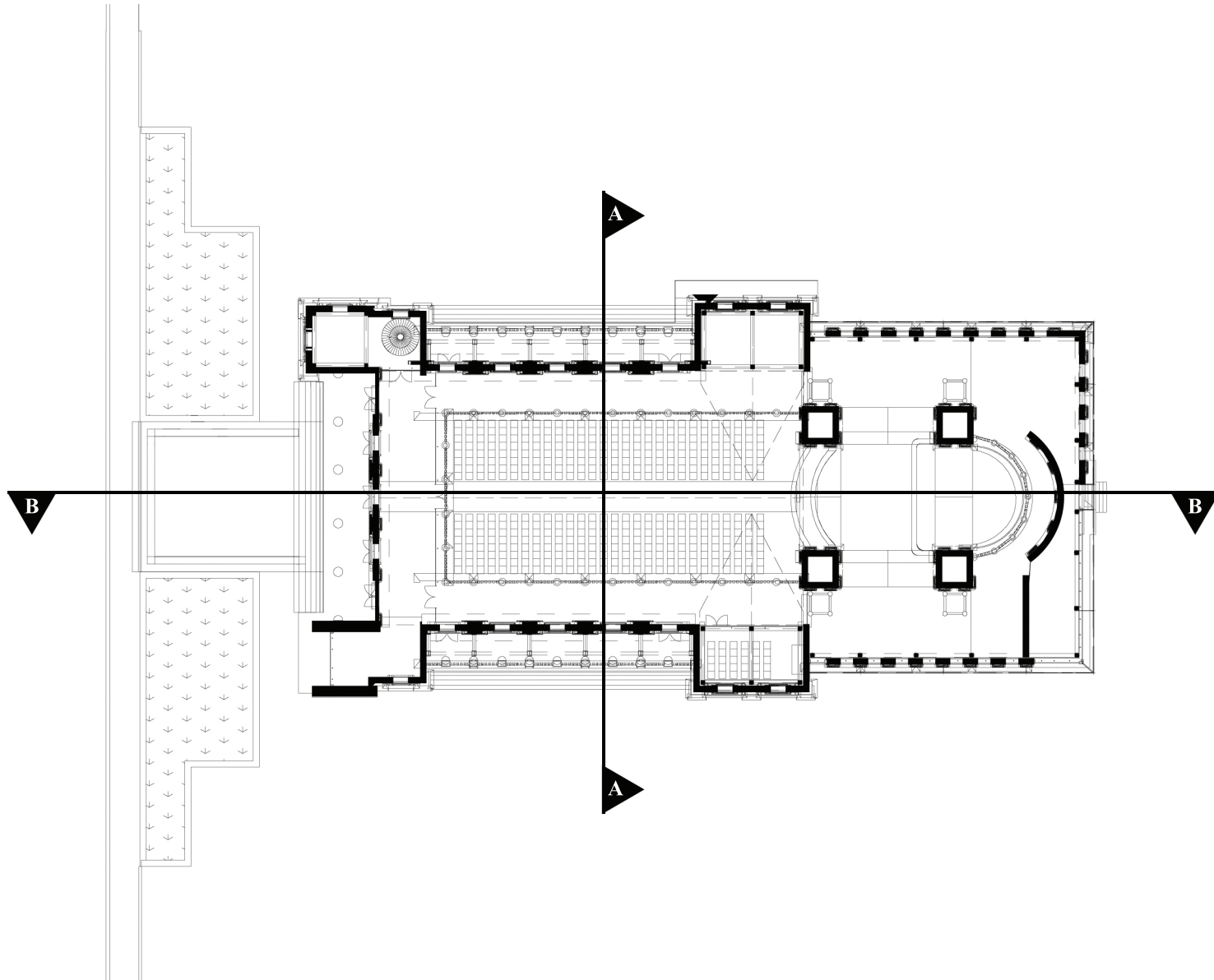


LOCATION MAP

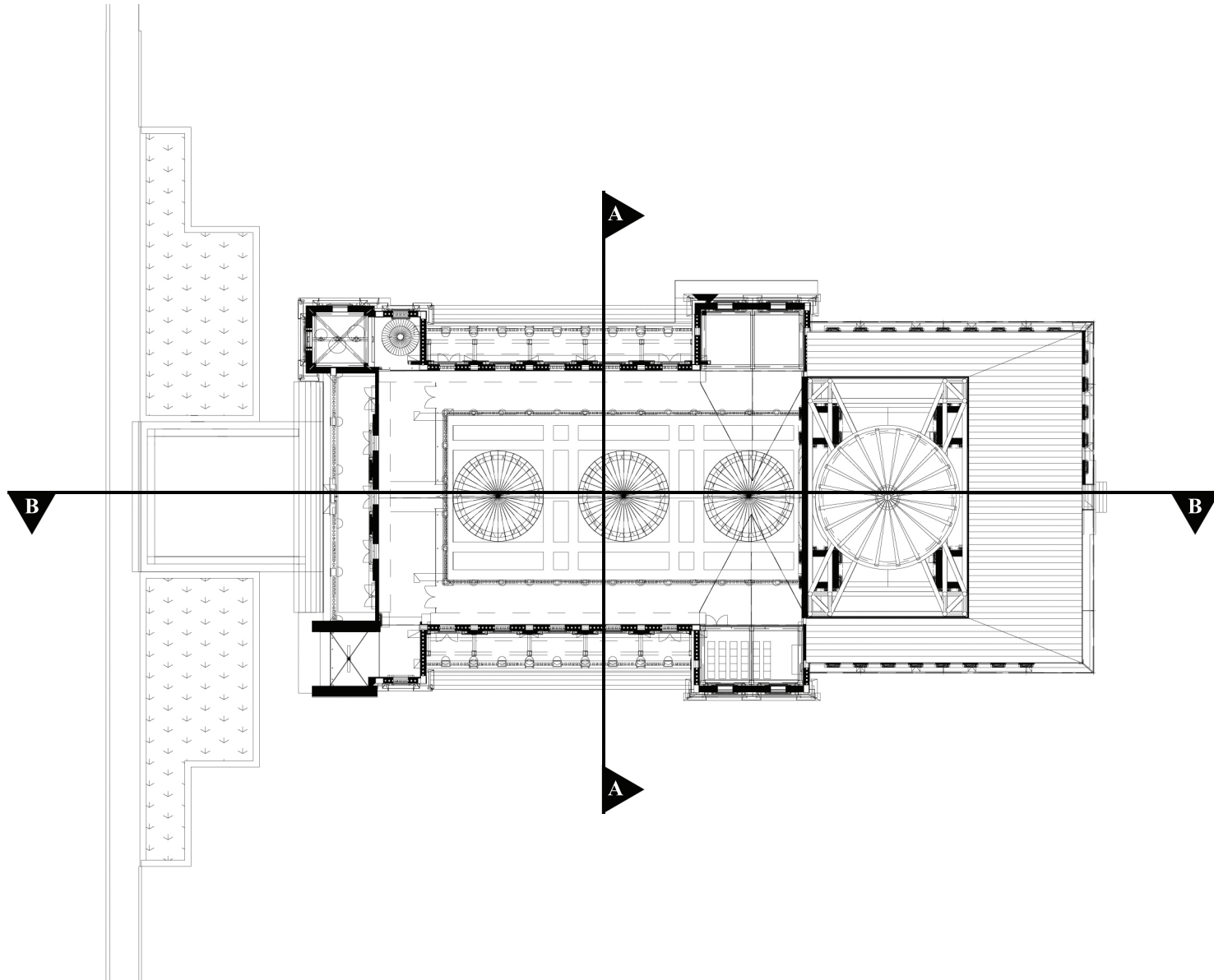
Image source: Google Maps



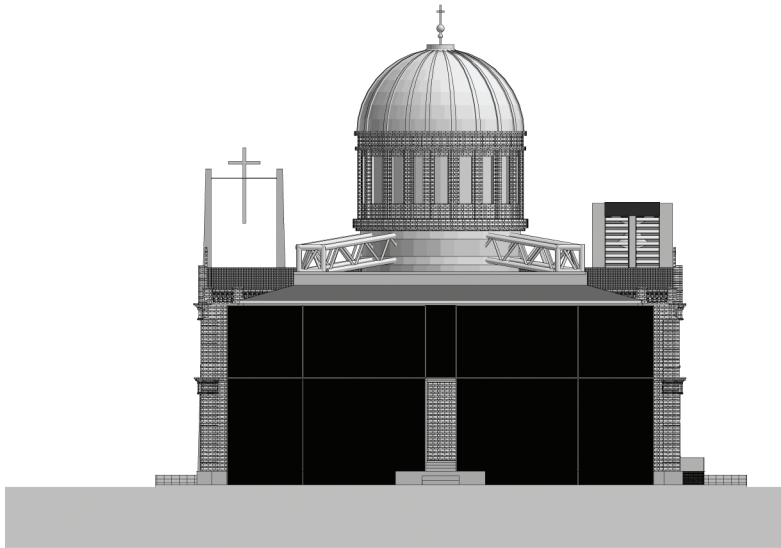
GROUND FLOOR
1:500



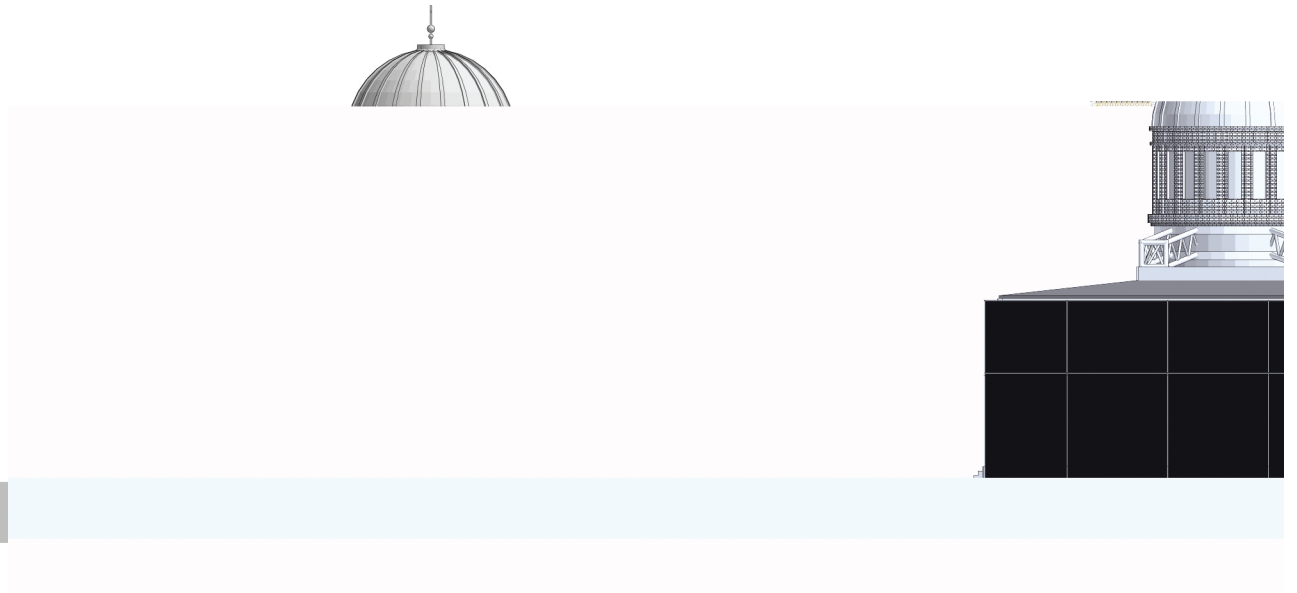
FIRST FLOOR
1:500



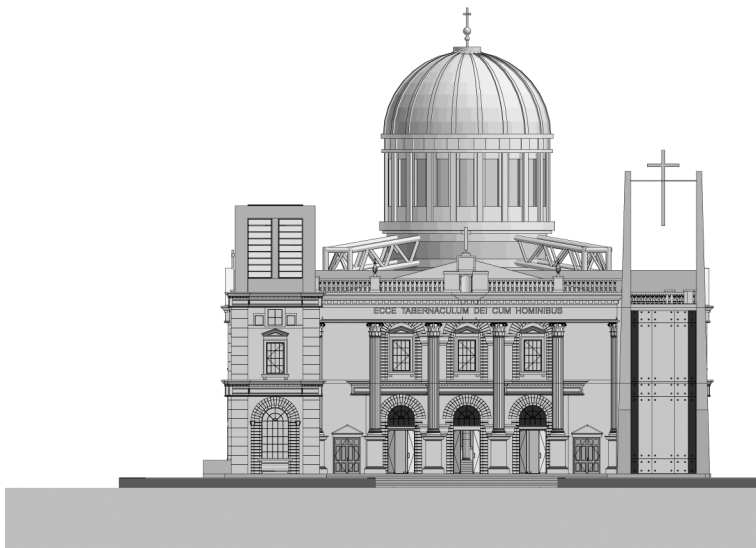
ROOF STRUCTURE
1:500



EAST ELEVATION
1:500



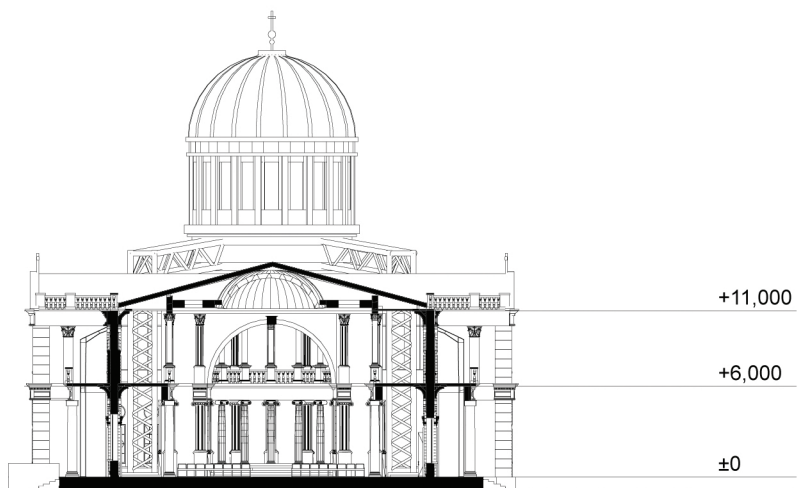
SOUTH ELEVATION
1:500



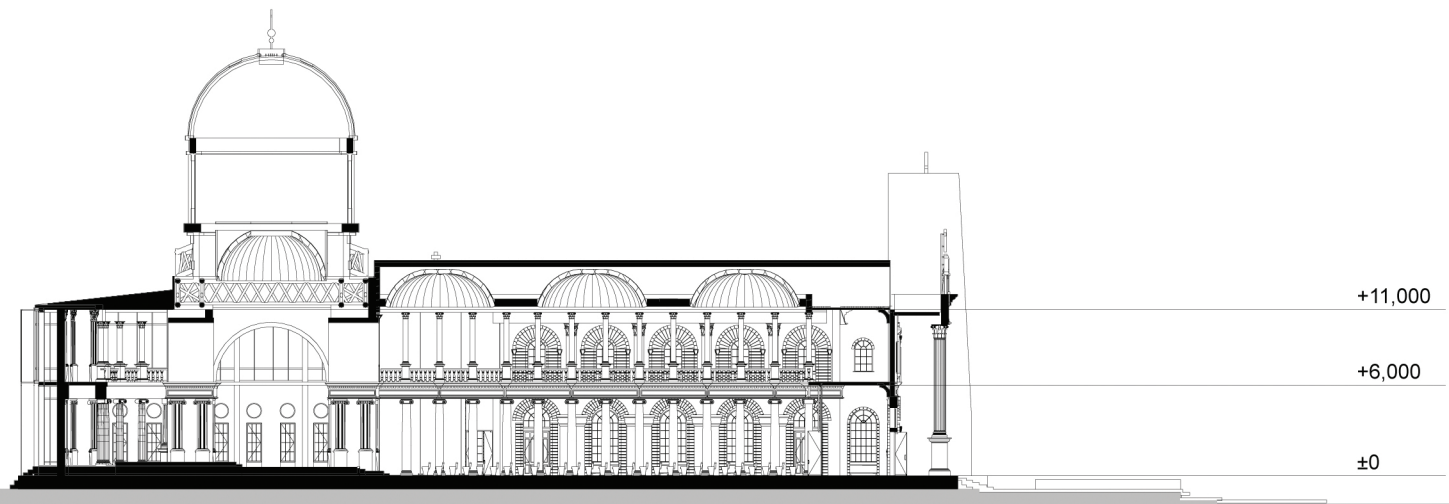
WEST ELEVATION
1:500



NORTH ELEVATION
1:500

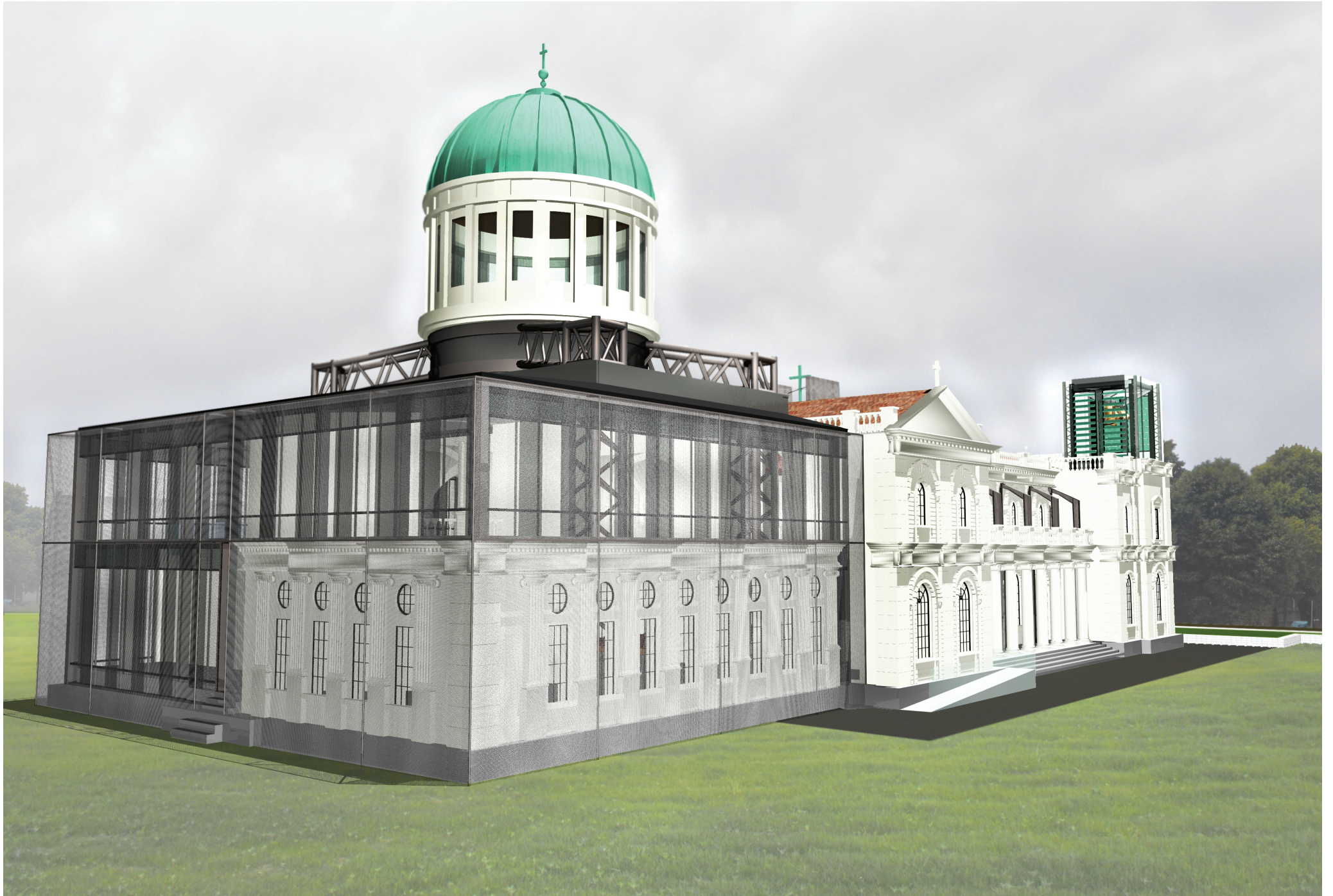


SECTION A - A
1:500



SECTION B - B
1:500







This section summaries the applied design for the reconstruction of the case study building. The design decisions of this chapter were made according to the heritage framework, precedent strategies and Catholic ritual.

EXTERIOR

NORTH TOWER

The belfry of the Cathedral's north tower collapsed in the earthquake of February 2011. A significant element of the Cathedral's façade and architecture it is a gesture of grandeur, spiritual transcendence and authority over the streetscape below. The Proposed Heritage Framework of this thesis identifies the Cathedral's towers as being of 'Significance.' The framework's proposed levels of intervention for building fabric identified as being 'significant' is to conserve, repair or reinterpret that fabric. Due to the belfry's collapse, this framework suggests the appropriate option is to reinterpret the lost fabric.

The reinterpretation of the belfry is a new architectural gesture constructed from steel and glass. With the appearance of being lightweight and transparent it sits in contrast to the original fabric, distinctly different as a new gesture in line with the recommendations for 'Altering heritage buildings' as set by the Historic Places Trust.¹ The new belfry houses the original bells from both towers and is glazed to reveal and display the historic bells. Inspired by Lund's protective enclosure of the Hamar Cathedral ruins, the new belfry displays, protects and reinstates function to the heritage fabric.

This gesture of a lightweight structure that sits upon the heritage fabric was shaped by Sverre Fehn's intervention to the fabric of Hamar Bispegaard where his enclosing structure appears to rest on the ruins below. Fehn's intervention responded to the Hamar Bispegaard ruins, constructing an enclosure that rested upon and took its

form from the ruined walls of the building.

The form of the reinterpreted belfry fits within the boundary of the original belfry's form, creating a visual sense of familiarity. Copper louvres, made out of the copper recycled from the roof of the collapse belfry represent the louvred openings in the original belfry. The design is humble and transparent, revealing and celebrating the historic bells within it and contrasting the original heritage fabric to distinguish it as a new work. As with Norman Foster's reinterpreted replacement dome for the Reichstag, the Northern belfry is a gesture to the Cathedral's original design, by recalling it, but without mimicking it.² The belfry returns the ringing of the 100 year old bells back to Christchurch.

The upper section of the tower is reconstructed using the conserved original stonework to form the platform on which the new belfry will sit. Any repair done to the masonry will be done so with a dark mortar between stones to distinctly mark where reconstruction has occurred. The glazing of the tower will be replaced and the Statue of Mary that was retrieved from the window will be returned facing outwards. In the February 2011 earthquake the statue rotated 180 degrees to be facing out of the window. This was interpreted to be a significant religious gesture by the diocese and her return to the window will mark their faith and beliefs returning to the Cathedral. Her facing outwards will represent the change from an insular to outer focus caused by the crisis of the earthquake.

This design for the Northern tower critiques the practice of restoration by reinstating the belfry in a contemporary language that distinguishes itself from, yet honours the Cathedral's original fabric.

SOUTH TOWER

The Cathedral's south tower collapsed in the earthquake of February 2011, destroying the belfry and tower's

frontage. The towers are a significant element of the Cathedral's façade and architecture. The proposed Heritage Framework identifies the Cathedral's towers as being 'Significant' and proposes that any intervention into such heritage fabric should be limited to conservation, repair or reinterpretation of that fabric. Due to the tower's collapse, this limits the options of this framework to reinterpret the lost fabric through a new gesture.

The reinterpretation of the South tower is a distinctly new architectural gesture that honours and embraces the original fabric, whilst communicating a message of change and new beginnings to the streetscape and skyline. It does not try to reconstruct the old, but stands as a new tower within the outline of the original.

The two parallel concrete sheer walls rising to the height of the original tower and belfry create the mass and body of the new South tower. A glazed frontage, capped off at roof level allows an angled view into the interior of the Cathedral, revealing and celebrating the preserved interior architecture and revealing the worship within. At the top of the tower a copper cross, made from the copper roof tiles of the collapse belfry is suspended between the concrete sheer walls to give it the appearance that it is floating.

The concrete sheer walls are a tribute to the original architect and represent the Cathedral's construction and the fracturing and damage of the earthquake. The Cathedral's architect, Francis William Petre was a pioneer of concrete construction in New Zealand. The Cathedral was constructed with a concrete core inside a permanent formwork of Oamaru stone on the interior and exterior. This concrete had been hidden for a century before being revealed in the destruction of the February 2011 earthquake. The tower's concrete construction embodies these and the two walls represent the fracturing caused to Christchurch city by the earthquake.



The tower's glass frontage allows the interior of the Cathedral to be more visible and allows for greater external appreciation of the preserved heritage fabric. Since the September 2010 earthquake the diocese has not been able to use its Cathedral. They have moved to other buildings and their efforts in the wake of the February 2011 earthquake were focused largely on community support. The glass frontage of the South tower is a window out to and for the community. It represents the outward focus of the diocese post-earthquake and on their return to their Cathedral allows the public to view into the Cathedral to witness their worship and to also celebrate the preserved interior architecture.

The use of concrete and the revealing of the interior was shaped by Carlo Scrapa's intervention at Castelvechio where he layered the edges of the buildings elements to reveal the architecture's layers of history. Here, the South tower extrudes these layers into a new gesture for post-earthquake Catholicism and Christchurch. The relationship expressed here of new and old interweaving was influenced by Sir Basil Spence's intervention at Coventry Cathedral and how he interwove old and new into one living Cathedral.

The reinstatement of the towers is important in representing the Catholic faith and its view that church buildings stand as 'high places' where God lives.³ The new tower is designed as a new gesture to their faith and subtly communicates their beliefs through its architectural gestures. The tower's cross is a gesture of apologetics through the representation of the cross of Jesus Christ bridging the gap between man and God. This symbol created by the sheer walls and the suspended cross can also be interpreted to represent the cross of Christian faith overcoming the earthquake (represented by the sheer walls); a gesture of new hope for the faith in post-earthquake Christchurch.

This design for the South Tower critiques the practice of

restoration by reinstating the tower in a contemporary language that is distinct from the original fabric. It symbolises the old, the faith and a new Catholicism for post-earthquake Christchurch.

THE DOME

The structure that supported the Cathedral's dome was badly damaged in the February 2011 earthquake and continued to show signs of deterioration in the following aftershocks. In July 2011, Heritage Consultant, Carole-Lynne Kerrigan of Opus International Consultants led a process of 'Forensic deconstruction' whereby the Cathedral's dome was deconstructed with every part catalogued to enable rebuilding.⁴ The dome is a significant architectural element and has been a landmark on the Christchurch skyline for a century. The Proposed Heritage Framework of this thesis identifies the Cathedral's towers as being of 'High Significance/Significant' and proposes that any intervention into such heritage fabric should be limited to conservation, repair, reconstruction or reinterpretation of that fabric. Due to the 'forensic deconstruction' of the tower it is possible for the tower to be reconstructed or reinterpreted using the conserved original fabric.

The dome is a significant element of the Cathedral's architectural design. Its placement over the altar was a unique decision by the architect, but one that gave an incredible height to the altar area and allowed natural light to shine down over the religious activities of the altar area. It gave the Cathedral a presence and grandeur that was prominent on the Christchurch cityscape and undoubtedly partially contributes to why the Cathedral's architecture is regarded so highly.

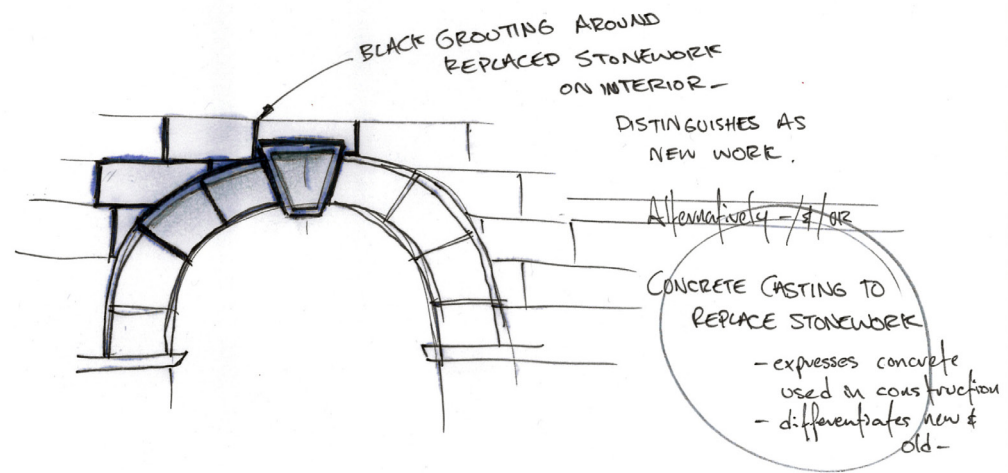
The dome is partially reconstructed in the solution proposed in this thesis. It is reconstructed upon a steel space frame structure that rises from new foundations within the Cathedral. This structure stands vertically on the outside of the altar's arches before exiting the roof and

angling horizontal to support a circular structure upon which the round masonry plinth of the original dome begins. Upon this the vertical pilasters are reconstructed, supported by an internal steel skeleton and on top the timber roof with copper tiles is reconstructed.

The space frame structure is an architectural gesture embodying the process of deconstruction by cranes. The space frame structure represents cranes, which instead of pulling the dome down are now employed to hold the Cathedral's dome up again. The supporting structure is a distinctly new gesture; it is a functional structural system to support the reconstructed dome and an architectural gesture symbolic of the deconstruction and the reinstatement of the Cathedral's dome.

Of the precedents analysed in this thesis none of the interventions had access to elements of the heritage fabric that had been deconstructed and catalogued. The decision to reconstruct the body of the dome was shaped by the proposed Heritage Framework, which for elements of high significance, the fabric should be conserved, repaired or reconstructed.⁵ Due to the significance of the dome and the availability of the knowledge and heritage fabric required, reconstruction of the dome is a viable option. This was determined not to be a viable option for the front towers, which collapsed largely destroying their heritage fabric. The deconstruction process employed, which catalogued and coded every element for replacement in its original location means the reconstruction can be done to a high level of authenticity.

This design for the dome's reconstruction aligns with the guidelines and recommended practices of the Historic Places Trust.⁵ The process of 'forensic deconstruction' provides sufficient information to guide the reconstruction of the dome out of the preserved original fabric. The supporting structure for the dome is a distinctly new gesture that is both a practical structural



system and an architectural gesture.

REAR SECTION OF BUILDING

The rear section of the Cathedral was badly damaged by the displacement of the dome in the February 2011 earthquake and subsequent aftershocks. During the deconstruction of the dome, sections of the rear of the building became unstable or were damaged and were subsequently pulled down to make the buildings fabric stable. The rear section was comparatively conservative in its classical detailing compared to the ornate colonnaded porches of the front half of the Cathedral. The Proposed Heritage Framework of this thesis identifies the rear section as being of 'Some Significance.' The significance of the rear section is due to its attributed significance as part of the whole. The framework suggests that any intervention into such heritage fabric should be to conservation through repair, reinterpretation or replacement with a new work. Due to the loss of fabric at the rear of the Cathedral this has limited the options within this framework to reinterpretation and replacement.

The invention proposed in this thesis sees the rear section reinterpreted with a new structure. Built upon a new concrete foundation that replaces the old and braces the footings for the stone arches over the altar, the new structure is of steel frame construction. Influenced by Sverre Fehn's intervention at Hamar Bispegaard, traces the outline of the old walls and sits atop the preserved sections of original fabric. Its facades are fully glazed except where elements of the original historic walls are preserved and reinstated by being mounted to the new steel frame. A screen made from chain link fencing is attached to the exterior to blur the distinction between the original and new fabric. The screen is constructed out of the chain link fencing that has surrounded the Cathedral since its closure in September 2010. The chain link screen contrasts the original solid Oamaru stone of the front half of the Cathedral and creates a

visual hierarchy that favours the heritage fabric.

INTERIOR

COLONNADE & ARCHES

The four double height arches over the altar and the interior colonnade gives the Cathedral's interior its sense of grandeur and majesty. The colonnade is largely undamaged and the arches have suffered moderate damage that became evident during the deconstruction of the dome and its structure. The proposed Heritage Framework identifies the altars arches and the colonnade as being of 'High Significance.' The framework developed in this thesis indicates that for elements of high significance they should be conserved, repaired or reconstructed.

The colonnade lines the nave of the Cathedral leading towards double storey arches that form an arcade around the altar. The colonnade and arches create a powerful sequence that gives the interior its 'remarkable grandeur.'⁶

The damaged arches are to be reconstructed to their original form with the original masonry that has fallen from it. Where this masonry is too damaged, new stones are to be carved from spare masonry not employed elsewhere for reconstruction. A dark mortar is to be used between replaced stones to distinctly mark where reconstruction has occurred.

The arches are braced by a space frame structure that rises alongside them to support the reconstructed dome above. The reconstructed dome allows light to filter back down into the altar recreating the beautiful lighting that the Cathedral's interior is renowned for.

CHAPELS

The Cathedral's chapels are located in the transepts, which received moderate structural damage during

the February 2011 earthquake. These chapels and the transepts have significance as part of the Cathedral's architecture and it's function. To strengthen the transepts a steel framed structure is built inside the transept that supports its walls. The floor of the transept is removed at the second level to allow the structure to pass through. A glass wall separates the chapel from the main interior of the church with doors at ground floor to provide access. The removal of the second floor has doubled the height of these chapels creating a transcendent space for prayer and worship within the Cathedral.

GENERAL FABRIC

The interior fabric of the Cathedral, other than the colonnades and arches, has attributed significance as being a 'part of the whole Cathedral. Where damage has occurred to the Cathedral's Oamaru stonewalls, they should be repaired to their original form using either the original stone that has fallen or from spare stone that is not being used elsewhere in the reconstruction. A dark mortar is to be used between replaced stones to distinctly mark where reconstruction has occurred.

Undamaged stained glass will be preserved and mounted between protective sheets of Perspex. Where the glazing has been completely lost the window opening will be filled with new sheet glass without any mullions. This sheet glazing continues the transparency and openness of the Cathedral that the Southern Tower creates.

Any damage to the coffered ceiling is to be repaired and the structure of the ceiling reinforced as the ceiling's contrast with the Oamaru stone is an important feature of the interior's beauty.

The transparency introduced through the Southern tower is continued in the replacement of the Cathedrals wooden entrance doors with glass doors. Inside the glass doors will be an internal glass foyer that is located in the area under the next level's floor. The glass doors allow



the community to get a view of the Cathedral's interior when it is not open. The glass foyer adds a functional space to the church between the main area and the entrance. It is conceived to be a foyer that can be open to the public to look into the building during the day. The reconstruction of the Cathedral will draw visitors back to the Cathedral who will have a renewed appreciation for the building they almost lost.

The furniture designed by Warren and Mahoney during their renovation of the Cathedral's interior is significant as an example of their work and the changes brought about by Vatican 2. If these can be conserved or repaired, this should be done, otherwise they should be replaced with a contemporary alternative. At the time of writing it appears that only the pulpit designed by Warren and Mahoney has survived.

The opportunity would also be taken during the intervention process to upgrade the Cathedral's facilities, heating, lighting and audio capabilities.

STABILISATION

To support the building structurally and to stabilise against further damage supporting steel structures have been added to the buildings fabric in addition to those already mentioned in the above interventions. Steel frames supporting the North and South elevations are inside the colonnaded porch and emerge as a steel column that arches over to brace the upper section of the second floor's wall. These frames are installed along the length of the porch area between the front towers and the transepts. The structure of these arches tie into the steel frame of the transepts and the sheer wall and steel frame of the two towers. This structural system is a portal frame structure with one side of the frame fastened using epoxy and dowels to the heritage fabric and supports the stone and concrete wall structure against lateral forces.

This arched structure is a bold gesture that is visible from the exterior where it merges from behind the colonnade. This structure was placed on the exterior for ease of construction and to visually show the strengthening structure of the Cathedral. The steel structure is designed to be slender and elegant but it is intentionally exposed. The structure is exposed to show it's restrengthening to engage the public who have lost faith in their heritage buildings. For the Cathedral to have a realistic future, sentiment will not be able to outweigh safety as argued by Earthquake recovery minister Gerry Brownlee.⁸

The Cathedral's proposed reconstruction has been directed by the process and framework for reconstructing damaged heritage buildings that this thesis develops. The design of the reconstruction for the Cathedral embodies the Cathedral's history, the damage that has occurred to it and is distinct as a new work. The design decisions made were shaped by the analysis and experimentation with the intervention tactics employed by the six analysed precedent examples.

ENDNOTES

1. Cochran, Chris, *Guidelines for Altering Heritage Buildings*, Greg Bowron (ed), Wellington: New Zealand Historic Places Trust, 2000.
2. Norman Foster describing the design of the Reichstags dome: 'The new dome manages to respond to the Reichstags history by recalling it, without imitating it.' Quoted from, Barnstone, 2005, pp207.
3. The inscription on the entablature of the Cathedral's facade translates to 'Here is God's dwelling-place among His people.'
4. Evans, Amanda, dir. *Battle for the Basilica*, New Zealand Stories. TVNZ Channel 7, 16 Oct. 2011. Television.
5. Cochran, 2000.
6. Catholic Diocese of Christchurch, *History of the Cathedral*, 2004. Web. 16 May 2011.
<<http://www.chch.catholic.org.nz/?sid=2725>>
7. Meaning 'Spirit of the times.'
8. Editorial; Courtney, Bernadette. *Raise Christchurch anew from rubble*, Opinion, The Dominion Post, Tuesday March 7, 2011.

EVALUATION & CONCLUSION

This thesis proposes a process for guiding the reconstruction of damaged heritage buildings. This process and its proposed heritage framework are applied to the Cathedral of the Blessed Sacrament as a case study example. The design resulting from the application of this process is distinct from the conservative conservation approaches currently employed in New Zealand.

PROCESS

The process includes a framework for the assessment and identification of heritage fabric, which recommends the appropriate intervention for each level of heritage significance. Each stage of the process gathers the required information to direct the reconstruction of a damaged heritage building.

The process was used to direct the design application of the reconstruction of the case study building. The process is limited due to its development parallel to only one case study. The process is limited by the case study and requires further testing against a range of case studies before being broad enough for application in the industry. Its steps and the applied design is suitable to be used as precedent examples to guide other heritage interventions.

FRAMEWORK

The framework is an assessment tool for identifying and awarding levels of heritage significance to the elements and spaces of a heritage building as to inform the appropriate levels of intervention. The proposed framework recommends the appropriate level of intervention into an element of a specific level of significance. This is unique to this framework and is envisaged as being a tool for adoption by the heritage industry.

APPLICATION

The proposed process was applied to the case study building, the Cathedral of the Blessed Sacrament, to

direct its reconstruction from the damage it suffered in the February 2011 and subsequent earthquakes.

The Cathedral's proposed reconstruction has been directed by the process and framework for reconstructing damaged heritage buildings that this thesis develops. The design of the reconstruction for the Cathedral embodies the Cathedral's history, the damage that has occurred to it and is distinct as a new work. The design decisions made were shaped by the analysis and experimentation with the intervention tactics employed by the six analysed precedent examples.

The design represents a bold new approach to heritage reconstruction and puts forward a new method of addressing the reconstruction of damaged heritage buildings. The application of the design is segmented as to explore the application of different precedent approaches in the reconstruction of the various damaged elements of the Cathedral. This is opposed to the application of one cohesive approach to the entire reconstruction.

This process steps away from creating unsustainable mausoleums to creating heritage palimpsests that respond to and reflect history.

CONCLUSION

Heritage buildings are an important element of our urban environments, representing the hope and aspirations of a generation gone, reminding us of our achievements and our identity. When these buildings are damaged, an important element of our urban environments is at risk of being lost forever.

This thesis proposes a process for directing the reconstruction of damaged heritage buildings that is a new tool for the heritage industries tool kit. The process proposes a specific framework for the identification and tabulation of heritage significance to elements or spaces.

This framework recommends the appropriate level of intervention for each level of significance as a means of directing the reconstruction process from the heritage tabulation stage.

The process is developed parallel to a case study application of the process to provide a precedent for its use in the heritage industry. This process challenges the current preservationist approach predominant within the New Zealand heritage industry. It proposes an alternative solution that directs the reconstruction of damaged heritage buildings in a way that reflects their history, the damage and will allow it to make a gesture towards the future.

This process is a new tool for the heritage industry and its application to the case study building a contribution to the debate of how we can reconstruct Christchurch's damaged Cathedral's.

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