Future of the Past

The place of adaptive reuse in revitalizing a historic church

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Abstract

The importance of conservation in architecture is to preserve the evidence of cultural development and historical values in a particular social context. The lack of awareness and attention to this often leads to a dramatic end, demolition or structural collapse. An increasing number of historic buildings are facing significant issues, and because of the lack of attention, are failing to express their cultural and architectural value to the public. Throughout different eras, architects have made steps to improve the quality and function of buildings, and consequently, this has resulted in changes to the architecture. Due to this, old buildings with architectural and cultural value gradually fall out of favour, and face difficulties with their preservation.

Heritage New Zealand is taking steps to conserve historic buildings to save their heritage. Heritage buildings are often conserved but are not always well utilised by the public; and it is only when people engage with the buildings that they become aware of their historic importance. This poses a relevant question: is it possible for adaptive reuse to regenerate the depreciated value of the country’s heritage.

This project aims to investigate the problems faced by St. David’s Presbyterian Church in Auckland, and to take necessary action to protect the significant church. Since the church is a historic war memorial, protection of the building is essential to respect and honour the men who sacrificed their lives for their country. The project will explore an appropriate design for the adaptive reuse of the heritage building. The building will be reused and given a new programme, a performance centre, art gallery and Art-in-Residency.

Systematic research, study and analysis of the church and its social and cultural dignity will provide information on significant issues. For the required design decisions, the project explores various literature, precedents and site investigations. The design focuses on the creative integration of the old and the new, such as the incorporation of modern technology for strengthening the existing building, contemporary materials, and minimal additions are explored and applied to the building. Creating a functional building that serves the public in order to improve social bondage is required in this situation.
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1.1 Terminology

The terminologies used throughout the document are mentioned below; these terms are defined through ICOMOS New Zealand Charter (2010).

Adaptive reuse: it refers to maintaining the continuing use of a place with cultural heritage significance or proposed change of use for facilitating the place by serving a useful purpose. Thus, the process can undertake alteration and addition.

Conservation: means all the processes of understanding and caring for a place so as to safeguard its cultural heritage value. Conservation is based on respect for the existing fabric, associations, meanings, and use of the place. It requires a cautious approach of doing as much work as necessary but as little as possible and retaining authenticity and integrity, to ensure that the place and its values are passed on to future generations.

Cultural heritage values: indicate the aesthetic, archaeological, architectural, commemorative, functional, historical, landscape, monumental, scientific, social, spiritual, symbolic, technological, traditional, or other tangible or intangible values, associated with human activity.

Fabric: means all the physical material of a place, including subsurface material structures, and interior and exterior surfaces including the patina of age; and including fixtures and fittings, and gardens and plantings.

Place: It is mentioned as a geographically defined area in New Zealand with cultural heritage value; this may include cultural landscape, heritage structural elements or objects, sacred spaces and archaeological sites.

Preservation: it is the process can involve little intervention as possible, to ensure its long-term survival and the continuation of its cultural heritage value.
1.2 Background of the Project

The present St. David’s Presbyterian Church was opened in 1927 as soldiers’ memorial “to keep green the faith, courage and sacrifice” of those who gave their lives in the First World War.

The church has been closed to the public since December 2014 as it does not meet the advanced seismic protection standards of New Zealand. A trust, “Friends of St. David’s”, has been formed to save the church from the risk of demolition and is looking forward to gaining community support. The trust says that the church cannot raise funds for maintenance, due to low attendance. However, after several years of dedication and hard work, St. David’s has received a rare Category A heritage listing that emphasises the importance of saving the historic church and restoring it for community use. In this case, the historic building now has the highest level of heritage protection in New Zealand. As per the current scenario, the St. David’s trust is working on some creative designs to preserve this historic building and encourage community interaction. This research project concentrates on retaining the heritage aspects of the building. It aims to design a model that reflects and protects historical and cultural values, helping to recognise its importance and create public awareness of historical evidence. To provide a new function to a historic building, methods of adaptive reuse are appropriate. Adaptive reuse methods employ ideas of heritage conservation and also draw insights from architectural history and theory. Many conservation policies have been developed by architects. Therefore the research investigates the appropriate function of the historic building through conservation policy.

1.3 Project Outline

The project is focused on developing St. David’s Presbyterian Church in Auckland. The church has been closed to the public since 2014 as it does not meet the current seismic protection standards. Recently, the building received the highest heritage protection from Heritage New Zealand. The intention of the project is for the adaptive reuse of the site of St. David’s Presbyterian church to revive the buildings so they can be used by the public. The adaptive reuse of the buildings will consist of a performing art centre and an art gallery for exhibiting pieces from the World Wars. The associated building on the site is reused as an art-in-residency where artists can live and work. The associate building holds historical significance due to being the first St. David’s Church built-in 1880.

1.4 Aims & Objectives

The overall aim of this project is to develop a design that facilitates the conservation of St. David’s Presbyterian Church in Auckland, through utilizing adaptive reuse as a method for design. The secondary aim is to bring the church back to its former glory through engaging the public with the historical building with the help of function.

The adaptive reuse of St. David's Church will have the following objectives:

- The church needs to retain the historical values of the existing structure.
- The church is at risk of demolition due to seismic issues and the lack of maintenance of its masonry structure. Therefore, the research will investigate the structural problems and will apply the required seismic solution.
- Develop awareness by the public for protecting New Zealand heritage buildings.
- Honour soldiers from the wars through exhibitions in St. David’s Church.
1.6 Scope and Limitations

The project combines conservation and adaptive reuse of St. David’s Church to recreate the site for the benefit of the public in order to creatively reuse the space of the historical site. The project understands the structural issues of the church. There is a weakness in the masonry, which could be damaged by seismic activity, as stated in council records. The project seeks to retain the historical authenticity of the building through minimal interventions. The project will explore historical documents, relevant literature, precedents and site investigation to produce an appropriate design solution.

The project will have the following limitations:

• Religious factors will be of less importance to this project as they are not directly of concern for the reuse.

• The redesign of this heritage building should steer away from religious aspects.

• Significantly, public entry to the church is prohibited so that all interior investigation of building spaces is done through available documents and photos.

• Although the project will explore the structural integrity of the building, the proposed design will need to be assessed by a structural engineer.

1.7 State of knowledge in the field

In the field of heritage building conservation, there have been two significant arguments regarding restoration. These are whether a restoration should retain the building in its actual state, or make changes resulting in a more advanced structure. In current conservation practice, the phrase ‘adaptive reuse’ took over the change that includes refurbishment and structural integrations. In this project, the state of knowledge explores relevant conservation methods and adaptive reuse methods for the redevelopment St. Davids Presbyterian Church.

The literature includes various conservation theories and adaptive reuse practice over different periods. In the 19th century, architects and theorists argued over the restoration movement and anti-restoration movement. In the restoration movement, the architects had the freedom to restore a building to its original state, whereas anti-restoration believed that restoration should be avoided as it degrades the authenticity of a heritage building. Viollet-le-Duc and John Ruskin were two predominant figures in these two movements. The restoration works by Viollet-le-Duc and Ruskin were known as stylistic restoration and romantic restoration respectively. However, 20th-century architects and theorists identified that both restoration and anti-restoration movement are so controversial that they led to eclecticism. It is difficult to agree with or oppose the 19th controversial philosophies. Hence an investigation through design strategies would be of benefit through the analysis of precedents. A precedent such as the border distillery demonstrates how a heritage building can be creatively reused within its spaces with the required integration of new structures. Here, the architect maximised the new interventions integrated with existing heritage fabric to avoid the domination of a structural addition. Likewise, another precedent analysis opens the door to various design strategies, conservation methods and adaptive reuse that can be considered when working with heritage buildings.

The conclusions from both literature and precedents are informed in literature summary (2.5) and precedent summary (3.6), which are used to develop design solutions for the adaptive reuse of St. David’s Church.
1.8 Methodology

Four methods were followed in this project to acquire the knowledge to inform the design development for the creative reuse of St. David’s Church. These methods were site investigation to identify the design possibilities of the site, analysis of literature, examination of precedents and design trials through drawings and models.

Site Investigation: the existing building conditions and landscape heavily influenced the project. Two major site visits established the groundwork for the project. The required dimensions were collected at the site visit to produce a digital model of St. David’s Church and establish a photo library that enabled reference for digital modelling and site design potentials. During a site visit a meeting was arranged with St. David’s trust spokesman Paul Baragwanath, which helped with understanding the background of the church, the structural issues facing it and also the trust’s intentions regarding developing the St. David’s site. This information was vital in design development.

Literature Analysis: the literature is in the field of conservation theory. It looks at existing knowledge of various theoretical innovations on conservation practice. Various adaptation strategies were analysed, which enabled the development of the function, and also the structural additions of the research project. The study of the seismic protection of heritage buildings helped in the attempt to resolving seismic issues at St. David’s. The ICOMOS New Zealand charter (2010) was analysed as it is preferred as the design guideline for the adaptive reuse of St. David’s Church.

Precedent Analysis: the precedents enabled insight into adaptive reuse approaches and design interventions for heritage buildings. Four relevant precedents were analysed for the research project in terms of adaptive reuse, conservation and restoration. The precedents retain heritage aspects through minimizing new interventions that simultaneously respect the existing heritage fabric. The methods and strategies identified from the precedent analysis have been used as the reasoning for certain design decisions.

Design Trials: the design trials were based on various design concepts developed through drawing, diagramming and modelling. Design iterations were investigated to explore the adaptive reuse of St. David’s Church through theoretical learning and precedent examinations. These comparisons led to the final design outcome.

The literature review includes multiple heritage conservation practices in the architecture discipline, specifically regarding the conflicts of different restoration theories. The literature is explained under the four headings of conservation theory, ICOMOS New Zealand charter (2010) and seismic protection. Firstly, conservation theory consists of philosophies that are implemented and practised by prominent architects and philosophers on conservation practice. Secondly, adaptation consists of a critical analysis of important adaptive reuse concerns as well as the theory practices on heritage buildings. Thirdly, ICOMOS New Zealand charter (2010) is explained through the guidelines regarding adaptation. Lastly, a brief analysis made on seismic protection is explained which is relevant for the conservation purpose of St. David’s church. From the investigation through the literature review, the specific design possibilities and implementations are identified that can be supported for the adaptive reuse and conservation of St. David’s Presbyterian Church.
2.1 Conservation theory

A variety of conservation approaches have been followed for historic buildings in separate decades in order to transfer the cultural identity of a heritage building for future generations. In the book Conservation of Historic Building, Bernard Feldman, who was a conservation architect describes heritage buildings as one generating a sense of wonder and creating an eagerness to discover more about the public and social aspects of those who produced them.12 Many historians and philosophers used their restless pen point to focus attention on the negligence of the public to their heritage. Bernard further suggested that the heritage building created an initial impact of emotion in the social context as the symbol of cultural identity and continuity as a part of the heritage.12 The basic intention of all conservation and restoration made was to achieve aspects such as historical, archaeological, social, economic, political, spiritual and symbolic values. Charles Taylor, a Canadian philosopher indicates the concerns of modern society in the detachment to their traditional values have limited our creative capacity.12 In order to address this issue, effective education and sensitisation are required. Taylor also suggests that conservation and maintenance of the cultural properties can contribute a role in giving physical references for the re-establishment of collective memory and cultural identity.12

In the past, there has been controversy in heritage development about the use of restoration and conservation in terms of architecture. In the early 18th century one of the leading critics of restoration in France, Adolphe Napoleon Didron stated Regarding ancient monuments that, "it is better to consolidate than to repair, better to repair than to restore, better to restore than to rebuild; it means to re-establish it in a finished state which may in fact never have existed at any given time."15

This explains to restore a historical building might have been to continue with the design concepts of the original architect of that period as the main objective rather than regaining its actual form that was already conceived in a given historic period.15 Prior to the mid-1800s, Viollet-le-Duc's restoration movement that led to arbitrary renewal and redevelopment of historic fabrics was widely accepted throughout the western world in that period this is referred to as "stylistic restoration".16 The French architect argued that the stylistic restoration can compromise the integrity of a historic structure.17 For example, in the restoration of the Notre Dame cathedral in France, after the centuries of deterioration and significant damage during the French revolution, the new spire was replaced in a position where the actual spire was missing (figure 1). The old design did not inspire the timber spirelet; instead, Viollet-Le-Duc worked on a new design assuming the original architect would have made if they had advanced technology and imagination.18 On page 21, the figure two is evidence that he adapted the styles and ornamentations from the cathedrals from the same period for the remodelling the lower entries and ruined fabrics.

"To restore an edifice means neither to maintain it, nor to repair it, nor to rebuild it: it means to re-establish it in a finished state which may in fact never have existed at any given time."12

Didron depicts that reconstruction is not an appropriate treatment to take on conservation practice. Prosper Marianne, The French writer who was an important figure in the architectural preservation history clearly reflected on Didron's principle on various conservation works in the country. Marianne considered the restoration process over reconstruction. Marianne stated that conservation work should be limited to the consolidation of the actual structure rather than assuming the original architect would have made if they had advanced technology and imagination.20

In the 19th century, Architect Viollet-le-Duc introduced a whole new face for the restoration process in Europe. He once believed actual restoration was returning the building to its original state, avoiding structural addition and element modifications till the day of his associate French architect Jean-Baptiste Antoine Lassus. However, after the death of colleague Viollet-Le-Duc's creative instinct had moved hence that resulted in combining historical aspects and additional stylistic modifications in the restoration practice. That is in Viollet-le-Duc's words, "To restore an edifice means neither to maintain it, nor to repair it, nor to rebuild it: it means to re-establish it in a finished state which may in fact never have existed at any given time."15

Conservation of Historic Building  
led to the formation of the anti-restoration movement, largely spread over English architects and philosophers.22 This movement criticized architects who were involved in restoration for the demolition of the historical authenticity of the structure and doing their best to give their buildings a new face. Niglio (1819-1905) was one of the most famous art critics in the Victorian era, the principal protagonist of anti-restoration architecture who introduced a new conservation principle to the architectural field later known as the conservation movement. In the book “Seven Lamps of Architecture,” Ruskin outlines the vision towards the conservation of heritage edifices. He expressed criticism of restoration making it equal with destruction:

“The most total destruction which a building can suffer: a destruction out of which no romances can be gathered: a destruction accompanied with false description of the thing destroyed.”

He saw the historic structure as a monument to the creative innovation of the individual. The anti-restoration movement was indeed continuing development that prolonged the life of the building until its actual form of structure in history. In fact, for Ruskin, the restoration was a specific decade and should be treated carefully as it is a product of personal treatment. In the early 20th century conceived historic buildings as a national monument and he introduced a new conservation principle to the architectural field later known as the conservation movement.

Towards the end of the first half of the 19th century, science and technology development changed the face of classic architecture in Europe. This movement gave a romantic appreciation to historic monuments and architecture, this field was dominated by an eclecticism that blended past designs with the present. In this decade historicism adopted a major role in historic building conservation.23


23 Ruskin, The Seven Lamps of Architecture.24

24 Jokilehto, History of architectural conservation, 175.

22 Adaptation

Adaptation can be defined in different aspects. Most commonly as creative reuse of interior space only viable if the building is structurally sound, this could also be called adaptive reuse. Architects working in conservation ensure that adaptive reuse is a successful approach towards historic buildings that will continue their survival by pursuing appropriate new use.25 However, adaptive reuse in conservation held in Venice had introduced a philosophical manifesto called Venice Charter illustrates different approaches towards the conservation of historic monuments. It characterizes restoration and conservation for the building with heritage significance should receive minimal repair and treatment to remain as actual forms. According to the charter, retaining the earlier state allows removal of accretions and also enables the use of new material on an existing fabric. The charter further highlights the effectiveness of using adaptive reuse in conservation practice.

2.1.1 Summary

In conclusion, the literature analysed the evolution of conservation practice from early 19th century to the 20th century in the field of heritage. The study examines the theories by Adolphe Napoléon Dalou, Eugène Emmanuel Viollet-le-Duc and John Ruskin. The reflection of restoration movement and anti-restoration movement in historic building development are explored through different aspects. Through analysis of these theories, it is identified that both restoration and anti-restoration movements are extreme and controversial. That is, in restoration movement architects had less apprehension on historical authenticity, while, anti-restoration led the building to extinction. The elements of use become Dalou’s theory that claims conservation practice should be limited to the consolidation of historic buildings which avoids reconstruction. The project will enforce the repairs of Viollet-le-Duc’s and Ruskin’s theories for the adaptive reuse of St. David’s church that is further discussed in the literature summary (2.3).


28 Nicole Cramer, Architects in Existing Fabric - Planning, Design, and Building, ed. Stefan Bollack (Bristol : Bristol: Bollack and Bollack, 2007).21


However, adaptive reuse is a difficult challenge for architects as it is a special form of refurbishment since changing the use of a building introduces new regulatory conditions and may consider rezoning approvals from the authority. Architect Steven W. Semes, practising as a professor in Notre Dame School of Architecture expresses the five approaches or strategies towards adaptation according to the integration of the host structure and new elements that are insertion, parasites, wrap, juxtaposition and weaving (figure 5). These methods can be followed as per the required level of intervention needed in the architecture discipline. That means an appropriate design should justify the relationship between old and new. So, approaching a design solution of adaptive reuse for a historical building should have prior investigation through the site to identify the architectural and heritage significance.

2.2.1 Summary

In conclusion, the literature is consistent in the idea that adaptive reuse can include minimal exterior alteration and high internal space modifications. Also, adaptive reuse may consist of a refurbishment of heritage fabric to obtain the historical integrity. These statements identified valid for the redevelopment of St. David’s church. Methods that are used for adaptation which are insertion, parasites, wrap, juxtaposition and weaving suggested by Semes. These elements will be examined through precedents for the appropriate design decision for the project.

2.3 ICOMOS New Zealand Charter

International council on monuments and sites or else ICOMOS is a non-governmental organisation founded in 1965. ICOMOS provides service in the conservation of a location with cultural heritage values and is engaged in the conservation of the world’s historic monuments and sites36. The organisation was initiated as a product of Venice charter that was an influential document during the 20th-century conservation practice. The document eventually got outdated because of the opposition on reconstruction from modernist practitioners. Later many countries formed their equivalent of ICOMOS. New Zealand became a part of the organisation by 1987. Currently, the country is following the fundamental document of definitions and guidelines for the conservation of historic buildings which was developed in 2010. The ICOMOS New Zealand Charter (2010) creates a recognised benchmark for heritage conservation. The charter suggests that any of the changes or integrations considered should be suitable with the existing heritage building. Also, the appropriate design interventions should respect original fabric in order to contrast with the original form, mass, colour and materiality of the historic building. Any of the adaptation that would dominate or substantially obscure the heritage building should be avoided hence these interventions may involve the setting of place with heritage values37.

In conclusion, guidelines mentioned in ICOMOS New Zealand charter regarding adaptive reuse emphasise that any alteration or interventions should complement the existing heritage form and fabric. This could be useful in designing the St. David’s church through minimal interventions to the building and complement the existing form and fabric through minimal interior alterations. The impact of ICOMOS New Zealand charter is identified through some of the heritage development projects from Auckland that are mentioned in Relevant case studies within Auckland (section 4.0) which are useful for the project in the adaptive reuse of St. David’s Presbyterian church.
2.4 Seismic Protection

Unreinforced masonry building is vulnerable to seismic actions, especially loadbearing brick masonry. Building elements such as tie beam, buttresses were incorporated in order to overcome seismic activities. But unfortunately, these measures are not enough to protect the building for a long time and under maximum stress. Understanding the failure points in the load-bearing brick masonry buildings is the key to finding solutions to strengthen the heritage building under seismic load. Some of the masonry seismic failures include rocking failure mechanism, diagonal cracking shear failure, shear sliding failure, out of plane wall failures, floor and roof diaphragm failures and Gable end wall failures (missing or inadequate ties/anchorage).

Strengthening of the building’s connections can make a huge difference in building performance during seismic activity. Isolating the building from the ground would reduce the seismic load on the building. In addition to this, strengthening building connections between floor to floor, wall to wall, floor to wall and roof to the wall can improve the performance of the building under extreme seismic load.

Some of the strengthening techniques are seismic base isolation, exterior tie beams, inter-floor wall supports (figure 7, 8), post-tensioning, floor and roof diaphragm stiffening, insertion of internal frames (figure 9) and removal of the mass and/or geometric/stiffness irregularities. Based on the existing conditions of the heritage building some of these techniques can be incorporated to help to strengthen the building.

In a detailed observation of the structural system of St David’s Presbyterian Church, many defects can be seen. Over the years brick and mortar building start to deteriorate, this is no exception in St David’s Presbyterian Church. Localized cracks and mortar voids on the building base can be observed (figure 6), these cracks can be caused by various factors such as dampness and subsidence. Few restoration measures have been taken but these measures are not enough under extreme seismic load. Extensive restoration activities such as grout or epoxy can be injected into the mortar to strengthen the base. However, these measures must be minimal, irreversible and matching colour and texture to make a minimal visual impact. Inserting anchor rods which are grouted or epoxy into place will help increase tensile strength.

Internal post-tensioning is another effective method to increase the strength of the building over seismic loading. The internal post-tensioning is visually less impactful compared to external post-tensioning.

Floor and roof diaphragm stiffening: Diaphragms provide an additional layer of lateral strength during seismic activity. A building to perform well under seismic load, it needs to be one rigid object than a component of many flexible planes and surfaces. Timber floor diaphragms consist of three components, cords, sheathing material, and supplementary structure. Providing an additional second layer of fastening can make this building act as one rigid component under seismic activity. Additional stiffness of the new plywood panel diaphragm to the old timber flooring can be one of the effective solutions.

Braced frames are another very effective way to strengthen the building from inside (figure 10). These frames can be made into the aesthetically appealing structure so that complements the existing building. The braced frames can be “K” frames, shear walls or pole columns. These restoration methods are standard procedure however, this heritage building needs structural engineer expertise to determine the exact restoration methods to find the exact requirements for seismic strengthening.

2.5 Literature Summary

Summarising the useful literature that is conservation theory, adaptation, seismic protection and ICOMOS New Zealand charter brings insight into the design guideline for the adaptive reuse of St. David’s church.

Conservation Theory explores ideas from architects such as Adolphe Napoleon Didron, Eugène Emmanuel Viollet-le-Duc and John Ruskin. The literature becomes useful for the project through the elements of Didron’s theory based on consolidating the heritage structure through avoiding reconstruction. It is identified that both stylistic restoration and romantic restoration are not valid for the adaptive reuse of St. David’s church. Considering the principle from Viollet-le-Duc, some issues arise. Such as arbitrary renewal and redevelopment of historic fabric that would significantly ruin the historical authenticity of the building. Ruskin’s theory focuses on continuing maintenance. That means the overall intention should be of preserving the existing condition. In the project, it aims to re-engage the building to its former glory through reusing the building for a newly defined function. Neither its historical authenticity can remove nor its destruction accepted.

In the literature, adaption is defined in two different aspects. The first is adopting a new function and the second is adapting structure on heritage fabric. Adaption ideas become useful for the project through the elements of refurbishment, minimal exterior alteration of heritage fabric, possibilities of creating new programmatic volumes inside building and methods of adapting structures explained by Semes. Appropriate methods considered in the project will justify the relationship between the old and new through form and distinguish them through the use of contemporary materials for design interventions that will retain the historical authenticity.

ICOMOS New Zealand Charter suggests the guidelines for the adaptive reuse of St. David’s church. These guidelines become useful for the project in terms of giving appreciation to the original heritage fabric and form. The fundamental document states that any of the intervention should respect the elements of the existing building. St. David’s church reflects strong architectural characteristics and contrast of materiality on its form. Any design intervention should limit the complexity with regards to its form, moreover should complement the elementary characteristics of the St. David’s church while adapting its new defined function.

Additional retrofitting of the building can provide strength under seismic activity. Strengthening of connections between, wall to wall, floor to floor, wall to floor and roof to wall. Elements in use become base isolation, exterior tie beams, inter-floor wall supports, post-tensioning, floor and roof diaphragm stiffening, insertion of internal frames and removal of the mass and geometric stiffness irregularities.
Precedents are selected on the basis of identifying adaptive reuse, conservation and restoration projects under heritage buildings. Four precedents have been selected to explore the design strategies on heritage building development. The selected precedents are critically analysed to learn the level of interventions, method of structural integration and materiality. The study of existing examples will enable insight to be gained about the function and potential design strategies for the adaptive reuse of St. David’s church.

3.0 Precedent Analysis
3.1 The Borders Distillery

Location: Hawick, Scotland.

Date: 2018

Architect: Grey Macpherson Architects.

3.1.1 History

A classic Scottish building was established around 1900 to house the Hawick Urban Electric Company. It stands on one of the 20th-century industrial sites on the banks of Teviot river in the border town of Hawick, Scotland. The town of Hawick has a long history of manufacturing and it was one of the most productive textile towns in the United Kingdom. The inheritance of the industry, though it came to an end in the late 20th century, is still visible today in the form of the various mill buildings. The historical site had some structural alteration on late 18th century and early 19th century. Hawick Urban Electric Company was playing a major role in keeping the Hawick region alive with lights and energy as it was a major source of power for many of the industries and houses.

49 “Back to the Borders - Whisky Magazine.”
50 “Back to the Borders - Whisky Magazine.”

3.1.2 Design Of Adaptive reuse

Architect Grey Macpherson developed a design concept that housed a distillery at an early 20th-century industrial historic site with modern components. He was successful in occupying the existing spaces with adaptive reuse and made structural integration to fulfill needs, prioritising on plan development and design integrity. Macpherson reinstalled the roof with glass and steel trusses, following the same pitch formed to maintain the past building character (figure 17). However, the transparency of the roof provided more lighting and ventilation to the production zone. Moreover, a glass-walled entrance courtyard was built, connecting the open visitor centre and the distillery that merges the outdoor courtyard space with the sheltered courtyard space (figure 18). A closed archway on the exterior wall has retained, which might be an assumed modification of the architect to bring back the last characteristic of the building (figure 16). A window has been stretched downwards preserving the materiality and form to carry a visual connection with interior and exterior spatial characters (figure 14).

52 “Gray Macpherson Architects Completes Distillery in Hawick | Building | Architects Journal.”
In conclusion, this project undertakes appropriate structural adaptation, alteration and spatial development with respect to heritage integrity. The project identified structural issues that had to be sorted for the reuse of the historical industrial building. The structural redevelopment of the historical building made minor alterations on existing fabric, the adaptation of new material on ruined structural parts and design integration for creating new spaces. The transparency in the materiality of new interventions brings a visual contrast between old and new. The structural redevelopment of the building, minor alterations and transparency in materiality become elements to explore in design.

3.2 St. Mary Medieval Museum

Location
Kilkenny, Ireland
Year
2017
Architect
McCullough Mulvin Architects

3.2.1 History

The former St. Mary's church was a parish church of the city built in the 13th century. The church building is located on the high street, in the city of Kilkenny, Ireland. Importantly, the building served as a parish and masonic hall till the midst of 20th century. Later on, in 2010 the building was obtained by Kilkenny borough council with the cooperation from the local county council and department of environment, heritage and local government. The parish church was constructed in the cruciform structure made of stones. The large building sits in a significant walled graveyard that carries many substantial tombs and monuments from the early decades to the 20th century (figure 15).
3.2.2 Design Of Adaptive reuse

Importantly, the challenge faced in design was to regain the lost building structure, which was the aisle and chancel of former St. Marys church. The parts have been reconstructed according to the existing elements of the church despite this the structure clad with lead created a clear contrast in materiality with the stone-built church. Thus, the architects made a unique approach to materiality with lead and timber rather than sticking into a common restoration strategy of using matching stones. The gable section constructed over the tomb-filled undercroft overlooks the town was a process of re-establishing its dominant form in the urban landscape. However, the existing medieval complexity of spaces has been successfully restored with additional structural and spatial alteration to meet the requirements of the building. The design solutions were made with the seek of archaeology department such as one of the new structure is built on an existing foundation revealed under the earth through excavation. The ruined walls of northern transept have been rebuilt according to the survey based on the existing plan and remaining walls. To improve the quality of a controlled environment for the exhibition the architects carefully reinstalled the interior floors with stones and relatively smaller treatments on existing surfaces.

In conclusion, the restoration of St. Marys church reconstructed the building concerning the existing fabric and form. The reconstructed form expresses the volume of existing heritage structure and contrast with the materiality. In the interior, the architect retains the original spatial qualities of the original church with minimal alteration. The installation and alteration of the interior not only improves the spatial quality but also compromised structural deterioration of the existing building. Elements of use become the contrast in materiality and minimal interior alterations for adaptive reuse of St. David’s church.
3.3 Convent de Sant Francesc

Convent de Sant Francesc was an 18th century established by Franciscan priest located in the small Catalan town of Santpedor. The construction of a Convent which includes a renovated church was held in between the period of 1721 to 1729. However, after its successful run of hundred years, in 1835 the convent got sacked and continued to be unattended. Subsequently, the process of the continued deterioration of structure finally ended up in its demolition by the state in 2000.

After that, the church and a part of the perimeter wall remained with poor quality structural stability (figure 27).

3.3.2 Design Of Re-Use

Architect David Closes had received a design challenge to convert the ruined building for facilitating cultural activities. Therefore, he implemented multiple functions that allowed the convent to be put to use as an auditorium and multipurpose cultural space. The inspiration recovery of the structure was done in 2003 with the intervention merging the historic fabric and differentiating the contemporary construction from the old, through form and material usage. After the demolition of the convent, the remaining structures were in decay because of its modest quality of construction. Especially, the roof, which could barely stand, the choir was no more, and the vaulted ceiling of the church hall was near collapse (figure 29).

An unpredictable inflow of natural light was present due to the existing roof, despite the actual form of the building which contained light in the interior. Closes added a new programmatic volume on the existing façade emphasising the contrast of contemporary language with heritage fabric for the requirement of connecting new inserted floors with the use of stairs. Indeed, this was to preserve the actual aspects of interior space and unity of the original structure. However, the new inserted volumes are occupying the parts inside and outside with a vision of unfilled spaces in the actual building (figure 28).

A proposed ceiling hides the actual roof, controlling the inflow of natural light with different solutions such as, on the north side of apse an apparently big skylight, an open of ceiling that exposes the belfry from inside of nave, and a cut in the roof to ensure natural light would reach inside the nave on entrance (figure 32). Nevertheless, the understanding of historical wounds and the building's most important values allowed the architect to renovate the structure without sacrificing the use of a contemporary language in the establishment of new components through the intervention.

Figure 28: Image shows the structural adaptation through weaving method. (Image Author unknown)

Figure 29: Recovery of ruined interior.
In conclusion, the structure was undertaken to an extreme level of restoration as the majority of the structure of the original building was heavily in ruin. The architect adapted a new design intervention to reuse the heritage building. The historical building adapted insertion and weaving methods to create new programmatic volumes. However, the analysis indicates that the additional structure inserted on existing façade respects the lines and shape of the heritage building (figure 31). Moreover, the interior insertions compromise the required spaces for adaptive reuse. Elements of use become respecting line and shapes of the existing building. The project may also explore the possibilities of insertion to create new programmatic volumes.

3.4 Selexyz Dominican Bookstore

Location: Maastricht, Netherlands.
Year: 2005
Architect: Merkx+Girod Architects

3.4.1 History

The 13th century Catholic Church is one of the earliest gothic constructions in the Netherlands. It is located in the centre of Maastricht city that was consecrated in 1294. The church was constructed from malstone grit on the different foundation of millstone grit. It served as a church for the Dominican order until 1729 and that was recorded as end of its ecclesiastical function. Later the church was used as stables, a bike shed, exhibition space and a party hall, and since 2005, it has been restored and changed in use to a bookshop.


"Boekhandel Dominicanen | History of Bookshop Dominicanen.

"Boekhandel Dominicanen | History of Bookshop Dominicanen.

"Boekhandel Dominicanen | History of Bookshop Dominicanen."
3.4.2 Design of Re-use

The church was successfully restored to its former glory without obstructing the church space or ruining sacral elements such as stained-glass windows, frescoes, vaults and the incidence of light. The proposed programme was challenging as it required covering an area that was almost double of the existing area. Architects maintained to insert the required space within the church through the three-story walk-in structure that is used as a bookshop. The inserted structure is decentralised off to one side and stands individually around the existing church columns. The decentralisation of structure retained the original nave space and vaulted roof. Also, the central line characteristics of the church have been saved through the positioning of new design interventions. The design integration represents a clear contrast between smooth gothic interior with the new rigid structures.

In conclusion, the church preserved to retain its original fabric that in the authors opinion successfully adapted a new use within the space. The analysis shows that the architect followed the idea of insertion to create more spaces for the required functions. Even though the inserted structure retained the existing nave space, on the other hand, it obstructed the sacral elements of the aisle with its elevated characteristics. However, the architect retained one aisle. Fascinatingly, the insertion was done without damaging the existing walls and could be removed if it is necessary. Elements of use become the insertion of rigid structure within the smooth gothic space. The development of spaces through insertion would be used as a design tool for the adaptive reuse project.

3.5 Precedent Summary

The precedents explored are the Border Distillery, the St. Mary Medieval museum, Convent de Sant Francesc and the Selexyz Dominican bookstore. The buildings were analysed through valid drawings and photos in order to enable the insight into design decision for the adaptive reuse of St. Davids Church. The study focused on the history, design implementation and adaptive reuse methods.

From this precedent analysis, The Border Distillery and the Selexyz Dominican Bookstore are found most relevant for the project. In the Border Distillery architect investigated the ruins of the building that enables the design interventions. The historical industrial building adapted its new programmatic volume through insertion and parasitic methods mentioned by architect Steven W. Semes. The material considered was transparent that allowed the differentiation of the adapted structure from existing fabric. These methods may prefer minimal exterior additions in redeveloping St. David’s church. In the Selexyz Dominican bookshop, the architect contextualised himself from exterior alterations. However, the heritage building adapted a rigid structure in its interior space that contrasted with the remained gothic volume. Connecting with literature analysis, the bookshop is a clear example of extreme interior space modification with no exterior alterations. The project may receive space modifications within the church so the possibilities will be explored through design trials. Moreover, precedents analysed illustrate their concerns to the historical authenticity and architectural integrity of the building. The elements, character and form of heritage building are preferred as basics point for design decisions.
4.0 Relevant Case Studies within Auckland
St. Patrick’s Cathedral/Wyndham St.
The St. Patrick’s Cathedral is an iconic building in the Auckland city central. The restoration of the building took place in 2006. The restoration reinstated the altar and wooden biblical pictures. Similarly, the roof is reinstated, maintaining the original pitched form. As the restoration maintain to retain historical authenticity, the architect carefully protected the existing windows. Foyer entry has proposed with a contemporary language. However, the proposed layers are complementing the heritage fabric through the form and design. The city square associated with the cathedral was restored along with the cathedral, as part of the streetscape upgrade programme given by Auckland council. The paved landscape significantly enhances and complemented the cathedral that also improved community gatherings.

The Imperial Building/Fort Ln.
The refurbishment of the heritage building was carried out in 2003 and completed in 2004. The restoration project focused on strengthening the building from seismic activities. The process such as retrofitting, floor and roof diaphragming applied in order to upgrade seismic performance. Feature lighting is installed to emphasis and complement the heritage building. Internal walls are stripped off to explore the old bricks. The building had extreme level of internal space redevelopment to accommodate retails. The use of steel, stained glass and concrete retained the industrial character of the heritage building.

Saatchi and Saatchi Building/Parnell.
The project explored the building to understand the methods of insertion and structural development in order to raise the seismic performance of the building. In order to upgrade seismic performance, the restoration had diaphragms running throughout each level and foundation strengthening. The restoration installed large horizontal trusses which were necessary due to the inability to prefabricate because of the irregular building structure.

Mason Bros Building/Wynyard Quarter.
The adaptive reuse project facilitates an old warehouse building for commercial developments. The architect installed highly glazed volumes on existing heritage fabric that contrast with the original building. The rigid design of the existing building is complemented through new design interventions. The alterations could have followed the language of the existing building; however, it breaks free from the rigid language by introducing angled facades and a material that has the ability to stand out in contrast to the brick facade.
5.0 Context
5.1 History of the Church

The understanding of historical factors is important to have a deep knowledge of the history of the church. Detailed historical analysis identifies possible historical significance that can be highlighted as the establishment of St. David’s Presbyterian Church in Auckland.

5.1.1 Presbyterian Church in Auckland

New Zealand’s first Presbyterian church, St. Andrews, was established in 1840 by Rev. John Macfarlane in Wellington. It was officially recorded as the Scotia first church in the country.14 After two years in 1842, two immigrant ships from Scotland arrived at Auckland shore, which can be highlighted as the establishment of St. David’s Presbyterian Church in Auckland.

For finding a permanent minister to take over in time, the presbytery appointed to design a bigger structure for new St. Davids Church. Bartley found his success of developing the design for St. Davids in 1879 after the competition held in 1878.77 Soon the mission was established by the presbytery under the designation of St. Davids with minister Rev. A.M. McCallum of the free church of Scotland appointed to design a bigger structure for new St. Davids Church. Bartley successfully developed the design for St. Davids in 1879. The competition was held in 1878 and new furniture has been obtained. The renovation works were successfully completed, and the school received for regular church service on 10th March 187875. The church saw the building undergoing serious structural deterioration and got consequently deserted. In the meeting held decided that the school should be put into proper state repair.76

5.1.2 St. David’s Church

In 1864 St. David’s was established as preaching stations at the site were Symonds Street and Khyber Pass road intersects (figure 44). At the same time St. Andrews church built-in 1849 on Symonds street was in a situation of out of capability to meet the needs of rapid expansion and population of Auckland city. Indeed, the church was in a situation of out of capability to meet the needs of rapid expansion and population of Auckland city. Therefore, the presbytery decided to build a new church as a strategic one because the city growth was in that direction. Hence, rented the topmost point, allotment fronting Symonds street which was in front of excited Temperance hall in Newton and developed an independent congregation there75.

The picture changed after Dr Willis, having withdrawn from the jurisdiction of the presbytery, seemingly the unpleasant work at St. David’s church. Hence, rented the topmost point, allotment fronting Symonds street which was in front of excited Temperance hall in Newton and developed an independent congregation there75.
finial standing a further 14 metres high. The architect was specific about the integration of gothic style with native timber craftsmanship. The combination of totara brackets and kauri principals laying on carved truss enhance the plain roof interior. The building interior painted in white and the rostrum followed the gothic theme in the paneling. Importantl y, the native timbers below these panels became balusters, with gothic arches between. Except for the front wall rest of all other sides were of weatherboard, the entrance tower and front walls are covered with a rusticated board. The impressive church building was opened to the public on the second Sunday of November 1880, a popular newspaper at that time denoted the new building as “a new church, on the most commanding site occupied by any of the city churches” which emphasis the dominancy of the location at that time. The first minister was Rev. Thomas Mackenzie Fraser one of the former theological tutors of the Presbyterian Church of Victoria inducted on august of 1881. After nine years of successful running, Mr J Robertson was appointed to investigate the need for a new site for St. David’s Church. Then upon the church sold the Symonds street property in order to obtain the Khyber Pass site with a frontage of 35.6 metres and a depth of 60 metres. As a result, the timber structure successfully transported down the road to the new site procured a significant amount of public interest as till now, no building of this size had been moved in the Auckland history (figure 45, 46, 47, 48). The church has re-erected on the beginning of 1902 on the exact position of the current brick building is placed. The church was later moved and reoriented in the associated site. The architects examined the building states that, “Its exterior fabric has been highly modified, and its architectural qualities degraded and compromised to the extent that it cannot be ‘read’ as the original church.” These modifications included removal of the tower, replacing of gothic windows and single stories building additions on the south and north facades that ruined the architectural features of the old gothic building (figure 45 ).

Architect, 18.
Architect, 18.
Architect, 18.
St. David’s Church | NZETC.
Architect, 8.
Architect, 8.
Architect, 8.
Architect, 8.
Architect, 8.
Architect, 8.
The idea of replacing the beautiful gothic church with a new one was suggested in 1916 on the midst of the First World War. The thoughts of having a new church were not flourished until 1919 because of the circumstances of World War I. While looking into history, it is important to note the relation between World War I and St. David’s church which took the church as a soldier memorial. Reportedly, 21 members of St. David’s church joined the force in 1915, and unfortunately, two of them sacrificed their lives; one was reported missing this resulted in placing a roll of honour at the church porch with the enlisting their names and memorial services were held88 (figure 58, 59). Consequently, as the war progressed the more people connected with St. David’s joined the army that caused a major loss of seventeen lives related to the congregation89.

Rev. D.C. Herron was appointed as a minister of St. David’s on 1919, a church’s historian was described Herron in 1926 as the strong man who has taken hold of St. David’s with a masterly grip90 which clearly expresses the role of Herron in the redevelopment of St. Davids as a soldier memorial church. A judgement took shape that the new church is a necessity due to increased need of congregation particularly the number of students in Sunday school rapidly expanded out of capacity that reached in a position where the groups had been to affect to meet in sections91. Therefore, it was concluded that the old timber structure would be used as a school and a new more sufficient building would be erected to accommodate more people also to meet the advanced requirements of the congregation. The additional, adjoining property on Khyber Pass road on which the old church now placed was purchased in 1924 and prominent architect Mr D. B. Patterson was appointed to develop a new proposal on the same year. Patterson was not a random choice because he already had an association with St. David’s church as he developed the church manse in 1916, on Grafton road.

88 Rev.David.J.Albert, The Story of St.David’s Presbyterian Church,47.
89 Rev.David.J.Albert,47.
90 Architect, “St David’s Memorial Church Historic Heritage Assessment Peer Review”,22.
91 Architect,22.
As mentioned earlier, it was agreed that the proposed church was to be not only a soldier memorial of those who had sacrificed their lives for the country, but also as a symbol to keep the faith, courage and sacrifice to the extreme level who were once worshiped with St. David’s congregation. Eventually, through frequent meetings of the congregation with the architect, it was decided that the proposed church would be built on the exact plot of timber structure by replacing the old building to adjoining which was purchased earlier. In particular, with the interest of the congregation, the architect came up with a Gothic revival design that revealed several good aspects of elements especially the square Gothic tower with well-designed battlements on top, buttresses at the corners and louvres in the window openings. The church was designed with seating of accommodating 560 worshippers in church with an additional 100 more on the gallery placed above lobby which made it as a satisfactory design by resolving the needs of the congregation. On 1927 Anzac Day, the foundation stone of new St. Davids church was laid by Mr Duncan Macpherson however it took six months for the intended dedication and opening ceremony which was reportedly well attended by people. After the building was opened several issues had been noticed by the congregation particularly the brickwork, the poor masonry caused continual dampness which had affected the interior walls of the basement and also made the interior space extremely cold during the winter months. Moreover, the dampness ruined the electric lighting system as well as pushed the steel window sashes to require an urgent repair by 1935. At the same time, there was a desire to redesign the chancel at the north end of the church, Horace Massey, well-known architect at that time was appointed to remodel the chancel. Eventually, the alteration and repair works carried out, the chancel replaced with more attractive model finally after successful building works the rededication of church were held in 1937.

52. Rev. D.C. Abbott, The Story of St.David's Presbyterian Church [60]
53. Architect, "St. David’s Memorial Church Historic Heritage Assessment Peer Review" [24].
54. Architect, [24].
55. Architect, [24].
An analysis of Grafton suburb has been carried out to understand the site’s potential. The study analysed pedestrian and traffic flow, climate, demographic details and site zoning by Auckland council. The design possibilities and their implications for the adaptive reuse of St. David’s church are investigated through the following diagrams and photos.
6.1 Introduction

Grafton is one of the inner suburbs of Auckland city in New Zealand with a population of 2052 according to the 2001 census. Located in a position as its west and north-west sharing the boundary with Auckland CBD, where north, east and south shares with Parnell, New Market and Eden Terrace respectively. It was considered as an immense suburb according to the land size for a tiny population until it got occupied by the Motorway, hospital and University. The suburb was once known as Grafton heights when it had only the University and gentry, indicating its history as a well-off suburb of Auckland's earliest periods. Hence Grafton is enriched by historical buildings that are significantly untouched and remains as a signature of Auckland's early decade.

The upper Symonds region in Grafton is where St. David’s Presbyterian church is located is one of the main commercial sectors, locally known as uptown of Auckland city. Indeed, uptown is a major concern of the Auckland Council for its future development since 2014, as per the fast-growing population in Auckland CBD. Looking into potential landmarks around Church site, Grafton bridge is a major structure that bridges Grafton with Auckland CBD which spans across Grafton Gully. Significantly the bridge was constructed in 1910 with a height of approximately 43 meters and it is listed in Heritage New Zealand and IPENZ Engineering Heritage Register. Although the Grafton Gully is located beyond the north of the site runs northwards towards the sea through the volcanic hills of the Auckland volcanic field. However, today it’s been occupied by several multiple lines of motorway and a major part with bush.

6.2 Access

Grafton has great infrastructure and important in connecting Auckland CBD with Newmarket. The Motorway passes through the Grafton Gully directly connecting Auckland City with Hamilton and further south to Taupo. However, it bypasses in either side enabling access to the eastern side of Khyber Pass which is barely 50m from St. David’s church. Grafton Gully, where the Grafton Bridge passes above is the hot spot of southern motorway in bypassing it to four directions there it makes a complex traffic circuit. The estimated drive time to Grafton from Auckland CBD is nine to ten minutes, while the travel time from Hamilton is has a vast difference that is one hour and forty minutes.

The nearby railway line of Auckland passenger railway network connects Britomart station with Newmarket station and then follows the western line to Swanson which is currently the northernmost station in the network for its future development since 2014. Grafton station is one of the inner-city stations serving in the western line. As Grafton is one of the major hubs of tramway in bus routes the station makes a direct interchange to many of the bus routes. The station also located in close proximity to Auckland hospital, Auckland War Memorial Museum and Auckland University campuses in Grafton and Newmarket.
figure 63. Analysis the available space around site with traffic path (grey) and pedestrian path (orange). (Image by Author). 

figure 65. Analysis showing traffic path (grey) and pedestrian path (orange). (Image by Author). 

figure 64. Analysis shows the commercial development (orange) and residential (grey). (Image by Author). 

figure 66. Sun path diagram (Image by Author). 

figure 67. The above figures are analysis of surrounding building's character. (Image by Author).
6.3 Climate
Auckland is considered as holding an oceanic climate by the Koppen climate classification system which is a widely used climate classification in the world. The climate varies from warm, humid summer to mild damp winter normally in the year. However, the studies show that Auckland is the warmest centre in the country with average sunshine of approximately 2200 hours per month. Despite this, the extinct volcanic cones and high vegetation create a lower temperature with heavy winds on the Grafton region. The average temperature is 24 °C in the daytime and a lower of 16 °C in the nights normally in the year. However, during winter, temperature rises to an average of 15 °C on daytime and touches its bottom point of 7 °C on nights more often than not. Furthermore, Auckland is the warmest centre in the country with an average of 30 °C in the daytime and a lower of 15 °C in the nights. The average temperature is 24 °C in the daytime and a lower of 16 °C in the nights normally in the year. However, during winter, temperature rises to an average of 15 °C on daytime and touches its bottom point of 7 °C on nights more often than not.

Predominantly the wind flow is from southwest except for the increase in the proportion of wind from the northeast in the summer. The sea breeze is common in the summers with a speed of fewer than twenty kilometres per hour.

6.4 Demographic
In recent years, Grafton has seen a drastic increase in its population. The people who maintain a close relation with Auckland CBD for their jobs, business and educational requirements find Grafton as one of the most convenient hubs for living by its well-connected road system with Auckland CBD and New Market. According to the 2013 census, 43% of Grafton population prefers walking or jogging as a means for travel to their work. This shows the comfort of choosing Grafton for inhabitation. Grafton west has an increase in its population by 50.7% between 2006 and 2013. Importantly, based on the comparison of ethnicity and birthplace of the inhabitants depicts that more than 60% of the population are migrant workers and it strongly shows the character and significance of the location.

6.5 Site Zone
The proposed Unitary Plan by the Auckland council underlines that Grafton west acts as a transmission zone according to its location and activity. It carries a frequent and fast transport network throughout all the time between suburbs, the Auckland city centre, and New Market. Moreover, the location follows a character of maintaining a harmonious relationship between residential and employment activities. According to the proposal, the zone should maintain households for inhabitants as well as proportionally smaller scale trading activities that do not cumulatively affect the viability of the place. Significantly, it is clear that neither the site should have a mixed-use character individually nor on the spaces within it, but the building should hold a character of adaptation to facilitate different function over time. The standard height of the building is five stories. However, greater height is enabled on the zone because of its strong transmission character with city centre.
6.6 Site investigation

Two major site visits have made to inspect St. David’s church and its context. The information gathered from the investigation made during the site visit was used to inform the design implication for the adaptive reuse of St. David’s church. The findings are reflected through the following photographs and short notes.

Observations from first field trip.

Through the site investigation the project identified the potentials for the design development. Some of the existing building elements were analysed and measured for digital modelling.

Observations from second field trip.

Through the site investigation the project identified ruins parts of the building that could be further investigated for the design development. The site circulation and possibility of remodelling existing building entries verified. The first field trip was not concerned of old St. David’s church building. This second field analysed the old church and identified the potential to use in the adaptive reuse project.
This section contains site setting, existing building analysis, programme and design iterations. Site setting explains existing site conditions through building orientation, circulation and landscape. Existing building analysis explores the building characteristics. The programme explores the adaptive reuse of St. David’s church. The design trials carry various design iterations to reach the design outcome.
7.1 Site Setting

The St. David’s Church is placed facing its southern façade to the Khyber Pass road where Madeira Place intersects. The wooden structure of old St. David’s Church is sited next to the church. The old church building is oriented in an east-west direction. The site is enriched with landscape with a vast variety of trees. The sloping lawns slope to Khyber Pass road, a relatively small brick wall at the entrance and semi-circular sloped pathways develop a sense of parish church in the broader landscape. The mounding increases the height of the church; hence, it obscures the basement level of church from this point. The semi-curved pathway connects with the slope of the ramps with the entry terrace, which leads on each side of the lobby. Beyond the ramp, the terrain gently slopes downwards towards Madeira Lane. There is a car park placed in between the church and the associated school building on the sloped terrain. On the east side of the site, there are well-landscaped areas. Also, a set of steps down from ground reaches beneath the entry terrace. At the north-west rear corner of the site, there are buildings with a contemporary architectural language.

105 Architect, “St David’s Memorial Church Historic Heritage Assessment Peer Review”, 49.
7.2 Existing Building Analysis

The section analyses the existing St. David’s church and associated former school building in terms of space, circulation, form and architectural style. The analysis is made through documents, digital models, drawings and photographs.

7.2.1 Ground Floor of St. David’s Church

There are entries at east and west façade of ground level which leads to the lobby. The main entry doorways are reached through wide ramps. The lobby was originally consisting of a cloakroom on the east end and a storeroom at its west. The storeroom was later altered to a kitchen while the rest of the space remained to its actual state. There is opening at the eastern end of the lobby which enables entry to a stairwell that gives access to the raked gallery space. The gallery original rooves over the lobby space is open to a nave that allows a clear view of the entire church space. From the lobby, there are two door entries to the church aligned to the sides. The main room of the church carries the total span of the building. The church main space link each side by 5 tripartite windows and also has single lancet windows on each side of the chancel. Artisan stained glass work is used on some of these windows. Fully expressed elegant timber trusses forms the roof structure and it follows the slope of the roof. The floor is made of timber that slightly slopes down from the lobby to the chancel. Initially, the chancel was planned and built as a semi-circle having a focus on the altar and also having radiating choir stalls on each of the sides. Having doorways by the walls, the area on the rear of the panelled choir stall was enclosed on both sides. It was into a pointed arched recess at centre of the northern wall where the organ was set. The new chancel was designed by Horace Massey and was modified in 1937. Timber stairs occupy the space on each side of the choir stalls in the wings of the chancel and they lead up to a rear wing of the building where Vestry and offices areas are located and also to the rooms on the lower level. With choir vestry room on the east end, office bearer’s room on the west end and ministers room and lavatory at the centre, the upper level consists of three rooms which are linked by a corridor that runs behind the wall of the chancel. There is a concrete safe in the office bearer’s room by the corridor.

Figure 84. Church main room looking towards chancel. (Image Author unknown)

Figure 85. Church main hall interior looking towards nave entrance. (Image Author unknown)

Figure 86. Ground floor plan. (Image by Author).
7.2.2 Basement of St. David’s Church

The two stairs down from each side of chancel lead at the basement lobby. The lobby takes up the full span of the building below the chancel. There is a wide corridor space which goes through the centre of the church to the south end that attached to lobby. There is one man’s bathroom on the east wall and one women’s bathroom on the west wall of the lobby. The space between these two bathrooms and the corridor is where the storage rooms are placed. There are three meeting rooms on each side of the corridor. Two of those are of the same size and it sits between the pilasters at the southern end and the third one is a comparatively larger one which is at the northern end. In earlier, there was a gymnasium at the southern end. The centre corridor leads to the gymnasium and it takes up the full width of the building. The walls of gymnasium carry the form of above nave space. A subfloor space takes up the area beneath the lobby and there is a set of doors at the centre of the lobby which leads to the lower chapel space. This chapel which has been modernised and takes up the whole width and depth of the back section and storage areas can be found beneath the stairs on each side. Naturally lit and ventilated rooms are the attraction of the rooms on the lower floor but the central corridor remains an exception to this. Some extension works were done on the entryway on the southern side at the rear end of the building to create more lobby space.

111 Architect, “St David’s Memorial Church Historic Heritage Assessment Peer Review”, 52.
112 Architect, 52.
113 Architect, 52.
Figure 89. North-South cross section of St. David's church. (Image by Author).

Figure 90. West elevation of St. David's church. (Image by Author).

Figure 91. East elevation of St. David's church. (Image by Author).

Figure 92. South elevation of St. David's church and old church. (Image by Author).

Figure 93. Digital model showing St. David's church and associate building. (Image by Author).
Figure 94. Openings on west facade. (Image by Author).

Figure 95. Proportional analysis using lines on west facade. (Image by Author).

Figure 96. Hand drawing showing curved pathways and north facade details. (Image by Author).

Figure 97. Analysis showing site circulation. (Image by Author).

Figure 98. Images showing materiality. (Image by Author).
figure 99. Main circulation through the ground floor. (Image by Author).

figure 100. Main circulation through the basement floor. (Image by Author).

figure 101. Cross section through old St. david's church. (Image by Author).

figure 102. Interior showing natural light inflow. (Image by Author).

figure 103. Main circulation through the Old St. David's church. (Image by Author).

figure 104. Analysis shows structural addition (grey) on old church building (orange). (Image by Author).

figure 105. Analysis differentiating old structure from adapted structure. (Image by Author).

Madeira Place Site path connecting Khyber pass with Madeira Line Landscape Madeira Place 12.2
Programme

St. David’s’s Prosthetic Church has been closed to the public since 2014. However, the building received a “category A” listing from Heritage New Zealand in 2017. The intention of this project is to introduce a new programme for St. David’s Church and its associated school building which was the old St. David’s church. The project will facilitate a performing arts centre on the main level and an art gallery in the basement that will focus on different art forms related to the World Wars. An artist-in-residence programme is also introduced to the associated building, which provides accommodation for artists who wish to explore the site in order to develop works. The focus is “how can adaptive reuse be applied to a historic church in Auckland CBD to preserve the cultural and historical values of the building and improve community interaction?”

Programme Development

The features explored through historical, site and building analyses are used to define the new programme for the adaptive reuse of St. David’s Church. Preliminary consideration for the programme was that it should not distract from the heritage values of the building. For the consideration of programme development, the project looked into three aspects, the viability of the proposing programme. The historical analysis identified the critical aspects that may be explored for the adaptive reuse of the project. The context of the site identified it as a commercial area that connects Auckland city with its neighbouring suburbs, which enhances the heritage values of the building.

However, the project intention is to engage the public with the site, which indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building.

Hence, the project examined the scope of art-driven programmes. The Art of Remembrance was a memorial art event organised by the St. David’s trust. The event was initial in 2015 as a part of the international response to the centenary of the First World War. In 2015, the St. David’s Church was discovered with brass quarter foils each foil representing a New Zealand soldier who sacrificed his life in the war. Prominent artist Max Gimblett ONZM designed the artwork. The art event was unveiled on Anzac Day and continued in the following years through different approaches. The project determined the opportunity to develop an art gallery within the heritage building enhancing its World War memorial values. The research examined how the project could pursue the project objective, which is to honour New Zealand soldiers through exhibitions. Analysing the outcomes of the church’s former function and from the historical research, the project identified programmes. The Grafton west buildings are commercially occupied; however, the building received a “category A” listing from Heritage New Zealand in 2017. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building. The church has been closed due to seismic issues, and also the drastic decline in its congregation. The historical listing from Heritage New Zealand indicates that the programme should have the ability to redirect public attention to the historic building.

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7.4 Design Trials First

7.4.1 Design Trial One

The diagram (figure 108) shows that the associate school building on the site has been removed. This removal of the building can provide more space to expand the St. David’s church with design interventions. However, this may compromise the heritage significance of the site. However, through historical analysis, it is identified that the school building is not carrying historical authenticity. The extension of the building (refer A, figure 110) oriented perpendicular to the heritage building that provides exposure of existing heritage fabric as well as new intervention.

7.4.2 Design Trial Two

Diagrams of the ground floor (figure 111) and basement (figure 112) shows the analysis of insertion of a new programme within the building. The diagram (figure 113) shows the sectional analysis of the proposed function. The removal of the roof and an extension is shown (refer A, figure 113) for the redeveloping of spatial quality. The removal of the roof is replaced with a larger structure using transparency in materiality. The main level floor is replaced to increase the roof height above the basement (refer B, figure 113).

7.4.3 Design Trial Three

The trial followed the same programmes at the main level and ground level as shown in design trial two (7.4.2). In the figure 113, a demolition of the rear end at the north to create a design addition (refer A) that would create a warm courtyard space for both gallery and performing arts centre lobby. Minor demolition on the existing fabric of south-west corner (refer B) to weave a structure on the existing fabric. The method of weaving on fabric with transparent material creates visual contact with the interior and exterior of the heritage building. The alteration on the wall separating lobby with nave improves the visual connection through the design intervention on the south-west corner on the exterior fabric.
7.4.4 Design Trial Four

The figure 116 shows the analysis of the context. A structural connection from the site to the opposite church is proposed passing over Khyber pass road (refer A). A pavilion is added on the site as the addition of the extended building (refer B). The diagram (figure 117) describes the insertion of the programme within the building. The programme maintains not to touch the existing fabric, in the figure 117. The performing art centre is at the main level (refer C) and art gallery in the basement (refer D).

7.4.5 Conclusion

The design trials analysed the insertion of a new programme and the structural additions on the site and on the St. David’s Church through digital diagrams and drawings. From design trial one an opportunity received to remove the existing school building from site to develop the extension of current St. David’s Church. The extension is oriented in such a way that it will not obscure the existing heritage fabric of the St. David’s Church. In design trial two and design trial three, there are issues of historical authenticity. That is the demolition and removal of the existing fabric will distract the heritage significance of the historic building. In design two and three, the design interventions may dominate the existing fabric of the heritage building. That is the demolition and removal of the existing fabric will distract the heritage significance of the historic building.

The extended building will consist of an art gallery and art studios within the space. From design trial four, an opportunity achieved to work with the new structures on site isolating from the existing heritage building. However, the extended building is seemingly large and that may dominate the heritage integrity of St. David’s church. A further investigation has to be developed to create an appropriate design intervention to be established. The insertion of the programme within the heritage building is seemingly appropriate with the new analysis made through required lighting for spaces. Moreover, the insertions are not touching the existing heritage fabric; this would emphasize the heritage integrity of church interiors. As per the analysis on the St. David’s church it is evident that the church has a good acoustic quality and a sloped floor in the nave. Thus the project identified these characters would be an advantage for the performing art centre.

The pavilion design is isolated from the extended building. The roof structure is designed with an organic form to reflect a clear contrast from the heritage building. Timber structure with native craftsmanship could create the free-flowing form. The pavilion could be used as an exterior gathering space for the public. Hence the pavilion design reflects one of the project aims. The existing landscape on the east side of the site is modified to produce a recreational area for the public. To analyse the form and design of the extended building and pavilion a further design have to be trailed.

7.5 First Design Scheme

The first design scheme is developed from the elements chosen from design trials one and four. The design included an extension of St. David’s Church from its west façade on the north end, a pavilion on the south-west of site and landscape gently designed on the east side of the site (figure 119). The extended building will consist of an art gallery and art studios within the space. The art gallery circulation integrates heritage space with newly invented space with a contemporary character (figure 118). The extended building reflects a co-existence with a respect to its materials to distinguish heritage building from the new design intervention. The form of the extended building follows the nature of the heritage building to complement the original building.
7.6 Design Trial Two

Design Trial One identified that the form of the building dominated the site and did not complement the existing heritage building. Hence, the project decided to examine more design trials. Before approaching the trials, the project had few changes from the first design scheme. The project incorporates the school building for design development of St. David’s church site. The site investigation and precedent analysis enabled insight to design decisions. The site circulation identified as an important aspect for further design development (Refer 7.5).

7.6.1 Design Trial One

A connection is introduced from St. David’s church to associate building. The connection is intended to allow the existing site circulation that connects Madeira line with Khyber pass road. The structure would follow the shape of the school building in order to merge the design intervention with the old school building (figure 122, 123). Paved steps will be reintroduced on the existing car parking. The programme remains the same as the first design scheme.

7.6.2 Design Trial Two

The diagram (Figure 125) describes the west façade of St. David’s church. A high raised canopies are placed along with the paved landscape (refer A). The canopy design followed the geometrical composition of existing heritage façade and each represented trees that is responding to the surroundings. The structure attached to the church façade is to introduce a new reception centre for the building complex (refer B). However, the structure followed an asymmetrical form to respect the existing openings on heritage fabric. The function of the school building is introduced as an artist-in-residency. The programme introduced for the St. David’s Church remained as first design scheme.

Figure 119. conceptual drawing of the proposed site 1 (Image by Author).
Figure 120. conceptual drawing of the proposed structure 1 (Image by Author).
Figure 121. conceptual drawing of portal frames connection. (Image by Author).
Figure 122. A model experimenting structural addition (Image by Author).
Figure 123. A model experimenting structural integration (Image by Author).
Figure 124. A Model of site contour orange lines representing circulation (Image by Author).
Figure 125. Diagram 8 (Image by Author).
7.6.3 Design Trial Three

The diagram (figure 126) illustrates the dilapidated parts of the Historic building identified from site investigation. The project analysed the literature that reflected that design decisions should minimalise the exterior interventions. The design development focused on the east side of the site as the ruins found in the east façade of St. David’s church. In the figure 126, foyers are introduced on the entries (refer A). A new roof structure is attached on the rear end east façade that increases the light flow to the lobby space for the art gallery (refer B). The west façade will stay untouched that will hold historical authenticity. The project retains the gothic windows for the school building to enhance the heritage significance of the building. However, the old St. David’s church will receive a material replacement on its roof to create passive light flow within the spaces.

7.6.4 Conclusion

In conclusion, from the design stage one, it seems the design intervention interrupts the existing heritage fabric of St. David’s church. However, the paved landscape will be acting as a public gathering space and still allows the site circulation. In design two the canopy structures may face structural stabilities as the southern hemisphere got high wind speed. The design followed to create reception space reflects inappropriate on the heritage building. From design stage two, the decision taken seems appropriate to argue that the design interventions followed a minimal intervention only on east façade. The elements in use for the final design scheme become programmes as mentioned in the first design scheme for St. Davids Church, the minimal interventions from design trial three, paved landscape design between church and school building and landscape design on the site facing east façade.
Developed design scheme

The design scheme was developed for the elements in use through theoretical design trial two. The project decided to develop design interventions on east façade. The design aims to redevelop the dilapidated parts of buildings with minimal intervention and to expose the scope of using existing building circulation for the design. The rear end of east façade is to be the new entry for the art gallery and the lobby roof is reintroduced with increased height. The new roof will create a warm space with an enlarged roof. The materiality taken for the roof would distinguish the heritage building from new design intervention. Transparency is a key tool for new design intervention. However, the design development for the roof has to be further investigated for responding to the existing heritage building fabric. Simultaneously, the foyer design has to be verified for appropriate design decisions. The interior space of St. David’s church is proposed to have an art gallery at the basement and a performing art centre at the main level. The new programme are introduced without creating any damage to the existing fabric. Art gallery may use flexible partitions to develop space in order to differentiate various exhibition zones. The stepped floor above the art gallery favours the seating design for performing art centre. A stepped structure is attached on the stepped surface to produce seats for the audience. The insertion of elements has to be further developed for the interiors. The literature studies opens the opportunities to have extreme interior modifications within the heritage building in an adaptive reuse project. The project will still focus on emphasising the heritage integrity of interior spaces.

The potential of the site to transform as a gathering hub is discussed throughout the project. The paved landscape design connecting Khyber pass road with Madeira Lane is intending to use the site as a gathering space. The paved area may become a strong aspects to highlight the heritage building on site. The landscape design on the front of east façade is redeveloping of the existing landscape to introduce a design more responding to the site also with St. David’s Church. Hence the landscape design turns to a recreational space for the public. In order to connect the school building function with the newly introduced programme of St. David’s Church, the project decided to have an artist-in-residency as reuse for school. Art-in-residency is a programme where an artist can live and explore the site to produce creative works through site inspirations. The design focused on retaining the Gothic windows on the building which was noticed from the historical analysis. The roof would have to be replaced that would increase the natural light inflow within the school building. The light inflow is required in certain spaces like art workshop. The design interventions focused on regaining the lost elements of the historic building as well as introducing new design on the school building.

Figure 129: Developed site plan indicating potential designs(Image by Author).
Proposed entry for Art gallery

New Proposed roof

Proposed new Paved landscape

Recreational space

Figure 131. 3D representation of proposal. (Image by Author).

Figure 132. 3D representation of proposed art in residency. (Image by Author).

Existing fabric of St. David’s Church.
8.0 Conclusion
The project explores the potential of the historic building to be functionally relevant without losing its heritage values. The focus was to determine a design solution for the adaptive reuse of St. David’s Church to regain the public interest. By redeveloping the heritage site, the project receives a unique opportunity to emphasise the historical and heritage significance of the building.

For the appropriate methods for heritage development, the project explored various conservation theories, to ensure the design decisions and their impacts respond to these theories. The literature examined adaptation, seismic strengthening and ICOMOS guidelines to pursue solutions for the adaptive reuse of heritage buildings. The project analysed relevant precedents, the approaches and outcomes, to ensure the design development resulted in a solution for the adaptive reuse of the heritage building. The project identified the potential that art has to redirect public interest towards heritage buildings that will also create strong financial viability for the further maintenance of the historic building.

The initial design changed as it was dominating the heritage building and obscuring the historical authenticity of the building. For this reason, various design trials were considered for the purpose of the project to obtain a creative design solution to enhance the historical authenticity of the building while being sensitive to the historical elements of the building. The design integrates the use of contemporary materials and designs to contrast the old and new. Thus the design integration involved minimal structural additions, replacement of ruins and elementary insertions within the heritage building. The controlled design instalments, conservation and effective reuse, will retain the public interest and emphasise the heritage significance to the public.

When the concept of remodelling the nave floor was initially considered, it was identified as the decision that would create controversy, as it changes the heritage integrity within the building. However, the project made its final design decisions through concern regarding these potential issues fitting the programme within the architecture language of the original building. The building analysis and precedent analysis created the groundwork not only to design within the available spaces but also to return and protect the heritage integrity of the existing building.

The seismic protection is briefly identified through exploring the available protection methods. Nevertheless, if the project continues, the heritage building could also be inspected by a Structural Engineer to find the exact requirement for seismic strengthening.

The final design retained the overall aim, that of the conservation of St. David’s Presbyterian Church through the use of adaptive reuse as a design tool. The reused function reflects the historical significance of the church. Hence, the building retains the War Memorial characteristics of the public to honour the New Zealand soldiers who sacrificed their lives in the world wars. The proposed design provides a public gathering space that improves social bonding and enhances the opportunity for the community to reuse a heritage building.
Books
Soldiers-Church.


Figure 1. St. David’s Presbyterian church decorated with brass quarter foils in 2015 by Friends of St. David’s trust. Image Author unknown. https://twitter.com/hashtag/savestdavids

Figure 2. Notre Dame Cathedral doorways before stylistic restoration (refer A) and after stylistic restoration (refer B). Image Author unknown. https://richardnilsen.com/2017/05/18/the-cathedrals-of-northern-france-part-10-chimerae-of-notre-dame/

Figure 3. Replaced spire on Notre Dame Cathedral. Image by Author. Reproduced from: https://www.timesofisrael.com/our-lady-of-paris-notre-dame-throughout-history/

Figure 4. Structural adaptation on heritage fabric, Malapolska Garden of art, Krakow, Poland. Image Author unknown. https://www.dezeen.com/2012/11/22/malopolska-garden-of-art-by-ingarden-ewy/

Figure 5. Adaptation methods, possibilities on St. David’s church. Image by Author.

Figure 6. Sight of deterioration of brick and mortar at St. David’s church base. Image by Author.

Figure 7. Internal strong backs to restrain out-of-plane wall failure. Image Author unknown. file:///C:/Users/jayank02/Downloads/ENG.ACA.0001E_Section_5_Performance_of_Unreinforced_Masonry_Buildings_in_the_2010_and_2011_Canterbury_Earthquake_Swarm%20(1).pdf

Figure 8. Struts from the floor above to improve out-of-plane performance. Image Author unknown. file:///C:/Users/jayank02/Downloads/ENG.ACA.0001E_Section_5_Performance_of_Unreinforced_Masonry_Buildings_in_the_2010_and_2011_Canterbury_Earthquake_Swarm%20(1).pdf

Figure 9. Internal steel frame retrofit. Image Author unknown. file:///C:/Users/jayank02/Downloads/ENG.ACA.0001E_Section_5_Performance_of_Unreinforced_Masonry_Buildings_in_the_2010_and_2011_Canterbury_Earthquake_Swarm%20(1).pdf

Figure 10. Eccentric bracing. Image Author unknown. file:///C:/Users/jayank02/Downloads/ENG.ACA.0001E_Section_5_Performance_of_Unreinforced_Masonry_Buildings_in_the_2010_and_2011_Canterbury_Earthquake_Swarm%20(1).pdf

Figure 11. Reinforced concrete moment frame retrofit. Image Author unknown. file:///C:/Users/jayank02/Downloads/ENG.ACA.0001E_Section_5_Performance_of_Unreinforced_Masonry_Buildings_in_the_2010_and_2011_Canterbury_Earthquake_Swarm%20(1).pdf

Figure 12. Border Distillery, North facade Night View. Image Author unknown. https://www.borderdistillery.com/

Figure 13. Border Distillery, East façade. Image Author unknown. https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 14. Window alteration on existing fabric. Image Author unknown. https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 15. Remodelling of ruined façade. Image Author unknown. https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 16. Retained archway. Image Author unknown. https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 17. Glass material installation on the roof. Image Author unknown. https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 18. Remodelling of ruined courtyard space. Image Author unknown. https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 19. Section showing the interior alteration. Image Author unknown. https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 20. Analysis shows the use of materiality and composition of new elements following the existing fabric of heritage building. Image by Author. Reproduced from: https://www.graymacphersonarchitects.co.uk/the-borders-distillery

Figure 33. Campanile, Verona. Image by A. Caputo. Reproduced from; https://www.archdaily.com/525584/campanile-verona-by-grazia-ferrini-design

Figure 34. Bike shed running in the cathedral. Image Author unknown. https://www.inhabit.com/gorgeous-church-renovated-into-modern-bookstore/lefroy_domin dzie_church_maastricht_10

Figure 35. The cathedral facilitated for party hall ( l ), restored to book store ( r ). Image Author unknown. https://www.fastcompany.com/9032463/the-big-business-of-rains

Figure 36. Insertion of book stall decontextualised to the side of the nave ( left ). Steel structure sustaining original existing pillar ( right ). Image Author unknown. https://www.dezeen.com/2007/12/04/a-shop-in-a-church-by-merkx-girod-architects/author/merkx-girod-architects.html

Figure 37. Plan showing insertion of first level ( top ) second level ( down ). Image Author unknown. https://www.caandesign.com/13th-century-dominican-church-converted-into-contemporary-bookstore-by-merkx-girod-architects/selley/dominican-bookstore-25

Figure 38. Section showing insertion of book stall. Image Author. Reproduced from; https://www.caandesign.com/13th-century-dominican-church-converted-into-contemporary-bookstore-by-merkx-girod-architects/selley/dominican-bookstore-25

Figure 39. St. patrick’s cathedral, Auckland. Image Author unknown. https://www.viator.com/Auckland-attractions/St-Patricks-Cathedral/d391-a19265


Figure 41. Saatchi and Saatchi building,Auckland. Image Author unknown. https://architecturenow.co.nz/articles/the-imperial-buildings/


Figure 43. Sketch of the first preaching station at St David’s Church, Symonds Street which opened in 1864, drawing by Alexander Boyd Stuart. https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/proposed-plan-changes/docs/72804-st-davids-church.pdf


Figure 60. Diagram showing Grafton location. Image Author. Reproduced from; https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html