EN.ER.GIZE
ADAPTIVE REUSE OF AN EXISTING BUILDING

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARCHITECTURE PROFESSIONAL. UNITEC INSTITUTE OF TECHNOLOGY, 2013

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Abstract

The research project investigates the sustainable adaptive reuse strategies to re-energize existing buildings as an alternative to demolition and replacement. Giving existing buildings a new life helps keep a trace of our cultural heritage and history.

The significance of this project lays in the future characteristic of the city. As our population further increases with land use intensifying, existing buildings play an essential role for society in conserving our historic resources. While existing buildings contribute to the character of our community and our own personal memories, they also contain large amounts of embodied energy. Buildings located in a popular development zone and have outlived a specific purpose are usually demolished. This action is brutal and wipes the site clean of any associated history. There lies an opportunity to explore solutions that can be more adaptable and sustainable for the future.

The project explores how adaptive reuse and sustainability strategies can be applied to a unique Ahuriri site that was developed in the years following the Napier 1931 earthquake. The project not only explores the energising of the existing site, but how the surrounding areas connections can be improved in Ahuriri, making the site more valuable to the community.

There needs to be a shift in our thinking of how we deal with existing buildings and sites in our architecture. How we can integrate this towards our approach of design and the potential this existing fabric we inherit holds for us as designers and fellow users of the world is vital. The challenge lies not only in how we adaptively reuse buildings, but how we re-energize them that is sustainable to meet modern day requirements. This research project aims to raise awareness and the potential of adaptive reuse as a more socially responsible alternative to demolition and replacement. This analysis will help demonstrate and develop a sustainable design solution that can assist the knowledge of others; to re-energize the potential existing buildings hold in our world.
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# Table of Contents

1.0 Introduction ........................................................................................................... 1  
   - Research Question  
   - Projects Aims  
   - Outline of the project  
   - Methodology  

2.0 Literature review ................................................................................................. 5  
   - Adaptive reuse  
   - Adaptive reuse movement  
   - The situation in New Zealand  
   - Benefits  
   - Barriers  
   - Review of current practice  
   - Important figures  
   - Sustainability  
   - Conclusion  

3.0 Precedent review ................................................................................................. 19  
   - Case study #1  
   - Case study #2  
   - Case study #3  
   - Case studies summary  

4.0 Urban analysis ...................................................................................................... 27  
   - Site criteria  
   - Site location  
   - Aerial analysis  
   - Panoramic views  
   - West Quay  
   - Bridge Street  
   - Character of Ahuriri  
   - Pedestrian movement patterns  
   - Environment and vistas
Activity
Figure/Ground
Existing train line
Topography
History
Community
Sustainability
Existing building
Programme
Conclusion from Urban analysis

5.0 Design Process
Design Development
Movement
Entry point and vistas
Adaptive reuse strategy
Exploration One
  Massing
  Outcome of Exploration One
Exploration Two
  Pedestrian movement
  Outcome of Exploration Two
Exploration Three
  Functional Planning
  Outcome of Exploration Three
Exploration Four
  Mass and volume
  Outcome of Exploration Four
Exploration Five
  Modelling elements
  Outcome of Exploration Five
Exploration Six
  Functional Planning
  Outcome of Exploration Six

6.0 Design outcome
Adaptive reuse strategies
Public movement and entry
Energize
Daylighting and heating
7.0 Conclusion

Conclusion
Future directions

8.0 Bibliography

9.0 Appendix

Appendix A
Existing waterfront locations
Conclusion
Appendix B
Existing building
Appendix C
Presentation
List of Figures

Figure 2.1: Basic development options
Figure 2.2: Types of physical change
Figure 2.3: Moritzburg Museum
Figure 2.4: Schausattl, Switzerland
Figure 2.5: House Muugn, Germany
Figure 2.6: Castelvecchio, Italy

Figure 3.1: Tate Modern, London
Figure 3.2: Tate Modern, London
Figure 3.3: Tate Modern, London
Figure 3.4: CarriageWorks, Sydney
Figure 3.5: CarriageWorks, Sydney
Figure 3.6: Caixaforum, Madrid
Figure 3.7: Caixaforum, Madrid
Figure 3.8: Caixaforum, Madrid
Figure 3.9: Caixaforum, Madrid
Figure 3.10: CarriageWorks, Sydney

Figure 4.1: Wynyard Quarter, Auckland
Figure 4.2: Vos Building, Auckland
Figure 4.3: West Quay, Auckland
Figure 4.4: Hawke's Bay location plan
Figure 4.5: Aerial image of site and surroundings
Figure 4.6: West Quay panorama
Figure 4.7: Bridge Street panorama
Figure 4.8: West Quay Ahuriri
Figure 4.9: Ahuriri Township
Figure 4.10: Pedestrian movement diagram
Figure 4.11: Environment and Vistas diagram
Figure 4.12: Activity diagram
Figure 4.13: Figure/Ground drawing
Figure 4.14: Figure/Ground drawing
Figure 4.15: Existing train line in Napier
Figure 4.16: Existing building - East
Figure 4.17: Existing building - North
Figure 4.18: Existing building - Interior
Figure 4.19: Existing building - South
Figure 4.20: Existing building - North
Figure 4.21: Aerial view of Ahuriri
Figure 4.22: Context perspective
Figure 5.1: Diagram of layout
Figure 5.2: Section of spaces
Figure 5.3: Exploration sketches
Figure 5.4: Exploration sketches
Figure 5.5: Aerial view of model
Figure 5.6: Concept model
Figure 5.7: Pedestrian movement
Figure 5.8: Axis
Figure 5.9: Controlled thresholds
Figure 5.10: Section looking south
Figure 5.11: Section looking south
Figure 5.12: Section looking east
Figure 5.13: Building perspective
Figure 5.14: Plan exploration
Figure 5.15: Facade sketch
Figure 5.16: Interior sketch
Figure 5.17: Exploration Three
Figure 5.18: Exploration Three
Figure 5.19: Exploration Three
Figure 5.20: View from North-west direction
Figure 5.21: View from North-west direction
Figure 5.22: View from South-west direction
Figure 5.23: View from Easterly direction
Figure 5.24: View looking North
Figure 5.25: View from North-west
Figure 5.26: Exploration Four
Figure 5.27: Exploration Four
Figure 5.28: Exploration Four
Figure 5.29: Exploration Four
Figure 5.30: Exploration Four
Figure 5.31: Existing structure model
Figure 5.32: Existing structural square
Figure 5.33: Negative space
Figure 5.34: Extension of roof
Figure 5.35: Extension of roof
Figure 5.36: Existing structural grid
Figure 5.37: Bridge exploration
Figure 5.38: Bridge exploration
Figure 5.39: Bridge exploration
Figure 5.40: Building and site model
Figure 5.41: West edge of site
Figure 5.42: West edge of site
Figure 5.43: Plan view of site
Figure 5.44: Stepping condition
1.0 Introduction
Research Question
How can adaptive reuse strategies be used to energize a currently underdeveloped building as an alternative to demolition and replacement?

Projects Aims
To investigate and critically analyse precedents and writings about sustainable adaptive reuse strategies. This analysis will help demonstrate and develop a comprehensive sustainable design solution that can assist the knowledge of others; to re-energize the potential existing buildings hold in our world. It aims to propose a unique design solution that is valuable to the community with a greater purpose than a typical mixed-use building.

Outline of the project
This research project focuses on the process of adaptively reusing existing buildings that energizes them with a new life. It will demonstrate how we can provide a process of finding new life for old buildings that is more sustainable and flexible for what the future holds.

Existing buildings may contain not only health and safety issues but also present difficulties in meeting current building code requirements. There lies the question, is the building worth saving? It is a common option to demolish the building and start again, which may be the only appropriate solution in some cases. It requires an area of knowledge where a proper awareness and an appreciation of the potential that some sites need to have considered.

New Zealand’s history cannot date significant buildings back before the 1820’s. One of the adverse affects of being a young country is that we have not in the past taken care to retain some of that heritage, as we have not considered it to be significant. As long as we keep this attitude not much will be kept. Shifting the balance to the attitude of “let’s keep it unless there’s a good reason not to” is important.

It is not just about significant buildings in architecture it is about the fabric of the past being taken more seriously. Keeping traces of the existing urban fabric through adaptive reuse of New Zealand’s past is important and needs to be articulated. The benefits of what this strategy presents have been very slow
to be adopted here in New Zealand. Very few good examples of adaptively reusing buildings exist that are both innovative and sustainable for the future.

The project investigates the literature published on theories of adaptive reuse and why it is one of the strategies we can use. It identifies the characteristics and why we should engage with it as very few buildings adapt gracefully over time to meet new demands. Adaptive reuse is more than just rehabilitation of a property. It also raises the issue of how we sustainably reuse a site that is a vibrant response that is valuable to our community. Adaptively reusing buildings presents a number of challenges for us to deal with as Architects. It is often found they often want to make their own statement on the world rather than building on from somebody else's. There needs to be a shift in our thinking of how we deal with existing buildings and sites in our architecture. How we can integrate this towards our approach of design and the potential it holds for us as designers and fellow users of the world is vital. The challenge lies not only in how we adaptively reuse buildings but how we re-energize them that are sustainable to meet modern day requirements.

Methodology

The methodology of this research project will be formed around a sequence of progressive problem solving with each development influencing the next. This type of approach identifies a problem, develops knowledge and skill, explores alternatives, implements the change, and evaluates the output. It is at this point that another alternative is explored and begins the cycle again. Unearthing useful precedents, writings, and an in-depth site analysis will identify what problems will arise with the project. This research method allows for a great range of sources to be consulted with which it can be developed through the exploration of the design process. This area will form a major part of the research process and is appropriate to this topic.
The research will be broken down into subfields with which an in-depth analysis will be undertaken:

- Theories of adaptive reuse. This will investigate the theories of adaptive reuse and why it is one of the strategies we can use. It will identify the characteristics of it and why we should engage with it.

- Precedents and case studies. This will analyse the more recent and the gentle history of adaptive reuse. This will indicate some of the issues involved and will include international examples. This will give a good overview to how far back the issue stretches.

- Site analysis. This will involve a full site evaluation being undertaken which will include the site history, climatic data, traffic movements, existing buildings and features, views, and the existing fabric of the area.

- The brief. This will form and set out the guidelines and direction the project will undertake.

- Design exploration. This will be one of the important aspects of the project with which possible solutions to design issues will be identified and explored. Developing the project through a series of models and drawings will do this.

- Presentation. This is a key aspect with the project, as it will affect how the project is going to be understood. The presentation will emphasize and describe the aesthetic detail of the adaptive reuse strategy, as it is an important aspect. The project will include plans, elevations, sections, and perspectives as well as detail models so the project can be understood clearly. The drawings will be a combination of hand drawn and computer aided that will be manipulated in Adobe Photoshop.
2.0 Literature Review
En.

Denoting to the development, creation, or intensification of a state.

Er.

Denoting to a person concerned or belonging to a specified thing or subject.

En.Er.Gize

Give vitality and enthusiasm to. Enliven, liven up, invigorate, stimulate, excite, motivate, encourage, jump-start, power.

Oxford Dictionary
Recycling and reusing not only buildings but also everything from bottles, clothes, and vehicles is an aim to reduce, reuse, and recycle waste as we strive for environmental sustainability.\(^1\) Sometimes the items appearance doesn’t change at all and we adapt new ways of utilizing the existing item as it is.

Adaptive reuse is known as “the process of adapting old structures for new purposes.”\(^2\) It has a known number of benefits associated with the approach towards design including examples found locally and internationally. Adaptive reuse sometimes is the only way that the existing building's fabric will be properly cared for, interpreted, and made better use of.\(^3\) Yet it is interesting to find that many architects today are not adequately prepared to deal with this shift in focus of architectural work.\(^4\) In New Zealand this approach is not often emphasized as a priority for development.

Communities and needs with certain buildings change and develop over time. Some buildings adapt to their new uses with no or minor alterations and some buildings no longer fit into a community. Technical and thermal comfort standards of a building also change and develop over time with the building required to undergo upgrading of its internal and/or external components to meet modern day requirements. The importance of the idea to extend the life cycle of a building is related to various sustainability goals: sprawl minimisation, preservation of virgin materials, and energy conservation.\(^5\)

Dealing with the existing building and its environment is one of the greatest tasks facing the building industry today.\(^6\) Literature edited by Robert Klanten and Lukas Feireiss,\(^7\) Johannes Cramer and Stefan Breitling,\(^8\) and Christian Schittich\(^9\) all examine buildings that have changed over time and provide good literature on the topic.

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5. Adaptivereuse.net, “Adaptive Reuse Contemporary Metamorphoses”
Critical review of current knowledge

Adaptive reuse movement

Adaptive reuse in the building industry is not a new phenomenon. There are a number of examples found before the 20th century of architects forming designs for existing built structures. Michelangelo Buonarroti’s plans for St. Peter’s in Rome for example were informed by a number of constraints from the existing site, the structure foundations of St Peters itself by Bramante, and by the surrounding structures built by previous architects. A lot of the great architects pre 1920 split their attention between new constructions and working within existing built contexts. However from the 1920’s their was a shift in thinking. Architects who worked on such adaptive reuse conversion projects have been regarded as second-class employment. Terms like “conservation architect” is a term used to discredit such architects even today. To design a building from the ground up is regarded as the ‘real deal’.

It is not until the 1970’s a renewed interest in the urban and the historical built environment brought about an upturn in interest of adaptive reuse. A concern for the environment as well as preserving the city image and historic monuments has become an economic and ecological imperative. There have been various studies that estimate between 50-70% of all construction work and about half of the entire economic value of construction now deals with work on existing buildings, particularly in the United States and Europe.

The situation in New Zealand

In the 1970’s the potential existing buildings held, particularly in the United States and European based countries, was beginning to gain interest. In New Zealand however, there was a rise in new construction with a certain amount of demolition undertaken to make room for these new constructions.

10 Cramer and Breitling, Architecture in Existing Fabric, 9.
11 Ibid., 9.
15 Cramer and Breitling, Architecture in Existing Fabric, 98.
17 Cramer and Breitling, Architecture in Existing Fabric, 9.
New Zealand has a relatively new building history, compared to European based countries and the United States, buildings can date back well into the BCE. The New Zealand Historic Places Trust, supported by the government, seeks to protect such buildings that hold some historic significance, so us as New Zealanders develop a better understanding of our history and identity. However, this does not cover more normal buildings that hold no historical significance. Instead, demolition is often sought after as the primary decision and is often left to the architect, designer, or the client to decide the existing buildings fate. There are a significant number of benefits reusing existing buildings but more times than not it is disregarded.

In the more recent years however, there have been a handful of projects in New Zealand that have produced notable developments that involve adaptively reusing existing structures. This together with an increase in education into the field of adaptive reuse has started to raise awareness of the associated benefits and its role into preserving our built heritage.

Benefits
Adaptive reuse has a number of benefits associated with the approach towards design that include planning, environmental, historical, economic, and social benefits.

Planning benefits
Johannes Cramer and Stefan Breitling highlight that the design process for working with existing buildings is not different in principle from that of planning new building constructions. What it does require however, is a more in-depth research of the building to be undertaken at the beginning of the project, compared with new buildings. This is to understand the structural systems that are already in place and the factors that may cause problems in the design.

Brent Bellamy suggests incorporating durable materials, flexible design layouts, and structural systems that allow easy dismantling and reuse as an idea to build with the intention the building will outlive its initial purpose. New buildings having the ability to be flexible and evolve with changing needs is one of the key requirements to an ever changing society but we need to remain open to the unexpected and relish the moment of surprise. A good design concept that utilizes the qualities and possibilities that

18 Cramer and Breitling, Architecture in Existing Fabric, 29.
an existing building has to offer, contributes to the sustainability of the building far beyond the guarantee period.\textsuperscript{21} The existing building and its context therefore become a big part as a primary driver for the design.

Environmental benefits
Adaptive reuse reduces the overall impact of construction activities, reduces waste, minimizes urban sprawl, and helps to preserve the urban infrastructure.\textsuperscript{22} The enhanced appearance of an existing building, when done carefully, should also enhance the surrounding properties.

One of the main environmental benefits of reusing existing buildings is the retention of the original building’s embodied energy which makes the project more environmentally sustainable than an entirely new construction.\textsuperscript{23} The mining and manufacturing of the material down to the transportation of the material to the site are all retained in the existing structure. Then to demolish the existing building, more energy is therefore required to demolish and dispose of the existing material. There already is a lot of energy that has been depleted before the new construction has begun. It is estimated that from demolishing a five storied building results in 4,000,000 kilograms of landfill waste.\textsuperscript{24}

Economic benefits
Adaptively reusing an existing building is usually much cheaper than demolition and redevelopment of the site. Demolition is usually a very expensive and dangerous activity that can cause a lot of nuisance. Reusing the existing building can significantly reduce not only construction costs but several other financial savings during the project.\textsuperscript{25} Many buildings that are demolished are usually structurally sound with adaptive reuse not given a priority in the design decisions. The foundations, structure, and basic services are usually already in place.\textsuperscript{26} With the predicted rise of energy costs in the future, embodied energy savings from not demolishing a building will only continue to increase further.\textsuperscript{27}

\textsuperscript{21} Cramer and Breitling, Architecture in Existing Fabric, 95.
\textsuperscript{24} Adaptivereuse.info, “A New Purpose for Old Buildings,” http://adaptivereuse.info/tag/benefits/
\textsuperscript{25} ibid.
A study for the New South Wales Heritage Council in Australia made aware that sympathetic adaptive reuse schemes have created commercially viable investment assets for the owners of the building.28 Christian Schittich describes marketing existing buildings falling into one of his three categories as ‘conversion as exploitation’. Adaptive reuse has become an established sector of the real estate market which is profiting from a growing appreciation for old buildings and differentiated lifestyles, becoming vital capital beyond purely material estimated values.29 These projects are starting to become popular destinations and tourist magnets.

Breathing new life into a building is one of the great challenges faced by architects today. Their inspiring transformations and creative handling of a building present a number of challenges and difficulties that need to be treated carefully.30 If done right, it can stimulate further development and growth in an area leading to increase in tourist numbers.

Social benefits
Reusing existing buildings have long term benefits for not only the communities that value them but ensures its heritage significance survives for generations to come.31 Whether the development is creating new housing or a new community space, the building finds a new life that adds to the character and life of the surrounding community.32 Demolishing such buildings that possess some character to an area is a significant loss to the community.

Abandoned buildings can drive down surrounding property prices and in some cases can invite crime. Adaptively reusing an existing building well ensures that the land and building is being utilised to its potential. It can improve health conditions, poor indoor quality, and dampness which can have a serious impact on building-related illness.33 It maintains the historic character of an area in our cities. The process of aging leaves us traces to discover.34 A building that has a history associated with it encourages interaction and interest.

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29 Schittich, ed. Building in Existing Fabric, 15.
32 Adaptivereuse.info, “A New Purpose for Old Buildings”
33 Douglas, Building Adaptation, 16.
34 Cramer and Breitling, Architecture in Existing Fabric, 15.
Barriers

The many advantages there are to adaptively reuse certain projects, there are several barriers that often stand in the way of these projects moving forward. All too often however, there are unclear expectations concerning the values of the building with the hope of improving the value of the property to determine the choice of strategy, without the implications of these decisions being properly considered.

Johannes Cramer and Stefan Brietling point out that the historic building fabric contains a wealth of resources and undiscovered qualities but it also has no shortage of problems and defects in which the architect will have to work with and consider. It is extremely important to consider and analyse the condition of the existing building and any structural concerns at the initial design stages. This includes any change in structural requirements, accessibility, and building codes. Because of the complex parameters an existing building has, compared to designing a new building, it is often deemed to be too expensive, too high risk, and quickly disregarded. The advantages with adaptive reuse are then deemed to be too difficult to obtain and assess, with no incentives given by local councils to promote designers to do a proper assessment and pursue this approach towards design.

Adaptive reuse should be assessed on a case-by-case basis with the final option to possibly demolish and replace a building. However, it would be naive to think that every building is suited for adaptive reuse. There are no guarantees that the performance of the existing building once adaptively reused, would match that of a new building. Maintenance costs of an older building refurbished would generally be still higher than a new building. It is also Johannes Cramer and Stefan Brietling that point out in principle, the decision to incur high costs and undertake major alterations is not necessarily bad, the architect will need to justify the decision, explain the reasoning for the chosen concept, its implications, and the expected results.

Designers often want to make their own mark on the world and want a clean slate to work with. They feel possibly constrained and restricted dealing with an existing building. What needs to be realised is that these constraints set up a starting point for a piece of innovative architecture. The idea that existing buildings allow no room for creativity is unfounded.

36 Cramer and Breitling, Architecture in Existing Fabric, 111.
37 Ibid., 12.
38 Douglas, Building Adaptation, 17.
39 Cramer and Breitling, Architecture in Existing Fabric, 111.
40 Ibid., 9.
Conversion of an existing building should always be considered as a practical alternative to demolition. However, adaptive reuse may not be a viable option in some cases. What needs to be understood is that it needs to be considered properly rather than assuming to wipe the slate clean and start from scratch. Kincaid sets out a diagram that shows a range of basic development options, figure 2.1.\(^{41}\)

It was found that partial demolition to the existing building often played a frequent role in development strategies, with the value of it often underestimated. These strategies of the development align with the amount of physical change to the existing building.\(^{42}\)

- **Low Change** - Maintain the existing external fabric with minor modification of the internal space. This action will align with areas 1 and 2 in figure 2.1. It relies on the flexibility of the building with a low cost specification adopted.
- **Low-Medium Change** - Replace the external fabric and modify the internal space with no structural change.
- **Medium-High Change** - Maintain the external fabric, reconfigure the internal space, with some modification of the building’s structure.
- **High Change** - Replace the external fabric, modify the building’s structure and reconfigure its internal space. This action aligns with areas 4, 5, and 6 in figure 2.1. It shows that the new builds are both vertical and horizontal extensions to the existing building.

The adaptability of an existing building is a key characteristic of adaptive reuse. James Douglas sets out five criteria that are very useful and can be defined as the capacity of a building to absorb a minor and major change.\(^{43}\)

- **Convertibility**: Allowing for changes in use (economically, legally, technically).
- **Dismantlability**: Capable of being demolished safely, efficiently and speedily, in part or in whole.
- **Disaggeregatability**: Materials and components from any dismantled building should be as reusable as possible.
- **Expandability**: Allowing for increases in volume or capacity.
- **Flexibility**: Enabling minor if not major shifts in space planning - to reconfigure the layout and make it more efficient.

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43 Douglas, Building Adaptation, 6.
Review of current practice

In New Zealand there are very few examples of adaptive reuse done commercially. Someone who is informed about the benefits of adaptive reuse and has a passion for it leads most of the projects. Projects like Britomart, Shed 10, and the reuse of the Red Shed in North Wharf in Auckland are examples of adaptive reuse that have produced some glimpses into the outcome of the process. In the residential scene in New Zealand we have a history in renovations of homes but its normally at a much smaller scale.

In the literature reviewed there were some fluctuations in the categorisation of adaptive reuse. They did however share some similarities with how the architect has dealt with the existing building. *Build On*\(^{44}\) classifies adaptive reuse into three main categories.

- **Add-On**
  Demonstrates the possibilities of adding architecturally onto existing buildings with new spaces that extend, penetrate, and superimpose onto already existing ones.\(^{45}\) The Caixaforum and the Moritzburg Museum extension is an example.

- **Inside-Out**
  The original appearance of the existing structure remains largely intact, but the interiors are fundamentally changed that reveals the beauty of the found conditions in unexpected ways.\(^{46}\) Carriageworks in Eveleigh and Schaustall in Switzerland is an example of this approach.

- **Change Clothes**
  Are works that entirely change the face of an existing building structure both programmatically and aesthetically, giving old structures a fresh, revitalised look.\(^{47}\) The House Muugn shows an example of this approach.

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46 Ibid., 99.
47 Ibid., 167.
Building in Existing Fabric\(^8\) also categorises adaptive reuse into three main categories but are different to the literature found in *Build On*. The categories are more program related.

- **Feature spaces - the existing building acts as an exhibition space**
  These projects enhance the local cultural profile that can take on an economic importance if they become tourist attractions e.g. churches into community centres, castle to a castle museum.\(^9\)

- **Niches for pioneers - appropriated buildings**
  These projects focus on vacant buildings with little or no economic value that are usually old industrial and manufacturing buildings.\(^10\) These types of buildings are unique as they offer spaces that are large volume, allowing a low rent for multi-use developments. These projects were often the subject of trying new things such as new ways of living with unusual experiences.

- **Conversion as exploitation - marketing existing buildings**
  Adaptive reuse has become an established sector in the real estate market with a growing appreciation for old buildings. It has been identified as vital capital beyond purely material estimated values.\(^11\) The tension between the new and the old, serves as a stand in for innovation, imagination, openness, and adaptability.\(^12\)

Christian Schittich points out that in the future, the consideration of which new program fits into an existing envelope, will not only become the focus of debate amongst designers and professionals alike, but it will also assume social relevance as a public and civic task.\(^13\)

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\(^8\) Schittich, ed. Building in Existing Fabric.
\(^9\) Ibid., 14.
\(^10\) Ibid., 14.
\(^11\) Ibid., 14.
\(^12\) Ibid., 15.
\(^13\) Ibid., 16.
Important figures

There is a certain challenge in dealing with existing buildings we inherit. Carlo Scarpa, Aurelio Galfetti, or Massimo Carmassi from the 1960’s are important, inspiring figures that show an insight to how innovative and creative adaptively reusing buildings can be. In particular Carlo Scarpa’s refurbishment of the Castelvecchio in Verona was considered the benchmark for all creative conversions.\(^\text{54}\) Carlo Scarpa developed a distinct set of principles of distinctly separating the existing fabric with confident interventions through contrasting the old and new materials. To this day they continue to be applied far and wide and have lost none of their validity to this day.\(^\text{55}\)

The techniques they employ engage the new building elements and define itself through its own materiality, employing new structural concepts and design approaches as an expression of the present.\(^\text{56}\) This approach respects the original construction and layers of the new. It reads as a development where the visitor can visually see the innovative solution of the architect and the development the building has undergone.

Sustainability

Sustainability is an interesting topic that is becoming more educated. There are many views providing insights to what is sustainable and how to achieve it. The New Zealand Green Building Council has set up a national voluntary environmental rating scheme which designers are striving to achieve to rate the performance of new buildings. It has become more a marketing scheme, much like conversion as exploitation for adaptively reusing buildings. People are becoming more aware and understanding the importance of our earth and its resources.

Adaptively reusing buildings and the continued use of existing buildings is sustainable. We are maximising the lifetime of the building and reducing waste. It ultimately ensures that the original effort and investment gone into erecting a building can be utilised for as long as possible into the future. The ability to be able to replace and repair materials that weren’t durable is beneficial to the life of the building.

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55 Cramer and Breitling, Architecture in Existing Fabric, 9.
56 Ibid, 98.
This type of experience allows us to develop strategies and techniques that not only guarantees the sustained use of the building long past its write off period but with proper maintenance, there is no reason why the building cannot progress to future phases without the need for major investment.\textsuperscript{57} The conservation and maintenance of existing values of a building can become an important economic factor.

Johannes Cramar and Stefan Brietling point out that it is not only cheaper working on historic buildings but it also maintains the value of the building, not reacting to short-lived aesthetic fashions, and brings out the innate aesthetic qualities of the building.\textsuperscript{58} Existing buildings should be treated as long term investments embodied in the buildings fabric.

Conclusion

In the literature reviewed the common theme was that a lot of the designers and architects weren’t prepared for the shift in focus of adaptive reuse in their architectural work. The concerns were that if we weren’t properly educated, demolition would remain the primary response to a project and we would lose our built heritage and traces of our past. We need to capitalise on the advantages adaptive reuse entails both culturally, socially, and environmentally with the importance of educating people of these benefits emphasised.

Very few of the literature reviewed provided detailed information about adaptive reuse. A lot of the literature reviewed was glossy coffee table books that showed pictures of different projects and a small description of them. There was a lack of technical evaluations on projects that analysed how good the project and the solution was.

Adaptive reuse will continue to grow, with the designer becoming more aware of the benefits socially, environmentally, and economically. It raises a good question; with adaptive reuse to pick up momentum does the future task of the architect primarily involve converting and adaptively reusing existing structures already built? It is important for the designer to examine not only existing buildings in detail but also their own relationship to the values, qualities, and constraints the buildings hold within them.\textsuperscript{59}

\textsuperscript{57} Cramar and Breitling, Architecture in Existing Fabric, 199.
\textsuperscript{58} Ibid., 204.
\textsuperscript{59} Ibid., 12.
3.0 precedent review
Case study #1
The Tate Modern
Designed by Herzog and de Meuron

The Tate Modern, designed by Herzog and de Meuron, is located in Bankside, London, England. It is one of the most famous adaptive reuse projects, “standing at the cornerstone of historic preservation, urban renewal, and sustainable development.”60 It attempts to work with the existing structure and energize it rather than demolish the building. It has become a major tourist icon while visiting London. The former power station has been adaptively reused and converted into an art gallery displaying international modern art dating back to the early 1900’s.

The building was originally abandoned until Herzog and de Meuron, won out of six finalists, the rights to design the new museum. Their solution was the only one to leave the original power station mostly original and intact. Most of the original brickwork has been retained with the existing turbine hall becoming the new entrance into the gallery. The thirty five meter high and one hundred and fifty meter long entrance provides a large vast entrance and exhibition space. The space is quite dramatic as the visitors enter beneath the existing building and descend down a long gradual ramp. As you enter the building the Tate Modern gets bigger and bigger to the visitor as you walk further into the building. This sort of space created is very unique and wouldn't be financially viable to build in a new building. This is the sort of advantage adaptively reusing an existing building can be. The new glass ceiling allows the space to fill with natural light, creating a unique environment to view art. There are also light filled boxes attached to the sides of this entry space to allow visitors to look down and into the turbine hall from the galleries.

Herzog and de Meuron's strategy was to accept the physical power of the Bankside's massive brick building and to enhance it further rather than breaking it or trying to diminish it.61 The strategy is interesting as they are embracing and enhancing what is already there. They understood the importance of the location and enhanced it. The result is a piece of architecture which one cannot distinguish between the old and the new.62 The polished concrete flooring, the raw untreated wooden flooring, and the light paintwork on the walls contrasting with the dark black girders work together and emphasize the industrial character the building possesses.

60 Designing the Tate Modern, “Architecture About.com,” http://architecture.about.com/od/museum1/ss/TateModern_3.htm
61 Ibid.
This extreme simplicity of the architects approach towards the existing building allows both the artwork and the power station’s impressive form to speak for themselves.\textsuperscript{63}

Outside the building the only major addition appears to be a two storied glass box running the whole length of the building. Not only does it provide good lighting to the top galleries, it could be seen as an element to signal the change the building has undergone. The glass element at night makes the size of the building stand out and is an iconic element. The contrast between the lightness of the glass and the heavy nature of the original bricks is worked very well. The absence of shock between the inherited fabric (tradition) and the new construction (progress) indicates a concern for normality and for the unimpeded appreciation of art.\textsuperscript{64} The ability to draw on tradition and then to develop it intelligently strengthens the identity of the built environment considerably.\textsuperscript{65} Herzog and de Meuron pointed out that “you cannot always start from scratch”\textsuperscript{66} which is very important.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure3.png}
\caption{Tate Modern, London}
The light filled boxes built into the structure viewing the entry space.
Rowan Moore and Raymund Ryan, Building Tate Modern, 32.
\end{figure}

\textsuperscript{63} Moore and Ryan, Building Tate Modern, 29.
\textsuperscript{64} Ibid., 29.
\textsuperscript{65} Cramer and Breitling, Architecture in Existing Fabric, 120.
\textsuperscript{66} Moore and Ryan, Building Tate Modern, 30.
CarriageWorks, designed by Tonkin Zulaikha Greer Architects, is located in Eveleigh, Sydney, Australia. The former 1888 Carriage Workshops building is a great example of an adaptive reuse project that involves the conservation of the former building. The workshop building is part of the Eveleigh Railway Complex. Originally the building had no public access and is located below street level but at railway level.

It has been transformed into a contemporary performing arts centre that contains theatre spaces, rehearsal rooms, admin offices, and a workshop space. These new spaces are housed in distinct modern forms, breathing a new life into the old. Its raw original structure provides a unique feel to the building that respects the original heritage and provides an environment of unique creativity and innovation. The new distinct concrete forms in the building stand free from the original structure and allows the original rows of iron columns to become the circulation spaces around the building. The concrete boxes represent the ‘carriages’ being disposed around the building. The new materials provide a good contrast with the raw industrial existing steel in the building. Some of the original roof trusses have been recycled and reused as sculptural elements outside the entry, displaying the new public use of the building.

The outside of the building looks visually untouched with a set of red glass doors to divide the outside world with the inside world, providing a subtle hint at ground level of the buildings conversion. The building being adaptively reused has ensured the embodied energy in the original built fabric is conserved.

Performance spaces are air conditioned with the rest of the building being passively ventilated by the existing roof louvers. The location of the building, which is adjacent to an existing railway station, provides and takes advantage of an already well-established transport structure.

The approach to adaptively reuse the building mainly inside, leaving the outside untouched, is rare among most architects. The architects have chosen to leave the stains on the exterior brick cladding and not restore it in anyway. In this case what it has provided is the preservation of the grungy conditions that existed before the inside of the building was transformed and is unique.

68 Ibid.
69 Ibid.
Case study #3

Caixaforum

The Caixaforum, designed by Herzog de Meuron, is located in the heart of the city’s cultural district in Madrid, Spain. It is in the middle between the three most important arts locations Reina Sofia, Museo Thyssen, and El Prado in Madrid. The building acts as a museum, art gallery, auditorium, and bookshop. The building is considered by many as an “urban magnet, not only for art-lovers but also for the building itself.” The museum is an example of an adaptive reuse of a 1899 power station which is one of the city’s only remaining examples of a historically significant piece of industrial architecture.

The twenty four meter high vertical garden takes up a wall of the square and is designed to establish a connection with the Botanical Garden and landscape of the Paseo del Prado. The vertical garden wall creates a soft edge to the square and creates a very good contrast between the rough hard edged museum and the soft natural green wall. The green wall could also be seen as a piece of artwork in itself.

After an analysis of the old power station the only existing material the architects could use was the existing brick shell. The program needed a much larger volume to be inserted. They started to dissect parts of the building that were not needed and removed the existing base the building originally sat on. This opened up a different perspective to the architects and solved a number of problems associated with the site. The building now appears to float above ground level and defy the laws of gravity. This opens up an innovative solution for visitors not only to enter the building but provides a covered plaza underneath for public encounters. The narrow streets provided issues with circulation and how to enter the building, as it appeared not to be public. A simple gesture made by the architects allowed the underneath of the building to be transparent and contrasts the hard-edged closed off nature originally experienced by the existing building in the surrounding streetscape. It makes ground level more open and user friendly for the increased volumes of visitors.

This separation between ground level and the structure of the building created two worlds in a sense; one above ground level and the other below. The program extends beneath ground level housing an auditorium. The lobby and galleries are located in the upper part of the building. The slice between these two worlds creates a very clever covered plaza space. This gesture is very clever as it welcomes...
The three case studies each provide some elements that are interesting to discuss and explore further through design. Starting with the Caixaforum in Madrid, Spain. The design by Herzog and de Meuron energizes the existing building and is an innovative solution to the brief from the client. It not only creates more transparency into the building at ground level but it creates an iconic sculpture that acts as an urban magnet to attract people to the area. Located in a built up environment, the building stands out and attracts people to explore it. The treatment of the existing facade and the new rusted steel element become part of a jigsaw puzzle that is inserted into the existing streetscape giving it a sense of belonging. Taking the existing roofscape to inform the shape of this new form respects the existing environment in which it is placed. The solution is both interesting to be inside and outside the building with a great level of thought and resolution given to both areas of design. The idea of making the building an icon and contrasting the new materials with the old is an interesting solution that will be explored further.

Comparing the Tate Modern in London, the adaptive reuse approach enhances the building differently, suiting the needs and requirements of the projects brief. The absence of “shock” between the new and the old indicates a different appreciation of the existing building and its context. The location of

Case studies summary

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this building and the sheer size of it speak for itself with the additions being so subtle it merges into one solution. The descending ramp penetrating beneath the original structure of the building is an interesting gesture. It not only handles the volumes of visitors entering the building but it enhances the size of the existing turbine hall and building. The new entry allows you to penetrate the building beneath it that seems so closed off from the outside world. It shows the architects respect for the existing fabric of the building by not altering the existing facade to make a larger entrance. It is a very powerful gesture that treats the building as a piece of artwork that enhances its appearance.

The Carriage Works in Eveleigh, Sydney takes on a slightly different approach compared with the Caixaforum which has only the existing brick shell remaining and a completely new interior. The Carriage Works exterior remains largely intact with the transformation happening inside. The original structure is largely intact with new elements withdrawing and contrasting from the original. This contrasts the techniques adhered to by the Tate Modern from which the new and old structure is blurred and hard to distinguish from one another. It is an interesting approach from which the original raw structure has a dialogue with the new clean surfaces. This type of approach acknowledges the existing structure and suits the needs for the building.

The design elements found in these buildings each are very unique and relevant to each site and its brief. The Caixaforum is a building that makes a very bold statement and is one that is interesting to investigate. It is a building that starts to really push the idea of adaptive reuse that starts to energize its surroundings. You either love it or hate it. The other two buildings have a slightly less contradicting approach but are very well executed in a different way. Adaptively reusing buildings and energizing them successfully depends on the sensitivity and intention of the project. A careful analysis of an existing building will determine what approach is relevant and necessary for a successful outcome on a case-by-case basis.
4.0 URBAN ANALYSIS
Site Criteria

The proposed site for the project needs to be an underdeveloped building that would benefit from an adaptive reuse strategy. The ability for the project to help energize not only the building itself but also the surrounding environment and community would be beneficial.

Site Location

From the start of the project the question was asked what sort of site would benefit from an adaptive reuse strategy being employed as one of the primary drivers of design to energize an underdeveloped site? The first option explored was located at 38 Hamer Street, Wynyard Quarter, Auckland. Percy Vos boat builders, one of three main yacht and boat builders located in the area, originally occupied the building in the early 1900’s. The Vos Building is located on the western edge of the fast developing Wynyard Quarter next to two historic slipways that filter into the Westhaven Marina.

Perceived Benefits
- The site has uninterrupted views across the harbour and towards the Auckland Harbour Bridge.
- The building contains a rich history of boat building still in its near original condition.
- The site has the opportunity to revitalise the surrounding area of the fast developing Wynyard Quarter.
- Situated in close walking proximity to the Viaduct Harbour and Auckland CBD.

Adaptive Reuse Concerns
- The outside cladding of the building, made of corrugated iron, is in a very run down condition.
- The building is unlined and has various structural issues associated with it with the building having undergone a series of additions over the years.
- The timber structure is relatively lightweight and has not been strengthened since the early 1900’s.
- The existing floor area, structure, and location provides concerns with the extent of the adaptability.
- Possible programs explored are already provided in the area.
However, after further research and initial design concepts it soon became apparent after critical analysis that The Vos building in Hamer Street wouldn’t be appropriate for this project. It was ultimately determined by the small scale of the site and its initial reuse concerns. It became apparent that a larger site that allowed the flexibility to expand and be a greater asset to the community would be more appropriate. A site that would become an icon, acting as a sort of hub to an area, that would become a greater part of the community rather than an isolated moment would be more beneficial.

Using the same site criteria a suitable site was discovered at 72 West Quay, Ahuriri, Napier. It presents a number of challenges and difficulties that would better suit the direction of this project. It is located on a corner site along the wharfs edge with great views into the boat harbour and out the channel into the bay. A careful analysis of the site is required to determine what the area is missing and what would be beneficial to the community. The current site as it stands, a proposed development would present a number of advantages for not only the Ahuriri township but would be highly beneficial to Napier. However, the site at an initial glance also presents a number of concerns and difficulties to work through including the type of structure, road patterns, and access in around the site. These challenges along with other difficulties encountered with the site will provide some constraints that will produce not only a unique design for the area but will energize an utilised site that will be beneficial to the community.
Aerial analysis

Examining the site from an aerial view reveals a separation in activities between West Quay and Nelson Quay. The site is a visual barrier between these two areas. The location of the site is in a very strategic corner position that is visible in a number of locations, both on land and on water. The building itself is isolated with a lot of vacant land surrounding it, particularly on the eastern side.

Figure 4.5 Aerial image of site and surroundings
Diagram by Author
Panoramic views - West Quay

The photograph above illustrates the following characteristics:
- The building is isolated and is not pedestrian friendly providing no footpaths on the buildings side of the road at all.
- The site is very unutilised with it being abandoned for nearly 4 years presenting an opportunity for reuse.
- There is a varied cluster of building masses and building materials with a very iconic saw tooth roofline on the neighbouring buildings to the site.
- Most of the buildings cover nearly the entire site with them built right up to the edge of their boundary.
- The building provides no transparency at ground level with windows only located at the top of the facade allowing natural light into the building.
- The building site lacks any interest and excitement.
Bridge Street

The photograph above illustrates the following characteristics:
- There is a large amount of vacant space behind these buildings that is very unutilised and is used mainly for storage.
- The facades lack any visual depth and welcoming frontages.
- The train track, buildings, and large road provide a visual barrier between Bridge Street and West Quay.
- There lacks any visual interest, from the highly detailed Rothmans building located to the left of the image compared to the plain industrial sheds.
Character of Ahuriri

Figure 4.8 West Quay Ahuriri
Photos by Author

Figure 4.9 Ahuriri Township
Photos by Author
The existing pedestrian movement between the waterfront, Ahuriri Township, and the growing business sector is disjointed with a few problems that restrict comfortable pedestrian movement in the area. Starting with Bridge Street, the size of the road, the close proximity to the buildings, and the speed of traffic make it a very dangerous road to cross. Along with the traffic island by the Iron Pot, it is providing a barrier between West Quay and the Ahuriri Township. The site being situated so close to the roads edge ceases pedestrian movement on that side of the road. The building acts as a wall between West Quay and the Ahuriri Township. The large space of unused land directly behind the site provides no interest for the public ceasing meandering and public encounters. The movement between the zones above relies on the use of the car. This is due to safety issues, no public interest between the zones, and inadequate pedestrian paths.

Pedestrian movement patterns

The existing pedestrian movement between the waterfront, Ahuriri Township, and the growing business sector is disjointed with a few problems that restrict comfortable pedestrian movement in the area. Starting with Bridge Street, the size of the road, the close proximity to the buildings, and the speed of traffic make it a very dangerous road to cross. Along with the traffic island by the Iron Pot, it is providing a barrier between West Quay and the Ahuriri Township. The site being situated so close to the roads edge ceases pedestrian movement on that side of the road. The building acts as a wall between West Quay and the Ahuriri Township. The large space of unused land directly behind the site provides no interest for the public ceasing meandering and public encounters. The movement between the zones above relies on the use of the car. This is due to safety issues, no public interest between the zones, and inadequate pedestrian paths.
The site is isolated with it subject to high winds in most directions. However, the prevailing wind directions in Napier change in the summer and winter months. The dominant summer winds come from ENE providing a cooling breeze from the sea. The winter winds come from a SW direction, providing a cold breeze during the winter months due to snow sometimes forming on the Kaweka ranges that shelter Hawke’s Bay. Bluff Hill, located behind the site, shelters it from most of the chilling southerly winds. The average wind speed is approximately 9 knots with an average temperature of 15 degrees. The site receives all day sunlight during the summer and winter months with no surrounding buildings shadowing the site. The site enjoys views out the harbours entrance to Hawke’s Bay, the Kaweka ranges, Ahuriri Tavern, and the Rothmans building.
Activity
Currently, the surrounding urban fabric provides a mix of residential, businesses, bars/restaurants, cafes, artists, retail, and abandoned sheds. The size of Bridge Street, the Iron Pot, and the railway line, divide the activities up with preference given to the use of a car to get to each destination. The projects site, providing little activity, causes a disjoint of activity from West Quay, Nelson Quay, and to Bridge Street.
Figure/Ground

The two figure/ground drawings display how isolated the site is and the large amount of land that surrounds it. The drawing shows how strong the axis is along West Quay and how most of the buildings have a flat frontage to the streets edge. The car park situated to the south of the building sets up an interesting space between the buildings that is not utilised very well. The Iron Pot with additions over the years has lost its clear defined shape it would have once possessed.
The existing railway running behind the site is currently only used to ship goods to and from the Port and provides an opportunity in this project. In Napier there is currently no passenger train service that operates due to the small scale of the city. The diagram illustrates how it pierces through Ahuriri and comes next to the main CBD of Napier. An opportunity presents itself to introduce a train that may be part of a tourist activity and/or a passenger service between the two areas.

Figure 4.15 Existing train line in Napier
Google Earth

Existing train line
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Topography
The building site itself sits on flat reclaimed land. There is a 3.5 meter drop along the wharfs edge down to sea level. This level fluctuates a further 1.8 to 3 meters during high and low tide periods.

History
The Hawke’s Bay region was settled in approximately 1520 by Ngati-Kahungunu who found the area ideal for human settlement as it had an excellent climate, large river valleys, the sea, estuary, and very fertile soils. In the mid 1800’s the first European settlement occurred in the area now known as Ahuriri. Napier was declared a Customs House Port of Entry in 1855 with Ahuriri becoming the major port dock for Napier. The Napier earthquake overshadowed construction in the port during this time due to the seabed being lifted up more than 2.7 meters. It wasn’t until the mid 1900’s a new breakwater was built in front of Bluff Hill and the port was shifted. Ahuriri was one of Napier’s main industrial areas which was dominated by wool stores. A change in the industry in the coming years saw most of these sheds becoming unused.

On February 3rd 1931 a number of earthquakes struck the Hawke’s Bay region. Two hundred and fifty six people died in the tragedy either by collapsed buildings or by the fire that guttered Napier. All forms of communication were cut with the city and were unable to ask for help. Fortunately at the time the HMS Veronica Navy ship was docked at Port Ahuriri and was the sole means of alerting the outside world of the disaster. This ship was an important lifeline for the city, along with its crew was able to provide immediate relief to the people stuck on land. A few days later more help arrived from ships that had sailed to provide relief. The building that originally occupied the site was badly destroyed by the earthquake and was demolished soon after. The Ahuriri dock was also badly damaged with the existing train track servicing the dock not repairable. The whole of the business district of Napier city was destroyed meaning the new rebuild would avoid building faults of the past and was rebuilt in the style of Art Deco. A new building code was released soon after including new structural performance guidelines. More than 4,000 hectares of land which was formerly estuary land was raised enabling the town to expand.

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74 Ibid., 2.
75 Ibid., 14.
76 Ibid., 3.
The Ahuriri Estuary and its wetlands, viewed from the west of the site, is regarded as a natural resource of national significance hosting an abundance of wildlife. On the northern side, the Iron pot is one of the earliest settled areas in Napier and is a link to the industrial past of Ahuriri.

The large site and prime location on the waters edge has put the building in the spotlight and has been subject to two redevelopment proposals submitted to the council in the last 5 years. The first proposal looked at converting the building into a hotel. The project was soon withdrawn after submission to the council by the client. The second proposal has been put on hold by a different client due to financial issues. The current proposal is converting the building into a mixed-use development, with retail and business occupying the ground floor and first floor, with luxury apartments located on the top floor. Both submissions look at reusing the existing reinforced concrete shell as part of its design.

**Community**

Ahuriri provides a mix of residential, businesses, retail, artists, cafes, and bars/restaurants. The area comes alive during the day, especially in the weekends where people congregate to the unique waterfront character of the area. Commercial areas are becoming a popular destination for recreational activities and act as a social focus for the community. The development of Napier to the current day can be traced through its development of its commercial areas.

Ahuriri is rich in maritime history with a lot of activity including boating, sailing, fishing, and maritime activities happening out on the water. The Fishing Club and Sailing Club provide small facilities for their members for after functions but aren’t very welcoming for visitors. There are also a number of creative people and artists found in the area but are hidden in the small Ahuriri Township. There lacks any facilities for these artists to display there work in the area apart from their small studio apartments.

Significant gains in employment of Napier over the past three years has been promising with growth opportunities over the medium-term are considered to include further tourism development (Art Deco, wine, conferences, general tourism, and international visitors). The Napier City Council’s long term visions for the city wants to see its position in transport and tourism strengthened.

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77 Napier City Council, Napier District Plan, 4.
78 Ibid., 4.
Sustainability

The Napier City Council has identified they want to promote the efficient use of the City’s network of services to reduce the environmental costs for the present and future generations. The primary tourist attraction for Napier city currently is Art Deco. It attracts nearly 1.6 million visitors per year from all over the world and continues to be an important employment and revenue base for Napier’s economy.\footnote{Napier City Council, Napier District Plan, 14.}

There are three major gateways into the city via road, the airport, and cruise ships through the Port of Napier. Hawke’s Bay’s economy is in for a major boost with the number of cruise ships set to double over the next two years. At this stage next year’s season has 63 vessels confirmed with approximately 100,000 passengers and 44,000 crew visiting Napier. Each of the passengers spends approximately $100 - $200 per visit. The local paper, The Hawke’s Bay Today, pointed out the real challenge is for the tourist industry in Hawke’s Bay to cope with the sheer volume of passengers.\footnote{Patrick O’Sullivan, “Cruise ship bonanza, but can region cope,” \textit{Hawkes Bay Today}, October 11, 2010, 4.} Port of Napier chief operations manager Chris Bain said while the port could handle the increased number of ship visits, the influx of people could present on-shore challenges.\footnote{Ibid., 4.}

There is a need for some sort of intervention to help cope with the increased numbers Napier is about to experience in the coming years. The seaside location makes Ahuriri a very desirable location. Currently the existing industrial buildings are either being reused or demolished. It is important to maintain the mix of activities the area currently possesses but lacks a central hub to the area.
Existing building

The original building occupying the site was demolished during the 1931 Napier earthquake. The replacement building that stands today was completed during the 1940’s. During this time the building was used as a steel and tube factory. The building was then renovated in the late 1950’s to add another structural bay to the building on the southern side. In the 1980’s it changed use into a Marine Engineering workshop. In the recent 5 years the workshop has moved to the Onekawa Industrial area and the building has been abandoned while it is trying to be sold and developed.

The building itself is very hard edged and is located right on the site boundaries. The building is located right next to the road providing no safe pedestrian path next to the building. This means pedestrian activity around the building is very dangerous and ceases to exist. The walls of the building allow no light penetration to occur except near the top of the structural grid through scattered windows. On the eastern side of the building there are ice towers to help service the trawlers but are currently being located to another site. There are two large roller doors on the eastern facade to allow trucks to enter the building with smaller service garage doors located on the northern and western facades. What happens in this building is a mystery to the public and is very private for such a largely exposed site. Waterfront locations like this are very desirable commercial locations and are a limited resource.

The building has a unique reinforced 340 x 340mm concrete grid structure with brick infilled between the structure that is exposed on the southern facade. Testing the existing structure with Resist, a program dedicated to testing earthquake and wind loads, the structure performed very well in its current condition. There are unique tube framed truss systems for the two main 'Dutch gable' roof pitches running from east to west with corrugated iron roofing. There is a unique gantry system that runs in the central structural bay, running from east to west, with unique steel tube columns. The gantry was used to lift heavy engineering parts and tubes on trucks in the earlier years. There are no internal load bearing walls allowing planning flexibility internally.

It soon became apparent of the buildings weaknesses through site visits, discussions with its owners, and tenants. The building is very dark with a limited amount of openings, wasn’t weather tight, poor acoustic qualities, and no ventilation or heating system. The internal environment of the building is very poor. These weaknesses however, don’t provide concern for the adaptability success and potential for the building. It does provide an opportunity to respond to these conditions and provide an environment that is more expected of modern day building requirements.
Looking at Kincaid’s development options discussed earlier, this information would be beneficial to look at if the project had a budget and there was a client. This way you could set out what change the client wanted to achieve with their budget. For this project however, I will look at a ‘medium- high change’ strategy that is to maintain the external fabric, reconfigure the internal space with some modification of the building’s structure.

Evaluating the existing building against James Douglas’s five key characteristics find that the building is suitable for adaptability.

- **Convertibility: Allowing for changes in use.** High
  The council’s planning regulations allow for a change of use and is favoured to specialise in the tourism sector. It has also been discovered from the urban analysis that there are a number of needs for the community that aren’t properly provided.

- **Dismantability: Capability of selective demolition in part or in whole.** Medium - High
  The existing outside structure needs to remain but is capable of being selectively demolished if not necessary. The internal spaces are not load bearing so can be removed safely and efficiently if required. Refer to existing drawings in Appendix.

- **Disaggregatability: The ability for materials and components to be reused.** Medium - High
  The intention for where building materials are dismantled, efforts will be made to incorporate these materials in the new proposal.

- **Expandability: Allowing for increases in volume or capacity.** High
  The existing construction and local planning regulations allow for a number of options to be considered. The local council are open to any suggestions in and around the site.

- **Flexibility: Enabling minor if not major shifts in space planning.** High
  The building allows a great level of flexibility due to the external load bearing framed structure, internal columns, and no internal load bearing walls. It has the ability to accommodate future change and to make it more efficient.
**Programme**

Determining the existing buildings new programme has an important role in the projects success. Most buildings can be turned into almost anything but it’s necessary to develop a function tailored to the building and the location in order to establish a new relationship between space and function. Adaptive reuse conversions result in a shift in the traditional relationship between object and use; whereas an envelope is usually designed for a given program, in the case of new construction, this envelope already exists in structures for which new uses must be developed. This is where the challenge lies for the architect in the reversal of this traditional definition.

The idea for the building was to convert it into an earthquake museum. The location of the HMS navy ship outside the building during the 1931 earthquake was a primary driver. The idea was to promote the importance of this ship to the visitors as the only gateway into the city at the time of the disaster. The facility was to house information on the earthquake with an interactive sculpture located in the centre of the building to experience the earthquake.

After further research and through design the program developed into a maritime events centre. The needs for the community, the buildings physical characteristics, and the location were better utilised with a greater flexibility. The programme developed is multifaceted, incorporating services, activities, facilities that are all supportive and complimentary of each other. This allows an environment that is vibrant and energizing not only to the building itself but compliment the community, acting as a hub.

The spaces provide for a range of occupants including but not limited to visitors, artists/designers, business professionals, and the general public. Facilities for the public are the dominant attraction with a maritime facility displaying the city’s maritime history as a primary attraction, a cafe, supporting unique retail, restaurant, conference facilities, flexible spaces suited to local activities, and exhibition spaces for local designers/artists. The surrounding land will provide a series of outdoor spaces that compliment the proposed buildings program. The character of the building, flexibility, and its location will be very attractive for both local and international visitors. With the increasing numbers of passengers from the cruise ships into Napier the project will look at introducing the rail link that connects the two cities of Napier and Ahuriri as part of an experience to energize not only the city but the site itself and bridge the gap between them that currently exists.

Using adaptive reuse strategies in this scenario will raise awareness and demonstrate the potential it has to the public and professionals. Energizing the existing building will ensure it remains a part of Ahuriri’s fabric for future generations to enjoy. It will better utilise not only the building but make better use of the surrounding land, contributing to the community, and act as a hub to the area. The flexibility and adaptability of spaces will help energize the community allowing a greater interaction between individuals.

82 Schittich, ed. Building in Existing Fabric, 16.
Figure 4.22 Context perspective

By Author
Conclusions from urban analysis

There are some important factors that arise from this particular site’s context that provide some benefits and opportunities for an architectural intervention using adaptive reuse strategies. They include:
- The vitality of Ahuriri is very dependent on the level of safety and convenience for pedestrian activity.
- The potential for connecting the broken pedestrian movement lines between West Quay and the Ahuriri Township. Making it a more pedestrian friendly environment and making better use of the physical resources. Introducing an attractive pedestrian linkage will contribute to the success and enjoyment of the areas.
- Located in a very desirable waterfront location.
- The large space of unused land around the building allows the potential for possible expansion and better utilisation of the existing land.
- The highly visible corner location that is seen from the greater surrounding area, including out on the water from Hawke Bay.
- The potential to promote public transport on the rarely used train line on the southern side of the site.
- To provide a location that is seen as the hub for the area, the center point.
- Maintain a part of the industrial fabric that existed in the area.
- The potential to energize not only the building itself but also the surrounding environment, providing a facility that is a valuable asset to the community.
- The existing building is in a good physical condition with no load bearing walls inside the building, allowing for greater planning flexibility internally.
- Allows a good level of adaptability and exploration using adaptive reuse strategies.
5.0 Design Process
Design Development

The design process looked at a series of explorations using different adaptive reuse strategies and techniques towards the design of the building. These explorations were a development of ideas learnt from the previous explorations. It was a discovery process where many avenues of exploration can be made. The process looked at a series of sketches, floor plans, physical models, and three-dimensional models on computer to be able to critically analyse the success of the architectural form and strategies employed in the design.

The design began by acknowledging what was learnt from the preliminary review of current knowledge of the site, adaptive reuse strategies, and sustainability techniques. Two existing precedents situated in similar waterfront locations were also critically analysed and can be found in the Appendix. Explorations of design ideas began by looking at site planning, massing, and the functional organisation of the design. Explorations began by dealing with just the building itself and employed the strategy from Herzog and de Meuron in the Caixaforum by subtracting elements from the existing building. The process looked at taking the building down to its structural bones and through a process of ‘Add-On’ and ‘Inside-Out’, elements were added where they were needed and thought to enhance the design. This allowed getting the permeability and transparency through the building so it didn’t act as a wall between Ahuriri and West Quay.

The buildings structure is very unique to the area but it soon became apparent that the surrounding vacant land needed to be incorporated into the design. In order to demonstrate a comprehensive solution to the research problem a number of issues needed to be addressed and resolved. Each of the issues had their own individual unique constraints and characteristics but are all linked together that required a constant awareness of how other elements in the design are affected.
Movement

The public movement to, through, and around the site will form a generating influence towards the design solution. As already discovered through the urban analysis the site forms a barrier where pedestrian movement ceases around the site connecting the areas of Ahuriri. The ability for the public to pass through and around the building is essential to successfully reenergize not only the building itself but also the surrounding area. The architectural strategy will look at spaces and functions located along these paths.

These functions located along the public path create a set of interlocking spaces that compliment each other. The public path can be seen as a linking device that exposes the public to these different spaces through a number of thresholds through the building. This allows the public to walk through the building and needs to happen seamlessly. This increases foot traffic and plays with the boundary edge of the building.

It becomes important what is located along the public path to allow people to dwell and contemplate so the public movement line doesn’t just become a mere means of getting somewhere fast. To encourage this type of interaction the public has with the building spaces like the maritime museum, exhibition spaces, and a cafe, a number of viewing areas become important areas to the success of the project. The buildings edge plays an important role to the success to these spaces and how it deals with these thresholds.
Another challenge is how to expose the public to the spaces located on the 2nd level without them having to go up there for a specific reason. The verticality of this public movement line along a path therefore becomes important so the spaces don’t become dead, stagnant spaces. The ability to move the public upwards brings about a change of flow that can be dwelling spaces or a pathway to a destination.

Entry points and vistas

The proposed building being located on a corner site and being isolated brings about a problem with what facades become active and serve as the main and secondary entry points into the building. The visual approach and entry into the building will look at being articulated to give the public the option to engage with the building and feel welcoming. The building and the surrounding environment become important in how it is articulated to form a hub and a connection point in the area. How it will engage and attract attention of the public is significant to the success of the project. The existing building using adaptive reuse strategies can help generate this idea and become a significant identity to Ahuriri.

There are a number of important views and landmarks that surround the site as discovered in the site analysis. Being able to articulate these views in some way along the journey around and through the site will set up a series of moments, which connects the occupants with the building and the surrounding environment.

Adaptive Reuse strategy

The strategy that will be employed during the development of the design will not look at a specific adaptive reuse technique but rather try and understand what the best solution to the problem will be. This at times may be a combination of techniques that will be specific to the problems raised during the design process.
Exploration 1
Massing

The first exploration looked at a series of options using adaptive reuse strategies and the guiding principles for the project. These explorations were quick rough sketches testing different ideas found in the literature review. It looked at possible entry locations, massing options, and how the building would look. It also looked at how it could be used as part of a pedestrian footpath. Massing of the building was a key aspect to how the building was seen and how it encouraged pedestrian movement and activity. The massing sketches looked at splitting the building into volumes allowing different points of entry and activity happening on different levels. The ‘Add-On’ idea of extending the building outwards and utilising the whole corner, not just within the site boundaries, allowed an interesting mix of activities to occur.

From these quick explorations there were a number of complex issues that arose. Issues like entry points, pedestrian movement lines, and splitting of mass were some that needed to be addressed through the design. I continued the process and further explored using the existing structure as a facade with a free form mass inside the shell of the building. It looked at incorporating some of the central column structure to help support a roof that hovered over the building and created an internal courtyard.
A. The existing columns supporting the gantry act as supports for a new roof for the internal courtyard. The strategy retains the existing structure and integrates it into the new design.

B. The strategy of ‘Inside-Out’ was tested with the outside remaining largely intact and a free form structure inserted in the shell of the building. A gallery and banquet restaurant were below ground level.

C. Using Herzog and de Meurons technique of bringing the existing building back to its structural bones employed in the Caixaforum, allows the existing reinforced concrete grid to act as a threshold with the new addition setback from the shell. It allows a level of transparency through this existing grid that is currently a wall, allowing pedestrians to meander through. The mass and the existing structure appear as separate elements and not integrated.
Outcome of Exploration One

From this exploration I found the unique grid structure of the building provided an interesting threshold. Using Herzog and de Meuron’s adaptive reuse technique allows pedestrian movement through the shell of the existing building. It allows a pedestrian path around the outside of the building, currently a footpath doesn’t exist, making it safer for the pedestrian and providing a barrier between themselves and the cars on the road. This would help encourage some pedestrian activity around the building. The issue of how West Quay is going to connect with the Ahuriri Township needs to be investigated further. Whether the building plays a part of this connection needs to be explored.

Car access around the site needs to be controlled and slowed down making it more pedestrian friendly. The road coming so close to the corner of the building is a problem. Introduction of cobblestones for the roads surface would help slow traffic to a degree. Another idea is restricting car access to one way so the road can be widened and allow car parks outside the building.

The new mass addition being setback from the outer shell and not interacting with the outside existing structure doesn’t work well but the idea of this happening in small sections will be explored. The new addition needs to interact with the structure more and be more integrated. The idea of the building stepping up in blocks from the water creates not only a presence to the waters edge but allows the pedestrian to have interest at different levels and better utilise the space. The mass being split into volumes works better than a continuous volume as it allows multiple points of entry.
Pedestrian movement

This exploration looks at the pedestrian movement and the connections with the building and its surroundings. Looking at the precedent examples in Sydney, Auckland, and Wellington they all provide unique solutions to encourage pedestrian movement. The Te Wero bridge in Auckland is an interesting idea as it improves the areas connectivity with other businesses, education, and retail. However most of the buildings are objects located next to the ‘path’ and it is the decision of the person to either enter the building or to carry on past it. The idea to energize the building would suggest integrating the path with the building in such a way the building and its site becomes part of the journey.

A bridge was introduced into the design to connect people over the Iron Pot and into the Ahuriri Township. This idea would move people away from the main arterial routes for cars and would provide many viewing opportunities. The bridge itself would be an icon in its own right and create an interest. The bridge would be introduced so it would go over the road around the building and enter the building on the second level. From here you can come down to ground level and exit around the footpath inside the shell of the existing structure. This integration makes the existing building play with a level of different thresholds. The bridge direction out of the building is set at 90 degrees from the northern facade and points out the channel towards the bay. The Ahuriri bridge comes on another angle and aims towards the estuary and Kaweka ranges. These two journeys provide different vistas and intersect one another on different levels.
Continuing to develop the idea of varying thresholds the building can provide, an idea of using a series of large pergolas that not only hovered over an internal courtyard in the building but having a series of them that stepped down to the waters edge. This creates interesting light qualities and reduces the heat load on the building. It provides a stepping effect from the waters edge and engages people entering the area through a number of controlled thresholds. The idea allows the existing shell of the building to act as another threshold and hints at the filtered light qualities experienced from the Norfolk pines located along the beach edge of Napier. The bridge is integrated into the buildings design.
The pergola system approach provides an opportunity to extend the building and engulf the surrounding site. It allows a series of shaded outdoor areas which vegetation could be integrated into the structure. The programme of the building would then be found in the heart of the building. This creates a journey for the pedestrian through a series of thresholds and revelations. It allows the building and its surrounding site to be a continuous open public space. The addition of steps down to the waters edge connect people to the sea and set up a dwelling opportunity.
Outcome of Exploration Two

The pergola system that engulfs the site allows the columns to be configured to host events and public activities that can be less formal. The columns also allow vehicles and the public to be separated subtly and coexist. The pergola system extending right around the site and down to the waters edge is an interesting system allowing for future development and expansion around neighbouring sites possible. It also sets up an interesting engagement with the building as you enter underneath the screens, through the buildings structure, arriving at the heart of the building. It opens spaces up and connects it with its surroundings creating an interesting meandering environment.

The bridge going over the Iron Pot and connecting the two areas is important. It not only provides an essential link to the two areas but also provides an opportunity to reveal different vistas along the journey from the Ahuriri Township and West Quay. Where these two points connect at a junction at different levels over the Iron Pot is important as the culture of the two areas, although they are located so close, posses a different quality. The bridge helps energize the site and increase circulation in the area. It promotes more foot traffic and reveals hidden characteristics and destinations along the journey. Linking the two areas makes two separate identities become unison and become a vital asset to the area.

Making the bridge part of the journey and penetrating it into the building integrates it with the building and is more successful. It hints at the idea of the earthquake lifting the land during the earthquake in a way that the bridge is lifting the foot traffic above ground level, away from the road. Textures and materials of the new additions become an important part of the design and how they communicate with the existing structure.
This exploration is an extension of Exploration Two. It looks at the massing and how the functional planning could work within the pergola system. The pergola roof is a series of rectangles scattered over the site with an East to West axis to respect the direction of roofing lines on the neighbouring buildings.

The mass of the blocks explore the idea of being closed off elements that give a level of controlled opening to them, similar to the existing buildings shell with controlled openings between the reinforced concrete structural grid. The texture of ground level would remain untouched to reveal the scars of the building over time. The structural grid was explored to shape the new volumes with the original structure contrasting in the new wall elements or becoming feature elements in a particular space of the new build.
Figure 5.20 View from Northwest direction
Testing massing of concept
By Author

Figure 5.21 View from Southwest direction
Testing massing of concept
By Author
Figure 5.23 View from Easterly direction
Testing massing of concept.
By Author

Figure 5.24 View looking North
Testing internal footpath and internal atmosphere.
By Author
Outcome of Exploration Three

The pergola system and mass seems to overpower the existing building in areas with it getting lost in the new design. The pergola stepping down to the waters edge sets up a nice connection with the water and land. This idea could be explored further using a series of steps around the waters edge to overcome the height difference.

The original structure needs to be looked at a bit more closely, especially the existing gantry system which gets lost in the new design. The existing gantry could inform a new intervention with how the spatial arrangement of the interior is arranged. It provides a better sustainability option if more of the existing structure is used.

The road that exists around the building is creating a real barrier between the building and the water. This needs to be looked at more closely and explore moving it all together to allow the waterfront promenade to be exclusively for pedestrians. This will need to be evaluated to determine the effects it has on the site and the area.

The massing of the spaces on the ground floor being setback from the existing structure in places works well as it creates a threshold and layer to the building. The bridge over the Iron Pot being brought right into the building is interesting but needs to be explored further as it may be seen as the buildings exclusive bridge. It also may present difficulties for a pedestrian outside the building to find the stairs to use the connection.
Exploration Four

This exploration looks at a different approach towards the existing building. It explores the volume of space the existing building contains as well as its existing structure. It is important to respect the original structure to an extent, during an adaptive reuse fit out. The stripping down of the facade to its structural bones will continue to progress as it possesses an iconic structure that is unique to the area.

The columns supporting the gantry system through the building sets up a strong axis from the east to west direction. It divides the internal space of the building into three areas and has a very strong presence to the character of the building. The existing mass of the building in figure 5.28 is unique and follows the lines of the wharf of West Quay and the Iron Pot. The space the shell of the building encompasses is captivating with the roofline holding a strong presence to the space.
The existing gantry system is unique to this building and has been extended out to create a dominant axis in the building. It creates spaces outside the building shell that can be utilised as supporting spaces to the building. These spaces also make the observer aware of the unique surroundings around the site. It creates a main focal point in the building with the spaces inside supporting this axis. It creates two main entry points into the building and allows two smaller supporting entrances on the sides of the building. The gantry axis acts as an internal street through the building and has a similar characteristic to the exhibition space displayed in the Tate Modern and existing iron columns in CarriageWorks.

The performance spaces supported by the gantry could allow several activities and events to occur like concerts, exhibitions, large gatherings and many more. It would energize not only the site but also the building, surrounding buildings, and become an asset to the local community.
Outcome of Exploration Four

This adaptive reuse approach explored better suits the buildings context and the projects needs. It is more sympathetic to what exists, which can be enhanced subtly. The shape and the spaces the building creates are unique and need to be retained to some extent to respect the existing building. The gantry system in place provides an opportunity to provide a unique experience and should be retained.

The existing roofline should be retained to some extent as well as the existing roof trusses as it is a link to the industrial past of the area. The thinness of the steel tube roof trusses already provide an opportunity for unique lighting qualities that can be enhanced by introducing openings into the roof. The roof trusses have a high embodied energy value and it is a good sustainability approach towards the projects outcome.
Exploration Five

This exploration is an extension of exploration four. It looks at a range of issues raised in the previous explorations and is tested through a series of models.

The models in figure 5.31 and 5.32 look at ways to fill the void between the reinforced concrete structural grids. Playing with the spacing of the adaptively reused filled brick inserts in figure 5.31 gives a new life and look to the building while retaining the existing structure. The existing bricks give a natural raw feel to the building and the spaces that surround it. Along with the louvers these options provide a good way to control the light and transparency into certain parts of the building that provide a unique character to the building.

The model in figure 5.33 looked at the negative space left behind when the structural grid was taken away. It presents a number of ideas of how the new interior walls could be treated. The bricks could be reused or be part of a new wall that include concrete, steel, or glass to get a desired element.
The models in figure 5.34 and 5.35 explore how a new addition of a roof could be supported on the northern facade. The model in figure 5.34 presents an idea of reusing the existing trusses that span in the northerly direction that are currently hidden by the facade. This idea could be explored more by using the shape of these trusses to inform a new structure that supports the roof. The supports angling down in figure 5.34 and 5.35 provide an opportunity to use these as a way to support the roof as it spans out further. These could be inset and attached to the existing concrete structural grid.

The model in figure 5.36 looks at ways to support floors off the grid and also lining the grid structure with a material to keep its structural integrity. This provides an opportunity to dress up the grid in areas and create a frame with materials that speak of the area, like corten steel to relate to the rusty shipping and fishing industry.

The ‘Add-On’ adaptive reuse technique employed in these models by reusing the existing structure to inform the new roof and adding metal to the existing structural grid gives the building life and enthusiasm, energizing the building.
These models explored ideas with how to deal with the bridge crossing the Iron Pot. Models in figure 5.37 and 5.38 explore the idea of the supporting structure leaning, as it gets further away from the wharfs edge. Figure 5.38 explores the idea of people sitting on the wharf fishing and producing a structure symbolising this. It looks a bit complicated compared with figure 5.37, which looks simple and clean. Further exploration was done on this idea resulting in a bent steel pole that emphasized the fishing line more direct and didn’t detract from the existing building too much but rather complimented it.

The model in figure 5.39 looks at drawing ideas from how the small Ahuriri Township is constructed. Although it looks unique it may not be very practical as boats wouldn’t be able to pass underneath it. Further exploration was done on this idea but looked at the idea in a more abstract sense with ideas coming from the art community in Ahuriri.

Using an adaptive reuse technique of ‘Add-On’ and introducing these bridges over the Iron Pot, adds an icon to the community and allows the two bridges, one from Ahuriri and the other from West Quay, to meet over the Iron Pot and speak of different architectural languages. It energizes the area and improves the pedestrian linkage.
Developing the exterior environment the building sits in as just as important in this case as the building itself. These models look at a process of ‘Add-On’ and introducing steps down to the waters edge to create a sense of excitement. The gantry system axis is extended out to the west allowing a platform for multiple activities to occur. Along with the steps it improves the shape of the Iron Pot and defines it more clearly. The steps are constructed to allow pedestrian pathways and a dedicated sitting area to dine. This condition is unique to the area, energizing the site, and compliments the activities in the building.
These set of models look at how the building sits on the site in relation to the surrounding context. The building utilises not only the space within but extends out to the waters edge. Larger openings were introduced in the building to allow the gantry to extend its axis. This provides main entry points with a thicker structure introduced into the existing structural grid emphasising entry points. This axis provides a common ground where a number of activities can be held. The treatment with the surrounding wharf compliments the buildings activities and allows a range of activities to be held on the steps like dining, fishing events, and a farmers market to name just a few.

The roofline has been adaptively reused and has been extended outwards to provide shading. A new roof is added onto the northern facade and ramps upwards. The roofline now becomes iconic that is unique to the building itself, much like the saw tooth roof on the neighbouring buildings. The building itself sits better in its context.

The gantry system allows exhibits to be hung from it and allows it to maintain a clear sight down the axis. The performance space in figure 5.47 is interesting at the rear of the building and better utilises this space. It would be a great point of entry from train users and creates some excitement at the back of the building.
Outcome of Exploration Five

The ideas explored in the models provide very unique possibilities that would help energize the building and make it a valuable icon of the community. It reintegrates it back into the context and social fabric. Adding on to what already exists gives a sense of place and familiarity. Subtracting and adding parts of the ground to make way for steps to the waters edge makes better use of the land and allows people to engage with the site and what the surrounding environment has to offer better. The adaptive reuse strategies allow a multiple of activities to be held not only in the building itself but the land that surrounds it. The building therefore acts as a hub with it supporting these activities. It allows a level of flexibility and creates a collage of moments with these fragments promoting the culture of the area. Further development of these ideas is required and the functional planning of the building needs to support these areas to make it successful.
Exploration Six

This exploration is an extended one of exploration four and five. It looks at a range of issues raised in the previous explorations and looks to merge them together functionally. The edge condition and site around the building is developed to create a solution that will satisfy the research question. The building needs to now respond and support the surrounding context.

Figure 5.49 Conceptual planning
Looking at the building as a series of volumes.
By Author

Figure 5.50 Conceptual planning
Looking at the activities in the building supporting the surrounding context.
By Author

Figure 5.50 illustrates a need to incorporate the space between itself and the neighbouring building. A plaza space will allow another supporting gathering and dwelling space that will be sheltered from a number of winds. A car park is normally situated in this space. The plaza will allow the surrounding buildings to utilise this space and will help reintegrate this building into its context. It allows people to enjoy the afternoon sun and connects people with the waters edge through a series of steps next to the extended gantry. The steps also provide additional seating.

The drawing in figure 5.49 illustrates a conceptual way with how to deal with the dividing of spaces internally. It looks at it as a series of volumes that compliment not only the surrounding context but the gantry which hosts a number of activities.
**Figure 5.52 Ground floor plan**
Spatial planning of the ground floor.
By Author

**Figure 5.53 First floor plan**
Spatial planning of the first floor.
By Author
Figure 5.54 Ground floor plan
Spatial planning of the ground floor.
By Author

Figure 5.55 First floor plan
Spatial planning of the first floor.
By Author
Figures 5.52 and 5.53 present planning arrangements that look at how to arrange activities supporting the surrounding environment and the internal environment. The volumes set back from the existing building in areas allow the pedestrian a primary engagement with the building and creates an internal footpath. It also provides space for diners to dine within the buildings shell and provides a level of shading and unique light qualities through the existing shell. Having the volumes on the ground floor set back from the gantry columns defines their presence they have on the space. The bridge across the gantry space should be angled in the building providing a better view out the channel when walking out of the building. Reusing the existing spiral staircase in the building as a way to get off the bridge would benefit the experience.

Figures 5.54 and 5.55 sketches try a slightly different approach towards the planning arrangements of the building. The ground floor volumes set backs work well except for the space on the south between the two retail volumes. The space doesn’t work as well with the plaza due to the spatial arrangement and the programs. However, the bridge angle provides more interest in the building and over the gantry. Walking out of the building you are presented with views of Hawke’s Bay that are framed by the existing structure. The floor plate on the south as it meets with the bridge doesn’t work as well. A section of the floor plate feels as though it needs to be the same direction as the bridge and would provide a good contrast with the axis of the bridge meeting the axis of the building. It would form a great space for dwelling or holding displays along the journey. More dividing of the floor plate on the second floor is required on this side to allow light penetration to the spaces below.
Outcome of Exploration Six

The planning arrangements from these explorations support the existing building and surrounding context better. The interior complements the exterior allowing the outside to flow into the interior through soft thresholds of the existing structure.

Further development will look at detailing the spaces and elements of the building more with the information learnt from the previous explorations. The project has developed into an icon that would be a great unique asset to the community. The number of spaces allows a great level of flexibility that would allow the community to display, express, and host a range of events and activities.
6.0 Design Outcome
Design Outcome

Adaptive Reuse Strategies

The surrounding site where the building sits was considered just as important as the building itself to energize the site and became part of a primary driver for the design. Adaptive reuse techniques provided a comprehensive solution that would encourage bringing the community and visitors together. The building, according to Kincaid’s development options, had a ‘medium-high change’ of conversion. A building already existed so working with it to reintegrate it back into the context and society is a respectful approach to the past. The adaptive reuse techniques provided a creative solution that capitalises on the social, cultural, and environmental benefits of the approach.

A process of ‘Add-On’ was used to extend the axis of the gantry and wharf out into the channel. The Iron pot was extended slightly and is a more defined shape, keeping a link to the industrial past of Ahuriri. A process of subtraction was used to provide the stepping system around the outside of the wharf. The elements help form a collage of spaces that allow the community to enjoy it and interact with one another. The different levels set up by the steps allow a different level of engagement with the water and the building. These thresholds allow sight lines not to be disturbed at different levels with the surrounding context able to be enjoyed. The different levels provide opportunities for dwelling, farmers market, fishing and much more to be enjoyed. This environment is made out of concrete, which is very durable.

The interior of the building had a slightly different adaptive reuse approach. The strategy stripped the building back down to its structural bones and utilised the unique characteristics the building has. The existing structure allowed a greater transparency through the building and provided a unique opportunity to engage people through soft thresholds. The structure frames a number of views of the surrounding context into fragments, which come together to form a collage of moments. The building becomes a part of the site and the landscape rather than an isolated object. Using the existing gantry system allows it to host a great number of activities and functions such as exhibitions, festivals, and weddings to name a few. This adaptive reuse technique described as a ‘feature space’ takes on an economic importance to the community becoming a tourist attraction. The gantry axis provides a central space that programs in the building and the surrounding context focuses on and supports. The gantry has been added onto and sets up a strong axis that leads to the train line and Rothmans building in one direction and the distant hill ranges and the harbour in the opposite. This axis is a powerful gesture that would be amazing to experience with a number of activities held along it. The gantry will remain operational with exhibits being able to be hung from it, keeping the line of sight open. Platforms of the ground are able to be lifted up by
Public movement and entry
Public movement was considered an important aspect to help energize the existing building. The building was an isolated object with pedestrian movement ceasing to exist around it. Adaptive reuse strategies were used to not only the building itself but also the surrounding environment to increase pedestrian activity to and from the building.

Road patterns were changed around the building with cars now going down Lever Street and joining into the main road of Bridge Street. This allows the restaurants along West Quay and the projects building to be a pedestrian friendly zone. There was no need for cars to drive along the front except for car parking which can be built relocated around the back of some of these buildings if required. This allowed the landscape to be altered with strategies of ‘Add-On’ and subtraction to form a landscape that allowed a pedestrian friendly environment being able to host a range of activities.

A bridge was decided to be a great option to get pedestrian activity away from the busy Bridge Street and Ahuriri Bypass that had a footpath very close to the busy road. The option of the bridge allowed people to cross the Iron Pot and have unobstructed views of the area. It provides a vital link between West Quay and the small Ahuriri Township. These two areas have been disjointed from one another and has always been a journey in the car between the two destinations. The addition of a bridge allows a connection between these two areas to exist. It provided an architectural opportunity to demonstrate the connection point between the two areas over the Iron Pot where the two bridges almost touch one
Energize

Adaptive reuse strategies have allowed the building to host a range of activities and be an icon to the community acting as a hub to the area. Having the ability to exhibit the maritime past and flexible spaces where local artists can express themselves in a central hub where the community and visitors pass through that is always changing, energizes the area, giving a vitality and enthusiasm to the site. The flexible spaces allows the building to evolve and is a key requirement to an ever-changing society.

The strategies employed have developed a number of spaces in and outside the building that are beneficial to the community and the surrounding context. The plaza space to the south of the building creates spaces that are desirable during midday to late afternoon with great views out to the ranges. Converting what was a car park allows not only the existing building the option to open out and enjoy this newly created space but the other two buildings that surround this space. This area works well with the waters edge with steps stepping down to the waters edge. The northern face of the building has the same stepping system and allows elevated views at different levels to dine, dwell, walk, and fish to name a few. The possibilities of this newly created space are endless. This side also hosts vintage boats in the Iron Pot that the public can see up close and enjoy charter experiences, complementing the buildings programme.

The adaptive reuse strategies employed into the building have allowed the reuse of the gantry as a central space the building focuses around and supports. Views are set up from this space through the axis, the building, and out towards the surrounding context. The gantry can host a range of activities such as displaying art, holding maritime exhibitions, setting up performance spaces, concerts, and hosting a number of events. It creates excitement to the building that is always changing and will become a very valuable identity of the community. The existing Customs House located on the east side of the building is
also energized and complements the maritime function of the building.

There is a gap in the community for a building like this where people can display, host events, and express themselves. It also attracts people during their lunch breaks from local businesses where they can meet at a central place to enjoy the environment and what the building has to offer.

Daylighting and heating
The building originally was very dark and closed off from the surrounding context. Reducing the existing building back down to its structural bones, an adaptive reuse strategy used by Herzog and de Meuron, natural light was introduced into the interior of the building while providing a level of transparency. Larger openings were also introduced into the existing reinforced concrete grid in places. Natural light was introduced through the roof with a series of open glazed slits in the roof, which provided a filtered light through the existing steel tube roof trusses. These also have the ability to open, letting heat out, creating a natural stack effect.

The large volume of space contained within the shell of the building, mainly used for exhibitions, is heated during the winter months using four large air handling units. These units are located in the apex of the roof and are similar to the units installed in the Viaduct Events Centre in Auckland, which are very efficient. These units are natural gas fired and are capable of 3000 liters per second of heated air per unit. A series of radiant heaters was considered but wasn’t believed to suit all events and situations the building may encounter in the future. A natural stack effect in the summer months is used to cool the large space down with cool air from the sea providing a cooling breeze. The heating units double as mechanical fans that are capable of extracting 3000 liters per second of air and are also helped by three HVLS fans and roof vents to help increase the efficiency of the system. In the case of a fire the roof vents open, HVLS fans start, and the mechanical fans extract air out of the building to allow the occupants to escape and not suffocate.

The smaller volumes in the building that contain the cafes, restaurants, and retail volumes require a system that can cope with a higher demand for different individual room temperatures and ventilation requirements. A VAV system is installed and is an all air mixed mode energy efficient system that is capable of managing densely populated spaces for heating, cooling, and ventilation. To increase the energy efficiency of this system it has a seawater source heat pump, which uses the energy from the seawater as a heat exchanger to provide heating and cooling.

The buildings shell has 10mm laminated Sunergy glazing that offers very good solar control and good insulating properties with a low U value. This provides a good thermal envelope that still provides a transparent shell.
Figure 6.3 Traffic and pedestrian diagram
Showing bridge direction, traffic, and pedestrian linkages.
By Author
Figure 6.4 Ground Floor Plan sketch
By Author

Figure 6.5 First Floor Plan sketch
By Author

Figure 6.6 West Elevation sketch
By Author

Figure 6.7 South Elevation sketch
By Author
Figure 6.8 Northeast perspective
By Author

Figure 6.9 East perspective
Showing gantry supporting performance platform.
By Author
Figure 6.10 View from Nelson Quay
By Author

Figure 6.11 Southwest perspective
By Author
7.0 conclusion
This research project investigated how adaptive reuse strategies could be used to energize an unused and abandoned site in Ahuriri, Napier. The site was used as an example to demonstrate and confront the problems that are becoming more frequent for architects today. The abandonment of such a site in a prime location affects the surrounding context and becomes dead space in once a thriving location.

The approach was to locate a site that demonstrated a nonexistence within a city and contained a memory of the past that was detached from the present. The project investigated adaptive reuse strategies as a driver to energize a site and reconnect it with its surrounding context through urban connections and a program that displays and promotes culture and social relationships.

In Ahuriri, the car is the primary means of transport with road patterns and car parks dividing the waters edge and the buildings. This environment limits pedestrian activity and sets up a culture where cultural and social interaction with one another is very limited. The existing railway line, primarily used for transporting freight to and from the port, was used as a starting point to introduce passengers arriving from cruise ships in the port and transporting them to the site. Reconnecting connections in Ahuriri between the site and its context was developed and was seen as a stimulus for energizing the site.

The program of the building developed into a maritime events centre and houses mixed-use flexible spaces that reconnects people with its history and promotes culture. The strategy accommodates cafes, retail opportunities, and several exhibition and performance spaces that become public attractions. It establishes a starting point, which asks for involvement from local residents and visitors to get involved and promote cultural and social relationships. The programs of the building are linked by pedestrian paths and set up a process of discovery. The performance and exhibition spaces are always changing and allow individuals and the city to express and display themselves. Local residents and visitors are able to observe and interact with one another. These moments are shared and unique with supporting programs, such as cafes, restaurants, historic boats and charters located in the Iron Pot used as gathering and social places.

The ability to create this atmosphere architecturally was a challenge. The site sits next to the Iron Pot, which holds some historic significance, and is isolated on a corner with dead space surrounding it. To create a vibrant atmosphere between the existing sites, connections and internal circulation becomes a driver to bring people to the site and expose them to the exhibition and performance spaces the building provides. Improving connections from West Quay and the Ahuriri Township by a bridge crossing the Iron...
Pot links people with the two areas that host a range of retail, and businesses. This element is seen as an icon in its own right and delivers people inside the existing building's shell, setting up an internal street on a north south axis above ground level. The existing gantry in the building was reused and extended setting up an east west axis on ground level. Where these two intersect is the hub of the building, the main gathering space. The industrial gantry carries exhibitions, displays, and sets up platforms in the space where people can display, perform, and interact with one another with supporting programs located off this axis. This feature of the gantry incorporates spatial, as well as pragmatic values that enhance the internal and external environments. This multi-use facility is flexible with a range of activities able to be accommodated for.

As the project developed it soon became apparent that no specific adaptive reuse approach could be taken with the design. The site itself becomes the principle driver and why it is worth keeping. The site analysis revealed problems associated with the site and the adaptive reuse approach becomes a mixture of techniques that is site specific. One specific approach can be demonstrated in certain circumstances but it is up to the designer to what approach they feel best satisfies the value of the site, context, and the community. Connecting the existing building back into the surrounding environment becomes a driver to energize the site and ensures its sustainability for the future.

Being made aware and reviewing the literature found in adaptive reuse and the sustainability benefits associated with the approach provided a key motivation to explore and integrate this direction into the design. The building that has resulted preserves a layer of history that is valuable to the community and has provided the significant benefits of conserving embodied energy in the existing building. The design demonstrates a horizontal extension of the building leaving the majority of it left intact but engages it with the surrounding environment more successfully by using a process of subtraction and extension.

The objective of the project was to demonstrate and raise awareness the potential our existing buildings hold in our world. It reveals how adaptive reuse strategies can be used to energize an existing building, which I believe has been achieved. It is a feasible solution that presents a number of ideas and explorations that are applicable to many architects, planners, and designers in the industry. Following the submission of this document further refinements and detailing will continue but the projects overall objectives will remain unchanged.
Future Directions

There is the potential to further research this topic in the future. There are an increasing number of buildings that can be adaptively reused and energized back into their environment with society and needs changing. If people are not properly educated, demolition will remain the primary response of a project and we would lose our traces of the past and built heritage. We need to take advantage of adaptive reuse and the cultural, social, and environmental benefits it entails with the importance of educating people emphasized more.

What new programs best fit an existing building is an important issue that needs to be understood more clearly by designers and building owners. The program needs to have the best interests of the community in mind and energize it. This will ensure the sustainability of the building for future generations.


Moore, Rowan and Ryan, Raymund, *Building Tate Modern: Herzog and de Meuron*, London: Tate Gallery, 2000


9.0 Appendix
Appendix A

Existing waterfront locations

The movement in and around the building is an important aspect to the success of energizing the existing building and its site. Two existing sites were analysed that are located along successful waterfront paths that each demonstrated different qualities of interaction with the public and buildings.

The first is The Viaduct Events Centre located in Auckland, New Zealand. The building is located along ‘the spine’ that runs on an east-west axis and connects the Viaduct with the City. The spine is designed to encourage pedestrian activity between the areas with locations like retail, entertainment, and hospitality located along the spine.

![Figure 9.1 Viaduct Events Centre, Auckland](image)

Showing how pedestrian movement and activity works with the building.
By Author
The public plaza located to the south of the building, as well as the steps down to the waters edge, works well as it acts a dwelling, meeting, and gathering space outside the buildings entrance. The steps down to the waters edge connects people with the water and provides a number of seating opportunities to admire the activity in the area. Along with the moveable seating in the plaza, it is a successful space that doesn’t just seem as a corridor to move people through.

The Te Wero bridge, which bridges the gap between the Viaduct and North Wharf, is heavily used with its importance understood when it raises to allow boats to pass beneath it. This link is vital to the success of ‘the spine’ allowing the public to reach North Wharf and beyond quickly and efficiently while providing a feature to the area. It is interesting to note that the bridge was originally located more to the bottom of the wharfs edge where it currently sits. This made the spine run down Jelicoe Street instead of in front of the restaurants on North Wharf.

The Viaduct Events Centre provides the opportunity for the public to use a path that runs around the edge of the building that provides elevated views north into the harbour. It is an interesting idea but sits back from the wharfs edge with the remaining part of the wharf providing car parking. There is no real attraction to the north of the building except the harbour. However, what is interesting is the elevated view is not exclusive to just the occupants of the building and can be enjoyed by the public. The building also provides seating areas outside the entrance where people can interact with one another.
There are two main axis that run through Wynyard Quarter and connect it to Auckland City and Victoria Park. The east-west axis, ‘the spine’, connects Wynyard Quarter to Auckland City. The other main axis introduced is the ‘green’ connection from Victoria Park to Wynyard Quarter. Where these two axis intersect is where Jelicoe Plaza is being developed. These connections are encouraging pedestrian activity between the areas. The cement silos, located on the western edge of the Wynyard Quarter, provide a landmark and destination for the public to visit and admire the past of the area. These silos located at the end of ‘the spine’ allow the area to open up to the westerly aspect the site has. Locations along ‘the spine’ are retail, entertainment, and hospitality. The western side of Wynyard Quarter has the potential to adaptively reuse existing buildings that are unique.
The second location explored was the public path along Wellington’s Waterfront. What interested me about the approach was the constant change of direction, as well as the sense of isolation and vulnerability away from land. This was experienced most successfully in front of the Meridian building. The journey along the waterfront, particularly around Te Papa, was interesting as there were spaces that displayed outdoor exhibitions that related to the museum’s program. How they deal with the ground condition is also interesting with subtle moves that separate movement and viewing areas. This is achieved by different direction of how the wood is laid as well as little pillars that provide seating. An interesting moment was a cut out in the ground, which divided a large paved space but also connected people with the water beneath the wharf. There was enough space along the wharf for the farmers market to setup in the weekends, which allows a hive of activity from the public. Trees were also planted in areas along the waterfront that provided a soft feel to areas instead of hard paved surfaces. There are a number of areas along the waterfront where steps down to the waters edge were utilised a lot by the public. It creates dwelling spaces that are useful to certain areas along the journey.
The path by the Meridian building has an interesting engagement with the waters edge. The main path in front of the building is set away from the land and creates a sense of isolation, vulnerability, and a visual boundary between the building and the public path. It separates the buildings occupation and the public path while providing a level of security provided by the water and a level of transparency. The use of a sculptural element along the path creates some interest along the journey. The connection from land to the walkway is made more noticeable as the surface changes from concrete to wood. These connections to the walkway around the meridian building are interesting as the building overhangs half the path leading up to these connections. It creates a first primary engagement with the pedestrian like the overhangs along a street frontage. The built in seating and plaza outside the building is useful as it encourages public encounters, creates interest, and doesn't use the space primarily for connections to spaces.

Figure 9.3 Meridian Building, Wellington
Google Earth
The Meridian building and the Viaduct Events Centre are two different function buildings. How they are designed along the waterfronts both provide an interesting model to look at as they deal with the waterfront and public interaction differently. The pathways both provide experiences that are different and unique accommodating seating areas, plaza spaces, vistas, and providing locations for the public to dwell and enjoy the waterfront. ‘The spine’ in Auckland provides an easy navigation route that connects spaces easily. Whereas Wellington is a more meandering experience with the direction always changing revealing new vistas. Sydney’s waterfront by the Opera house is an interesting model as well as it provides useful techniques with how to engage the public with what the immediate surroundings have to offer. The seating built into the paths edge along the waterfront provides dwelling opportunities with a restaurant supporting the space. The space develops into a dual purpose diverse space that is enjoyed by locals and visitors. The Sydney Opera House is integrated into the wharf providing a destination at the end of the journey.

**Conclusion**

The Meridian building and the Viaduct Events Centre are two different function buildings. How they are designed along the waterfronts both provide an interesting model to look at as they deal with the waterfront edge and public interaction differently. The pathways both provide experiences that are different and unique accommodating seating areas, plaza spaces, vistas, and providing locations for the public to dwell and enjoy the waterfront. ‘The spine’ in Auckland provides an easy navigation route that connects spaces easily. Whereas Wellington is a more meandering experience with the direction always changing revealing new vistas. Sydney’s waterfront by the Opera house is an interesting model as well as it provides useful techniques with how to engage the public with what the immediate surroundings have to offer. The seating built into the paths edge along the waterfront provides dwelling opportunities with a restaurant supporting the space. The space develops into a dual purpose diverse space that is enjoyed by locals and visitors. The Sydney Opera House is integrated into the wharf providing a destination at the end of the journey.
Appendix B

Existing building

The drawings provided of the site are not to scale. They show the basic outline of the building but are not 100% accurate. What exists on site slightly differs from what is drawn but are a good guide to follow.
Figure 9.9 Floor Plan
Drawing not to scale
Napier City Council
Figure 9.10 Roof Plan
Drawing not to scale
Napier City Council
Figure 9.11 Cross Section
Drawing not to scale
Napier City Council

Figure 9.12 Longitudinal Section
Drawing not to scale
Napier City Council
Figure 9.13 West Elevation
Drawing not to scale
Napier City Council

Figure 9.14 East Elevation
Drawing not to scale
Napier City Council

Figure 9.15 South Elevation
Drawing not to scale
Napier City Council

Figure 9.16 North Elevation
Drawing not to scale
Napier City Council
Appendix C
Presentation
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