Impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on the retention of historical buildings in New Zealand's provincial city-centres: Towards promoting seismic resilience through adaptive reuse

Itohan Esther Aigwi

A thesis submitted in partial fulfilment of the
requirements for the degree of
Doctor of Philosophy in Engineering

Massey University
Auckland, New Zealand

July 2020

Copyright

Abstract

The impacts of the increasing scale of earthquake disasters on New Zealand's historical buildings are becoming so prevalent to the extent of threatening the stability and existence of provincial urban areas, hence, resulting in local resilience emergencies. This thesis is designed to promote seismic resilience and city-centre regeneration through the retention of earthquake-prone historical buildings for New Zealand's provincial regions that have an abundance of underutilised earthquake-prone commercial historical buildings in their city-centres. No prior research has explored the main factors that contribute to the loss of historical buildings in New Zealand's provincial city centres as a result of the Building (Earthquake-prone Buildings) Amendment Act 2016, and how the retention of the buildings can be improved.

This thesis aims to address such inadequacy by identifying representative New Zealand's provincial cities and the contributing factors to their inner-city decline with links to the impact of the Building (Earthquake-prone Buildings) Amendment Act 2016. The applicability of the adaptive reuse approach (i.e., the change of use of an existing building) is also explored as a sustainable approach to retain underutilised commercial earthquake-prone historical buildings and promote seismic resilience and city-centre regeneration, by developing a performance-based framework to improve the adaptive reuse decision-making process.

Using a sequence of qualitative and quantitative research enquiry modes, the research question was answered to justify the overall aim of the thesis. The findings revealed Whanganui and Invercargill as representative examples of New Zealand's earliest cities currently experiencing a decline in their city centres, and also identified socio-economic and regulatory factors that may have contributed to their decline. Correspondingly, the impacts of the actions (or inactions) of local councils and building owners regarding compliance with the Building (Earthquake-prone Buildings) Amendment Act 2016 have also been addressed.

Examining the importance of heritage buildings in New Zealand and the allocation of government funding in the form of grants for the retention of these buildings imply that though New Zealand's government heritage grant systems are the most extensive non-regulatory incentives for the protection of built heritage, most of the grants are allocated to the bigger cities with the least per capita distribution of heritage buildings. The provincial regions with the most per capita ratio may continue to struggle to conserve their oversupply of heritage buildings if a disproportionately lower allocation of heritage protection grants to provincial regions continues to happen.

Findings from this thesis also revealed the main parameters (economic sustainability, built-heritage conservation, socio-cultural aspects, building usability, and regulatory aspects) for a performance-based framework to prioritise optimal underutilised commercial earthquake-prone historical buildings for adaptive reuse. The findings established the practicality of the validated framework in balancing the diverse interests of all stakeholders in an adaptive reuse decision-making process. The consensus among the multidisciplinary stakeholder group was acknowledged to be consistent and insensitive to reasonable changes in weighting.

An in-depth understanding of the characteristics of adaptive reuse stakeholders (i.e., identified as investors, producers, regulators and users) and the effectiveness of collaborative rationality among the diverse stakeholders was also found to improve: (i) active participation of stakeholders for future adaptive reuse prioritisation exercises; (ii) public consciousness and knowledge regarding adaptive reuse issues; (iii) transparency and accountability among the stakeholders; (iv) trust and organised networking among the stakeholders; and (v) legitimacy and quality of adaptive reuse decisions. Accordingly, the efficacy of adaptive reuse has been justified in this thesis as a sustainable approach to renegotiating seismic resilience and vitality in the city centres of Whanganui and Invercargill.

This thesis significance updates both the practical and theoretical understanding of seismic resilience and city-centre regeneration through the adaptive reuse of underutilised historical buildings in New Zealand's provincial areas to mitigate the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016, hitherto lacking. As a practical significance, the performance-based framework from this thesis guided Whanganui district council, as both a planning and measurement tool to prioritise and conserve underutilised earthquake-prone commercial historical buildings in their city-centre for adaptive reuse, while balancing the diverse interests of all relevant stakeholders. Also, findings from this thesis are of relevance to the theoretical body of knowledge as a guide for other researchers who are pursuing closely related research topics to that of this thesis.

Dedication

To the Almighty God, the creator of Heaven and earth, who comforts me in the most challenging times of my life, and who in His infinite mercies has been my shield and a constant source of hope, inspiration, and knowledge.

19 And to know the love of Christ, which passeth knowledge, that ye might be
filled with all the fullness of God. 20 Now unto him that is able to do exceeding
abundantly above all that we ask or think, according to the power that worketh
in us, 21 Unto him be glory in the church by Christ Jesus throughout all ages,
world without end. Amen. *Ephesians 3:19-21*

Acknowledgements

First and foremost, I return all the glory to God Almighty for strengthening me and giving me the opportunity, knowledge, and ability to take on this PhD research and complete it satisfactorily.

To my precious family (Mum – Victoria Aigwi, Dad – Johnson Aigwi, Big sister – Abieyuwa Oviosun, Big brother – Osaretin Aigwi, Kid brother – Osazee Aigwi, Aunty – Bridget Onahor, Nieces – Galaxy and Francess Oviosun, Menorah Aigwi, and Nephews – Jael and Pax Aigwi), thank you for your moral support, prayers, and innumerable sacrifices. This PhD endeavour could not have been possible without your full support. You all have always inspired me to follow my dreams, and, taught me that hard work leads to success.

My heartfelt gratitude to my supervisors Professor Robyn Phipps, Professor Jason Ingham, and Dr Olga Filippova, for your constant guidance and encouragement throughout my PhD. I am so delighted in acknowledging your steadfast support, patience, constructive feedback, and, for making your offices available for our research meetings. Words are insufficient to express my gratitude to you all.

The financial support from QuakeCoRE, a New Zealand Tertiary Education Commission-funded Centre for Earthquake Resilience, is acknowledged. This thesis could not have been finished on time without their support. I am particularly grateful to Professor Jason Ingham who helped me to secure the QuakeCoRE funding and provided me with an additional study space as a visiting research student in the Department of Civil and Environmental Engineering, University of Auckland. Also, my gratitude goes to the School of Engineering & Advanced Technology, and the School of Built Environment, Massey University, Auckland, for providing me with learning resources and financial support through my research account, which covered most of my data collection expenses, especially for my workshop materials and travel.

I wish to acknowledge some past and present academic staff in my department (Associate Professor Jasper Mbachu, Dr Kenny Park, Professor Monty Sutrisna, Associate Professor James Rotimi, Professor Suzanne Wilkinson, Dr Wajiha Shahzad, Dr Eziaku Rasheed, Dr Niluka Domingo, Dr Gregory Chawynski, Dr Mikael Boulic, Dr Naseem Ameer, Dr Atie Ahmadi, Susan Mander, Lara Tookey, and Chris Chitty). I have learnt so much from those productive discussions we had during my stay at Building 106. Some past and present administrative staff (Shona Alo – for her genuine kindness and motherly support, Lucy Chapman, Trish Bexley, Jacinda Mark, Vindhya Kruthiventi, and Liz Thaisen) are also recognised for their kind support towards ensuring a smooth administrative running of my PhD.

The Auckland campus College of Sciences subject Librarian (Cuiying Mu) and other Library staff are much appreciated for providing support with finding information for my research at its early stages, using Library resources, and information on publishing my research. I am also grateful to Penny Lyall of Albany Student Association Advocacy, for her kind role in ensuring my well-being during my challenging days.

My sincere gratitude to my beloved PhD colleagues turned siblings (An Le and Ravindu Kahandawa), and most especially, to my best friend (Amarachukwu Nwadike), whom their kind words always encouraged me when I felt weary. Thanks for cheering me up through those tough times. And to my other PhD colleagues (Nishadi Sooriyamudalige, Reza Ansari, Ehsan Bakhtiazadeh, Nasir Rasheed, Israr Wahid, Alexander Goryachev, Yu Wang, and Vineet Arya), thank you for your support.

These acknowledgements would be partial if I don't appreciate my family friends in New Zealand (Tilly Kordieh, Victor Anyanka, and the families of Abigail Kuranchie, Amarachi Chidozie, Nurudeen Adegoke, and Muhammed Bolomope), my Landlord – Roger, his wife –Monkan, and their beautiful children – Sean and Charles, for their encouragement and support throughout my research.

Finally, to my future children, you have motivated me to aim for excellence in all I do. I can't wait to meet you.

Contents

List of Figures

List of Tables

Abbreviations and acronyms

A1	Alternative one
A2	Alternative two
AHP	Analytical Hierarchy Process
ARP	Adaptive Reuse Potential
AT	Absolute-top
BA	Building Act
BEPBAA	Building (Earthquake-prone Buildings) Amendment Act
BID	Business Improvement District
BIM	Building Information Modelling
CBD	Central Business Districts
CCR	City Centre Regeneration
CO_2	Carbon dioxide
CPWD	Central Public Works Department
DEH	Department of the Environment and Heritage
EPB	Earthquake-prone Buildings
FD	Fuzzy-Delphi
GDP	Gross Domestic Product
IBM	International Business Machines
ICC	Invercargill City Council
ICOMOS	International Council on Monuments and Sites
ILT	Invercargill Licensing Trust
LGA	Local Government Act
MAVT	Multi-Attribute Value Theory
MBIE	Ministry of Business, Innovation and Employment
MCDA	Multiple Criteria Decision Assessment

M_S	Surface-wave magnitude scale
M_W	Moment magnitude scale
N.F.	Non-feasible
NABERS	National Australian Built Environment Rating System
NBS	New Building Standard
NHPIF	National Heritage Preservation Incentive Fund
NZD	New Zealand Dollar
NZSAC	New Zealand's standard areas classification
NZSEE	New Zealand Society for Earthquake Engineering
OPEX	Operating Expenses
PIS	Participant Information Sheet
PT	Per cent-top
RMA	Resource Management Act
RO	Research Objective
RQ	Research Question
SoRDS	Southland Regional Development Strategy
SPSS	Statistical Package for Social Sciences
SSGA	Statistical Standard for Geographic Areas
TCM	Town centre management
TCR	Town Centre Regeneration
UCOL	Universal College of Learning
UK	United Kingdom
UN-DESA	United Nations Department of Economic and Social Affair
UN-Habitat	United Nations Human Settlements Programme
URM	Unreinforced Masonry Buildings
USA	United States of America
WDC	Whanganui District Council
WSM	Weighted Sum Model

List of peer-reviewed publications

1) **Aigwi, I. E.,** Phipps, R., Ingham, J., & Filippova, O. (2019). *Urban transformation trajectories of New Zealand's earliest cities undergoing decline: Identifying links to the newly enforced Building (Earthquake-Prone Buildings) Amendment Act 2016.* Proceedings of the 43RD AUBEA Conference, 6 – 8 November 2019, Noosa QLD, Australia. pp 591-611. https://www.researchgate.net/publication/339138793_Urban_transformation_trajectories_of_New_Zealand's_earliest_cities_undergoing_decline_Identifying_links_to_the_newly_enforced_Building_Earthquake-Prone_Buildings_Amendment_Act_2016

2) **Yakubu, I.E.,** Egbelakin, T., Dizhur, D., Ingham, J., Park, K.S., & Phipps, R.A. (2017). Why are older inner-city buildings vacant? Implications for town-centre regeneration. *Journal of Urban Regeneration & Renewal, 11*(1), 1-16.

3) **Aigwi, I. E.,** Filippova, O., Ingham, J., & Phipps, R. (2020). Unintended consequences of the earthquake-prone building legislation: An evaluation of two city-centre regeneration strategies in New Zealand's provincial areas. *International Journal of Disaster Risk Reduction, 49*, 101644. https://doi.org/10.1016/j.ijdrr.2020.101644

4) **Aigwi, I. E.,** Filippova, O., Ingham, J., & Phipps, R. (2020). From drag to brag: Role of government grants in enhancing the built heritage protection efforts in New Zealand's provincial regions. *Journal of Rural Studies*

5) **Aigwi, I. E.,** Ingham, J., Phipps, R., & Filippova, O. (2020). Identifying parameters for a performance-based framework: Towards prioritising underutilised historical buildings for adaptive reuse in New Zealand. *Cities, 102*, 102756. https://doi.org/10.1016/j.cities.2020.102756

6) **Aigwi, I. E.,** Egbelakin, T., Ingham, J., Phipps, R., Rotimi, J., & Filippova, O. (2019). A performance-based framework to prioritise underutilised historical buildings for adaptive reuse interventions in New Zealand. *Sustainable Cities and Society*, 48(1), 101547. https://doi.org/10.1016/j.scs.2019.1015

7) **Aigwi, I. E.,** Phipps, R., Ingham, J., Rotimi, J., & Filippova, O. (2020). Characterisation of adaptive reuse stakeholders and the effectiveness of collaborative rationality towards building resilient urban areas. *Journal of Systemic Practice and Action Research,* 33(3), 1-11. https://doi.org/10.1007/s11213-020-09521-0

8) **Aigwi, I. E.,** Egbelakin, T., & Ingham, J. (2018). Efficacy of adaptive reuse for the redevelopment of underutilised historical buildings: Towards the regeneration of New Zealand's provincial town centres. *International Journal of Building Pathology and Adaptation. 36*(4), 385-407. https://doi.org/10.1108/IJBPA-01-2018-0007

Chapter 1. Introduction

"A community has resilience when it can adapt to change. But adaptation is an ongoing process because communities and the challenges they face are dynamic."

(Hoffer, 1973)

1.1 Background

For the past few decades, global communities have been trying to address the combined challenges of socio-economic inequality, climate change, natural hazards, and environmental degradation, mainly under the umbrella of internationally advocated "sustainability". Regardless of some partial achievements in the pursuit of sustainability so far, it is evident that the acceleration of these global challenges has not reduced, let alone reversed or stopped (Lerch, 2017). The impacts of the increasing scale of global challenges are becoming so prevalent to the extent of threatening the stability and existence of urban areas, hence, resulting in local resilience emergencies.

Local resilience emergencies are unstable situations that necessitate inevitable decisive change, and people often rely on the resilience of systems that support their general well-being. Otherwise, they would suffer if the systems flop. A community has resilience when it can tackle temporary disturbances, by anticipating and preparing for them, responding to them, recovering from them, and still retaining its essential character (Foster, 2007b; Pendall, Foster, &

Cowell, 2010). The failure to thwart local resilience emergencies by global sustainability efforts implies that community resilience pursuits are required more than ever to work effectively on all systems and issues, instead of just focusing on climate change and the built environment.

Resilience and sustainability are distinct but complementary concepts. Whereas resilience prioritises process, sustainability prioritises results (Redman, 2014). Nowadays, resilience and sustainability concepts are extensively recognised and explored by numerous local government projects, business initiatives, grassroot activists, academic programs, urban systems, and the built environment. Yet, applying resilience thinking to urban settings using the built environment as leverage is still developing.

Seismic resilience, therefore, requires cities to have the ability to "bounce back" from the looming negative impacts of climate change, and actively adapt to future threats from non-climate change issues such as social equity and economic development (Lerch, 2017). Accordingly, communities, individuals, businesses, institutions and systems within an urban area have resilience when they can adapt, survive, and grow after experiencing chronic stresses that have weakened the character of the urban area (such as endemic population decline, high unemployment, lingering water and food shortages, and incompetent transportation systems), and acute shocks from sudden events (such as terrorist attacks, disease outbreaks, floods, and earthquakes) (Rockefeller Foundation, 2019).

An urban area is defined by its built environment, which provides the physical character of a society's identity. The need to safeguard this identity against acute shocks and chronic stresses, while adapting to unstable conditions of the urban area is of essence (Lerch, 2017). Individuals are often emotionally connected to their identity through familiarity with their neighbourhoods or architectural favourites. The resilience conditions of a built environment largely influences how individuals as a community, perceive and attach values to their shared identity such as familiar gathering places (e.g., sports centres, libraries, churches), and historic landmarks (e.g., old museums and historical buildings) in their immediate localities (Manzo & Perkins, 2006).

Historical buildings are buildings or structures that have some form of architectural or historic interests which connects people to past events. Historical buildings also provide excellent narration of the existence of urban areas by creating physical links and the advancement of cultural evidence with the past (Goodwin, Tonks, & Ingham, 2009). Nevertheless, not all historical buildings have heritage significance. In New Zealand, heritage buildings are historical buildings with heritage significance, that are listed in the national heritage register or local district plans (Heritage New Zealand, 2019b).

A majority of historical buildings often possess aesthetic, heritage, socio-cultural, economic, or scientific values (Ahmad, 2006; Orbasli, 2002), and hence, play a vital role in the development of an urban area (CPWD, 2013). In a fast urbanising global setting, these values could be considered as public goods (Navrud & Ready, 2002), to foster the unique competitiveness and resilience of urban areas (Yuen, 2005). However, it is quite challenging to conserve these historical buildings to sustain the identity and continuity of an urban area in the face of acute disturbances from sudden events such as earthquakes in active seismic regions of the world (Nasser, 2003).

1.2 Research problem

New Zealand is one of the most active seismic regions of the world with many historical buildings, especially in the inner-cities of its provincial urban areas. The heritage setting in New Zealand encompasses cultural landscapes and features, archaeological sites, sacred places, traditional sites, gardens, monuments, and built heritage manifested as historical buildings.

Since 2009, about 138 heritage buildings from the national heritage register have been demolished due to earthquake damages (Heritage New Zealand, 2018). Besides, the statistics of demolished heritage buildings being scheduled on district plans but not on the national heritage register are expected to be even higher due to other demolition threats from fires, new developments, and neglect (Heritage New Zealand, 2018).

Following the 2010/2011 Canterbury earthquake sequence in New Zealand, most historical buildings were impacted and showed higher levels of seismic vulnerability (Dizhur et al., 2011; Ingham & Griffith, 2010). In order to ensure the safety of users and promote the resilience of vulnerable buildings to future earthquakes, the central government introduced the Building (Earthquake-prone Buildings) Amendment Act 2016 (BEPBAA), which categorised all pre-1976 buildings as 'potentially earthquake-prone buildings' (MBIE, 2016a). Also, the

BEPBAA mandated local councils to ensure that the affected owners of 'potentially earthquake-prone buildings' seismically strengthen their buildings to the required threshold and within the given timeframe based on their seismic hazard area, otherwise their buildings will be demolished when the timeframe elapses (MBIE, 2016a).

Accordingly, the instituted BEPBAA put a lot of pressure on historical building owners to decide on either strengthening or abandoning their buildings. The situation is worse for the building owners who are not sure of the return on investment in the seismic assessment and upgrade of their buildings, including those who lack access to public funding through government incentives as a form of motivation (Beauregard, 2013).

Besides, provincial areas in New Zealand were already experiencing inner-city shrinkage from the loss of businesses to the urban fringes, which had more new and modern accommodation (Wheeler, 2004). Also, the growth of the big box retail was another big force that was pulling businesses out from provincial city centres globally (Beck & Peacock, 2009). As a result, owners of city-centre commercial historical buildings lost income from rent which affected their ability to invest in building maintenance, so, the commercial historical building stock in provincial city centres started to deteriorate. An additional seismic strengthening requirement of the BEPBAA implies an even more expensive strengthening procedure for deteriorated historical buildings compared to those that were regularly maintained.

Many provincial cities in New Zealand are overwhelmed with so many abandoned earthquake-prone commercial historical buildings in their city centres, and as such, need help with a sustainable intervention that would help them conserve their inner-city earthquake-prone commercial historical buildings in a manner that would promote seismic resilience and vitality of their city centres.

Considering possible interventions for the problem at hand, doing nothing to the underutilised historical buildings would cause the buildings to continue to deteriorate to the extent of becoming an eyesore to the community. When considering performing cosmetic maintenance on the underutilised historical buildings to promote a positive image to the community, the safety of users will be compromised during earthquakes.

On the other hand, if all buildings are demolished and replaced with modern buildings due to economic feasibility issues, the historic character of the buildings will be lost forever, and future generations cannot have a link to the past. Moreover, instead of demolishing all the underutilised historical buildings in these city centres, it might be useful to retain some of them. In doing so, the buildings will need to be prioritised, and the diverse interests of the decision-makers need to be balanced, towards promoting seismic resilience for New Zealand's provincial areas currently experiencing a decline in their city centres.

1.3 Research question and objectives

One main research question (RQmain) is considered for this thesis to address the stated research problem.

RQmain: What are the main factors that contribute to the loss of historical buildings in New Zealand's provincial city centres as a result of the Building (Earthquake-prone Buildings) Amendment Act 2016, and how can the retention of the buildings be improved?

In order to design an effective strategy to answer the main research question and enable an empirical and systematic investigation of the stated research problem, the following research objectives (RO) are put forward:

RO1: To identify representative examples of New Zealand's earliest cities experiencing an inner-city decline, and determine the contributing factors;

RO2: To investigate the factors that contribute to vacancies among older inner-city buildings;

RO3: To examine the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on provincial city-centre regeneration strategies;

RO4: To ascertain the role of public funding in promoting the retention of heritage buildings in New Zealand's provincial regions;

RO5: To identify important parameters for the development of a framework that will assist in prioritising earthquake-prone historical building for adaptive reuse;

RO6: To determine the characteristics of adaptive reuse stakeholders and test if collaborative rationality can improve the decision-making process; and

RO7: To examine the efficacy of adaptive reuse as a sustainable approach in the retention of underutilised inner-city buildings.

1.4 Research methodology

1.4.1 Philosophical underpinnings

Ontology is the starting point of every research. It is the study of what exists, mainly involved with the nature of reality (Grix, 2018). Philosophical ontology is the study of what generally exists (Scotland, 2012), categorised into ontological materialism and ontological idealism. Accordingly, ontological materialism is the belief that reality exists regardless of human observers, while ontological idealism is the belief that reality is constructed in the mind of the observer (Bryman, 2008). Table 1.1 presents a comparison between these two ontological perspectives. While philosophical ontology is important for an improved understanding of the ontological status of the world, and for the discussion of challenging questions when building theories and models, non-philosophical ontology is the description of what exists within a determined field (Bryman, 2008). This involves all the parts and processes that exist in a specific information system, including the relationship and hierarchy between them.

Table 1.1: Materialism versus idealism ontological perspectives

Descriptive criteria	Materialism	Idealism
Organisational Nature	Tangible object	Social construct arising from the interaction between individuals
Organisational Drivers	Set down rules, mission statements, procedures, processes, and structures	Evolving rules and procedures, negotiated order, acting as guidelines leading to a community of practice
Organisational Culture	Shared values and beliefs of individuals with common social norms	Constant construction and reconstruction of emergent reality through interaction between individuals

Source: (Bryman, 2008)

Epistemology is the study of knowledge, with a focus on what is being accepted as valid knowledge. It is defined as the theory of knowledge embedded in both theoretical and methodological perspectives (Crotty, 1998). When ontological and epistemological assumptions are combined, a paradigm is created (Mack, 2010). A paradigm is a loose collection of logically associated concepts, assumptions, or propositions that orientate thinking and research (Mackenzie & Knipe, 2006). Accordingly, the epistemological process involves examining the relationship between a given study and the researcher and is divided into positivism and interpretivism (Bryman, 2008). Whereas positivism strives to maintain an objective and independent stance through believing that only an observed and measured phenomenon would be regarded as valid knowledge, usually governed by a deductive approach, interpretivism attempts to minimise the gap that may appear in various methods of participatory inquiry usually governed by an inductive approach (Bryman, 2008). Table 1.2 presents a comparison between these two epistemological perspectives.

Table 1.2: Positivism versus interpretivism epistemological perspectives

Descriptive criteria	Positivism	Interpretivism
Basis	Natural science	Human interactions
Approach to social science	Description and generalisation of human behaviour	Interpretive understanding and causal explanation of human behaviour
Subject matter	Nature	Social reality
Subject actions	Unmotivated and inanimate	Engaged and expressive
Data collection	Observation, classification, and measurement	Understanding the perspective of human subjects
Research and theory	Majorly deductive	Strongly inductive

Source: (Bryman, 2008)

Methodology: is the overall approach taken by a researcher to examine a research problem by synthesising the theoretical underpinnings of the research problem, the techniques for data collection, and the strategies for data analysis (Healy & Perry, 2000; Kothari, 2004). Before a particular research methodology is chosen to investigate a phenomenon, the following factors are considered: (i) the research question/objectives; (ii) the norms in practice; (iii) epistemological concerns; (iv) ethical and personal factors; and (v) resource availability (Buchanan & Bryman, 2009). Moreover, research methodology is usually informed by the epistemological assumptions of researchers, which is also informed by their ontological beliefs (Mack, 2010).

1.4.2 Research background and paradigm

Understanding the relationship between a research ontology, epistemology, methodology, and its paradigm will help a researcher to achieve more holistic research findings (Rohrmann, 1998). Research on 'impacts of the Building

(Earthquake-prone Buildings) Amendment Act 2016 on the retention of historical buildings in New Zealand's provincial city centres towards promoting seismic resilience through adaptive reuse' is neither absolute social science nor pure natural science but stands between these two fields (Fellows & Liu, 2015). However, this research tends to drift more towards the social sciences field.

Wing, Raftery, and Walker (1998) found that scientific approaches usually assume humans to follow a regular set of behaviours. In reality, this is not true, but rather, scientific techniques have restricted use in the study of human behaviour and choices (Wing et al., 1998), especially in the aspect of earthquake strengthening investment choices, where owners of underutilised earthquake-prone commercial historical buildings are mostly unmotivated. This is so because several social and psychological factors act as a driving force to these investment choices. The risk posed by earthquake disasters and the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on the retention of historical buildings in New Zealand's provincial city centres would interact with several processes including heritage conservation cultural, institutional, social, and human psychological processes, thereby creating a substantial impact on the economy, people and society (Kasperson et al., 1988).

Studying the impacts of the earthquake-prone building legislation, the attitudes, and choices of the public towards heritage conservation justifies the need for combining the epistemological interpretivist and positivist research paradigms for this thesis. This combination has significant strengths and weaknesses (Easterby-Smith, Thorpe, & Jackson, 2012). A practical review of these two dominant research paradigms is presented in Table 1.3.

Table 1.3: Strengths versus weaknesses of research paradigm

Research paradigm	Strengths	Weaknesses
Positivist (Quantitative)	- can provide wide coverage of the range of situations - can be fast and economical - can be of considerable relevance to end-users where statistics are aggregated from large samples - results are easily generalisable	- data collection methods are usually inflexible - not very effective in understanding processes or the significance of the people attached to actions - not very helpful in generating theories - due to the large focus on what is based on what has been, it is hard for end-users to project future changes and actions
Interpretivist (Qualitative)	- data collection techniques are more natural - can adapt to new issues and ideas as they emerge - can understand people's perspectives - can lead to the generation of theories	- data collection can be more tedious and require more resources - analysis and interpretation of data may be more difficult - more difficult to control the pace, progress, and endpoints of the research process - a greater tendency for end-users to give low credibility to results from a qualitative approach - difficult to generalise results

Source: (Easterby-Smith et al., 2012)

1.4.3 Justification for mixed-methods

The rationale for adopting the mixed-methods approach for this study is that both qualitative and quantitative methods can be combined using philosophical assumptions to improve the general rigour of the study (Creswell & Clark, 2017). Accordingly, the mixed-methods approach employs the strengths and weaknesses of both qualitative and quantitative data collection methods by invoking both inductive and deductive reasoning in terms of practical and reconstructive logic to query the same phenomenon (Lewis-Beck, Bryman, & Liao, 2003).

The nature of the thesis topic 'impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on the retention of historical buildings in New Zealand's provincial city centres towards promoting seismic resilience through adaptive reuse', lies within the pluralist paradigm that supports multidisciplinary research through the introduction of realistic processes that can reveal complex, socially construed, psychological, and contextual features (Coombs, 1993). The contextual features of this study align with other well-known mixed-method enquiry modes in similar research fields (Douglas, 2006; Wilkinson & Remøy, 2018).

A research balance is often attained by explaining what phenomenon occurred, why it occurred, and how it occurred. Correspondingly, the objectives of this thesis address the 'what', 'how', and 'why' questions, therefore justifying the adoption of a mixed-methods (qualitative and quantitative) approach (Yin, 2017). Besides, the exploratory form of the research problem also justifies sequential mixed-methods inquiry procedures to provide reliable and valid research findings, hence, improving the overall strength of this thesis through triangulation.

For the first phase (i.e., qualitative phase) of the research methodology, document analysis, key informant electronic interviews, face-to-face interviews, field survey, case studies, integrative literature review, narrative literature review, and focus group workshop are adopted as the instruments of data collection to help achieve RO1 to RO7. The second phase (i.e., quantitative phase) helps to achieve part of the RO5 and RO7. Figure 1.1 summarises the interrelationships that exist between the applied research methods, set objectives, and relevant research publication outputs for this thesis.

1.4.4 Data collection instruments

While developing this thesis, a total of 10 data collection instruments were employed for the entire data collection process (See Figure 1.1). These data collection instruments are described as follows:

1.4.4.1 Document analysis

Document analysis is a systematic form of qualitative investigation that involves the discovery, appraisal and interpretation of facts or trends in existing documents (i.e., could be paper-based computer-based or internet-based) by researchers (Bowen, 2009; Witkin & Altschuld, 1995), in order to develop pragmatic knowledge by eliciting meaning for a deeper understanding of an underlying research problem (Rapley, 2008; Strauss & Corbin, 2008).

Accordingly, documents are capable of providing (Bowen, 2009; Connell, Lynch, & Waring, 2001; Goldstein & Reiboldt, 2004): (i) background information and context; (ii) additional questions to be examined (i.e., during interviews as part of the enquiry); (iii) extra data from supplementary sources; (iv) an avenue for tracking change and growth; and (v) confirmation of discoveries from other information sources.

Notably, the document analysis approach has been chosen to gather data for RO1 and RO4 because it is a cost-effective and time-efficient method of data collection from readily available sources, usually unaffected by the research procedure (Bowen, 2009). Nevertheless, some significant drawbacks in using this approach have been identified to include (Bowen, 2009): (i) insufficient details to address the entire research problem; (ii) difficulty in retrieving the documents; and (iii) possibility of biased selectivity of document sources.

For RO1, the document analysis procedure was achieved through the gathering of historical census data benchmarked with statistics on socio-economic and demographic indicators such as population growth, income status, employee counts from Statistics New Zealand (2018b), and Motu - a New Zealand urban population database (Grimes & Tarrant, 2013). Property prices were extracted from two of New Zealand's popular real estate websites, realestate.co.nz and qv.co.nz websites. The collected data were carefully examined to construct interpretative information based on the characteristics of the collected data. Consequently, substantial themes pertinent to this research's focus were uncovered from the analysis of the highlighted documents.

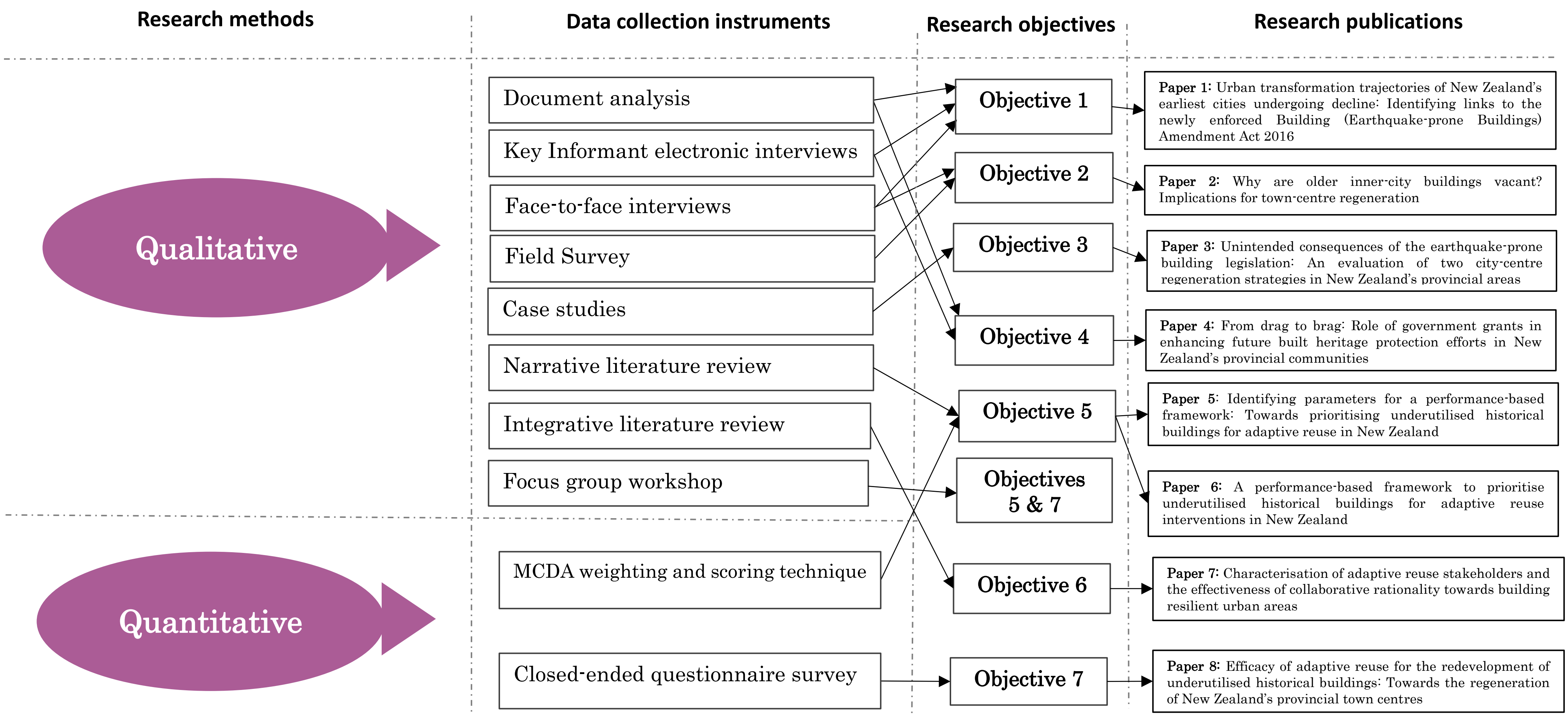


Figure 1.1: Inter-relationships between the applied research methods and set objectives and relevant research publication outputs

Likewise, for RO5, the document analysis procedure was achieved through the extraction of population counts from Statistics New Zealand (Statistics New Zealand, 2018b), and heritage building count sourced from Heritage New Zealand website (Heritage New Zealand, 2019b). Funding information was extracted from the National Heritage Preservation Incentive Fund (NHPIF) and Heritage EQUIP reports (Heritage EQUIP, 2019b; Heritage New Zealand, 2019b). This information was carefully examined and evaluated for interpretative constructs and significant findings.

1.4.4.2 Key informant interviews

The key informant interview technique allows experts (or key informants) well known for their skills and position within an organisation or society, to provide more profound knowledge and insights into what is happening around them, and make relevant inferences about their observations (Marshall, 1996). Accordingly, this technique has been successfully and extensively used in several branches of cultural anthropology, social science, and medical research.

The key informant interview technique was used in this research gather data for RO1 and RO4 mainly because it is an affordable means of gathering significant qualitative data from experts within a short timeframe (Marshall, 1996). Another advantage of using this interview technique is that unanticipated new ideas are likely to emerge. However, the potential shortcomings of using this technique may include bias if the key informants have been wrongly identified and selected, interviewers unintentionally influencing the responses of the informants, and informants divulging only politically accepted information (Marshall, 1996).

For RO1, the purposeful sampling approach was used to select and screen the key informants (n=9) from different professional contexts at the local, regional and national levels, to purposefully inform an insight into the research phenomenon (Chambliss & Schutt, 2018; Creswell & Poth, 2018; Yin, 2017). The selection was made based on their expert knowledge about the research problem, willingness and level of confidence in responding to the interview questions, and official roles in their different organisations (Marshall, 1996). Also, their professional specialities and work backgrounds were specified based on their essential duties, appointment, and primary place of service regarding heritage conservation and urban regeneration in New Zealand at the time of the interview. All the key informants serve in senior roles in their organisations, such as managers, directors, principal advisers, legal advisers, chief planners, and senior administrators. The specific organisations include Heritage New Zealand, Ministry of Culture and Heritage, Ministry of Business, Innovation and Employment (MBIE), Heritage Equip, and National Heritage Preservation Incentive Fund (NHPIF).

The key informants were invited by emails, followed by telephone calls, to arrange a convenient meeting place and time. Those who responded preferred to use the electronic interview method in order to eliminate the need to travel, hence, saving time and money (Bampton & Cowton, 2002). However, the weakness of the electronic interview approach is that it depends on the reliability of the technological device and internet connection used by both interviewers and interviewees (Deakin & Wakefield, 2014). Accordingly, whereas five of the participants preferred to use electronic mediums such as skype and zoom calls, four of them decided to use telephone interviews due to practical reasons. The length of the interviews varied between 45 to 80 minutes.

Furthermore, an interview schedule (See Appendix 1) containing a defined script and outline of open-ended questions relevant to the research focus was developed to moderate the discussion processes and ensure that all questions were answered. The richness of information and quality of ideas varied between the key informants due to their different professional backgrounds. Their emphasis varied from heritage to political, managerial, and financial perspectives regarding historical building conservation and urban regeneration. In order to maintain the consistency, quality, and efficiency of data collected across all interviews, information was compiled through note-taking and audio recording. The thematic analysis was used to develop themes from the notes and transcribed audio recordings (Braun, Clarke, Hayfield, & Terry, 2019). After the seventh interview, thematic saturation was observed as new themes stopped to emerge. However, acceptable interpretative findings were constructed after the ninth interview (Braun et al., 2019).

For RO4, five key informants were selected using the purposeful sampling method (Chambliss & Schutt, 2018; Creswell & Poth, 2018; Yin, 2017). The selected key informants serve in senior positions in their organisations (e.g., chief planner, heritage manager, principal heritage adviser, local council senior officers, and heritage building owner) in Whanganui District Council, Invercargill City Council, Rangitikei District Council. Four interviews were done in person while one was done through telephone due to practical reasons. The duration for each interview varied between 45 to 90 minutes. An interview schedule (see Appendix 2) outlining open-ended questions was used to moderate the discussion process to ensure that all questions were addressed. To maintain the quality, consistency and efficiency of data collected in the different interviews, the interviews were audio-recorded, and notes were taken. Themes were then developed from the audio recorded transcripts and the notes using thematic analysis (Braun et al., 2019). Although new themes stopped emerging after the third interview, adequate interpretative results were constructed after the fifth interview (Braun et al., 2019).

1.4.4.3 Face-to-face interviews

The face-to-face interview is a qualitative data collection method usually conducted with relevant interviewees to gain an in-depth understanding of a research phenomenon under investigation (Kvale, 1983). The face-to-face interview technique was adopted for this research to gather data for RO1 and RO2 mainly because of the following advantages: (i) it allows for a more comprehensive explanation and understanding of the research problem in context; (ii) it is easier to clearly identify and understand facial expressions and body language of the interviewees; (iii) longer interview length since participants are likely to have more committed participation (Schober, 2018). However, face-to-face interviews are prone to biased responses, and the recruitment process of the interviewees is more time consuming (Kvale, 1983). Also, face-to-face interviews can be expensive due to timing and travel costs.

The purposeful sampling approach was used to select participants for the face-to-face to offer in-depth facts about the topics in RO1 and RO2 (Maxwell, 2012). The purposeful sampling approach also allows the contribution of research participants experienced in the subject matter (Babbie, 2013; Easterby-Smith et al., 2012; Neuman, 2014). Accordingly, the interview participants were selected to gather data based on their experience and knowledge regarding the subject under investigation for RO1 and RO2.

For RO2, although 50 interviews were targeted, 20 face-to-face interviews were conducted with the selected participants due to time constraint (i.e., one week). The selected participants include real estate agents (n=3), building owners (n=4), engineers (n=3), property valuers (n=2), architects/town planners (n=4), council officers (n=2), and the local heritage trust representatives (n=2). These stakeholders described their experiences with the identified older buildings in Whanganui's CBD to establish the recognition of the factors contributing to the increasing vacancy rate in the area. An interview schedule outlining open-ended questions was used to moderate the discussion process to ensure that all questions were addressed (see Appendix 3). The interviews were audio-recorded and transcribed, with signed permission from each participant. The duration of each interview was between 45 minutes to one hour. In order to ensure the reliability of the collected data, the transcripts were sent back to the participants for feedback. Additionally, in order to guarantee data validity, notes were taken to support the interview audio recording. Transcripts from the interview process were extracted and analysed using the thematic analysis process, which allowed for the identification of themes in the transcript, and the extraction of consistent patterns from the research results (Braun et al., 2019).

1.4.4.4 Field survey

The field survey was carried out through ***direct observations*** of the exterior and interior features of the city-centre vacant historical buildings in a representative provincial area in New Zealand.

Direct observation (also known as an observational or walk-through study) denotes a structured form of research strategy aimed at gaining a local and intimate familiarity with a community, and their practices through a focused involvement with individuals in their natural setting, over a given timeframe (DeWalt & DeWalt, 2011). These observations allow the observer to define existing situations, making use of the five senses to collect evaluative information to produce a "written image" of the investigated situation, without altering the environment (Erlandson, 1993).

For RO2, the field survey was conducted within a period of about six weeks. The exercise was carried out by walking through the streets of the representative provincial area and carrying out visual observations of vacant historical buildings, and where accessible, each floor spaces of the buildings were internally surveyed. The field survey aimed to generate relevant information on the physical features of the city-centre vacant historical buildings such as aesthetic conditions, carpark access, and disability access, needed to examine the apparent nature and extents of the research problem. To ensure data validity, notes were taken to support the field observation process. The thematic analysis method was used to compile the data generated from the field survey.

1.4.4.5 Case studies

The case studies approach is an empirical data collection method that comprehensively investigates contemporary phenomena (i.e., the "cases") within their real-world context, particularly when the limits between phenomena under investigation and the real-world context may perhaps not be clearly evident (Yin, 2017). The benefits of using case studies for data collection is that researchers are provided with an in-depth understanding of real-world cases, with such understanding assumed to likely involve significant contextual conditions relevant to their cases (Crowe et al., 2011). However, some weaknesses of using the case studies approach for data collection include (Yin, 2017): (i) difficulty in generalising the findings from a single case study; (ii) not rigorous enough for an empirical study; and (iii) outputs are usually very lengthy and may result in huge unreadable documents if not properly managed.

For RO3, the case studies method was adopted to understand and describe the city-centre regeneration (CCR) strategies pursued by two representative provincial areas (Whanganui and Invercargill) in New Zealand and examine their approach to CCR. These two provincial areas have been chosen because of the abundance of underutilised historical buildings in their city centres, and the ongoing socio-economic stagnation and decline in the areas (Aigwi, Phipps, Ingham, & Filippova, 2019). Whanganui and Invercargill were among the first five earliest and most prominent cities in New Zealand (Thorns & Schrader, 2010), and are large urban areas (Statistics New Zealand, 2018b) in the medium seismic hazard zone of New Zealand (MBIE, 2017).

1.4.4.6 Narrative literature review

A narrative literature review is a comprehensive data collection method that critically examines existing knowledge on a research topic, usually done to establish a theoretical focus or context for the topic (Baker, 2016; Green, Johnson, & Adams, 2006; Machi & McEvoy, 2016; Onwuegbuzie & Frels, 2016). Accordingly, the narrative literature review technique is used to summarise the body of literature by drawing conclusions about the topic and identifies gaps or inconsistencies in a body of knowledge.

RO5 focused on identifying relevant parameters required for the development of a performance-based multiple criteria decision-making framework that will prioritise optimal underutilised historical buildings for adaptive reuse interventions while balancing the diverse interests of all stakeholders involved. To achieve this aim, the narrative literature review was conducted to summarise the body of extensive literature on existing adaptive reuse decision-making methodologies by drawing conclusions about the topic and identifying gaps in the body of knowledge. The narrative methodology that was used to gather data for RO5 incorporated systematic searches of the existing literature.

To identify relevant texts, a systematic search was undertaken using several online library databases including ProQuest, Google Scholar, Web of Science, and Scopus to search for keywords such as 'performance-based', 'adaptive reuse', 'decision-making', 'framework', 'historical buildings', 'urban regeneration', and 'parameters'. Only peer-reviewed journals, book chapters and reports published in the English language were included in the search. A total of 94 articles were identified and accessed, and the majority of the research associated with the defined topic under investigation for RO5 led to the development of knowledge gaps. The knowledge gaps identified from the narrative literature review facilitated the formation of parameters that were applicable to the development of the proposed performance-based framework.

1.4.4.7 Integrative literature review

The integrative literature review data collection technique reviews, critiques, and integrates representative literature on a topic in a synthesised manner such that new frameworks and viewpoints on the topic are created (Torraco, 2005).

As a topic develops and the size of its literature expands, there is a consistent growth in the knowledge base of the topic. Accordingly, an integrative literature review of RO6 addresses the necessity for a review, critique, and the potential reconceptualisation of the growing and more diversified knowledge base of the topic as it continues to develop (Bartlett & Bartlett, 2011; Torraco, 2005).

For RO6, the integrative literature review method was undertaken to fully synthesise existing literature on topics relevant to the characterisation of stakeholders involved in an adaptive reuse decision-making process and investigating how their collaborative rationality can be effectively integrated into the decision-making process.

Data were extracted through the use of several online library databases such as ProQuest, Google Scholar, Web of Science, and Scopus to search for keywords. The keywords used in the search for existing literature include ‘collaboration’, ‘adaptive reuse’, ‘decision-making’, and ‘stakeholders’. The reference lists from the identified research articles were used to generate a comprehensive list of literature to review. The research articles were fully read, and a total of 44 studies were retained for the whole research associated with the definition of the topic under investigation for RO6. Specific findings were used to create a conceptual classification of constructs to develop a new framework.

1.4.4.8 Focus group workshop

The focus group workshop is a qualitative data collection approach that allows data to be gathered from a small number of participants through group discussions focused around a specific topic usually defined by the researcher (Morgan, 2002). Focus group workshops may involve a single group of participants gathering on a single occasion, or many groups of participants within a single or repeated gatherings (Wilkinson & Silverman, 2004). The gatherings may entail as few as two, or as much as a dozen or more participants (the standard is usually between four and eight participants per group) (Wilkinson & Silverman, 2004).

A major reason for the vast popularity of the focus group methodology is its flexibility to either be used as a stand-alone qualitative technique or in combination with quantitative techniques such as questionnaire surveys (Kitzinger & Barbour, 1999). Focus group workshops can provide quantitative investigators with a chance to gain from a complementary qualitative approach while essentially staying within the limits of their traditional approach (Morgan, 2002).

The focus group technique was adopted for RO5 and RO7 because of the opportunity it provides to gather beliefs and opinions (i.e., through the closed-ended questionnaire survey), and test assumptions (i.e., through the MCDA weighting and scoring technique) about a phenomenon from experienced participants in a group (Krueger & Casey, 2014).

1.4.4.9 MCDA weighting and scoring technique

The multiple criteria decision assessment (MCDA) weighting and scoring data collection technique is a formalised process used for providing both systematic and transparent outcomes during focus group decision-making processes (Belton & Stewart, 2010). There are typically four significant phases when using the MCDA technique in focus groups (McKenna, Bertsch, Mainzer, & Fichtner, 2018): (i) identifying, understanding and establishing the alternatives and criteria; (ii) defining and eliciting both inter-criteria preferences (scores) and intra-criteria preferences (weightings), and other qualitative information; (iii) ranking best alternative by aggregating the choice functions; and (iv) exploring the sensitivity of optimal outcome with reference to variations of all assessed parameters.

For RO5, the combined analytical hierarchy process (AHP) and Fuzzy-Delphi (FD) MCDA weighting and scoring methods were reviewed for the validation of the performance-based framework because of the complex multi-criteria nature of the adaptive reuse decision-making process. Accordingly, a focus group workshop was conducted with relevant stakeholders, to administer the MCDA performance-based methodology, while exploring and balancing their opinions as a group. The workshop was conducted with relevant stakeholders representing different portfolio and striving for a common goal for RO5. A total of 22 local participants were selected for the workshop. The participant mixture comprised a combination of building owners/developers/users of historical buildings (23.6 per cent), building professionals (18.2 per cent), legal representatives (4.6 per cent), heritage representatives (18.2 per cent), and local government council representatives/community representatives (31.7 per cent).

1.4.4.10 Closed-ended questionnaire survey

The closed-ended questionnaire survey is a quantitative data collection method that enables a respondent to choose an answer from a fixed number of responses alternatives (Lavrakas, 2008). However, a smaller qualitative study (e.g., a focus group workshop) can help to guide data collection in a principally quantitative study (Morgan, 1998). When closed-ended questionnaires are administered in a focus group, the workshop facilitator is expected to present clear instructions on how respondents will complete the closed-ended questions, including all response alternatives to enable each respondent to understand the alternatives and select their choices individually (Krause, 2002). The set of response alternatives that respondents must select from should be exhaustive (i.e., must address rationally possible alternatives for the questions) and mutually exclusive (i.e., no two answers can have similarities in conceptual meaning) (Lavrakas, 2008).

RO7 focused on examining the effectiveness of applying adaptive reuse as a sustainable intervention to retain the underutilised commercial historical buildings in the city-centre of a representative declining provincial area in New Zealand towards promoting seismic resilience and vitality of the area. A focus group workshop was conducted with relevant stakeholders to explore their assumptions, beliefs, and opinions regarding the research topic (Krueger & Casey, 2014). Closed-ended questionnaires were administered to the focus group participants to measure their opinions regarding the efficacy of the adaptive reuse approach. The rationale for administering the closed-ended questionnaires in a focus group workshop is that it is a practically cost-effective way of gathering quantitative data within a short timeframe, and also, the data can be easily quantified with little impact on its reliability and validity (Krause, 2002). The focus group approach also allowed the workshop participants to probe, prompt, and clarify questions with the workshop facilitators.

The purposeful sampling technique was used to choose participants for the focus group workshop, based on their vast knowledge regarding RO7. Purposeful sampling allows research to be carried out in a particular setting where individuals or events are deliberately selected to provide detailed insights on a research focus (Maxwell, 2012). This sampling approach also promotes the involvement of participants who are experienced in the subject matter (Babbie, 2013; Easterby-Smith et al., 2012; Neuman, 2014; Tavakol & Dennick, 2011). The participant mix comprised a combination of structural engineers (n=1), quantity surveyors (n=1), architects (n=1), estate valuers (n=1), building owners/developers (n=6), legal representatives (n=1), heritage representatives (n=4), and local government council representatives (n=7). A total of 22 participants attended the focus group workshop. The administered questionnaires (see Appendix 4) were exclusively completed by all participants in about 45 minutes and returned to the workshop facilitators.

Responses from the questionnaire survey were analysed using the IBM SPSS statistical software. The responses were collated, number-coded and manually inputted into the SPSS spreadsheet with each question number as a column heading and separate rows for each participant's answers. The spreadsheet data was checked for accuracy, and the proportion of participants who selected each response was calculated and displayed on bar charts. To measure the level of internal consistency of all completed questionnaire items, a reliability test was done in SPSS using the Cronbach's alpha technique (Tavakol & Dennick, 2011). Additionally, the Friedman test (Friedman, 1937) was used to check for significant differences in the effect that each perceived questionnaire item under separate priority aspects would have on RO7.

1.5 Ethical considerations

An excellent ethical standard was adhered to in the entire data collection process (i.e., the document analysis, key informant electronic interviews, face-to-face interviews, field survey, case studies, integrative and narrative literature reviews, closed-ended questionnaire survey, and MCDA weighting and scoring technique) for this thesis. This research was evaluated by peer review and assessed to be at low risk by the Massey University Human Ethics Committee. The ethics approval with Notification Number **4000017402** was given in 2017 for three years (see Appendix 5).

Possible ethical issues which may have emerged in the course of this research are most likely unintentional findings as a result of personal viewpoints of the respondents during the data collection. This issue was addressed by advising the respondents to complete the confidentiality agreement contained in the participant information sheet (PIS) and sign the consent forms before the commencement of each data collection process (see Appendices 6 and 7). All collected data were stored in Massey University's premises. The supervisors and researcher were the only authorised persons that were granted limited access to these data.

1.6 Research scope

The research scope covers aspects that are deliberately left out of the scope of the entire thesis investigation and acknowledged as limitations to the research. The research scope includes the geographical coverage, domain of investigation, and unit of analysis and observation.

1.6.1 Geographical coverage

This research covers cities in New Zealand (i.e., North, South, and Chatham Islands), especially those cities that were among New Zealand's earliest cities (Thorns & Schrader, 2010). Additionally, these cities fall into all three seismic hazard areas (i.e., high, medium, or low seismic hazard) (MBIE, 2017). See Figure 1.2 for New Zealand's seismic hazard map.

1.6.2 Domain of investigation

For this research, only commercial historical buildings in New Zealand's city centres are considered. The historical buildings in New Zealand's city centres were typically designed for and are currently used for commercial purposes (Filippova & Noy, 2019; Thorns & Schrader, 2010). Also, following the 2010/2011 Canterbury earthquake sequence in New Zealand, most of the historical buildings that were impacted and showed higher levels of seismic vulnerability in city-centre commercial historical buildings (Dizhur et al., 2011; Ingham & Griffith, 2010).

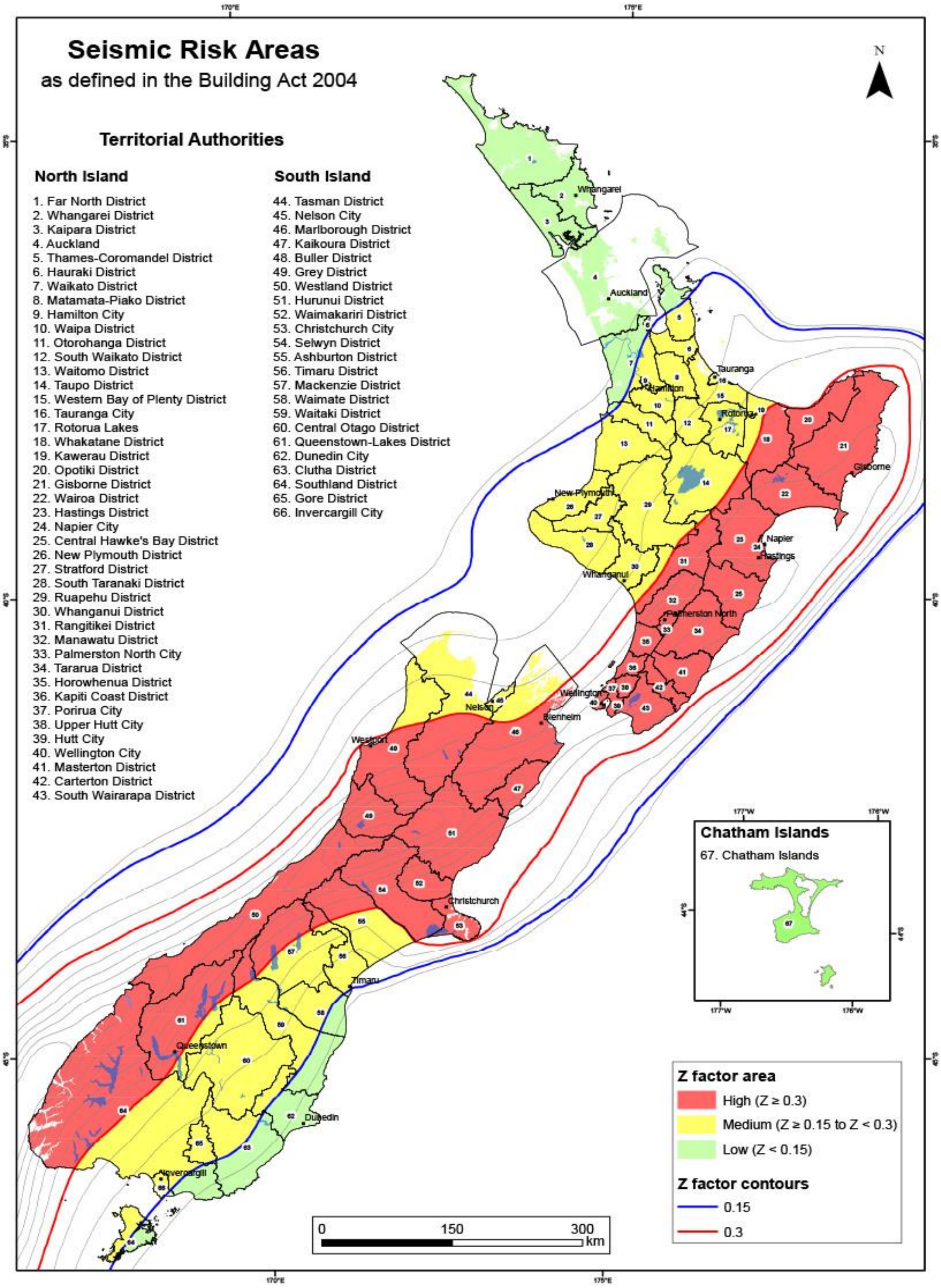


Figure 1.2: New Zealand's seismic hazard map Source: (MBIE, 2017)

1.6.3 Unit of analysis and observation

This research requires analysis of existing documents, key informant and face-to-face interviews, narrative reviews, field surveys, case studies, and focus group workshops (close-ended questionnaires and MCDA techniques) to explore the opinions of all relevant participants directly or indirectly involved with the research topic.

The stakeholders identified for this study are grouped under four categories: (i) Investors (i.e., building owners, funding organisations, government); (ii) Producers (i.e., building professionals); (iii) Regulators (i.e., heritage, health and safety, planning, and building code regulators); and (iv) Users (i.e., members of the community, passers-by, original users such as existing tenants of an adapted historical building's original function, and contextual users such as potential or future tenants of an adapted historical building). Hence, these identified stakeholders, coupled with some archived historical government documents, are adopted as the unit of analysis and observation for this research.

1.7 Research significance

The significance of this thesis is its contribution to practical and theoretical knowledge through its findings in the fields of seismic resilience, historical building retention, and adaptive reuse.

As a practical significance, the performance-based framework developed from this thesis guided a representative provincial area in New Zealand – Whanganui district council, as both a planning and measurement tool to prioritise and retain underutilised earthquake-prone commercial historical buildings in their city-centre for adaptive reuse, while balancing the diverse interests of all relevant stakeholders categorised as users, investors, producers, and regulators. This framework can be transferred to other provincial areas in New Zealand.

Furthermore, findings from this thesis are of relevance to the theoretical body of knowledge as a guide for other researchers who are pursuing closely-related research topics to that of this thesis. So far, the paper publications from this thesis have been cited on Scopus and Google Scholar by over 60 research projects, from different parts of the world including New Zealand, Italy, Canada, Australia, Malaysia, Portugal, Hong Kong, Russia, Lithuania, Egypt, South Korea, Luxembourg, and Saudi Arabia. The diverse research projects include 'the environmental and cost performance of adaptive reuse projects', 'maintenance of heritage buildings', 'BIM strategies for urban regeneration through heritage retention', 'innovative upscaling of architectural elements in strengthening buildings', 'deep renovation of historic buildings', 'prioritising pre-project planning activities', 'earthquake strengthening policy for commercial buildings in small-town New Zealand', 'post-occupancy evaluation of adaptive reuse projects', 'the impact of real estate values and planning choices on urban redevelopment', 'adaptive reuse solution for the hospitality industry', 'criteria selection for adaptive reuse of cultural heritage buildings', 'performance-based planning for spatial equity in sustainable urban drainage systems', 'performance-based planning of complex urban socio-ecological systems', 'choice of integrated interventions on historic buildings', and 'housing preferences for adaptive reuse office and industrial buildings'.

1.8 Thesis outline

This PhD thesis integrates eight papers in total as publication outputs for the seven research objectives. At the time of writing, six papers have been published in peer-reviewed journals, one paper has been published in an international conference proceeding, and one paper is under review in a peer-reviewed journal. Each paper is presented in a chapter format. The title of each chapter is in line with the titles used in the papers. This thesis is organised into the following ten chapters, including the introduction and summary chapters:

Chapter 1 introduces the overall research background and problem statement and defines the research question and objectives, the rationale, the research methodology, ethical considerations, the scope, and significance of the thesis.

Chapter 2 defines urban areas in the New Zealand context, and, describes the historical background of New Zealand's earliest cities by signposting significant historic events faced by these earliest cities. Links to the Building (Earthquake-prone Buildings) Amendment Act, 2016 on the retention of historical buildings, are also examined to identify representative examples of New Zealand's earliest cities currently undergoing a decline, including the fundamental factors that may have contributed to their decline.

Chapter 3 probes into why older inner-city buildings in Whanganui which is one of the representative examples of New Zealand's earliest cities currently undergoing decline are vacant, by evaluating the proportion of totally/partially existing vacant older buildings within the studied area and identifying the underlying factors that contributed to the emergence of the vacant buildings. The highlighted consequences of the prevailing vacancy rate on the studied area provide implications for town centre regeneration and recommendations on how the adaptive reuse approach can be applied as a sustainable intervention to increase the demand for underutilised historical buildings.

Chapter 4 examines the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on two representative examples of New Zealand's earliest cities currently undergoing a decline, by investigating the city-centre regeneration initiatives pursued by the two cities (Whanganui and Invercargill), to understand if the legislation has presented an opportunity for them to either demolish or conserve the abundant underutilised commercial earthquake-prone historical buildings in their city centres.

Chapter 5 examines the role of public funding in promoting the retention of heritage buildings in New Zealand's provincial regions. This investigation is carried out by first evaluating the per capita distribution of heritage buildings for different regions in New Zealand, and then exploring the implications of the allocation of representative government funding sources for the heritage conservation efforts in New Zealand's provincial regions.

Chapter 6 identifies relevant parameters required for the development of a performance-based multiple criteria decision-making framework that will prioritise optimal underutilised commercial earthquake-prone historical buildings for adaptive reuse interventions while balancing the diverse interests of all stakeholders involved.

Chapter 7 validates the performance-based multiple criteria decision assessment framework that can prioritise optimal underutilised commercial earthquake-prone historical buildings for adaptive reuse interventions while balancing the diverse interests of all stakeholders involved.

Chapter 8 characterises the roles of relevant stakeholders involved in an adaptive reuse decision-making process towards city-centre regeneration and ascertain how collaborative rationality can be effectively integrated into the decision-making process to achieve a common goal, ideal speech, consistency, and transparency of the process.

Chapter 9 recognises and explores the key factors that could influence the practicality of the adaptive reuse approach, to endorse sustainable potentials of derelict underutilised commercial earthquake-prone historical buildings in the inner-city of Whanganui which is a representative example of New Zealand's earliest cities currently undergoing a decline, towards promoting seismic resilience and vitality of the area.

Chapter 10 summarises the overall research findings and essential contributions to the theoretical and practical knowledge in the fields of seismic resilience and heritage conservation, with pragmatic implications for policy. Some opportunities for future research are also highlighted.

Chapter 2. Urban transformation trajectories of New Zealand's earliest cities undergoing decline: Identifying links to the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016

This chapter was developed from Publication № 1, *which has been published in final form in the Proceedings of the 43RD AUBEA Conference, 6 – 8 November 2019, Noosa QLD, Australia. Pp 591-611.*

Abstract

Some of New Zealand's earliest cities are not currently experiencing the much growth they had anticipated for due to insufficient population to adequately utilise their building stock. These cities are now featured with a significant proportion of derelict and underutilised historical buildings in their city centres, which may be from the impacts of the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016, henceforth BEPBAA, and other factors. The presence of so many abandoned historical buildings in these areas usually creates a difficult situation for their local authorities to manage immediately, hence, leading to a condition of gradual decline or stagnation in population and economic growth base. This paper sought to identify New Zealand's earliest cities currently experiencing

inner-city shrinkage and examine the links, if any, between the identified shrinking cities and the impacts of the BEPBAA.

The findings from the document analysis revealed Whanganui and Invercargill as two typical provincial urban areas which though were among New Zealand's earliest cities, are currently experiencing a socio-economic decline. Also, findings from the key informant interviews revealed the following factors as impacts of the BEPBAA that may have contributed to promoting the decline of typical provincial areas in New Zealand: (i) pressure on building owners from BEPBAA compliance deadlines; (ii) attitudes of councils in different seismic hazard areas; (iii) risk of future amendment of the BEPBAA; (iv) safety concerns and high seismic retrofit costs; (v) unsophisticated investors in provincial areas; and (vi) lack of actual seismic retrofit cost data sharing.

These findings reflect secure connections between socio-economic and policy-related influences and the population growth trends in New Zealand's urban areas. The implication of these findings could be useful for researchers and policy regulators to have a better understanding of the unintended, intended, and future consequences of how the BEPBAA may have promoted the prevalence of derelict and underutilised historical buildings in the inner cores of typical provincial areas in New Zealand.

2.1 Introduction

With a growth rate of about 1.13 per cent per year, the world population of approximately 7.7 billion people have been estimated to reach 9.7 billion people by

2050 (UN-DESA, 2015; Wilkinson & Osmond, 2018). While the proportion of the urban population is currently estimated at 53.3 per cent, it is anticipated to progress at a faster pace of up to 70 per cent in the next few decades (Tripathi, Mishra, Maurya, Singh, & Wilson, 2019; UN-Habitat, 2013).

Many cities in developed countries have experienced diverse economic and demographic trajectories over the past few decades, with the global urban growth phenomenon being characterised by a sharp contradiction, portraying urban growth as uneven in many circumstances (Adhya, 2017). While bigger cities may have been experiencing substantial economic and population growth, there is usually simultaneous decline, displacement, and devaluation of smaller cities in the same country (Friedrichs, 1993; Wiechmann & Bontje, 2015). Such situations often result in the emergence of shrinking cities with specific challenges and prospects (Adhya, 2017). Some socio-economic factors such as loss of employment prospects, reduced property value, decreasing tax base, and deterioration of infrastructure are closely connected in a downward spiral towards the outmigration of the population of shrinking cities (Adhya, 2017).

“Shrinking cities” could be referred to as urban areas or regions with a population of at least 10,000 people, and have experienced a continuous decline or stagnation in their population, economic and employment trajectories for over two years (Wiechmann & Pallagst, 2012) to 50 years (Reckien & Martinez-Fernandez, 2011). Whereas the focus of urban researchers, policymakers and the media were on inquiries regarding cycles of urban dynamics such as urbanisation, suburbanisation and re-urbanisation several decades ago (Haase, Rink, Grossmann, Bernt, & Mykhnenko, 2014a), it is only recently that inner-city decline and regeneration began to receive the most attention (Martinez-Fernandez et al., 2016; Reckien & Martinez-Fernandez, 2011; Yakubu et al., 2017). Nevertheless, like most planning paradigms centre around urban growth, the primary concerns of government authorities are usually focused on buttressing the image of cities as "growth machines" (Logan & Molotch, 2007). As a result, cities that are experiencing rapid growth are often perceived as admired, desirable and successful, while a kind of stigma that identifies residents as those living in an area with a reduced sense of pride, is placed on shrinking cities (Leo & Anderson, 2006). Hence, shrinking cities in New Zealand have been disparagingly referred to as "zombie cities" by famous economist and media commentator, Shamubeel Eaqub (Aigwi, Egbelakin, et al., 2019; National Business Review, 2014).

In New Zealand, a majority of the population have been living in towns and cities since the early 19th century, and as at 2014, 86 per cent of New Zealanders were living in urban areas (Schrader, 2016). The growing city life across New Zealand's earliest urban areas stimulated commercial interactions and formation of purposeful socio-cultural clusters for people of like minds in city centres, hence, city centres became the highpoint of Western civilisation (Thorns & Schrader, 2010). Most of New Zealand's earliest cities prospered at some point over the years, and their anticipation for future growth led to a massive investment in the built environment during their early existence. Besides, the inner cores of these ancient cities were characterised with buildings of different architectural styles that reflected socio-cultural inclination for distinctiveness at that time (Schrader, 2016). As a result, these buildings are now categorised as historical buildings, of which some of them have significant heritage values. These heritage values include the conservation of the history and narration of a city's existence, sustenance of the architectural history, collective cultural identity and significance of a place, and, increased sense of belonging and attachment to a place (Aigwi, Egbelakin, & Ingham, 2018).

For some of New Zealand's earliest cities, the growth that they had anticipated for occurred, while for others, that expected growth did not happen. Accordingly, some of these earliest cities not currently experiencing the much growth they had anticipated for due to insufficient population to adequately utilise their building stock, are now featured with a significant proportion of derelict and underutilised historical buildings in their city centres (Yakubu et al., 2017). Most of these historical buildings are being threatened by obsolescence factors (Langston, 2011), building regulations, poor building conditions, and socio-economic factors. Hence, these factors have been found to influence the high presence of underutilised historical buildings in the inner-cities of New Zealand's provincial areas (Yakubu et al., 2017). As a consequence, these cities begin to experience shrinkage (Martinez-Fernandez, Audirac, Fol, & Cunningham-Sabot, 2012; Pallagst, 2008). The characteristics of cities experiencing shrinkage could, therefore, be viewed as a significant global politico-economic and planning problem.

Besides, lessons from the 2010/2011 Canterbury seismic events and the risk of further earthquake occurrences in New Zealand highlighted the vulnerability of historical buildings and the significance of their resilience to earthquakes (Russell & Ingham, 2010). Consequently, historical buildings are classified as potentially earthquake-prone buildings (EPBs) because they are mostly unreinforced masonry buildings (URM) which typically have a low resistance to the impacts of earthquakes (Ingham & Griffith, 2010). Local authorities in New Zealand have been mandated to adopt legislative approaches for the identification and assessment of earthquake-prone buildings within specified timeframes (MBIE, 2016a). Hence, the local authorities are mandated to use the BEPBAA to compel building owners into seismically upgrading their historical buildings to promote safety for users. Otherwise, the building owners will lose their buildings to demolition when the given timeframes specific to their seismic hazard area elapses.

While most owners of potentially earthquake-prone historical buildings may be uncertain about the cost-benefit implications of investing in the seismic upgrade of their building, they may tend to wait for the specified legislative timeframes to elapse, and in worst cases may eventually abandon their buildings (Beauregard, 2013). The presence of so many abandoned historical buildings in the inner cities of New Zealand's provincial areas then creates a difficult situation for their local authorities to manage immediately, hence leading to a situation of gradual decline or stagnation in population and economic growth bases. Some of these affected provincial areas are among New Zealand's earliest cities which are now characterised with significant collections of underutilised historical buildings.

It is within these above circumstances that this paper addresses the objectives of (i) identifying provincial cities among New Zealand's earliest cities currently experiencing inner-city shrinkage; and (ii) examining if there are links between the identified shrinking cities and impacts of the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016. The research design involves the primary citations of the research background, review of extant literature to justify the underlying research problems, materials and data collection method, results and analysis of findings, discussion and implication of findings, and conclusion.

2.2 Defining urban areas in the New Zealand context

From the perspective of urban morphology, urban areas emerge from the urbanisation of a place and are generally categorised into suburbs, towns, cities or metropolis (McGranahan & Satterthwaite, 2014). A metropolis is a region that consists of a densely populated urban core consisting of housing, infrastructure and industry, that is shared with other satellite territories with a lesser population (Squires, 2002). The urban cores of metropolitan areas are typically connected to these satellite territories through socio-economic ties such as employment, edification, and entertainment, measured through indicators such as commuting patterns.

Although the term 'urban area' could be used as a substitute name for 'town' or 'city' in some instances, it could also be distinguished from a town or city based on either population size or economic character. New Zealand's urban areas are defined without the basis of administrative subdivisions, or legal existence. According to the SSGA18 (New Zealand's official statistical standard for geographic areas 2018), which replaced the existing NZSAC92 (New Zealand's standard areas classification 1992), New Zealand's urban areas are ranked into four categories (i.e., seven major, 13 large, 22 medium and 91 small urban areas) by population size (Statistics New Zealand, 2017b).

Additionally, Statistics New Zealand defines a town as an area with a population ranging between 1,000 – 20,000 people, administered as built-up areas of districts (Statistics New Zealand, 2018b). New Zealand towns differ significantly in size and significance. There are five types of towns in New Zealand, which are categorised based on the kind of industry predominant to an area (Thorns & Schrader, 2010):

1. Market towns – were laid out to service their farming hinterlands (e.g., Timaru, Masterton, Oamaru, etc.);
2. Milling and mining towns - emerged due to their proximity to natural resources such as timber and gum (e.g., Dargaville), coal (e.g., Brunner), and gold (e.g., Dunedin);
3. Port towns – were developed as shipping and fishing centres (e.g., Whanganui, Oamaru and Riverton);
4. Military towns – were created as military bases for soldiers during the New Zealand Wars (e.g., Pātea, Hamilton, etc.); and
5. Construction towns – were developed as construction bases for significant infrastructure projects going on in New Zealand during the early 19th century (e.g., Ōhakune, Mangakino, Twizel, etc.).

2.2.1 Setting the Scene: historical background of New Zealand's earliest cities

The prominent factors that influenced the advancement of New Zealand's towns into the earliest cities encompass their aptitude to attract industry, commerce, and government, by building strong transportation links and dominating their hinterlands (Thorns & Schrader, 2010). Towns that effectively applied these highlighted factors to their benefit developed to become cities. In the early 1870s, the first five cities to emerge in New Zealand were Christchurch, Nelson, Auckland, Wellington and Dunedin. Whereas Christchurch and Nelson were formed by patent letters (i.e., a practice under the British law where towns could be designated as cities if they became the seat of a bishop), Auckland, Wellington and Dunedin were conferred as cities by their provincial authorities (Thorns & Schrader, 2010). By 1886, the Municipal Corporations Act introduced a population threshold of 20,000 people for towns to become cities in New Zealand (Statistics New Zealand, 2017b). Moreover, while these ancient cities (except Nelson) had enough development influence to dominate their immediate hinterlands (e.g., Christchurch over Timaru; Auckland over Hamilton), none of them had sufficient power to dominate each other (Thorns & Schrader, 2010).

About 50 years after the proclamation of the first five New Zealand cities, Whanganui, Hamilton and Invercargill became the next early cities after passing the 20,000-population threshold from the 1926 census data (Grimes & Tarrant, 2013). By the 1956 census, other early towns such as Palmerston North, Hastings, New Plymouth, Napier, Timaru, Gisborne and Nelson also became cities following the 20,000-population benchmark (Grimes & Tarrant, 2013). As the population threshold for city status was increased to 50,000 in 1989, some places such as Whanganui and Gisborne that had populations greater than 30,000 people were left as 'large urban centres' just for official purposes (Thorns & Schrader, 2010). These newer designated cities were called regional (or provincial) cities and their growth portrayed a typical urbanised society and rising preference for city life in New Zealand.

The key factors that facilitated the growth of New Zealanders living in cities in some areas include (Thorns & Schrader, 2010): (i) the rapid growth of dairy and sheep farming in New Zealand's South Island developed Invercargill from a market town into a city; (ii) the growth of Wattie's canning operations and two other freezing operations significantly developed the commerce and industry sector of Hastings; and (iii) the strong national and regional transportation links of Palmerston North made new industries to be attracted to the place.

2.2.2 Signposting significant historical events faced by New Zealand's earliest cities

New Zealand was discovered by Māori ancestors from East Polynesia in the late 13th century as the world's last habitable landmass (Wilson, 2005). Although the Europeans originally became aware of the existence of New Zealand in 1642, the initial European settlers began to arrive from Sydney in large-scale sometime around the 1840s (Wilson, 2005). The whalers and sealers started visiting New Zealand during the late 19th century, of which some decided to settle for cultivation in the early 20th century (Wilson, 2005). New Zealand became part of the greater Pacific trade system during these periods, with goods sold to other nations like China.

At Waitangi on February 6th 1840, New Zealand's first governor, William Hobson, invited over 500 Māori chiefs around the country to sign a treaty with the British Crown (Wilson, 2005). The treaty ceded the sovereignty and rights of the Māori people to the British Crown in exchange for a guaranteed control over the rights, lands and treasures of British subjects. Besides, before the signing of the treaty, Edward Wakefield, who was a colonial promoter of the New Zealand Company, had already started dispatching British settlers to Wellington (Wilson, 2005).

The gold rush in New Zealand was triggered by the discovery of gold in Otago and the West Coast in the early1860's, which led to the vast influx of gold miners to those areas. Gold was then discovered six years later at the Thames, and this discovery boosted the growth of Auckland (Wilson, 2005). Also, sheep farming in the grasslands of South Island around 1861 led to a substantial investment in wool by European settlers, which made Canterbury become the wealthiest New Zealand province at that time (Wilson, 2005).

When wool prices and the production of gold fell, a new twist to the growth of New Zealand's urban areas was introduced by Julius Vogel, the colonial treasurer, in 1870, by proposing a public works loans-funded initiative (Wilson, 2005). Vogel's initiative also included assisted immigration programmes and the construction of railways. Evidence from the 1871 non-Māori census data showed a dramatic increase in the growth of New Zealand's major urban areas following investment in Vogel's initiatives (Statistics New Zealand, 2017b).

Furthermore, a prolonged economic depression which lasted till the late 1880s hit major New Zealand's urban areas following Vogel's loans-funded initiative, causing prices of farm products to slump, despite a brief boom in wheat farming (Wilson, 2005). Accordingly, the demand for land also dropped and difficult times contributed to reduced industrial labour and massive urban unemployment, causing a mass emigration of people from New Zealand's major urban areas, majorly to Australia.

However, New Zealand's frozen-meat industry anticipated future economic prosperity for some of its urban areas such as Hastings and Pātea in the heat of the economic depression, when frozen meat was successfully shipped to England in 1882 for the first time (Wilson, 2005). It also became possible to export chilled cheese and butter after addressing initial hindrances in refrigerated shipping, making the economy of New Zealand's urban areas to flourish again till the late 1920s. Following some prosperous years from the frozen meat shipping boom, a global 'Great Depression' struck New Zealand so hard that export prices fell drastically (Wilson, 2005). As farmers began to face difficulties in paying for their mortgages, urban unemployment began to soar.

The 7.8 M_s (7.7 M_w) Hawkes Bay earthquake hit the main urban area of Napier, New Zealand in 1931, killing 256 people and causing a widespread of devastation to Napier's built environment (Ingham & Griffith, 2010). The 1931 Hawke's Bay seismic event was considered New Zealand's worst natural disaster, and this prompted an in-depth review of New Zealand's building codes which were assessed as entirely inadequate at that time (Dowrick, 1998). Between the 1930s to 1940s, the rebuilding of the Hawke's Bay region with the first revised building codes contributed to the construction of Spanish Mission and Art Deco style buildings which were perceived as cheap, safe and fashionable (Willson & McIntosh, 2007). In 1936, the Reserve bank funded significant public works, including state housing initiatives, leading to investment in the built environment of New Zealand's major and large urban areas.

Post-World War II, majority of New Zealand's main urban areas [i.e., major and large urban areas (Statistics New Zealand, 2017b)], started experiencing a large influx of people from neighbouring hinterlands to main urban areas. This vast migration became fortified by innovations in the transportation sector during the mid-20th century (Pool, 2013a). Also, there was substantial growth in the population of main urban areas in all directions following the construction of the motorway system and the corresponding reduced cost of intra-urban transportation (Gunder, 2002). Private cars also became popular during the mid-20th century and were utilised by the hinterland population to commute to main urban areas (Burayidi, 2013b).

The first and second oil crises hit New Zealand in 1975 and 1978 respectively and increased the rates of unemployment and inflation in the economy of urban areas across the country leading to the floating of the New Zealand Dollar (Decker & McCracken, 2018). Accordingly, most export-led industries (i.e., whether fishing, farming, or forestry) that enabled economic growth and job opportunities in New Zealand's main urban areas suffered significant losses. Nevertheless, by the early 1980s, New Zealand diversified its export trade and other investment reforms in the educational sector, and new sets of migrants were attracted into the country mainly from Britain and China (Openshaw, Lee, & Lee, 1993).

In 2008, New Zealand was one of many other countries that were affected by the global economic recession, during which domestic spending in most urban areas was dented by high costs of living and stricter credit conditions (Ball, 2014). As New Zealand's Gross Domestic Product (GDP) shrank by 0.2 per cent, housing statistics fell by 20 per cent, which suggests a decline in economic growth and construction activities in most urban areas during the recession period (Hall & McDermott, 2016). New Zealand's economy recovered from the recession with a GDP report showing growth by 0.1 per cent during the first quarter of 2009, and 4.4 per cent during the second quarter (Wall Street Journal, 2009). However, this nascent recovery lost some momentum and was set back by disruptions and damages from the 2010/2011 Canterbury earthquake events. There was a recorded negative average growth rate of 1.4 per cent in most urban areas for the first six months following the earthquakes, which was then regained in the third year of recovery by 2.5 per cent (Hall & McDermott, 2016).

As a pragmatic regulatory mechanism put in place by the New Zealand Government to promote seismic resilience during earthquakes, owners of earthquake-prone buildings (EPB) are mandated through the BEPBAA to strengthen their buildings to a minimum requirement of 34 per cent NBS rating within a specified timeframe, otherwise, the buildings will be demolished (MBIE, 2016a). With the inclusion of all pre-1976 buildings, other buildings are also assessed as potentially earthquake-prone in New Zealand when they score less than one-third of the New Building Standard (NBS) rating after a detailed seismic assessment has been conducted on it by certified structural engineers (NZSEE, 2017).

2.2.3 Impacts of the BEPBAA on the retention of historical buildings and declining urban areas in New Zealand

A combination of building regulatory and legislative frameworks form an effective performance system for the regulation of building performance in New Zealand.

Whereas the building act 2004 (MBIE, 2004) specifies a legislative framework which governs the overall building works in New Zealand, the building code specifies the minimum performance requirements that all building works must satisfy (e.g., requirements for fire safety, stability, user safety, energy efficiency, services and facilities, and access) (MBIE, 2016c). Accordingly, building regulations provide details for specific building controls such as prescribed forms, fees and infringement levies, definitions of 'moderate earthquake' and 'change of use' (MBIE, 2016c).

The BEPBAA provides a legislative framework that governs the seismic retrofit works for new buildings, and the identification and strengthening of existing earthquake-prone buildings (MBIE, 2016a). Since the first-ever building seismic code introduced in 1933 after the 1931 Hawke's Bay earthquake in Napier, it has been improved over the years with lessons from building performance-based experiences gained from past earthquake disasters (MBIE, 2016a). However, a majority of historical buildings in the cores of most New Zealand main urban areas have been assessed as earthquake-prone (Cattanach, Alley, & Thornton, 2008).

According to the BEPBAA, an earthquake-prone building (EPB) is defined as a building or part that has the potential to collapse when its ultimate capacity is surpassed in the event of a moderate earthquake, and would probably injure or kill people in or near the building, or destroy other nearby properties (MBIE, 2016a). Besides, pre-1976 buildings are classified as potentially EPBs because they are mostly unreinforced masonry buildings (URM) (Russell & Ingham, 2010). A seismic vulnerability study revealed that 35 per cent of New Zealand's URM building stock is potentially EPBs due to their underperformance during earthquakes from the inadequate seismic strength of their construction materials (Ingham & Griffith, 2010). Another seismic vulnerability study with a focus on Wellington which is a major urban area in New Zealand at the forefront of seismic hazard mitigation, found that 52 per cent of Wellington's overall building stock was assessed as potentially earthquake-prone (Stevens & Wheeler, 2008), with 92 per cent of the EPBs being URMs (Bothara, Jury, Wheeler, & Stevens, 2008).

Although earthquake risks of historical buildings could be mitigated through compliance to seismic regulatory specifications, the seismic retrofit cost and other redevelopment costs to satisfy other building code requirements such as fire safety, disability access, indoor air quality, etc., are borne by building owners/investors (Aigwi, Egbelakin, et al., 2019). As most owners of inner-city historical EPBs may be unsure of the returns on investment in the strengthening and redevelopment process, they tend to abandon these buildings for demolition and relocate to suburban areas (Yakubu et al., 2017). The potential choice of historical building owners abandoning their EPBs for demolition could eventually result in changing previously vibrant urban city centres into unattractive places (Martinez-Fernandez et al., 2012). Consequently, demolition could negatively influence the economic and social vibrancy of an immediate locality, thereby causing city-centre shrinkage (Wiechmann & Pallagst, 2012; Yakubu et al., 2017). Some detrimental impacts of city-centre shrinkage include loss of income from tourism; reduced tenancy; demolition of a significant proportion of the inner-city building stock; economic and population decline; reduced rateable income, and; loss of amenity and employment opportunities (Colvin, Fergusson, & Phillips, 2000; Schilling & Friedman, 2002). With the existence of these negative impacts, a vicious loop that raises the chances of residents relocating out of a declining urban area is created (Friedrichs, 1993; Lang, 2000).

2.2.4 The transformation trajectories of shrinking cities

The transformation trajectories of shrinking cities are observed from past studies. Hoyt (1939) examined the continuous socio-economic decline in the growth of some American urban areas using the urban transformation life-cycle approach. The findings from the study justified the evolution of the investigated urban areas towards decline, as a direct link to the devaluation of existing derelict buildings in the inner-cities (Adams, 2005; Lang, 2000). Another study found that the growth and decline of European urban centres usually followed a regular order of development stages (Hall & Hay, 1980).

Based on the finding from Hall and Hay (1980), Van den Berg, Drewett, Klaasen, Rossi, and Vijverberg (1982) developed an urban evolution theory which categorised the development of urban areas into four sequential stages (i.e., urbanisation, sub-urbanisation, de-urbanisation, and re-urbanisation). The urban evolution theory is linked to neoclassical economics, which reflects decline as an inevitable phenomenon caused by a sequence of economic triggers (Sassen, 2018). Nonetheless, other studies have argued that transformation trajectories cannot be restricted to a single urban evolution model because of the diverse and complex nature of urban areas (Buzar et al., 2007; Cheshire & Hay, 1989).

2.3 Methodology

This paper focuses on identifying provincial cities among New Zealand's earliest cities currently experiencing inner-city shrinkage and examining if there are links between the identified shrinking cities and impacts of the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016.

2.3.1 Data collection

The qualitative research method comprising of two stages: (i) document analysis; and (ii) key informant interviews; is adopted for this study to establish a pragmatic consensus between the focus of this study and reviewed literature. Application of these data collection tactics permits a comprehensive investigation into the current urban socio-economic growth trends in New Zealand's provincial cities.

2.3.1.1 Document analysis

An analysis of relevant existing document was done to examine the stated research objectives. Document analysis is a systematic form of qualitative investigation that involves the discovery, appraisal and interpretation of facts or trends in existing documents (i.e., could be paper-based computer-based or internet-based) by researchers (Bowen, 2009; Witkin & Altschuld, 1995), in order to develop pragmatic knowledge by eliciting meaning for a deeper understanding of an underlying research problem (Rapley, 2008; Strauss & Corbin, 2008). Accordingly, documents are capable of providing (Bowen, 2009; Connell et al., 2001; Goldstein & Reiboldt, 2004): (i) background information and context; (ii) additional questions to be examined (i.e., during interviews as part of the enquiry);

(iii) extra data from supplementary sources; (iv) an avenue for tracking change and growth; and (v) confirmation of discoveries from other information sources.

Notably, the document analysis approach has been chosen as one of the enquiry modes for this study because it is a cost-effective and time-efficient method of data collection from readily available sources, usually unaffected by the research procedure (Bowen, 2009). Nevertheless, some significant drawbacks in using this approach have been identified to include (Bowen, 2009): (i) insufficient details to address the entire research problem; (ii) difficulty in retrieving the documents; and (iii) possibility of biased selectivity of document sources.

In the course of this study, the document analysis procedure was achieved through the gathering of historical census data benchmarked with statistics on socio-economic and demographic indicators such as population growth, income status, employee counts from (Statistics New Zealand, 2018b), and Motu - a New Zealand urban population database (Grimes & Tarrant, 2013). Property prices were extracted from two of New Zealand's popular real estate websites, *realestate.co.nz* and *qv.co.nz* websites. The collected data were carefully examined to construct interpretative information based on the characteristics of the collected data. Consequently, substantial themes pertinent to this research's focus were uncovered from the analysis of the highlighted documents.

2.3.1.2 Key informant interviews

Following the process of document analysis, key informant interviews were conducted as a follow-up enquiry to examine if there are links between the identified shrinking cities and impacts of the newly enforced Building

(Earthquake-prone Buildings) Amendment Act 2016. The key informant interview technique allows experts (or key informants) well known for their skills and position within an organisation or society, to provide more profound knowledge and insights into what is happening around them, and make relevant inferences about their observations (Marshall, 1996). Accordingly, this technique has been successfully and extensively used in several branches of cultural anthropology, social science, and medical research. The key informant interview technique was used in this research mainly because it is an affordable means of gathering quality data from experts within a short timeframe (Marshall, 1996). Another advantage of using this interview technique is that unanticipated new ideas are likely to emerge. However, the potential shortcomings of using this technique may include; bias if the key informants have been wrongly identified and selected, interviewers unintentionally influencing the responses of the informants, and informants divulging only politically accepted information (Marshall, 1996).

The purposeful sampling approach was used to select and screen the key informants (n=9) from different professional contexts at the local, regional and national levels, to purposefully inform an insight into the research phenomenon (Chambliss & Schutt, 2018; Creswell & Poth, 2018; Yin, 2017). The selection was made based on their expert knowledge about the research problem, willingness and level of confidence in responding to the interview questions, and official roles in their different organisations (Marshall, 1996). Also, their professional specialities and work backgrounds were specified based on their essential duties, appointment, and primary place of service regarding heritage conservation and urban regeneration in New Zealand at the time of the interview. The selected key informants serve in senior positions in their organisations (e.g., chief planner – Heritage New Zealand, heritage manager – Ministry of Culture and Heritage, principal heritage adviser – HeritageEquip, Private heritage conservationist - Invercargill, Dunedin City Council senior heritage officer, and heritage building owners).

The key informants were invited by emails, followed by telephone calls, to arrange a convenient meeting place and time. Those who responded preferred to use the e-interview method in order to eliminate the need to travel, hence, saving time and money (Bampton & Cowton, 2002). However, the weakness of the e-interview approach is that it depends on the reliability of the technological device and internet connection used by both interviewers and interviewees (Deakin & Wakefield, 2014). Accordingly, whereas five of the participants preferred to use electronic mediums such as skype and zoom calls, four of them decided to use telephone interviews due to practical reasons. The length of the interviews varied between 45 to 80 minutes.

Furthermore, an interview schedule containing a defined script and outline of open-ended questions relevant to the research focus was developed to moderate the discussion processes by ensuring that all questions were answered. The richness of information and quality of ideas varied between the key informants due to their different professional backgrounds. Their emphasis varied from heritage to political, managerial, and financial perspectives regarding historical building conservation and urban regeneration. In order to maintain the consistency, quality, and efficiency of data collected across all interviews, information was compiled through note-taking and audio recording. The thematic analysis was used to develop themes from the notes and transcribed audio recordings (Braun et al., 2019). After the seventh interview, thematic saturation was observed as new themes stopped to emerge. However, acceptable interpretative findings were constructed after the ninth interview (Braun et al., 2019).

2.4 Results and analysis of findings

An overview of the data gathered from the analysis of relevant existing documents and key informant interviews is provided to demonstrate the depth and breadth of useful information obtained.

2.4.1 Identification of provincial cities among New Zealand's earliest cities currently undergoing decline

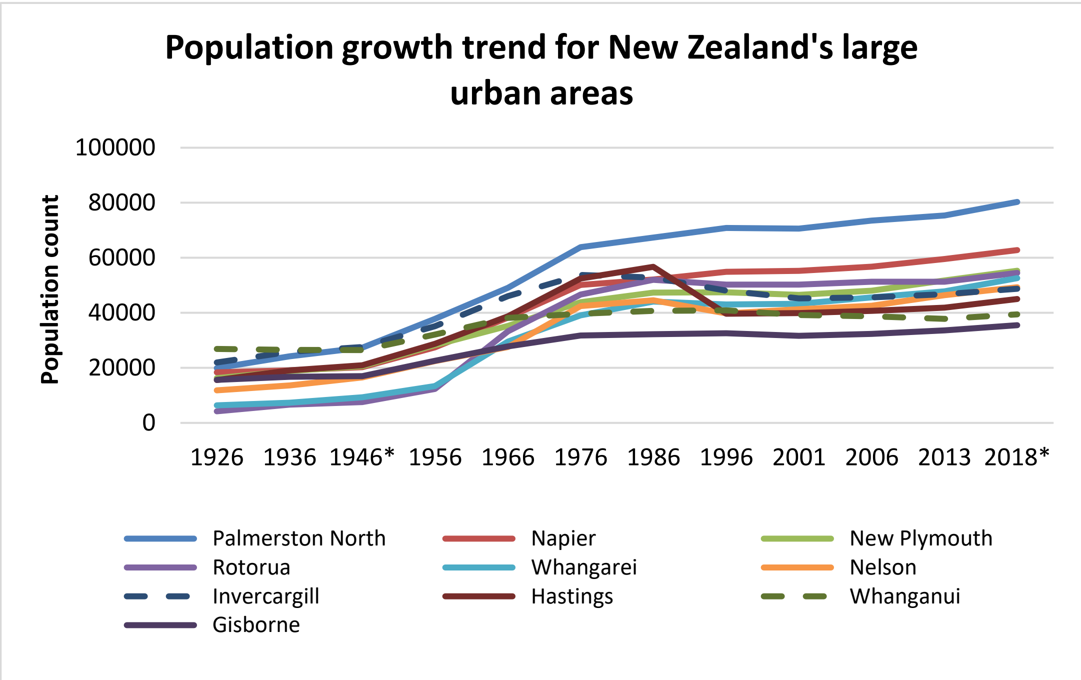
To identify provincial cities among New Zealand's earliest cities currently experiencing shrinkage, the following socio-economic and demographic statistics have been extracted from document analysis benchmarked with statistics on socio-economic and demographic indicators such as population growth, income status, employee counts.

2.4.1.1 Population growth trend for New Zealand's large urban areas

The population data were extracted from relevant existing documents to monitor the population growth trend for New Zealand's large urban areas. The historical population data for 1926, 1936, 1946, 1956, 1966, 1976, and 1986 are extracted from Motu (Grimes & Tarrant, 2013), while that for 1996, 2001, 2006, 2013, and 2018 is gotten from Statistics New Zealand website (Statistics New Zealand, 2018b). From the total 13 large urban areas, three have been excluded due to their split from major urban areas. These excluded areas are Hibiscus Coast (split from Auckland), Upper Hutt and Porirua (split from Wellington).

Given the use of population statistics as a measurement indicator for prosperous urban areas in New Zealand, it could be noticed from Figure 2.1 that while some areas are experiencing a significant population increase, others are experiencing population stagnation or decline. Accordingly, it could be observed that three of New Zealand's earliest cities (i.e., Whanganui, Invercargill, and Palmerston North) started with higher population counts during the 1926 census. However, over the years till 2018, while Palmerston North experienced a significant increase in population growth, Whanganui and Invercargill have been observed to have experienced population stagnancy and decline at different stages in time. The gradual decline in the population growth of Whanganui and Invercargill over the years have now placed them among the last four large urban areas in New Zealand. Hence, these two large urban areas are examined closely in order to understand the circumstances that may have triggered their decline over the years.

Whanganui first experienced a gradual decline in population growth between 1926 and 1936, which coincides with the period of "great depression" that hit New Zealand in the late 1920s. Since Whanganui was a famous port town in New Zealand at that time, the drastic fall in export prices created unemployment and hard times for farmers (Wilson, 2005). Consequently, most of the population started relocating to Palmerston North which was the nearest metropolitan area that had a booming agricultural college. Next, the Whanganui flooding event that occurred in February 1940 after an episode of heavy rains caused the Whanganui river banks to collapse. Most of the low-lying areas of Whanganui city were water-logged, creating another challenging time for both motorist and pedestrians (McSaveney, 2006). This flooding catastrophe experienced by the Whanganui area justifies a further decline in its population growth between 1936 and 1946.



* 1946 population data is from the 1945 census; * 2018 population data is estimated

Figure 2.1: Population growth trend for New Zealand's large urban areas

Source: (Grimes & Tarrant, 2013; Statistics New Zealand, 2018b)

Most of the major and large urban areas in New Zealand experienced a significant rise in population between 1946 and early 1970s. This population boom was mainly due to the massive influx of people from neighbouring hinterlands to metropolitan areas. Innovations in the transportation sector (Pool, 2013a), construction of motorways (Gunder, 2002), and popularity of private cars (Burayidi, 2013b), have been identified as the factors that promoted this change.

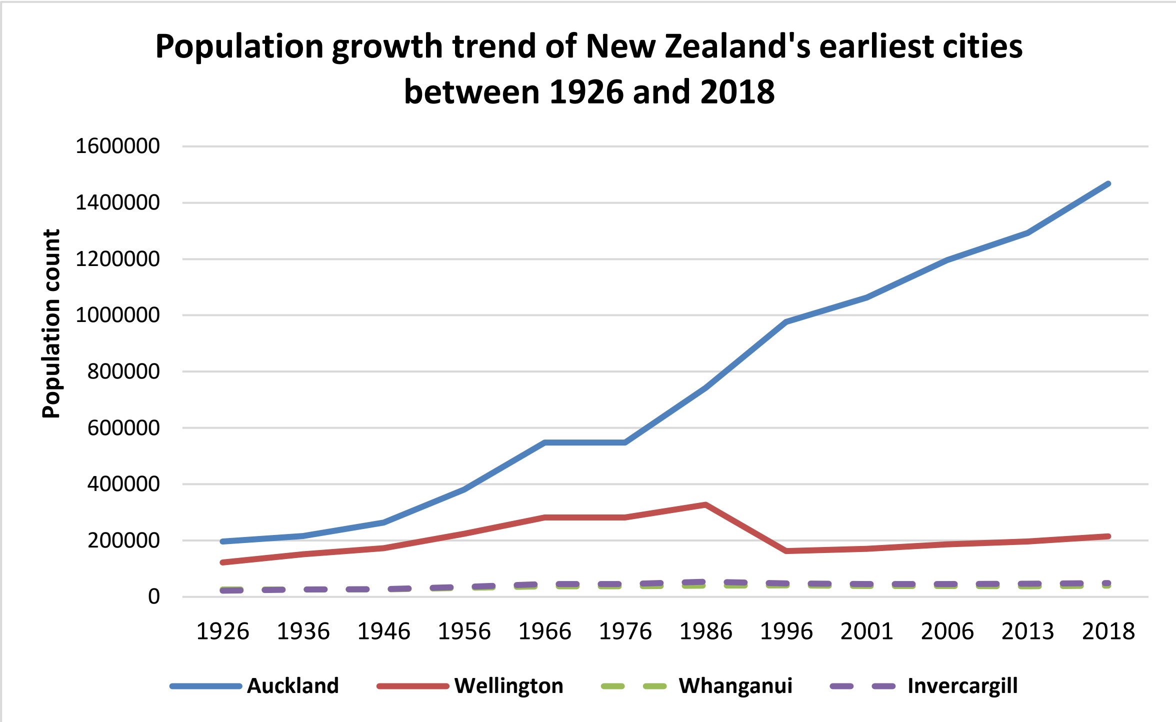
However, between 1976 and 1986, both major and large urban areas experienced a gradual decline in their population growth due to the first and second oil crises. The floating of New Zealand's dollar in 1985 justifies this decline in population growth (Decker & McCracken, 2018). Consequently, Whanganui and Invercargill experienced a massive decline in the number of available jobs, which led to an increase in foreclosures, unemployment, and out-migration from these areas.

A further decline in the population of Whanganui and Invercargill occurred between 2006 and 2013, which could be attributed to the 2011/2012 Canterbury earthquake sequences, and the introduction of the earthquake-prone building legislation to mitigate the impacts of earthquake-prone buildings to its users during earthquakes. However, the uncertainty in the cost-benefit implications of investing in seismic strengthening of the earthquake-prone historical buildings in the inner cores of these two city centres encouraged a mass emigration out of these areas to other bigger cities (Yakubu et al., 2017). The gradual growth in the population of Whanganui and Invercargill between 2013 and 2019 could be attributed to some community-mobilised initiatives organised by these local councils in a quest to regenerate the urban areas.

2.4.1.2 Comparing the population growth trend of New Zealand's major cities with typical provincial areas

A comparison between the population growth trend of the two identified large urban areas in decline from Figure 2.2 (i.e., Whanganui and Invercargill) with two major urban areas (i.e., Auckland and Wellington) is done to examine how these five New Zealand's earliest cities have grown differently in population size.

Accordingly, Figure 2.2 shows that whereas Auckland and Wellington have experienced steady population growth over the years, Whanganui and Invercargill are typical provincial areas observed to be experiencing an overlapping decline.



* 1946 population data is from the 1945 census; * 2018 population data is estimated; *Wellington includes Upper Hutt and Porirua

Figure 2.2: Population growth trend of New Zealand's earliest towns

Source: (Grimes & Tarrant, 2013; Statistics New Zealand, 2018b)

Provincial areas become less vibrant when specific industries move out to bigger cities, and the majority of the younger population move with such industries. The significant low proportion of the younger population in Whanganui and Invercargill may have resulted in the economic decline being experienced in these areas because the ageing population do not have enough flexibility to adapt and take advantage of demographic shifts from population decline (Jackson, Brabyn, Maré, Cameron, & Pool, 2019).

2.4.1.3 Income status and employee growth count

The income status of an urban area and the distribution pattern of its employee growth is usually connected to the level of economic development within the area's socio-economic structure (Cameron & Muellbauer, 2001; Centre for Rural Studies, 2002). Figure 2.3 shows that Auckland experienced a sharp increase in the distribution pattern of its total personal income status for the employed between 2006 and 2013. A gradual increase is also observed for Wellington. On the contrary, Whanganui and Invercargill are observed to have experienced a gradual decline in their income status between 2006 and 2013.

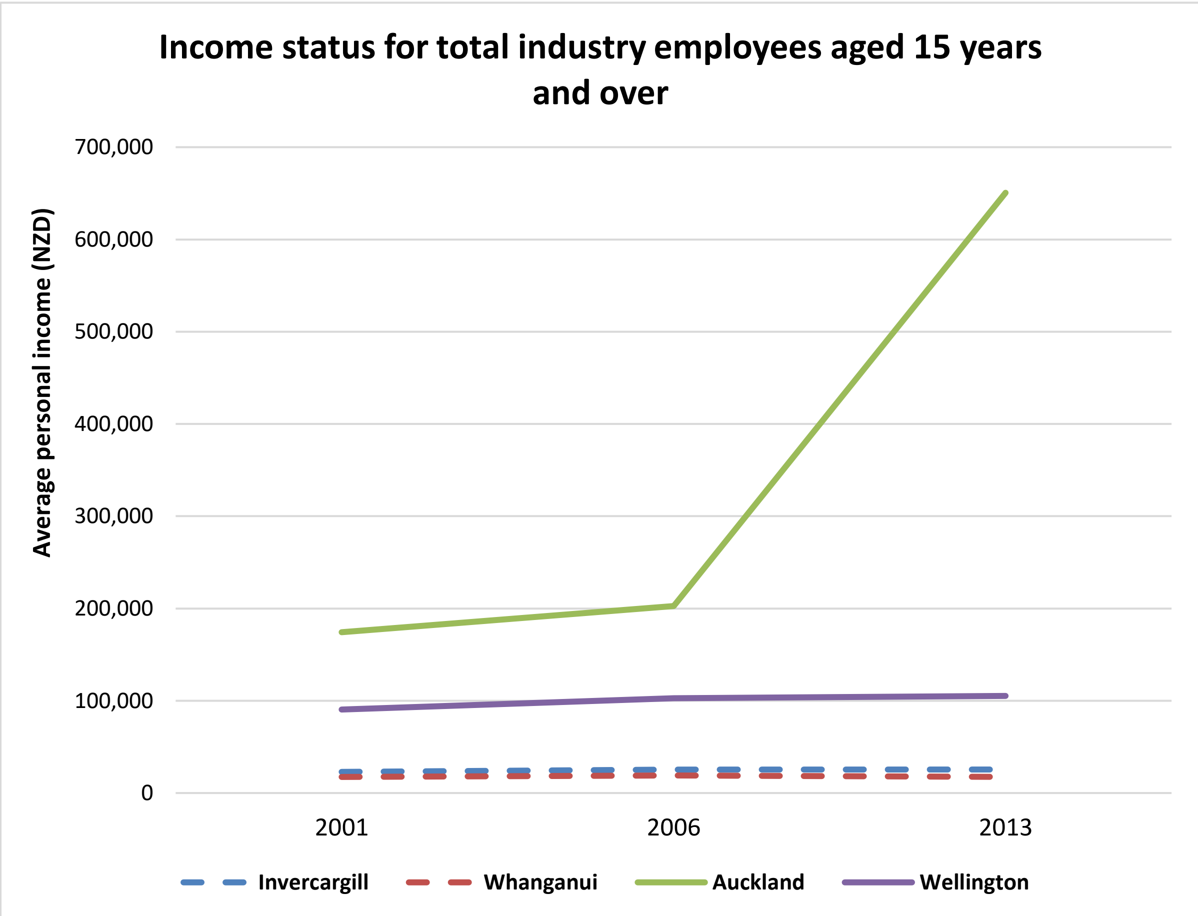


Figure 2.3: Total personal income for New Zealand's earliest cities

Source: (Statistics New Zealand, 2018a)

Also, the employment statistics as shown in Figure 2.4, put Whanganui and Invercargill as the least economically prosperous urban areas of the first five earliest New Zealand cities considered in this study, while Auckland and Wellington are seen to have experienced a significant increase over the years.

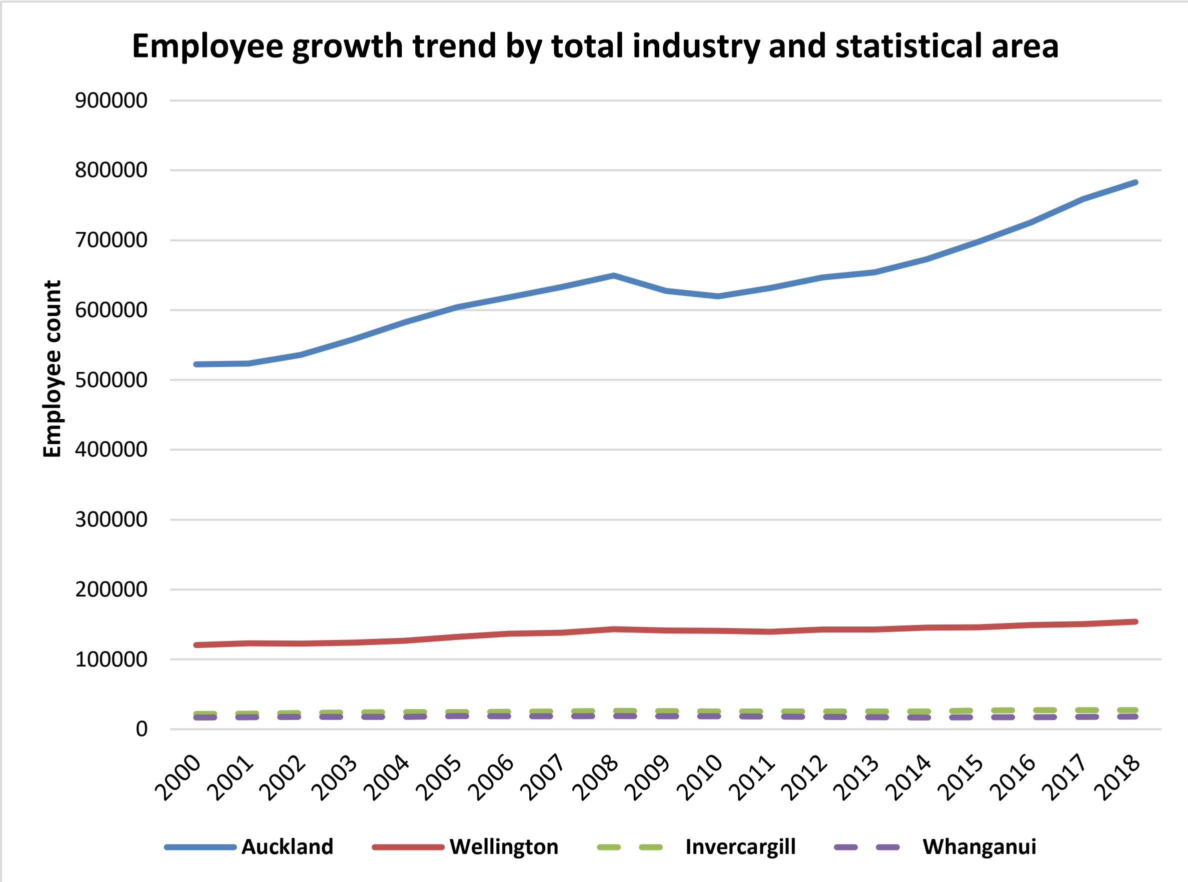


Figure 2.4: Employee growth trend for New Zealand's earliest cities

Source: (Statistics New Zealand, 2018a)

Besides, the employment statistics for the city centres, as shown in Figure 2.5 shows that the employee growth count of urban areas largely depends on the economic activities that occur in their city centres.

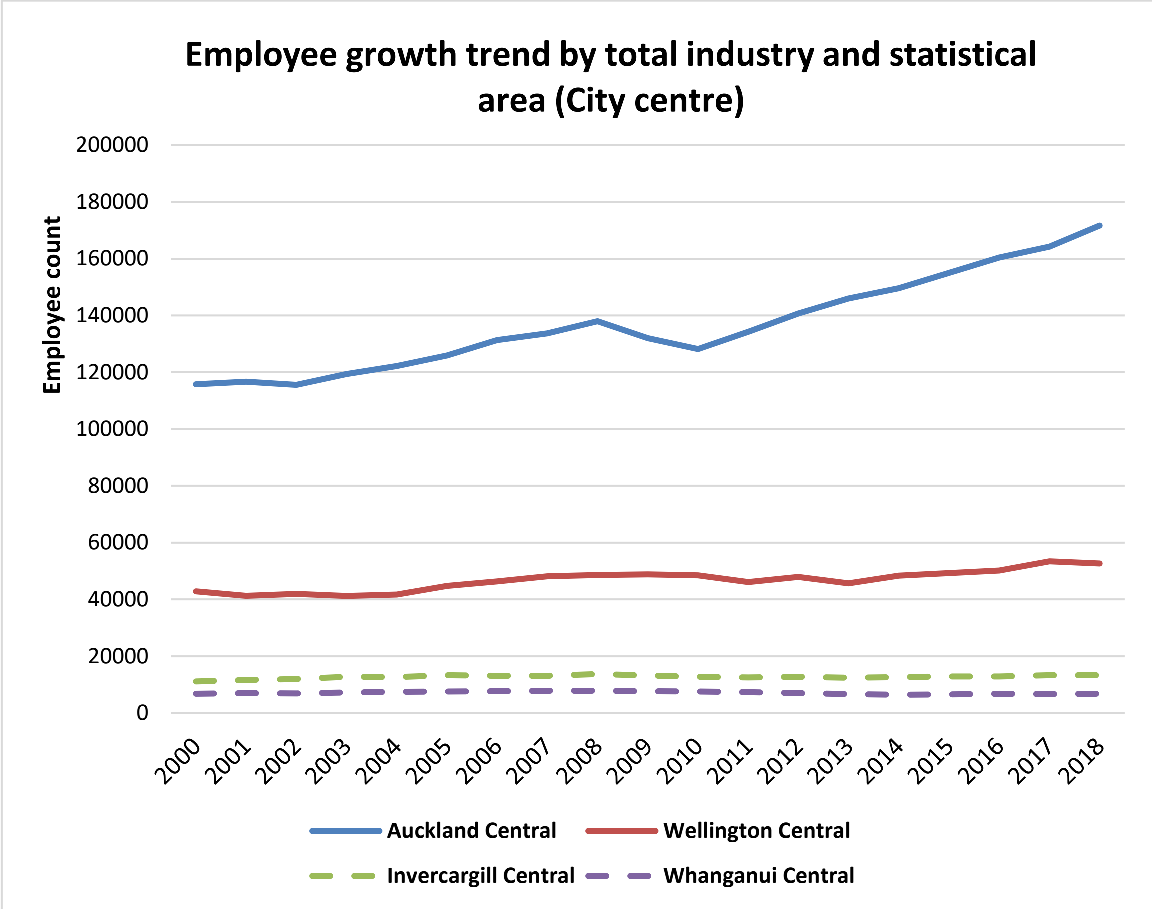


Figure 2.5: Employee growth trend in the city centres of New Zealand's earliest cities

Source: (Statistics New Zealand, 2018a)

Although the period between 2006 and 2013 coincides with that of the 2008 global economic recession (Bagliano & Morana, 2012), and the 2010/2011 Canterbury earthquake occurrences (Potter, Becker, Johnston, & Rossiter, 2015), bigger cities such as Auckland and Wellington thrived in their employment and income status while provincial areas shrunk. Also, some upshots of the Canterbury earthquakes exposed how New Zealand's provincial areas differ from the bigger cities in the aspects of risks, socio-economic physiognomies, expertise, challenges, and opportunities, regarding resilience (Eaqub, 2014).

The implication of this narrative is that Auckland and Wellington have some specific fast-growing industries (such as finance and insurance), which may be absent in most provincial areas. Also, with Auckland being the economic hub of New Zealand, and Wellington the political hub, these two major urban areas have been on the right track to creating employment growth opportunities that have attracted the vibrant younger populations from provincial areas over the years (Eaqub, 2014). Invercargill and Whanganui may not have experienced the kind of substantial economic growth they had anticipated for partly due to the underperformance of their significant industries (i.e., mining, housing and manufacturing) in terms of income status and employment (Statistics New Zealand, 2018a).

2.4.1.4 Property prices

Current property prices comparisons for city-centre commercial historical property listing are extracted from two of New Zealand's popular real estate websites (QV.co.nz, 2019; Realestate.co.nz, 2019). Figure 2.6 shows that asking lease prices for Auckland (26 per cent) and Wellington (25 per cent) is relatively higher than that of Whanganui (14 per cent), and Invercargill (14 per cent). Also, Auckland has a significant proportion (65 per cent) of asking sale price per square metre of floor area, which has a wide margin compared to that of Wellington (16 per cent) and Invercargill (7 per cent). Whanganui (3 per cent) is the least in this category. The evaluation of actual sale price shows that Auckland and Wellington have higher prices (i.e., 44 per cent and 36 per cent respectively), while Invercargill and Whanganui have lower prices (i.e., 12 per cent and 5 per cent respectively).

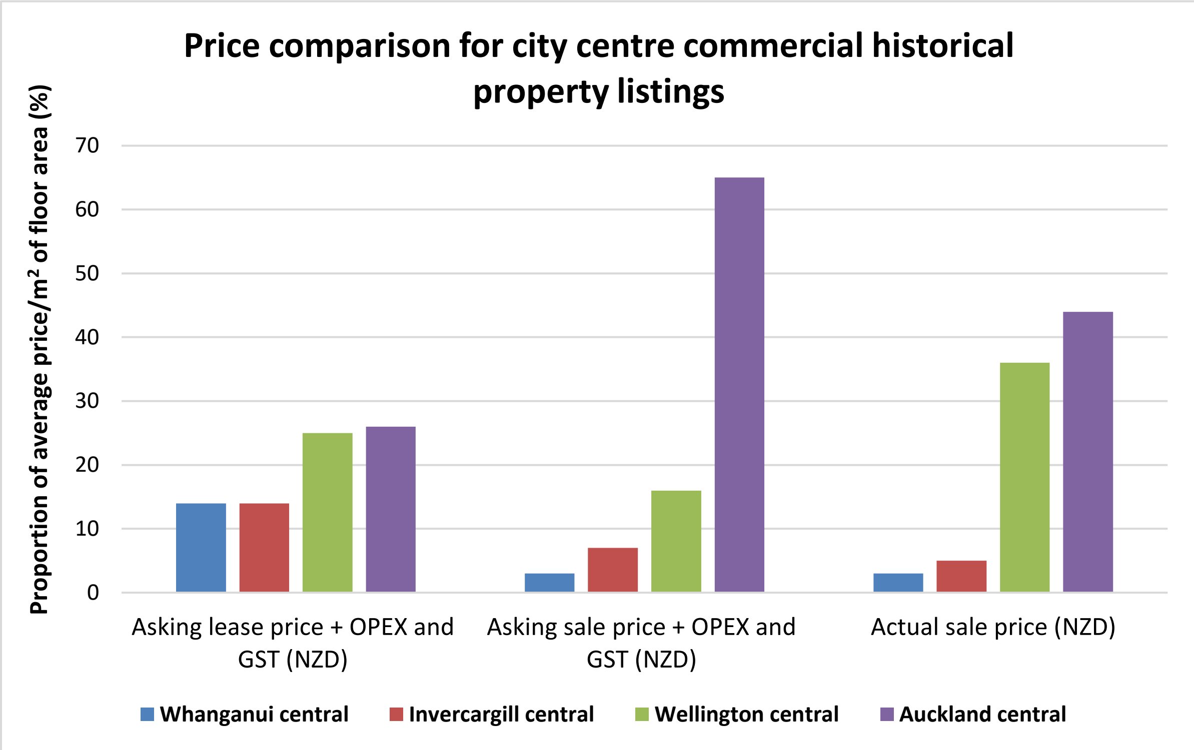


Figure 2.6: Property prices comparisons for commercial historical properties

Source: (QV.co.nz, 2019; Realestate.co.nz, 2019)

Some level of inequality observed from Figure 2.6 shows the disproportionately higher resilience of bigger cities and their socio-economic pulling force that usually tend to cause significant strain and eventual decline of provincial cities (Nel, 2015). The population growth trends could be considered a significant trigger for the fluctuations in property prices due to shifting demand for durable existing buildings in shrinking cities (Glaeser & Gyourko, 2005). Also, the link between the rise in population densities and the corresponding increase in property prices of buoyant urban areas have been emphasised through some economic pointers such as net migration, employment rate, and income growth (Agnello & Schuknecht, 2011; Winston & Eastaway, 2008). Hence, an inference connecting the decline of provincial cities with their respective property price trajectories is established.

2.4.2 Impacts of the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016

The emphasis of findings from the key informant interviews is based on a description of the broad range of ideas obtained from the interviewees, rather than their representative or average opinions. The key informants gave their opinions on the links between the identified shrinking cities and impacts of the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016, to establish if has it raised awareness to enable more conservation of heritage buildings, created incentives for demolition, or stimulated urban regeneration or decline. Accordingly, the six themes that were identified from the thematic analysis of the interview transcripts are discussed in the following subsections:

2.4.2.1 Pressure on building owners from BEPBAA compliance deadlines

The BEPBAA has put historical buildings on the spotlight. The compliance timeframes on people's mind have created more pressure for owners of EPBs. In the past, the EPB legislation that individual councils had was so variant. Some were active, and some were passive. However, with the recently amended BEPBAA after the Christchurch earthquakes, much pressure was placed on people because places that did not have compliance deadlines before now, do have deadlines now. The pressure is more on owners of EPBs who are responsible for the safety of users of their buildings. Before the introduction of the BEPBAA, there was much pressure by owners of derelict heritage buildings and developers to demolish the buildings and rebuild newer structures because of the value of land that the buildings were sited. Most owners were not inclined to conserve their buildings. Although there were already low-key conversations going on about the protection of New Zealand's heritage buildings, the introduction of the BEPBAA after the Canterbury earthquakes put heritage buildings on the spotlight because of their huge vulnerability during the seismic events.

In provincial areas, where the market forces are not enough to cover the cost invested in seismic retrofit, many owners of commercial historical buildings usually do a cost-benefit analysis to know what their return on investment from strengthening their buildings would be. They are usually sceptical about investing in strengthening now because they feel these buildings may need another upgrade in the future if the BEPBAA is amended. These owners believe it will cost them much money that they could never retrieve over the compliance timeframe. The outcome from a cost-benefit analysis that suggests a negative return on investment would discourage owners from investing in redeveloping their EPBs. Most of the owners tend to do nothing about their buildings, collect the marginal rent back on the building while hoping it does not get empty, and at the end of the compliance timeframes would prefer to abandon the buildings. The situation becomes worse for buildings with larger floor areas where the cost of strengthening will be higher, hence, creating a scenario where the main streets of most provincial areas are characterised with decaying historical buildings due to lack of maintenance.

The situation is even more frustrating for owners of EPBs on priority routes in higher seismic hazard areas where the timeframes are practically shorter. The implication of this is that the building owners tend to search for incentives to strengthen their buildings, otherwise, abandon their buildings for demolition by the local authority when the given compliance timeframe elapses. Additionally, some investors and owners of historical buildings are too scared to maintain their buildings or make any change of use alterations because they do not want to exceed the 25 per cent threshold and trigger the seismic strengthening requirements in the building act (MBIE, 2016a).

2.4.2.2 Attitudes of councils in different seismic hazard areas

The attitude of councils usually plays a significant role in motivating people to invest in seismic strengthening of historical buildings to revitalise their areas. Sometimes councils need to make the first move to upgrade heritage buildings.

While councils in larger high seismic hazard areas like Christchurch and Wellington are predominantly at the forefront of ensuring compliance with the BEPBAA, a majority of councils in provincial low and medium seismic hazard areas usually do not have sufficient resources to ensure compliance and may still be lagging regarding their EPB profiling. Hence, these councils may prefer the 'wait and see' approach, where they do nothing and wait for what happens when the compliance timeframes are exhausted. Owners of potentially EPBs in these areas may still not have been served EPB notices. This circumstance is a ticking time bomb for provincial councils, considering many non-compliant EPB investors in these areas. These council's hands may be entirely tied in terms of what they can do at the end of the timeframes for building owners to comply with the BEPBAA. Provincial councils have lower resources to chase building owners for compliance. They always struggle with enforcing compliance and usually end up in court, which may be too expensive for them. The risk here is that they may push back for the policy to be reviewed to allow for a longer timeframe to ensure compliance.

2.4.2.3 Risk of future amendment of the BEPBAA

There is a risk that most EPB owners become less confident about the way policy and requirements change due to review. Many EPB owners in low and medium seismic hazard areas that have between 25 to 35 years to strengthen their EPBs believe that the timeframes are so long and that any review of the BEPBAA would potentially add more time to it. For instance, if the government review the legislation in the future and introduce another timeframe that is not as short as the ones they already have, then owners will be discouraged from doing anything at all because they believe the rules will change again when the government will review the timeframes and push it further. The message this sends to building owners is that government will always push the timeframes, and so these owners do not need to do anything to their buildings in a hurry. There is also a risk that the more policies are being reviewed with changing requirements and timeframes, the more the confidence of building owners are being undermined that the policy is going to stay in place.

For some building owners that are required to retrofit their buildings within the next 25 to 35 years, their perception would be that they may not need to do anything now because their area may be categorised under a higher seismic risk zone after the next BEPBAA review. So, they would not want to eventually re-strengthen their buildings to meet the higher NBS rating for their area. Consequently, most of these building owners believe that the smartest economic decision to make would be to defer and strengthen their building at the latest possible time, by putting their money in the bank to collect interest in the meantime, while buying more time to wait and see if there would be any new changes in the policy. Also, some other owners prefer to defer their strengthening because they believe that the newer technologies of strengthening techniques will be cheaper than the existing ones. For instance, some of the earlier strengthening projects were quite complex and more expensive compared to the new technologies.

2.4.2.4 Safety concerns and high seismic retrofit costs

Most investors in New Zealand's provincial areas believe it's too expensive to retrofit EPBs and unsafe to live in. So, they rely on the economic and health and safety arguments as justification to demolish and prefer to erect new buildings because they feel it is a cheaper option. The economic argument regarding the high cost of retrofitting the EPBs has been used by most of the building owners in provincial areas as leverage to demolish their buildings.

EPB owners in provincial areas are often discouraged from investing in strengthening their buildings because they cannot afford to charge higher rents to cover the cost of an upgrade compared to other owners who have not invested in seismic strengthening at all. These EPB owners prefer not to invest in strengthening their buildings and charge lower rents as an incentive to attract tenants. Also, most prospective tenants of commercial historical EPBs expect owners to strengthen their buildings to above 67 per cent NBS rating because they are responsible for the safety of their employees during an earthquake. Accordingly, many of older banks in provincial areas who were already planning to restructure and shutting down their branches in smaller cities due to some modern banking trends such as the advent of internet banking, have used the safety concerns as an excuse to relocate to move out since most of their buildings were historical buildings assessed to be EPB's

Besides, insurance could also be an external economic factor pushing people away from seismically strengthening and protecting their buildings. Many affected building owners are being discouraged because if they cannot secure insurance, it becomes difficult to get bank loans to develop their building or acquire a new building. However, it may be interesting to know that the cost of a seismic upgrade is about the same across all regions of New Zealand depending on the alternative solution adopted, but the demand for heritage buildings varies according to different property markets in different areas.

2.4.2.5 'Unsophisticated' investors in provincial areas

In New Zealand's provincial areas, the average age of building owners is very different from commercially active centres like Auckland and Wellington. The context has always been that the kind of investors in provincial areas are already retired and have had their buildings for 50+ years without any mortgage to pay for. These types of owners are just running their assets for marginal profits, which supplements their pensions and hobbies, and hence, they tend to get startled easily when issues regarding compliance come up. It is very unrealistic for banks to give this category of investors loan to retrofit their EPBs. So, this category of owners settles for squeezing their buildings of the last worth and walk away when the compliance timeframe elapses. They believe they will not lose much compared to the cost of investing in strengthening.

It is usually very challenging for councils to engage this category of investors because they would consider any form of engagement from councils as barriers restricting them on what they can do with their buildings. This kind of attitude from these unsophisticated investors is often prevalent in provincial areas where the prospects of not complying with the BEPBAA to upgrade historical EPBs is a significant challenge due to the large proportion of historical buildings in these areas.

On the other hand, sophisticated investors on bigger cities usually identify the EPBs, asses their heritage values, and use cost-effective and more straightforward engineering solutions to strengthen them to the required standards at which insurance companies will agree to insure. At this point, it becomes easier for banks to give loans to buy the historical buildings from the owners and acquire incentives from funding bodies such as Heritage EQUIP (2019a).

2.4.2.6 Lack of actual seismic retrofit cost data sharing

Actual seismic retrofit cost data is challenging to get, and this has greatly influenced the barriers and motivation for building owners to invest in strengthening their historical EPBs. Most investors do not share their actual cost data. Instead, they prefer to share their designs and drawings, solutions, and estimated cost data that do not entirely represent the actual costs. As a result of these weird estimates, some engineers may overcharge, and some may undercharge. There has also been a slow uptake for some owners because they are still waiting for actual seismic retrofit cost information.

However, some owners may understate their strengthening costs because they do not want to pay higher building consent fees, which is usually based on the actual value of work. While some other owners may be very information sensitive because they may want their tenants to believe they are paying more to retrofit their buildings, and hence, increase their rent, others may be taking a loss that they do not want the public to be aware of.

2.5 Conclusion

The study in this paper has analysed some socio-economic statistics to identify provincial cities among New Zealand's earliest cities currently undergoing decline. The opinions of subject matter experts regarding how the newly amended BEPBAA may have influenced the decline of provincial areas have also been explored through key informant interviews.

Findings from the document analysis identified Whanganui and Invercargill as two typical provincial urban areas which though were among New Zealand's earliest cities are currently experiencing a decline. The statistics from the document analysis justified the decline in the population growth trend, income status, employee counts and property prices of the identified areas. Also, findings from the key informant interviews revealed the following factors as impacts of the BEPBAA that may have promoted the decline of typical provincial areas in New Zealand: (i) pressure on building owners from BEPBAA compliance deadlines; (ii) attitudes of councils in different seismic hazard areas; (iii) risk of future amendment of the BEPBAA; (iv) safety concerns and high seismic retrofit costs; (v) unsophisticated investors in provincial areas; and (vi) lack of actual seismic retrofit cost data sharing.

These findings reflect secure connections between socio-economic and policy-related influences and the population growth trends in major New Zealand's provincial areas. The implication of these findings could be useful for researchers and policy regulators to have a better understanding of the unintended, intended, and future consequences of how the BEPBAA may have promoted the prevalence of derelict and underutilised historical buildings in the inner cores of typical provincial areas in New Zealand. The occurrence of so many vacant buildings in these areas has now created opportunities for urban regeneration pursuits by concerned territorial authorities.

Chapter 3. Why are older inner-city buildings vacant? Implications for town centre regeneration

This chapter was developed from Publication № 2, *which has been published in final form in the Journal of Urban Regeneration & Renewal, 11*(1), 1-16.

Abstract

The historic precincts of many provincial cities in New Zealand are characterised by partially occupied, vacant or abandoned buildings, which are in critical locations of Central Business Districts (CBDs). Increasing unoccupied spaces and low demand for older buildings are detrimental to the socio-economic growth of many provincial towns in New Zealand. This study sought to: (i) investigate the proportion of totally/partially existing vacant older buildings within the town centre of Whanganui; (ii) identify the underlying factors that contributed to the emergence of the vacant buildings and the consequences of the prevalent vacancy rate on provincial town centres, and (iii) recommend possible ways to increase the demand for these buildings. Using a mixed-methods approach for data collection, the research findings showed a vacancy rate of approximately 86 per cent (n = 47) of older heritage buildings located in the main high street of Whanganui. Additionally, several factors were identified to be responsible for the high vacancy rate of the older buildings. They are (i) building conditions; (ii) social factors; (iii) economic factors; and (iv) building regulations. The research findings provided

significant recommendations on how property redevelopment through the adaptive reuse approach can be used as a responsive, sustainable strategy that can attend to the changing needs of owners, occupiers and visitors, as well as ensure compliance with regulatory requirements of seismic strengthening for older heritage buildings.

3.1 Introduction

Old historic buildings provide evidence of the origins and identity of a distinct society and contribute towards tourism (Ahmad, 2006). These buildings also play a crucial role in the socio-economic and cultural development of society by providing a physical link and progression of cultural evidence to the past (Central Public Works Department, 2007; Goodwin et al., 2009). However, a variety of reasons including obsolescence factors (Langston, 2011), self-congruity perspectives (Sirgy, Grzeskowiak, & Su, 2005), and urban shrinkage (Martinez-Fernandez et al., 2012; Oswalt, 2006; Pallagst, 2008), have been attributed to the underutilisation and high vacancy of older buildings.

According to the Department of the Environment Transport and the Regions (2000), vacant buildings could be defined as buildings that are structurally sound but have remained unoccupied for a year or more. Housing vacancy may be referred to as a unit of real estate that is being left unoccupied at any particular time (Vakili-Zad & Hoekstra, 2011). The rate of housing vacancy could be expressed as a product of an established vacancy occurrence – i.e., the likelihood of an existing building becoming vacant, and, the duration of vacancy – i.e., the timeframe in which the building remains vacant (Gabriel & Nothaft, 2001). Vacant buildings are being considered to encourage inefficient resource allocation, and also pose a risk to the functioning of the housing market (Vakili-Zad & Hoekstra, 2011). The relationship between old building occupancy levels and sustainable development activities has been observed to be widely overlooked as a result of researchers ignoring the development activities of provincial inner-cities (Buttimer & Ott, 2007). A strong argument has been made within the limits of the sustainability agenda, necessitating the improvement of existing building stock due to the potential financial and cultural resources that are most likely benefited by host communities (Kohler & Hassler, 2002).

In recognizing the significance of older vacant buildings, little consideration is being given to the older vacant buildings in provincial inner-cities. Acknowledging this fact will, therefore, promote both cultural and socio-economic viability for provincial areas by encouraging the efficient use of resources (Myers & Wyatt, 2004). There is a need for a better understanding of the proportion of vacant buildings, and the causal factors and consequences of a prevailing vacancy rate in typical provincial areas. The study discussed in this paper sought to develop strategies for the regeneration of a non-vibrant provincial inner-city of New Zealand. The specific objectives of this study are to (i) investigate the proportion of totally/partially existing vacant older buildings within a provincial inner-city; (ii) identify the underlying factors that contributed to the emergence of the vacant buildings and the consequences of the prevalent vacancy rate on provincial inner-cities, and (iii) recommend possible ways to increase the demand for these older buildings. The findings from this study will enable local authorities, building owners, and other relevant inner-city regeneration stakeholders to make informed decisions needed for the socio-economic viability of any proposed CBD regeneration scheme.

3.1.1 Research problem

Whanganui is located on the west coast of North Island in New Zealand and has a CBD famous for its heritage building precincts. These collections of heritage buildings possess original architectural designs that date as far back as Pre-1935. With a population of roughly 42,153 people and a population density of 0.18 persons per hectare, Whanganui has experienced a steady decline in population since the 2006 Census at a rate of 1.1 per cent - i.e., by 486 people (Statistics New Zealand, 2017a). The total number of counted dwellings that were unoccupied in the area from the 2013 Census was 1,839 houses as compared to 1,449 houses from the 2006 Census (Statistics New Zealand, 2017a). This trend indicates an increased rate of 26.9 per cent of unoccupied dwellings in the region (i.e., 390 vacant houses). According to Goldstein, Jensen, and Reiskin (2001), this increased vacancy rate could be linked to the reduced vibrancy of the inner-city of Whanganui, hence, triggering a decline in productivity and tax revenue potentials.

Most unoccupied or partially vacant old buildings in major provincial cities around the world have generated a lot of criticisms (Glock & Häussermann, 2004; Swallow, 1997). The negative public perception regarding the quality and functionality of older building stock is being considered to generate underlying socio-economic stigma attached to such buildings (Goldstein et al., 2001; Sirgy et al., 2005). With the existence of these negative impacts, a vicious circle is created that raises the chances of residents relocating out of the affected neighbourhood.

(Friedrichs, 1993; Lang, 2000). The lack of comprehensive and reliable data regarding the proportion of unoccupied existing buildings and its implication is currently a trending issue for planners, sociologists, and economists on both regional and district levels. In order to boost any inner-city revitalisation strategy, the underlying causes of the increasing vacancy rates of the town's older buildings need first to be established.

So far, there is negligible evidence of attempts to carry out empirical research to validate these criticisms, including evaluating the level at which they apply to the vacant older buildings in Whanganui. There is also less factual evidence so far to ascertain the specific factors and critical problems that have generated the increasing rate of vacancy of the 'entire' or 'upper floors' of the provincial older buildings. In order to establish valid constructs for policy formulation and objective decision making, it is essential for empirical research outcomes to improve the existing research problem. This research is, therefore, timely as it will contribute to knowledge in the context of inner-city regeneration and sustainability.

3.1.2 Research objectives

In order to address the highlighted research problems, this study sought to develop strategies for the regeneration of a non-vibrant provincial inner-city of New Zealand. The specific objectives adopted to achieve this research aim were to:

- Investigate the proportion of totally/partially existing vacant older buildings within the inner-city of Whanganui;

- Identify the underlying factors that contributed to the emergence of the vacant buildings and the consequences of the prevalent vacancy rate on provincial inner-cities; and
- Recommend possible ways to increase the demand for these older buildings.

3.2 Literature review

3.2.1 Overview

This section covers the review of existing literature that contextually relates to the indicators of urban shrinkage, the impacts of the prevalent vacancy rate, and the potential drivers for revitalising vacant old buildings of provincial inner cities.

3.2.2 Conceptualising shrinking cities and urban decay

The phenomenon of 'shrinking cities' has led to a common transformation pathway for major cities across the world (Haase, Rink, Grossmann, Bernt, & Mykhnenko, 2014b). The characteristic slow growth or population decline of these cities could be considered a significant global planning and politico-economic issue (Martinez-Fernandez et al., 2012). Many cases of severe population decline have been reported in several cities in Australia, Europe, Japan, North America, Russia, etc., (Oswalt, 2006). However, the determinants of urban shrinkage are not considered to follow global patterns even though the occurrence is relatively global (Haase et al., 2014b). For instance, an in-depth analysis of the determinants of urban shrinkage for a particular location could either be as a result of demographic change, huge work-related mass departure, provincialisation, or de-industrialisation (Rink, Haase, Bernt, & Mykhnenko, 2010).

A ‘shrinking city’ may be defined as an urban area that is densely populated with at least 10,000 residents, has experienced a population decline in large parts for a duration higher than two years, and is experiencing economic transformations with some signs of structural crisis (Martinez-Fernandez et al., 2012; Wiechmann, 2006). The concept of urban shrinkage explains it’s multidimensional (i.e., social, economic, demographic, physical, and geographic) trajectories that do not only evolve as an outcome of local realities but also guide researchers in proffering theoretical findings and solutions to urban research problems. Recent debates suggest that most European and USA cities had to address challenges posed by long-term economic and demographic trajectories resulting in urban shrinkage and the associated negative impacts such as unoccupied housing units (Wiechmann & Pallagst, 2012).

Some previous studies on urban shrinkage have been dominated by causal factors such as the growth of urban lower-class, urban poverty, blight and slums, immigration, and racial segregation (Martinez-Fernandez et al., 2012). For instance, the older building stock located in the city centres are more affordable and hence will attract the low-income population. Accordingly, the city centres will then accumulate a large proportion of low-income populations made up of both domestic and immigrant residents. This concentration of poor residents in the city centres will eventually lead to a physical decay of the area as the landlords will be forced to neglect the maintenance of the old buildings as a result of low rents (Martinez-Fernandez et al., 2012). Furthermore, the perspective on human ecology (Muth, 1969), emphasises the increasing rate of urban shrinkage due to the invasion of low-income residents into the middle-class areas (Lucy & Phillips, 2000). The implication of this typical invasion usually results in the relocation of the more comfortable middle-class residents and business owners to outer suburbs (Lucy & Phillips, 2000). As a result of this relocation, there will be a further population decline in the inner-city, worsened by lack of economic resources, increased social issues (e.g., public insecurity, crime, etc.) and infrastructural obsolescence (Downs, 1997).

Likewise, in a study carried out by Hoyt (1939), a life-cycle approach to urban transformation was developed to justify the constant decline in the structure and growth of some American urban districts. The research findings suggested that the investigated urban districts exhibited an inevitable evolution towards decline, associated with property devaluation as a result of the arrival of less prosperous residents to the districts (Lang, 2000). Following the research of Hall and Hay (1980) that identified a regular order of urban growth and decline to categorise the European urban development stages, a metropolitan evolution theory entailing four sequential development stages (urbanisation, suburbanisation, de-urbanisation, and re-urbanisation) was developed by Van den Berg et al. (1982). The origin of this standpoint was from an understanding of neoclassical economics that considers decline as an unavoidable phenomenon generated by the programmes of economic agents (Van den Berg et al., 1982). Nevertheless, this theory has been refuted by some studies which have argued that the evolutionary trajectories of urban districts are complex and diverse, thus cannot be limited to a single urban transformation model (Buzar et al., 2007; Cheshire & Hay, 1989).

In addition, the inhabitants of cities experiencing rapid growth usually regard themselves as both desirable and successful, while those living in cities with declining growth consider themselves as dwelling in locations with a reduced sense of self-worth (Leo & Anderson, 2006). Policymakers are being motivated by the perception of 'place' to source for alternative economic development trajectories for their towns. With the prevalence of older inner-city historical buildings vacancy common with shrinking cities, the attention of policy regulators is focused on addressing the underlying problems. Many cities have attempted to revitalise the real estate market by demolishing derelict building stock and replacing with recreational areas and open spaces. This revitalisation strategy is usually done with the belief that the improved neighbourhood will attract a large population to the neighbourhood (Lötscher, Howest, & Basten, 2004; Oswalt, 2006). Yet, these highlighted strategies can address only the symptoms of urban shrinkage and not the causes (Haase et al., 2014b). Additionally, the strict seismic strengthening policies targeted at older inner-city buildings in active seismic areas have made a lot of building owners to abandon their buildings for demolition (Coburn & Spence, 2006). These building owners may consider it uneconomical to redevelop or strengthen the buildings to current standards.

After reviewing a broad spectrum of empirical studies relating to the possible causes and consequences of shrinking cities, older unoccupied inner-city buildings are being identified as the most noticeable consequences of urban shrinkage (Hollander, Pallagst, Schwarz, & Popper, 2009).

3.2.3 Social consequences of older inner-city buildings on provincial areas

The prevalence of vacant buildings in provincial areas represents a most noticeable symptom of inner-city decay (Accordino & Johnson, 2000). Most of these unoccupied buildings haunt their neighbourhoods with detrimental impacts that include; a reduced sense of self-worth (Martinez-Fernandez et al., 2012), increased crime rates, reduced monetary value of adjacent properties, blighting of the urban landscape, potential hazards to children, and increased risk of fire (Kraut, 1999). Apart from vacant buildings being easy targets for arsonists, the deteriorating conditions of these buildings could also pose some hazards to neighbours and passers-by, especially children who could wander in to play and harm themselves in the process (Olden & Nespoli, 1998). Moreover, the majority of older inner-city buildings that are vacant serve as shelter for illicit drug activities and targets for vandalism and graffiti (Hirokawa & Gonzalez, 2010). These circumstances usually have intensified negative impacts on the conditions of adjacent properties and neighbourhoods (Hirokawa & Gonzalez, 2010).

A team of sociologists have compared the impacts of vacant buildings in urban areas to the "Broken Windows" syndrome, which postulates that if one broken window is left unrepaired, people will be motivated to break more windows (Wilson & Kelling, 1982). The theory proposes that the social menaces associated with broken windows include issues of greater fear and reduced public confidence in affected districts (Johnson, 2009). However, on a larger scale, other sociologists argue that the physical decay of neighbourhoods full of vacant buildings could create an impression to both residents and outsiders that nobody is in control of the area (Ross & Mirowsky, 1999; Skogan, 1992). Consequently, those that are involved in destroying the vacant buildings are therefore motivated by this belief to continue their act (Altman & Wohlwill, 2012).

Furthermore, the "Epidemic" theory explains the social problems of vacant buildings by postulating that these problems behave like infectious agents, therefore spreading at a faster rate, and to a larger group upon reaching a particular threshold or "tipping point" (Crane, 1991). This theory has been applied to the explanation of several sociological phenomena such as; the "white flight" effect (Schelling, 1972), the growth of gangs and gang ferocity (Hutson, Anglin, Kyriacou, Hart, & Spears, 1995), and the effect of well-educated workers on neighbourhood youth development (Crane, 1991). The epidemic theory has also been applied to explain the negative effect of vacant buildings on the inhabitants of an affected district (Hughes & Bleakly, 1975).

The increasing social impacts of older vacant buildings could be considered to significantly affect the social balance of shrinking urban areas in New Zealand if not adequately addressed.

3.2.4 Economic consequences of older inner-city buildings on provincial areas

Many territorial authorities and owners of vacant buildings in provincial areas are usually faced with a standstill in investments as a result of the high costs and low profits involved with this category of buildings (Weisel, 2002). There could also be a considerable decline in the value of vacant buildings as a result of reduced commerce and de-investment, aesthetic appeal, and tourism (Shane, 2012).

Accordingly, the reduced property value will lead to lower tax revenue on the property, and thus reduced capital for government services (Weisel, 2002). However, while some districts may recover this reduced revenue via tax lien sales, other cities may pull through by reverting property ownership to the local district council, who will have no other option but to demolish the vacant buildings (Schilling & Friedman, 2002). This reduced income is significant because property taxes are the single biggest source for generating tax revenue under local authority (Alexander, 2001).

Vacant properties usually impose massive externalities (costs) on adjacent property owners by reducing the market value of these surrounding properties, thus making the resale process very difficult as a result of reduced equity (Lucy & Phillips, 2000). Homeowners living in a neighbourhood concentrated with vacant properties are faced with bearing a larger proportion of the tax burden of the area (Bass et al., 2005). The proximity of other unoccupied properties to vacant buildings could make the process of obtaining mortgages, home owner's insurance, and loans for housing improvements tougher. As a result, most insurance companies could increase the premiums of the homeowners of properties close to a vacant building, or even cancel the entire insurance policy. Moreover, based on these fears, dishonest real estate mediators usually induce the landlords of the vacant buildings to sell them cheaply to maximise profits at the expense of the buyers (Colvin et al., 2000). Although the vacant buildings could still generate revenues for the urban area, there will be a lag in the maintenance of such buildings by the new owners due to the combination of high resale prices and tax rates (Colvin et al., 2000). Consequently, the urban area will transform into a shabby and run-down place. Businesses will also start experiencing declining profits and hence, will be forced to relocate to more vibrant areas.

Research evidence on the economic impact of old vacant buildings suggests that these buildings pose daunting challenges to urban areas by hindering population growth, pulling down urban economies, reducing property values, and imposing weighty cost burdens on local authorities. By taking no action, these issues will become worse. Therefore, ambiguous urban improvement expenditures and revitalisation projects may fail to generate increased demand for these vacant buildings if these highlighted economic issues are not addressed.

3.2.5 Impact of seismic strengthening and other building regulations

Majority of the old vacant buildings in the inner-cities of most active earthquake regions around the world are heritage buildings (Ahmad, 2006). These buildings need to be strengthened in order to reduce the effects of seismic risks on them and hence fortify the capacity for proactive measures meant to reduce the losses and devastating impacts of future seismic occurrences. In New Zealand, for instance, all territorial authorities are mandated by legislation to develop and implement policies to identify buildings that might be earthquake-prone (MBIE, 2016a). An earthquake-prone building (EPB) is described by the 2016 Building Amendment Act as a building that would likely collapse in a moderate seismic event, causing death or injury to people, or damage to adjacent properties (MBIE, 2016a). The aftermath of the 2011/2012 Canterbury earthquakes and the risk of further seismic occurrences in New Zealand contributed to making the significance of seismic resilience to be brought into focus. As a result, most regional and district councils have adopted relevant approaches to identify and assess all earthquake-prone buildings within specified timeframes (NZSEE, 2017).

Buildings confirmed as earthquake-prone are required to be strengthened against seismic actions to over 34 per cent of the new building standard (i.e., 34 per cent New Building Standard [NBS]) (NZSEE, 2017). However, most earthquake-prone building (EPB) owners are encouraged to strengthen their buildings to higher per cent NBS seismic ratings if possible, considering practical and financial implications. EPBs could be isolated under the legislative authority granted by Section 124 of the Building Act (2004) if building owners fail to implement seismic strengthening within the specified timeframe set by the territorial authorities (MBIE, 2016a). The isolation could either take the form of requiring occupants of the EPBs to vacate the buildings until the seismic hazard is addressed or pay hefty fines as a result of non-compliance under Section 124A of the 2004 Building Act (MBIE, 2016a). After considering the high cost of retrofitting these EPBs and the low financial returns, most building owners may simply abandon their buildings and relocate to urban fringes, thus leaving them vacant. Additionally, most inner-city businesses in New Zealand have become more aware of the safety implications of non-strengthened EPBs, and as such, prefer to occupy safer building.

Some other relevant New Zealand legislations have made provisions specifically for fire safety and evacuation (Department of Internal Affairs, 2006), and access and facilities to disabled persons (MBIE, 2004). However, the building owners of most old buildings in inner-cities of New Zealand cities find it expensive to redevelop their buildings to comply with these legislations (Egbelakin, Wilkinson, Potangaroa, & Ingham, 2013). In order to escape the hefty fines for non-compliance, the owners of this category of buildings could consider deserting the building, thus leaving them vacant.

3.2.6 Town centre regeneration

Most town centre regeneration (TCR) also known as City Centre Regeneration (CCR) strategies usually involve the working together of local authorities, public, private, and other voluntary sectors to achieve a precise aim of improving the quality of life for residents of a community. TCR strategy is a response to the opportunities and challenges of urban degeneration in a specific place, and at a particular time (Roberts & Sykes, 2000). Town centre regeneration (TCR) could be defined as a holistic and integrated approach adopted for the resolution of urban problems to generate a resilient improvement in the physical, social, economic and environmental condition of an urban area that has undergone degeneration (Pallagst, 2008). TCR schemes are often justified by community interests towards redeveloping obsolete vacant spaces (Couch, Fraser, & Percy, 2008). Strategies for regeneration and planning could also involve the redevelopment of older vacant buildings in order to improve the socio-economic viability of provincial areas (Martinez-Fernandez et al., 2012).

The prevalence of underutilised inner-city older buildings in the CBD of Whanganui has created significant concern for its local authorities. In an effort to maintain and boost the socio-economic wellbeing of Whanganui's main street, the local, territorial authorities have initiated town centre regeneration (TCR) strategy (Whanganui District Council, 2016). However, in a quest for a successful implementation of the vibrant TCR initiative, the relevant stakeholders involved in the planning and decision-making process need first to understand the factors that contribute to the current high vacancy rates, to establish valid constructs for policy implementation. This study, therefore, aims to develop strategies for the regeneration of Whanganui's inner-city through investigating the proportion of existing vacant older buildings, identifying the causal factors of the vacancy rate, and recommending possible ways to increase the demand for these older buildings.

3.3 Research method

The mixed-method approach involving two separate but interrelated techniques for data collection (e.g., field survey and interviews) was adopted for this study. According to Lewis-Beck et al. (2003), a mixed-method approach helps to combine the application of several approaches into a single study in order to query the same phenomenon. This method also increases the robustness of research findings.

3.3.1 Field survey

The field survey was carried out by direct observations of the exterior and interior features of the old vacant buildings in the inner-city of Whanganui. Direct observation denotes a structured form of research strategy aimed at gaining a local and intimate familiarity with a community, and their practices through a focused involvement with individuals in their natural setting, over a given timeframe (DeWalt & DeWalt, 2011). These observations allow the observer to define existing situations, making use of the five senses, thus providing a "written image" of the investigated situation (Erlandson, 1993).

The field survey was conducted within a period of about six weeks. The exercise was carried out by visual observations and where accessible, each floor spaces of the buildings were internally surveyed. Also, the survey aimed to generate relevant information on the physical features of the older vacant buildings such as aesthetic conditions, carpark access, and disability access, needed to examine the apparent nature and extents of the research problem to ensure data validity, notes were taken to support the field observation process. The thematic analysis method was used to compile the data generated from the field survey.

3.3.2 Interviews

After the preliminary analysis of the field survey, face-to-face interviews were conducted with various relevant stakeholders to gain an in-depth understanding of the research problem (Kvale, 1983). The purposeful sampling approach was used to select participants for the interviews based on the research objectives. This sampling approach permits research to be carried out in a setting where individuals or events are deliberately selected to offer in-depth facts about the research topic (Maxwell, 2012). The purposeful sampling approach also allows the contribution of research participants experienced in the subject matter (Babbie, 2013; Easterby-Smith et al., 2012; Neuman, 2014). Accordingly, the interview participants were selected for this study based on their experience and knowledge regarding issues of vacant older buildings in the inner-city of Whanganui.

Although 50 interviews were targeted for this study, 20 face-to-face interviews were conducted with selected participants due to time constraint (i.e., one week). The selected participants include real estate agents, building owners, engineers, property valuers, architects/town planners, council officers, and the local heritage trust representatives in Whanganui. These stakeholders described their experiences with the identified older buildings in Whanganui's CBD to establish the recognition of the factors contributing to the increasing vacancy rate in the area. The interviews were audio-recorded and transcribed, with signed permission from each participant. The duration of each interview was between 45 minutes to one hour. In order to ensure the reliability of the collected data, the transcripts were sent back to the participants for feedback. Additionally, in order to guarantee data validity, notes were taken to support the interview audio recording. Transcripts from the interview process were extracted and analysed using the thematic analysis process, which allowed for the identification of themes in the transcript, and the extraction of consistent patterns from the research results. Table 3.1 summarises the profiles of the interview participants.

Table 3.1: Profile of Interview Participants

Category	**Frequency**	**(Per cent)**
Real Estate Agents	3	15
Building Owners	4	20
Engineers	3	15
Property Valuers	2	10
Architects/Town Planners	4	20
Council Officers	2	10
Local Heritage Trust Representatives	2	10
Total	**20**	**100%**

3.4 Findings

The findings from this study entail the results from the field survey and interviews. The field survey involved locating and identifying older heritage-listed buildings. The observation process started with walking around the CBD of Whanganui and observing the aesthetic and structural features of the older vacant historic buildings. The interview focused on gaining more insight into the possible causal factors and consequences of the high vacancy rate of older inner-city buildings, and possible ways to increase the demand for these buildings. The recorded opinions and insights of the selected interview participants are thus discussed in the following subsections.

3.4.1 Vacancy rates

From the 400 listed historic buildings (including earthquake-prone buildings) in the council's heritage buildings inventory, 80 per cent (n = 320 buildings) of the older historic buildings were located on a major high street within Whanganui as shown in Figure 3.1. However, 55 buildings located on the main street of Whanganui were surveyed due to lack of full access to some of the building sites. The surveyed older buildings stock comprised of mostly two-storey buildings constructed with reinforced concrete and consisted of either commercial use or adapted for mixed-used purposes. Some of the buildings were adapted for residential use on the upper floors, and commercial use on the ground floors. Single storey buildings were excluded in order to avoid padding of the vacancy issue when considering upper floors.

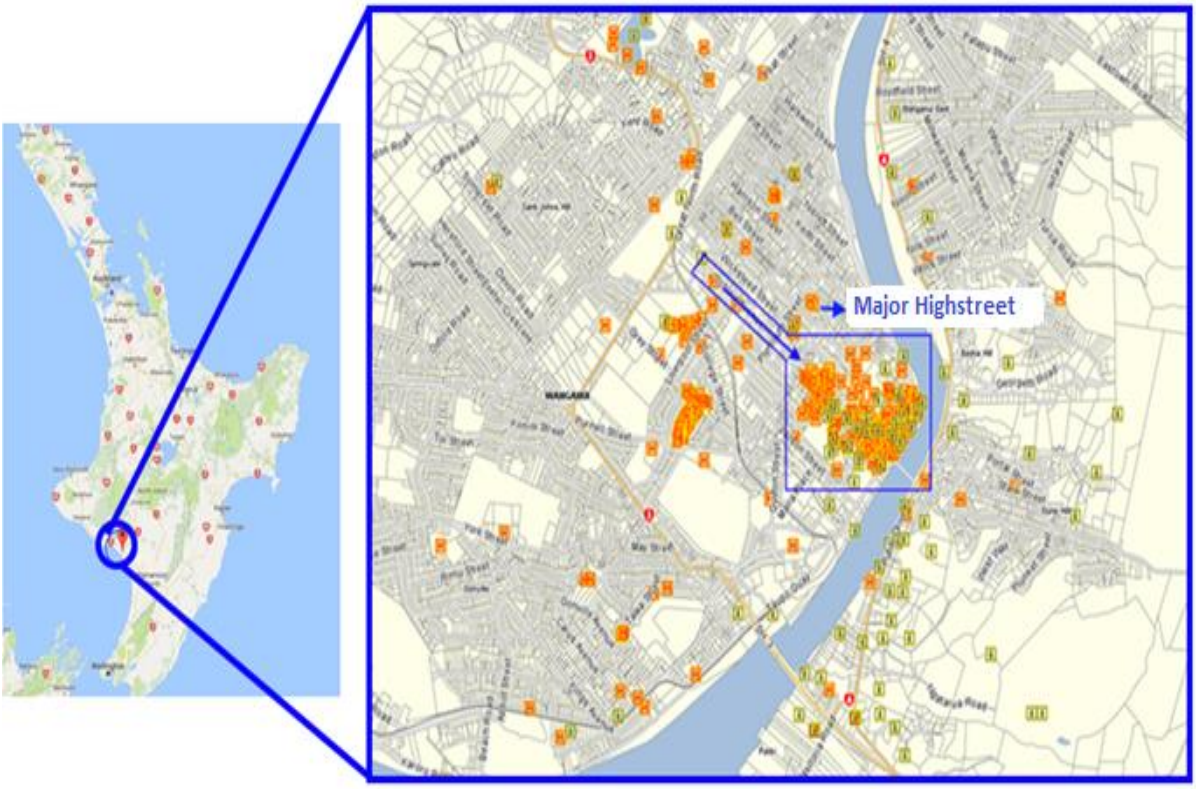


Figure 3.1: Concentration of heritage buildings in the CBD of Whanganui

The vacancy rates of the surveyed buildings were categorised into: partially vacant (i.e., where less than half of the units on a particular floor are empty), mostly vacant (i.e., where about half of the units of a particular floor are empty), and fully vacant (i.e., where all floors are entirely empty). Figure 3.2 depicts the analysis of Whanganui vacancies with 65 per cent of the upper floors of all the surveyed older buildings in the major high street, exhibiting some form of vacancy as compared to 21 per cent of the ground floors. In total, 86 per cent (n = 47) of the surveyed buildings in the CBD of Whanganui were identified to be vacant.

Additionally, from the interviews, about 90 per cent of the participants considered the increasing rate of unoccupied buildings as a big problem for the area, especially the vacant buildings in the main high-street of Whanganui.

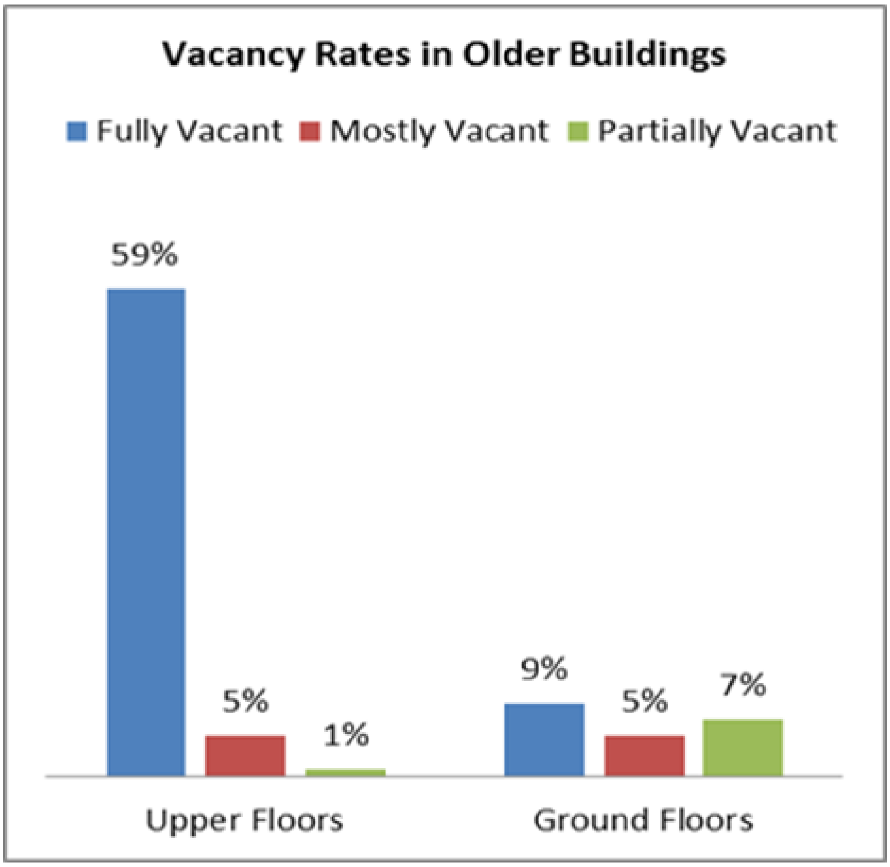


Figure 3.2: Analysis of Whanganui's vacancies

3.4.2 Causal factors

3.4.2.1 Building conditions

3.4.2.1.1 Aesthetic conditions

The wall and façade conditions of the surveyed buildings were examined by visual observation to determine if buildings with poor aesthetic conditions would yield a lesser chance of being occupied. The wall and façade conditions were categorised into: good (i.e., very presentable with apparent indications of clean appearance and excellent maintenance); average (i.e., a bit presentable with some indications of moderate maintenance); and poor (i.e., not presentable with apparent indications neglect and lack of maintenance). Accordingly, 64 per cent of the total surveyed buildings fell under the “poor” category, while 26 per cent were in the “average” category. The remaining 10 per cent of the surveyed buildings fell under the “good” category. Figure 3.3 depicts these findings.

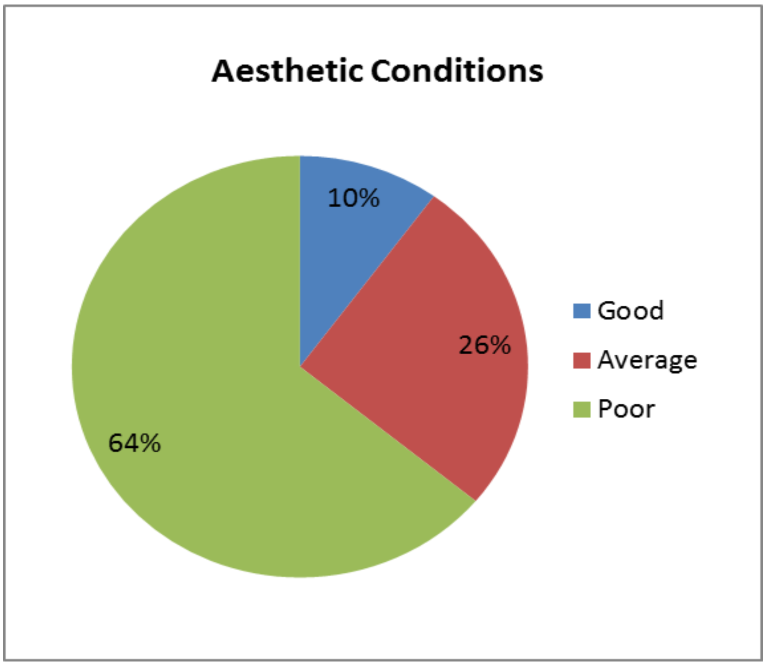


Figure 3.3: Analysis of Aesthetic Conditions

3.4.2.1.2 Disability access

Section 118 of the 2004 Building Act requires all newly built and redeveloped buildings to have adequate provisions of easy access, sanitary facilities and parking for disabled persons (MBIE, 2004). The surveyed buildings were therefore examined to determine if the buildings with poor disability access contributed to being less occupied. The criteria for disability access were grouped into: “no access”, “partial access” and “full access” based on ramped access and elevators for wheelchairs, sanitary facilities, and parking specifically for disabled persons. Consequently, 79 per cent of the total surveyed buildings were in the "no access" category while 16 per cent of the buildings were in the "partial access" category with at least one of the entrances to the buildings having a ramped access. Moreover, 5 per cent of the surveyed buildings fell under the "full access category". It was also observed that wheelchair access was limited to only the ground floors. Figure 3.4 shows these findings.

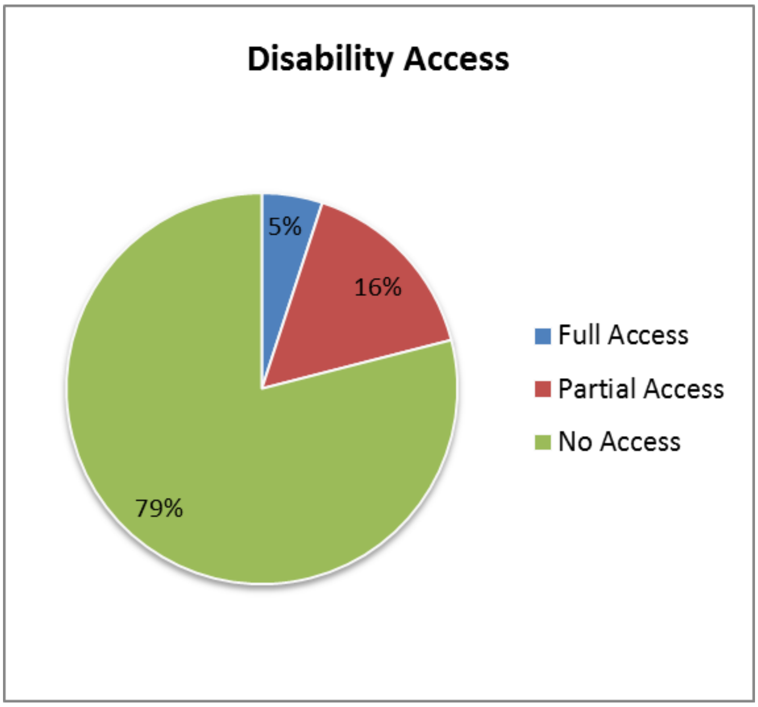


Figure 3.4: Analysis of Disability Access

3.4.2.1.3 Carpark access

The buildings that were surveyed under the carpark access criteria were those that had their carparks for users within a twenty-metre radius from either the front or back entrances. The referred building users include tenants, clients, and visitors to the buildings. The buildings were categorised based on "poor access" (i.e., paid parking, time-restricted, and no private parking for building users) and "good access" (i.e., free parking, unrestricted and private parking for building users). As a result, 65 per cent of the surveyed buildings had poor carpark access while 35 per cent had good carpark accesses that were located at the rear entrances. Figure 3.5 represents these findings.

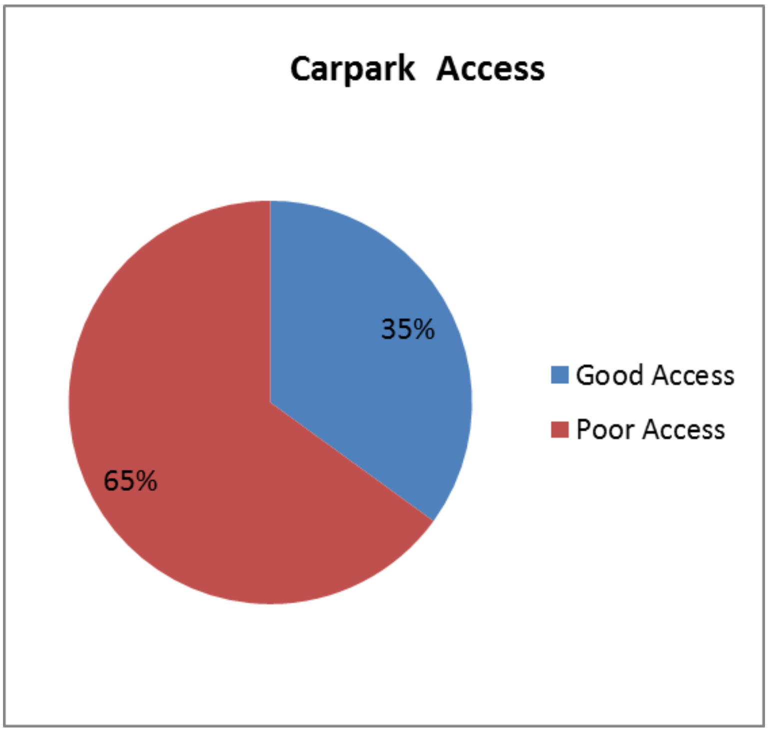


Figure 3.5: Analysis of Carpark Access

3.4.2.2 Social factors

Proportions of the interviewed participants discussed the following social factors (refer to Figure 3.6) that could potentially contribute to the increasing vacancy rates of the older buildings in Whanganui's CBD:

(i) population decline, (82 per cent);

(ii) emigration from the inner-city to urban fringes due to social threats and poor conditions of the buildings, (71 per cent);

(iii) poor disability and carpark access, (75 per cent); and

(iv) competition from modern construction and low demand for older buildings (69 per cent).

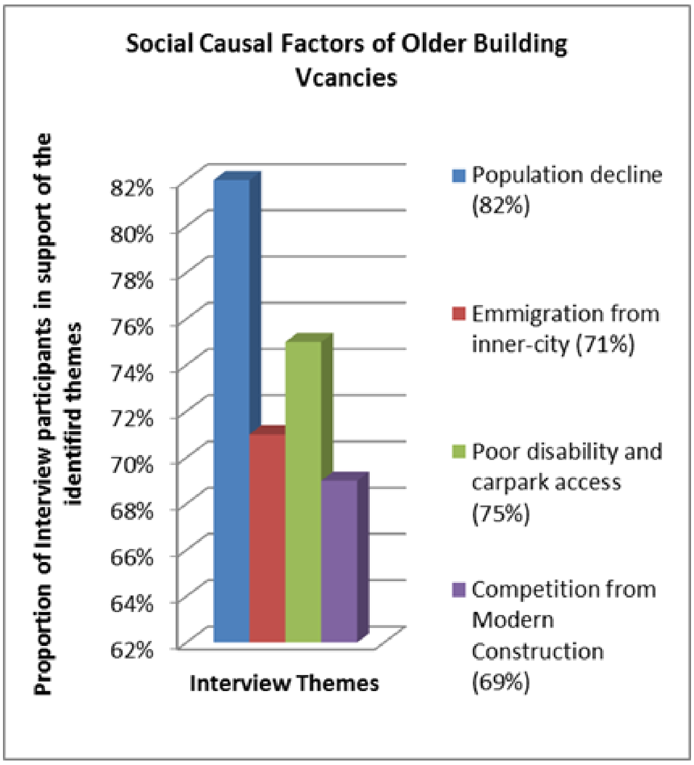


Figure 3.6: Analysis of Social Causal Factors

Stronger responses (82 per cent) were concentrated on the declining population of the CBD of Whanganui, especially the emigration of young adults for the purposes of better study and job opportunities in bigger cities. The impact of this emigration to more prominent urban areas would result in a population with a larger proportion of elderly persons that will require the use of an elevator, ramp, and wheelchair facilities. Some participants (75 per cent) also noted that older existing buildings with a poor disability and carpark access were less likely to be occupied by this older population. In addition, 69 per cent of participants believed that the competition from newer buildings in urban fringes, constructed with all modern facilities had caused most residents to relocate from the inner-city to suburbs.

3.4.2.3 Economic factors

The following economic factors (see figure 3.7) were identified by the interviewed participants to contribute to the increasing vacancy rates of the older buildings in the CBD of Whanganui:

(i) low property values, (86 per cent)

(ii) depressed property market, (78 per cent)

(iii) high lease costs, (73 per cent)

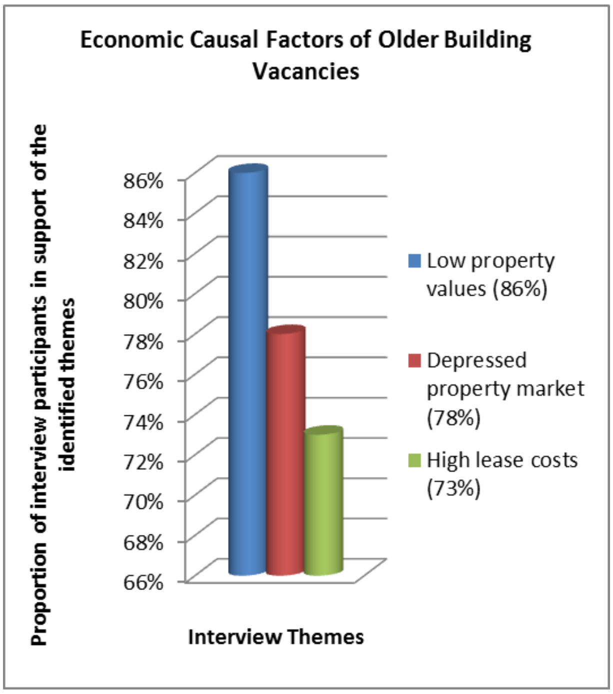


Figure 3.7: Analysis of Economic Causal Factors

A majority (86 per cent) of the interviewed participants considered the existing low property value of older historic buildings in Whanganui's CBD to negatively have influenced the property market. This low property value was believed to be as a result of insurance companies refusing to insure these buildings because of their earthquake-prone rankings, and banks refusing to grant loans to building owners for redevelopment. As a result, 78 per cent of the interviewees believed most surrounding building owners lack the motivation to redevelop these buildings, thus leading to the depressed property market. It was also noted that this depressed property market was an outcome of most building owners on the main street of Whanganui (i.e., mostly foreign investors), not showing any interest in retaining the heritage values of their buildings. These building owners are satisfied with the occupancy of the ground floor spaces and unconcerned about the upper floors of the buildings. Furthermore, 73 per cent of the interviewed participants believed that most potential tenants would prefer to pay lower rental fees for the buildings located around the backstreets of the main street, instead of paying higher fees for a ground floor space only a couple of blocks away.

3.4.2.4 Building regulations

Eighty-nine per cent of the interviewees believed that the building code compliance regarding change of use requirements and seismic strengthening prompted many owners and tenants of older buildings in the CBD of Whanganui to abandon the buildings with a seismic score less than 34 per cent NBS rating. With the potential high importance placed on the seismic evaluation of the buildings, lending and insurance options for the building owners are affected. Seventy-six per cent of the participants considered the high seismic performance expectancies from tenants in the older buildings of Whanganui's CBD to influence the increasing vacancy rate in the area. Consequently, major tenants (i.e., including financial institutions, major retailers, government offices, e.tc.) require that at least double the minimum per cent NBS rating is met to renew or enter new tenancy agreements with the building owners.

Furthermore, 68 per cent of the participants believed that some tenants might demand specific aesthetic and accessibility requirements that have restrictions to the potential solution most of the building owners would consider. Due to the inability for the building owners to configure their buildings to meet the requirements of their tenants, the buildings tend to remain vacant. Figure 3.8 depicts these findings.

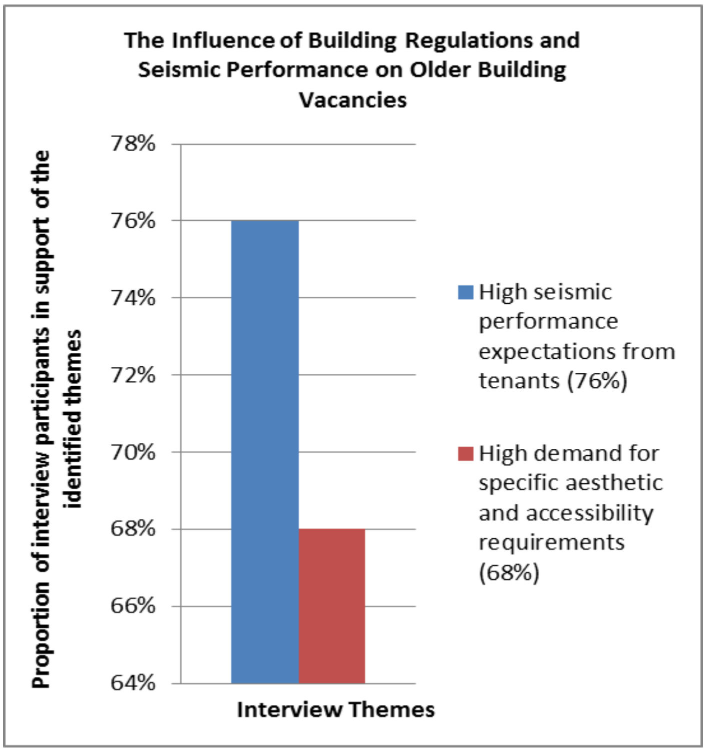


Figure 3.8: Analysis of the Influence of Building Regulations and Seismic Performance

3.5 Implications for town centre regeneration

Findings from this study suggest a high vacancy rate in the investigated CBD of Whanganui. The building conditions (i.e., poor aesthetic condition, lack of disability access and poor carpark access), social factors, economic factors, and building regulations were revealed from this study to have contributed to the prevailing high vacancy rate of older historic buildings in the CBD of Whanganui.

From the highlighted findings, it is therefore recommended for the local authorities of Whanganui to promote the redevelopment and reuse of the CBD's vacant older historic buildings, especially those not being protected and used by the government. Also, owners of the older vacant properties in the CBD of Whanganui should be motivated to redevelop their buildings to cater for seismic and disability requirements. Some of the upper floor vacant spaces of these buildings could be converted to drive-in carparks in order to address the lack of carpark access revealed from this study.

Furthermore, the older inner-city buildings should also be redeveloped for alternative economic uses such as restaurants, offices, hotels, and shops. Incentives such as transfers of floor-space indexes and property tax exemptions should be provided for the building owners that revitalise their old historic buildings. The local policies for urban development should focus on limiting the further decline in the population of Whanganui. Job-generating measures should be incorporated into the town Centre regeneration strategy already initiated by the local authorities of Whanganui in order to attract new inhabitants to the area and retain its working population. Cultural traditional activities should also be encouraged in order to transform the historic inner-city of Whanganui into a most sought-after area, through attracting numerous visitors from other parts of New Zealand.

The adaptation of older vacant buildings for other purposes forms a very important aspect of any town centre regeneration scheme (Ball, 1999). The adaptation process implies selecting relevant novel technologies and design concepts that will support the older buildings to adjust successfully to contemporary requirements without destroying the existing urban form. Adopting the adaptive reuse approach for the redevelopment of the older vacant buildings in the CBD of Whanganui would provide an added benefit to the regeneration of the region in a sustainable way, through transforming these buildings into useable and accessible units (Bullen & Love, 2011b). The adaptive reuse strategy would also enable the local authorities and owners of older vacant buildings in Whanganui's inner-city to minimise their economic, social, and environmental costs, in a quest for continued urban expansion and development.

Chapter 4. Unintended consequences of the earthquake-prone building legislation: An evaluation of two city-centre regeneration strategies in New Zealand's provincial areas

This chapter was developed from Publication № 3, *which has been published in final form in the International Journal of Disaster Risk Reduction,* 49, 101644. DOI: https://doi.org/10.1016/j.ijdrr.2020.101644

Abstract

This paper describes two city-centre regeneration strategies by reviewing existing literature and carrying out case study analysis to examine the approaches to City Centre Regeneration (CCR) pursued by two provincial areas in New Zealand.

Findings from the exploratory case study analysis of the two examined cities revealed different approaches to CCR: (i) Invercargill – 'demolition for redevelopment'; and (ii) Whanganui – 'heritage conservation for regeneration'. Whereas the earthquake-prone building legislation has created logical arguments that have put earthquake-prone historical buildings in the spotlight for demolition in areas with weaker attachment to place, the same legislation has been used as a catalyst to provide opportunities for the seismic upgrade and conservation of the

earthquake-prone historical buildings in areas with a stronger attachment to place.

These discoveries imply that the actions (or inactions) of councils shape the way their communities perceive the value of the historical buildings in their city centres. Also, the decreasing retention and increasing demolitions trends of heritage buildings in New Zealand's provincial city centres as a result of the BEPBAA, have now triggered discussions that have contributed to the recent regulatory and financial incentives initiated by the central government to address the unintended consequences of the legislation on the vitality of provincial areas.

4.1 Introduction

The overall identity of an urban area is typically defined by its city-centre. Most city centres transfer deep evident fingerprints and narratives of the social, economic, and cultural development of urban areas through their built heritage form (Burayidi, 2013b). While historical buildings in the city centres of many New Zealand's provincial areas are characterised by underutilised earthquake-prone historical buildings, the quest to regenerate previously vibrant city centres, currently experiencing a period of protracted decline, has gained momentum. City centres embody the overall heritage of a place due to the significant collection of historical buildings they possess (Yakubu et al., 2017). Also, historic city centres present opportunities and important resources for promoting economic and socio-cultural sustainability, built heritage conservation, and regulatory compliance through the reuse of historical buildings (Aigwi, Egbelakin, et al., 2019).

Despite the significance of city centres, some existing literature identifies how technological advances, the popularity of private vehicles, and societal and market forces Post-World War II, induced economic decline in the inner cores of provincial cities due to mass emigration of businesses, workers, and consumers to bigger cities (Aigwi, Phipps, et al., 2019; Burayidi, 2013b; Fogelson, 2003; Frieden & Sagalyn, 1991; Martinez-Fernandez et al., 2016; Talen & Jeong, 2019; Ushchev, Sloev, & Thisse, 2015; Wang, 2019). Also, provincial city centres are typically dominated by low-rise historical buildings and are usually observed to lack the ascendency of corporate presence about both economic influence and modern structures when compared to bigger cities (Frieden & Sagalyn, 1991).

In response to decades of city-centre decline in provincial centres, a common challenge is the effective identification of viable uses and financial support for the redevelopment of underutilised or vacant spaces (Faulk, 2006). Other causal factors of city-centre decline in provincial areas are linked to obsolescence factors (Langston, Wong, Hui, & Shen, 2008), impacts of globalisation on local industries (Martinez-Fernandez et al., 2012), de-industrialisation (Reckien & Martinez-Fernandez, 2011), building conditions, socio-economic and building regulations (Yakubu et al., 2017).

While strong demographic and economic forces including economic agglomeration and aggregation, impacts of global regionalism and globalisation, and ageing population may contribute towards shaping the city centres of New Zealand's provincial areas into stagnation or decline within the next 30 years (Wood, 2019), a focus on how to address stagnation or decline through locally-mobilised urban regeneration pathways is essential for the revitalisation of provincial areas. These provincial regions are now struggling to regenerate their central areas with a significant amount of derelict heritage buildings, most of which were built during the recovery period following the 'great depression' that struck New Zealand in the early 20th century (Wilson, 2005).

A high proportion of historical buildings in New Zealand's provincial city centres have heritage significance and serve as cornerstones to the areas. These buildings usually reflect the least levels of structural safety during earthquakes. Threats of natural hazards, especially the recent sequence of the 2010/2011 Canterbury earthquakes revealed the seismic vulnerability of many historical buildings (Ingham & Griffith, 2010; Potter et al., 2015). In order to promote the resilience of seismically vulnerable buildings to future earthquakes, a new regulatory mechanism mandated building owners to strengthen their earthquake-prone buildings to the minimum required New Building Standard (%NBS) rating within a given timeframe otherwise the buildings will be required to be demolished (MBIE, 2016a).

Due to the uncertain financial feasibility of retrofitting earthquake-prone buildings, some owners may take the 'wait and see' approach to their historical buildings waiting for the specified legislative timeframes to elapse, essentially facilitating 'demolition by neglect' (Aigwi, Egbelakin, et al., 2019; Beauregard, 2013). This decision would have implications for the wider community because whatever retrofitting decisions the building owners make, there would be downstream impacts on the socio-economic environment of the surrounding area. As an unintended consequence of the earthquake-prone building legislation, provincial town centres are 'plagued' with underutilised historical buildings

(Yakubu et al., 2017), which is a major driving force for the local authorities of such areas to develop CCR strategies.

The newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016, henceforth (BEPBAA), mandates local councils to ensure that owners of earthquake-prone buildings in territories comply with the updated seismic safety requirements (MBIE). Many building owners within those areas, especially the ones with buildings on the priority thoroughfares, are usually slow to engage with councils to financially commit to the compliance cost of retrofitting their buildings, partly due to uncertainty relating to return on investments (Aigwi, Phipps, Ingham, & Filippova, 2020). Since the socio-economic activities that happen in provincial city centres greatly influence the sustainability of the areas, local councils are implementing CCR initiatives to create dynamic city centres that are vibrant and attractive places for people to do business, shop and be entertained.

"City Centre Regeneration" (CCR) involves integrated and widespread visions and actions, taken to resolve urban problems through the planning and establishment of long-lasting economic, social, physical and environmental improvements in urban areas that have been subjected to prolonged decline (Balsas, 2004; Bromley, Tallon, & Thomas, 2005; Roberts, Sykes, & Granger, 2016). According to earlier studies, regeneration of the inner cores of shrinking cities has been very significant in stimulating total city-centre vibrancy, mainly because city centres usually constitute the backbone of historic quarters (Bromley et al., 2005; Rubenstein, 1992). While many local governments have launched and implemented various CCR strategies over the years, the inner cores of some of

New Zealand's provincial areas may still be observed to be at the verge of decline (Aigwi et al., 2018; Yakubu et al., 2017).

This study, therefore, presents a review of existing literature and case study analysis to examine the approaches to CCR pursued by two provincial areas in New Zealand. To deliberate on local policies that can improve their CCR process through the retention of underutilised historical buildings, the discussion draws together analysis from the case study areas in comparison with international examples. Recommendations on appropriate programs and effective responses are provided as a guide for other territorial authorities that are pursuing CCR through the involvement of historical buildings.

4.2 Existing city centre regeneration (CCR) models

Following years of relative neglect and decline of city centres, triggered by vast decentralisation in the mid-20th century (Travers & Weimar, 1996), and the loss of main industries and relocation of a big proportion of the local population to bigger cities, affected local government authorities are pursuing effective ways to attract investments back to city centres (Balsas, 2000, 2007). This implies that although cities around the world will have to develop their own strategic approach towards city-centre regeneration, there are common grounds and lessons from the past (Everton & Hughes, 2017). Different strategies have been implemented to regenerate declining city centres (Frieden & Sagalyn, 1991; Heath, Oc, & Tiesdell, 2013; Helms, 2003; Porter, 1995). Most successful city-centre regeneration attempts (particularly for smaller cities) have been attributed to either the Business Improvement Districts approach (Davies, 1997; Lloyd, McCarthy, McGreal, & Berry, 2003; Mitchell, 2001), the Main Street programmes (Francaviglia, 1996; Rifkind, 1977; Robertson, 2004), or the Town Centre Management approach (Coca-Stefaniak, Parker, Quin, Rinaldi, & Byrom, 2009; Forsberg, Medway, & Warnaby, 1999; Warnaby, Bennison, & Davies, 2005; Whyatt, 2004).

4.2.1 Business Improvement District (BID) Model

The BID model for city-centre regeneration is a bottom-up approach involving business and property owners within the boundaries of a specified city-centre, proactively imposing a compulsory extra levy (or tax) on themselves every year in order to collectively fund additional public improvements for the enhancement of their commercial precincts (Balsas, 2000; Hoyt, 2006; Morçöl & Zimmermann, 2006; Ward, 2007). The BID model originated in North America and is now widely applied in other parts of the world, including Europe, Africa, Asia, and Australia (Ward, 2007). In the face of some challenges such as inconsistent nomenclature and absence of systematic adoption patterns across the US, the development of the BID scheme as a regeneration strategy has been linked to several political and socio-economic conditions such as city-centre decline following earthquake and fire disasters; urban sprawl; the proliferation of new forms of retail and built environments; declining tax base; and the embracing of public-private partnership for urban regeneration (Briffault, 1999; Burayidi, 2013a; Lloyd et al., 2003; Morçöl, Hoyt, Meek, & Zimmermann, 2017; Wolf, 2006). Similarly, these explanations have also been used to describe the propagation of the BID schemes to regenerate declining city centres in the UK (Lloyd et al., 2003), Canada (Hernandez & Jones, 2008), and other countries (Ward, 2007), bearing in mind that the causal factors of city-centre decline are often location-specific (Hoyt, 2006).

4.2.2 Main street approach

The main street approach is used widely in the United States and most parts of Europe and Asia, to regenerate shrinking city centres and retail districts (Balsas, 2000). The main street programme was developed by the National Trust for Historic Conservation in the late 1970s to assess the local opportunities of smaller cities in the United States with a significant proportion of historical buildings, and address city-centre shrinkage based on a four-point agenda incorporating design, organisation, promotion, and economic restructuring (Robertson, 2004). The focus of the main street approach is on the development of wide-ranging city-centre regeneration strategies to re-activate economic development within a historic conservation context (Beaumont, 1994). The main street approach has now become a very popular CCR approach adopted by several cities around the world with important historic precincts, to find new economically viable alternatives for their historic resources within the city centres (Balsas, 2007).

4.2.3 Town centre management (TCM) approach

The Town centre management (TCM) approach is a widely used city-centre regeneration model in Europe, particularly in the UK, to boost local economies (Warnaby et al., 2005). A majority of TCM programmes in the UK apply the broad areas of the "4As" framework (i.e., attractions, accessibility, action, and amenities) to enhance the viability and vitality of shrinking city centres (Department of the Environment, 1994). These TCM schemes often emphasise the importance of public-private partnerships in directing both public and private funds meant for the commercial regeneration of declining city centres (Balsas, 2000). The application of TCM programmes for city centre regeneration in the UK have been identified to provide several benefits including enhanced property values; creation of more friendly, cleaner and secure city-centre spaces; stimulation of new retail and recreation activities in the city centres; and the strengthening of both corporate and tourism markets in the city-centre (Medway, Warnaby, Bennison, & Alexander, 2000).

4.3 City centre regeneration (CCR) strategies

There have been ongoing debates on how best to improve the vitality of provincial city centres (Department of the Environment, 1994; Faulk, 2006; Frieden & Sagalyn, 1991), primarily through balancing the opportunities that the reuse of their historical buildings offer in promoting economic sustainability, built heritage conservation, socio-cultural and regulatory aspects (Aigwi, Egbelakin, et al., 2019). An assessment of several major pathways to CCR that are commonly adopted include (Faulk, 2006; Robertson, 1995):

4.3.1 Pedestrian-friendly city centres

Pedestrianisation is one of the most popular strategies employed to improve the traffic conditions, environmental quality, and socio-economic status of city centres, hence, making them more pedestrian-friendly (Robertson, 1995). The volume of pedestrian traffic in a city-centre is usually used as a measurement of its positive image and vitality, rather than economic indicators alone. Sadly, even attractive buildings in the city-centre may appear dead if they do not generate public interest and the need to visit them. To avoid such 'ghost centres', some cities in the United States have successfully used pedestrian malls or skywalk systems to attract more people to the city centres, which improved the human-scale facilities and open space quality of the city centres (Banerjee, Maurya, & Lämmel, 2018; Robertson, 1993). This approach tends to be more successful in larger urban centres since provincial cities are inherently smaller and more pedestrian-friendly (fewer vehicles, narrow streets) and pedestrian malls may not bring additional foot traffic (Robertson, 1995).

4.3.2 City-centre enclosed shopping malls

Over the past four decades, enclosed shopping malls have become a widespread CCR strategy used in the United States to manage the steady reduction of city-centre retail sales, blamed on the vast popularity of suburban malls (Robertson, 1995). There have been some identified positive spill-over benefits through promoting shoppers visitations to neighbouring businesses such as restaurants and cafes, hence, increasing a sense of community pride (West & Orr, 2003). However, city-centre enclosed shopping malls have been criticised (Lorch & Smith, 1993).

As a significant criticism, the 'fortress effect' is a pedestrian movement pattern whereby a city-centre enclosed shopping mall would most likely eventually become an island of segregated activities from the remaining parts of the city-centre (Lorch & Smith, 1993). Shoppers would tend to prefer the design, architectural and self-sufficient and weather-controlled amenities of enclosed shopping malls and ignore the surrounding businesses in the central areas (Pelloi, 1983). In order to address this fortress effect on surrounding city-centre businesses to promote city-centre regeneration, the design of the enclosed shopping mall should be done in such a way that it would integrate other surrounding businesses on the main street (Faulk, 2006).

The ‘distance-decay effect’ is another pedestrian movement pattern that suggests that the overflow benefits from the city-centre enclosed shopping mall may be unevenly distributed across other businesses located in more than one or two blocks from the enclosed mall (Davies & Bennison, 1978). These further surrounding businesses may suffer lesser activity from the enclosed mall’s magnetic force partly because the malls have as retail focal points by pedestrians (Lorch & Smith, 1993). Furthermore, city-centre enclosed shopping malls could greatly promote a ‘commercial gentrification effect’, whereby national chain stores that sell speciality substances tend to suppress local independent businesses from offering their goods and services to potential shoppers (Gillette Jr, 1985). Apart from the three effects above, which are identified as criticisms of the city-centre enclosed shopping malls, they have also been criticised due to aesthetic reasons (Frieden & Sagalyn, 1991).

4.3.3 Heritage conservation

Built heritage conservation is a city-centre regeneration strategy that takes advantage of the abundance of underutilised historical buildings in city centres with unique aesthetic characteristics, to redevelop them (Aigwi et al., 2018; Aigwi, Egbelakin, et al., 2019; Yakubu et al., 2017). The adaptive reuse approach has been widely applied in the redevelopment of city-centre historical buildings through changing their existing uses to viable new ones (Aigwi et al., 2018; Aigwi, Ingham, Phipps, & Filippova, 2020). Underutilised city-centre historical buildings and structures in larger cities have been successfully redeveloped to special historical districts or festival market places in the United States (Robertson, 1995). The festival markets in redeveloped city-centre historical buildings are usually characterised by (Robertson, 1995): (i) a rare blend of local speciality shops; (ii) targeted potential users such as younger adults, erudite, and affluent market people; (iii) strong prominence of food and entertainment; (iv) absence of chain department stores; (v) strong emphasis on architectural or historical themes. Hence, these features differentiate festival markets from ordinary shopping malls.

Some eminent international successful cases of city-centre regeneration through the reuse of historical buildings as festival markets to conserve built heritage in the United States include the Ghirardelli Square, San Francisco; the Faneuil Hall, Boston; and the Union Station, St. Louis (Robertson, 1995). Nevertheless, some failures have also been noted (Sawicki, 1989). Apart from festival markets, most larger cities in the United States and New Zealand have created city-centre historic precincts to regenerate the city centres. Some successful cases of larger cities in the United States that created historic precincts in their city centres to regenerate the areas include Laclede's Landing, St. Louis; Shockoe Slip, Virginia; Lowertown, St. Paul; and Oldtown, Sacramento (Robertson, 1995). Main Street programmes have also been proven to stimulate city-centre regeneration in provincial cities in the United States such as Hot Springs, South Dakota;

Madison, Indiana; and Galesburg, Illinois (Robertson, 2004; Skelcher, 1992). The success of these Main Street programmes was attributed to the massive support rendered to the smaller cities by the National Trust for Historic Conservation, based on the four-point agenda of the Main Street strategy – organisation, promotion, design, and economic restructuring (Robertson, 2004).

In New Zealand, Auckland city council adopted the historic precinct approach for successful regeneration of the Britomart transport centre, which is now Auckland's central transportation hub (Blight, 2013). Also, Dunedin is an example of a major provincial city in New Zealand that has successfully used the Warehouse precinct revitalisation strategy to regenerate its city-centre historic area (Dunedin City Council, 2013).

4.3.4 Waterfront development

The older urban settlements usually enjoy proximity to water bodies, which probably was an important reason for their early establishment in the first place. The success of the waterfront development as a CCR strategy is often connected to the unique amenity offered to the public by naturally attracting people to the sight, feel, and sound of water (Sairinen & Kumpulainen, 2006). In the past, public access to waterfronts was very rare as people were often cut-off by highways, railways and factories. Many historic cities in the United States and Europe in the 1970s (Marshall, 2004), and New Zealand in the early 2000s (Murphy, 2008), only started reconsidering the opportunities that city-centre waterfronts offered, when they were experiencing a significant decline in their land values and economics of their riverfronts.

A mix of different land uses (e.g., fishing, manufacturing, open space, housing, hospitality/retail, recreation and tourism) is often incompatible with each other, hence, creating a major problem for waterfront development plans. To determine waterfront priorities for different uses, they have been classified into water-dependent; water-related; and water-enhanced uses (McBee, 1992). Whereas the water-dependent uses including ship-building, ferry terminals and marinas entirely depend on waterfronts to thrive, water-related and water-enhanced uses such as restaurants, resorts, seafood processing facilities, aquariums, hotels and apartment buildings, are usually enhanced by the location of the waterfront amenities but can also thrive in other settings.

The preferred use of city-centre waterfront developments either as public or private spaces is another big issue that city-centre regeneration decision-makers may face. The use of waterfront developments as public spaces has been identified to be more advantageous, especially by attracting many people to waterfront events (such as festival markets) and increasing the city's tax revenues (Robertson, 1995). On the other hand, private waterfront developments such as restaurants, hotels, and housing, usually intensify the amount of privatised free open spaces available for public use, hence restricting public access to waterfront amenities (Beauregard, 1986). Since often city centres lack adequate open spaces mostly due to their unique grid-system street layouts, it would be a sensible city-centre regeneration strategy to develop waterfront amenities for public use. Examples of cities that have successfully developed attractive waterfront public spaces to revitalize their city centres include (i) the United States – Rochester in New York, Portland in Oregon, St. Louis, and Louisville in Milwaukee (Robertson, 1995); (ii) New Zealand – Auckland city's Viaduct waterfront redevelopment project which started in the early 2000s (Murphy, 2008), and the Wynyard Quarter regeneration by Panuku Development which started in 2011 (Panuku Development Auckland, 2019); (iii) UK – Chatham in Kent (Jacobs, 2004); (iv) Canada – Toronto (Lehrer & Laidley, 2008); (v) Singapore – Clarke Quay (Chang & Huang, 2011); and South Africa – Cape town (Visser & Kotze, 2008).

4.3.5 Office space development

The office space development strategy through the transformation of city centres into administrative, financial, and professional services centres, is typically the focus of most corporate-centre approaches to city-centre regeneration (Frieden & Sagalyn, 1991). The corporate-centre approach allows different business units to come under one corporate umbrella (Ides, 2002), and can impact the performance of multi-business firms through the main economic activities, additional value activities, and shared services of the businesses (Pettifer, 1998). This city-centre regeneration strategy usually targets educated professionals, tourists, and convention attendees, who may be attracted to the central part of a city with a lot of office spaces and corporate services, and are likely to use surrounding business centres, hotels, restaurants, and cafes located in the city centres (Faulk, 2006).

However, it would be difficult to attract many corporate offices to provincial city centres due to their reduced commercial vitality. Also, a boom in office space development using the cooperate-centre strategy in the United States in the 1960s led to the construction of too many city-centre offices, which had several consequences (Dowall, 1986). For example, the oversupply of pre-existing office spaces in the 1980s made it more challenging to get tenants, resulting in a rise in the number of underutilised and devalued office spaces, especially in older inner-city buildings (Robertson, 1995). While this reduction in the value of city-centre office spaces from underutilised buildings led to a corresponding reduction in the tax base of cities, the capabilities of other activities in city centres were diminished, hence, greatly reducing the popularity of office space developments for CCR.

4.3.6 Special activity-based facilities

Significant public infrastructure is often located in city centres. Facilities such as stadiums, showgrounds, convention centres, are often located in such a way that their contribution to the regeneration of a city-centre would generate spillover benefits for nearby businesses such as restaurants, hotels, cafés, retail stores, etc. Subsequently, these spillover benefits on surrounding businesses would contribute to livening-up city-centre main streets during weekday evenings and weekends; hence, regenerating blighted central areas (McBee, 1992).

Activity-based facilities could vary in their schedule patterns. For instance, while convention centres and showgrounds may be able to schedule events throughout the year, stadiums may not. Nevertheless, a common issue with activity-based facilities is related to public cost, which in most cases are insufficient for their maintenance (Robertson, 1995). Also, when activity-based generators are not in use, they could become dead spaces. Due to their specific functions and sizes, it could be challenging to integrate the architectural design of special activity-based facilities with other existing buildings in central areas (Rosentraub, Swindell, Przybylski, & Mullins, 1994).

4.3.7 Transportation improvement

Sometimes inadequate transportation infrastructure can discourage the public from visiting the city-centre. For example, inadequate parking spaces, travel time/distance, safety concerns, and traffic congestion (Faulk, 2006). Whereas safety concerns and traffic congestion are less prevalent in the central areas of provincial cities than in larger ones, parking could be an issue for any size of cities. Moreover, public transport improvement has a significant role to play in the regeneration of provincial city centres where they are either rare or non-existent. As a result, people tend to wait for longer durations to be able to commute to city centres, which could be a major deterring factor for the use of public transport in smaller cities (O'Sullivan, 2012).

4.3.8 Housing and socio-cultural attractions

Various cities in the United States and Europe have invested in housing and socio-cultural attractions as a way of attracting more people into city centres to regenerate the areas (Faulk, 2006). The adaptive reuse of inner-city historical buildings such as mills and warehouses to hotels and residential units, the new construction of multi-storey and low-rise housing apartments have also been found to contribute significantly towards enhancing the vitality of city centres after standard business hours (Birch, 2002). Also, when special activity-based facilities are built in a city-centre, there is usually substantial investment in the construction of new hotels, in anticipation to accommodate tourists, sports fans, visitors and conventioneers (Robertson, 1995). Other forms of socio-cultural attractions, such as street art on the walls of city-centre historical buildings (Whanganui District Council, 2019c), restoration of old movie theatres and opera houses, libraries, and museums, may also help to draw more locals and visitors to the city centres.

4.4 Prevalence of underutilised historical buildings in New Zealand's provincial city centres

City centres constitute a substantial part of a city's image and identity, sense of community, economic development appeal, and tax base from property rates, and also, embody the overall heritage of a place due to the significant collection of historical buildings they possess (Burayidi, 2013b). Many historical buildings in New Zealand's provincial city centres may be underutilised for a variety of reasons, including building conditions, socio-economic, and regulatory factors (Yakubu et al., 2017). With a focus on regulatory aspects, some owners may be willing to comply with the BEPBAA but are not be able to afford the cost of the seismic upgrade. On the other hand, some owners may be uncertain about the cost implications of seismic strengthening in comparison with the return on investment on their historical buildings (Aigwi et al., 2018). While a majority of these buildings may not qualify for national heritage incentives, it is also difficult for owners to secure bank loans and insurance, due to their vulnerability to earthquakes (Ingham & Griffith, 2010).

However, in situations where it becomes hard to attract tenants to these buildings due to seismic safety concerns for users, the buildings may start experiencing a drop in their value (Yakubu et al., 2017). A more extended period of vacancy could lead to a reduction in the value of the buildings. In some instances, building owners may go as far as reducing their rents, as a desperate measure to keep their existing tenants. Alternatively, owners may opt to transfer the burden of strengthening and responsibility of maintaining historical buildings to other investors, especially when the taxes on the properties begin to outweigh their value (Listokin, 2017). At this stage, it becomes difficult to find willing buyers.

Furthermore, owners may apply for building consents from local councils to demolish their underutilised earthquake-prone historical buildings and rebuild, or decide to defer maintenance on their buildings when building consent applications for demolitions are unsuccessful (Yakubu et al., 2017). Hence, a scenario of where out-of-town property owners make poor maintenance decisions about their assets (Dubin, 1998), and neglected historical buildings would emerge in the affected city centres. Consequently, there would be significant adverse effects on surrounding property values, especially from larger and more visible underutilised historical buildings also referred to as “White elephants” (Moe & Wilkie, 1997) in the main streets of New Zealand’s provincial city centres.

4.5 Significance of 'attachment to place' towards city centre regeneration (CCR)

Research on the theories and contribution of 'attachment to place' regarding urban regeneration projects and its inferences for planning has increased within the last two decades. 'Attachment to place' refers to the emotional bond formed by people with their communities (Altman & Low, 2012; Brown, Perkins, & Brown, 2003; Chukwudumogu, Levy, & Perkins, 2019; Manzo & Perkins, 2006; Theodori, 2001). The influence of 'attachment to place' on the behaviours and motivations of communities in urban development and planning processes have been linked to some socio-cultural actors such as length of residence and familiarity (Hay, 1998; Taylor, 1996), sense of rootedness and bondedness (Vitek & Jackson, 1996), sense of community (Perkins & Long, 2002; Pretty, Chipuer, & Bramston, 2003), and value of shared identity (Hummon, 1992) within a community. These actors are often intertwined to illustrate the significance of 'attachment to place' regarding the commitment and participation of community members during city-centre regeneration pursuits.

Communities with residents that have stronger levels of 'attachment to place' often contribute more efforts to urban regeneration project implementations (Manzo & Perkins, 2006), because such residents usually have a higher motivation to stay, conserve, protect and make improvements to their shared community assets (Mihaylov & Perkins, 2014; Plunkett, Phillips, & Ucar Kocaoglu, 2018). However, some factors such as threats from disasters, derelict built assets, unrealistic health and safety requirements, and low quality of life of a community may disrupt the level of residents' commitment towards having a stronger 'attachment to place' (Mihaylov & Perkins, 2014).

While CCR encompasses a range of community actions and policies guided by a combination of strategies, theories, frameworks, and practice constructs, the connectedness of people to a place could either be reinforced or weakened, through their development capacity of the opportunities of the place, usually resulting in a higher level of social capital (Plunkett et al., 2018). Hence, the ability to develop and make use of this social capital to stimulate potential CCR outcomes through constructive and cooperative activities remains the chief component for the sustainable regeneration of urban areas (Mihaylov & Perkins, 2014). The significance of 'attachment to place' to CCR, therefore, presents an opportunity to discover ideas and influences regarding shared values and experiences towards CCR.

4.6 Case studies

The case study method (Yin, 2017) has been adopted for this research to describe the CCR strategies pursued by two provincial areas (Whanganui and Invercargill) in New Zealand, and examine their approach to CCR. These two provincial areas (see Figure 4.1) have been chosen because of the abundance of underutilised historical buildings in their city centres, and the ongoing socio-economic stagnation and decline in the areas (Aigwi, Phipps, et al., 2019). Whanganui and Invercargill were among the first five earliest and most prominent cities in New Zealand (Aigwi, Phipps, et al., 2019; Thorns & Schrader, 2010), and are large urban areas in the medium seismic hazard zone of New Zealand (MBIE, 2017; Statistics New Zealand, 2018b).

Figure 4.1: Map of New Zealand showing the case study areas. Source: (Google Maps, 2019b)

The two case studies – Invercargill and Whanganui, were both established in the early-1900's and were used for early settlement in New Zealand. With their strategic locations, both towns had plans for significant population growth and expansion and invested heavily in the building stock and infrastructure. Following the era of the great depression (Wilson, 2005), World War II, first and second oil crises, and the floating of New Zealand's dollar in 1985 (Decker & McCracken, 2018), the population and economic growth they had anticipated did not realise.

This was partly because there was underperformance in their main industries (i.e., farming, mining, housing and manufacturing) in terms of income status and employment (Statistics New Zealand, 2018a). Also, some upshots of the 2011/2012 Canterbury earthquakes exposed how New Zealand's provincial areas differ from the bigger cities in the aspects of risks, socio-economic physiognomies, expertise, challenges, and opportunities, regarding resilience (Eaqub, 2014). Loss of employment and vulnerabilities of building stock exposed by the Canterbury earthquakes resulted in a mass movement of businesses, workers, and consumers to bigger cities (Burayidi, 2013b; Martinez-Fernandez et al., 2016; Talen & Jeong, 2019; Ushchev et al., 2015). Auckland and Wellington being the economic and government hubs of New Zealand are two big cities that have provided better economic opportunities and ascendancy of corporate presence, and hence, have attracted the vibrant younger populations from these provincial areas over the years (Aigwi, Phipps, et al., 2019).

4.6.1 The city of Whanganui

Whanganui is a major provincial city in the Manawatu-Whanganui region, historically used as an early site for pre-European Māori settlement in New Zealand, and was among the earliest largest towns to become a city in New

Zealand during the mid-19th century (Grimes & Tarrant, 2013). Whanganui is currently one of New Zealand's 13 large urban areas (Statistics New Zealand, 2017b). The city is on the west coast of New Zealand's North Island and is nicknamed "the river city" because of its north-western location around the entrance of the Whanganui river, which is the third-longest navigable watercourse in New Zealand. Whanganui's current population count is 45,309 inhabitants (Statistics New Zealand, 2018b). The city's local economy thrived under its agricultural sector, particularly from dairy and meat production. Whanganui first started experiencing a change in its socio-economic prosperities in the 1970s, which has been attributed to its failing growth prospects, and shortage of skilled workforce over the years (Baxendine, Cochrane, Pool, & Poot, 2004). The city has also experienced a significant rise in its ageing population within the last two decades (Filippova & Noy, 2019).

Whanganui's city-centre spatially features a semi-complex system of narrow roads and courtyards that accommodates its historical urban fabric, with buildings that are typically between three to four storeys high. Two squares (i.e., Trafalgar and Majestic squares) and one main street (i.e., Victoria avenue) represent the commercial inner-core of Whanganui. Victoria Avenue is the main retail area of Whanganui's city-centre but has been observed to be losing population due to mass emigration of businesses along with their employees to other peripheral areas. Currently, Victoria avenue is characterised by many underutilised or vacant pre-1935 historical buildings, which may be due to certain factors that are directly or indirectly linked to mass emigration of businesses from the city-centre, such as regulatory compliance issues with the recently amended BEPBAA by building owners (Yakubu et al., 2017). As a result, most of these commercial historical building owners are under pressure to seismically strengthen their buildings, even as they may solely rely on rents to pay for the cost of the seismic upgrade and other building expenses (Filippova & Noy, 2019). In some situations, the buildings may not generate enough income to cover such expenses. Also, when owners of affected earthquake-prone historical buildings fail to keep their tenants due to seismic safety concerns from the tenants, and disruptive seismic upgrade process, their ability to raise capital for seismic upgrade works on their buildings decreases, hence, promoting underuse and obsolescence of these buildings (Yakubu et al., 2017).

A CCR strategy was initiated in 2010 after a sectional review of Whanganui district council's (WDC) plan (Whanganui District Council, 2016). The CCR strategy focused on providing coherent endeavours that would guide infrastructure development, changes in plans and resource consents, towards attracting more people into the commercial city-centre of Whanganui (refer to Figure 4.2 for the scope of the project). This CCR strategy is quite different from an ad-hoc programme because it offered a general plan that extensively balances differing objectives and interests in the direction of achieving sustainable outcomes for the area through realistic activities, priorities, and timelines. Besides, the strategy was intended for the following reasons (Whanganui District Council, 2016): to (i) develop an integrated approach for the reconciliation of multiple interests within the city-centre; (ii) guide decision-making regarding WDC's resource management and infrastructure planning; (iii) guide redevelopment and retrofitting of historical buildings to harness the full potential of the city-centre concerning encouraging private investors; (iv) determine how to improve and integrate existing public spaces, reserves and features within the city-centre; (v) guide funding and design for infrastructure, facilities and services in consecutive 10-year plans to accomplish the objectives of the community; and (vi) facilitate a resilient and vibrant future for Whanganui's city-centre, which will, in turn, provide economic, socio-cultural, and environmental benefits for the entire city.

The initiation and development of Whanganui's CCR strategy was a combined effort between the local council staff and representatives from the following stakeholder groups (Whanganui District Council, 2016): (i) retailers and business group (including Mainstreet Whanganui Inc., Earthquake-Prone Building Taskforce, Maori Economy and Business Development Group, Whanganui and Partners, Visit Whanganui, and real estate businesses); (ii) Iwi representatives; (iii) community and social organisations (such as Road Safety, Citizens Advice Bureau, Life to the Max Trust, Community Patrol, Sustainable Whanganui Trust, and Fire Service); (iv) arts and culture sector (comprising Royal Whanganui Opera House, Sarjeant Art Gallery, Artists open studios, Quartz Studio Ceramics Museum, Rayner Brothers Gallery, Whanganui Regional Museum, NZ Society of Artists in Glass, Spacemonster, and Whanganui Musicians Club, etc.); and (v) Universal College of Learning (UCOL).

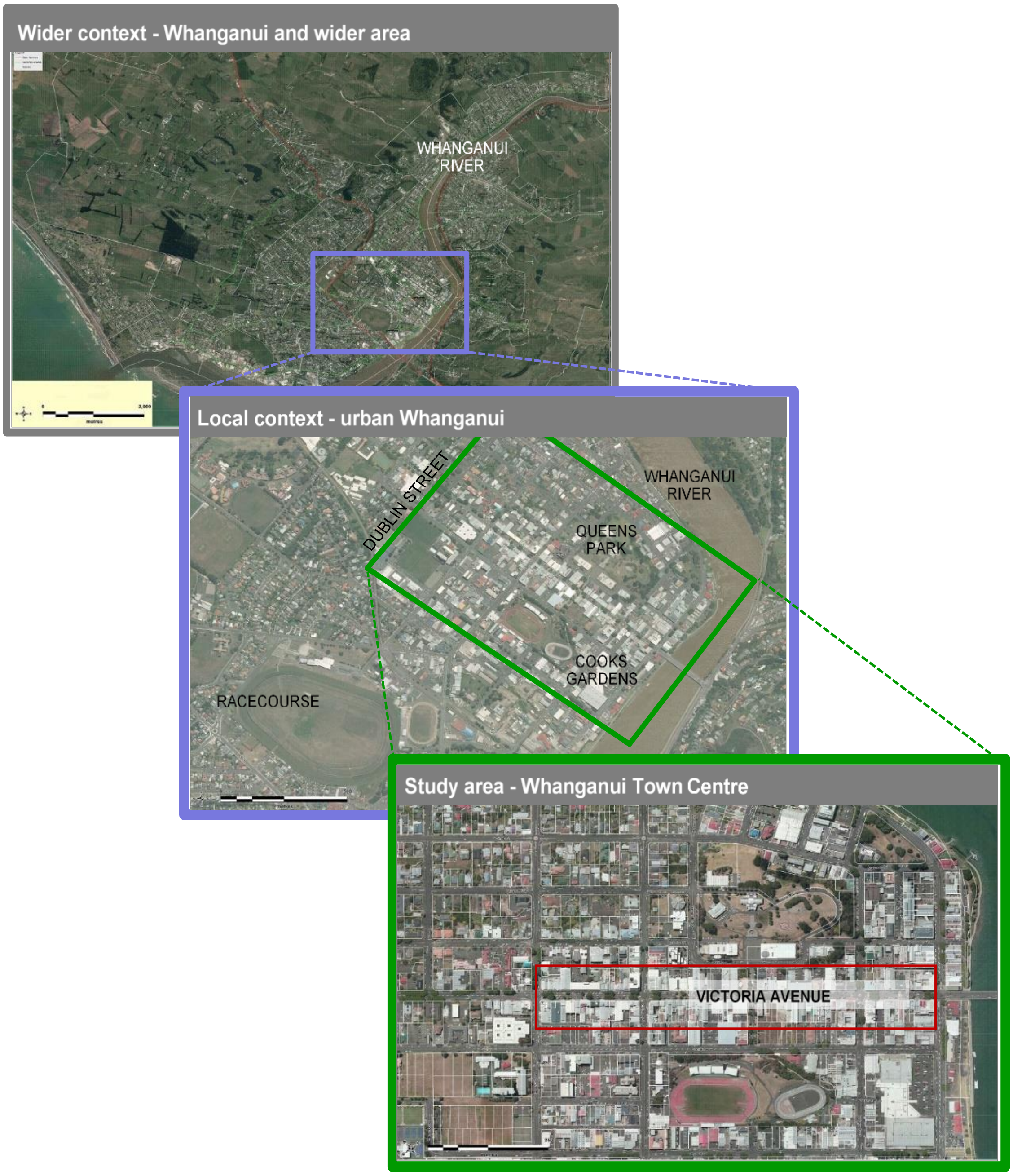


Figure 4.2: Spatial scope of Whanganui's city-centre regeneration strategy. Source: (Whanganui District Council, 2016)

Whanganui's ongoing CCR programme is getting some central government financial support including Heritage Equip (Heritage EQUIP, 2019a), the

Regional Culture and Heritage Fund, and, the National Heritage Preservation Incentive Fund (Heritage New Zealand, 2019a). The key endeavours of the CCR alongside its rationale and analysis were directed towards making Whanganui's assets and qualities more noticeable through the following proposals (Whanganui District Council, 2016): (i) targeting to bring back retailers that are currently missing from the city-centre; (ii) providing immense support for the entire retail core; (iii) pursuing big businesses to start up in the inner-city; (iv) introducing an art studio to the city-centre that would be shared by targeted artists; (v) targeting activation-focussed public art; (vi) presenting an Iwi dimension (Pool, 2013b) in the inner-city; (vii) offering some basic visitor necessities and proposing several new attractions for potential visitors; (viii) introducing new events and making changes to improve the existing ones; (ix) supporting the planned innovation quarter; (x) proposing programmes focused on attracting residential occupancy into the inner-city, improving the existing built form, and providing assistance with strengthening earthquake-prone historical building; (xi) Upgrading some targeted inner-city public spaces including footpaths; (xii) reviewing and updating the role of Mainstreet Whanganui; and (xiii) preparing a prospectus.

4.6.2 The city of Invercargill

Invercargill is the southernmost major provincial city in the Southland regional area, located on the South Island of New Zealand. With a distance of about 18km north of Bluff, the city lies within fertile farmland bordered by vast marine reserves and conservation land areas. The city has about 48,700 residents from New Zealand's urban-rural subnational population estimates (Statistics New Zealand, 2018b). Invercargill was also one of the earliest largest towns in New

Zealand (Grimes & Tarrant, 2013), and as well, is one of New Zealand's 13 large urban areas (Statistics New Zealand, 2017b). Historically, the city's local economy prospered from its vast involvement in dairy and sheep farming (Thorns & Schrader, 2010). However, the city of Invercargill suffered its first significant losses in job opportunities and economic decline when its export-led farming industries were affected by inflation across New Zealand, due to the first and second global oil crises between 1975 to 1978, which led to the floating of the New Zealand Dollar (Decker & McCracken, 2018). By the early 1980s, Invercargill's population was the fastest declining in Australasia.

Invercargill's city-centre has two wide main streets (Tay and Dee), and other prominent ones (Esk, Eye, Tweed, Ness, Don, Tyne, Spey and Forth), that were named after rivers in Scotland. These streets are characterised by blocks of historical precincts with collections of historical buildings constructed between the late 19th and early 20th centuries. Like Whanganui, the city began experiencing city-centre decline and high vacancy rates of historical buildings, especially the upper floors in the 1980s. New Zealand's recently amended BEPBAA may have also contributed to the underuse of these significant proportion of historical buildings.

The Invercargill rejuvenation programme (see Figure 4.3) was launched in 2015 as one of the nine projects of the Southland Regional Development Strategy – SoRDS, to grow the region's population with 10,000 additional people by the year 2025 (Southland Regional Development Strategy, 2016). Due to a prolonged concern regarding Southland's socio-economic vulnerability and viability, the SoRDS strategy document offers an opportunity for the prosperity of cities in the

Southland region, while focussing on building the socio-economic capacity and capability through the involvement of local leadership and national resources where applicable (Southland Regional Development Strategy, 2016).

Figure 4.3: Invercargill's city-centre rejuvenation strategy. Source: (Southland Regional Development Strategy, 2016)

As one of the cities covered by the SoRDS strategy, Invercargill may currently lack the pull to attract and hold the required number of people due to its abundance of old underutilised historical buildings in its city-centre that are in deteriorating conditions. Just like the case of Whanganui, these buildings are currently struggling to attract quality tenants whose rents would be sufficient in offsetting the cost of maintaining and upgrading the buildings to relevant building code safety requirements. The approach that is being adopted by ICC to create a vibrant, compact and contemporary city-centre, is by "skipping a generation" and introducing new modern development in the city centre, in order to meet the SoRDS year 2025 deadline (Southland Regional Development Strategy, 2016).

In line with the Resource Management Act 1991 (RMA, 1991), ICC in its district plan aims to use the 'Precinct approach' to attain a socio-economically vibrant and pedestrian-focused city-centre through the introduction of new developments and heritage protection in the area. The basis of the adopted precinct approach to city-centre regeneration is due to the area's inability to rediscover a vibrant and sustainable character for itself after extensive periods of demographic, retail, and economic decline, despite the abundance of historical buildings in the central district. As a result, the majority of the existing Edwardian and Victorian historical fabric is in disrepair or underutilised (Invercargill City Council, 2018b).

Findings from an economic performance survey of Invercargill's city-centre between the period of 2000 and 2017 revealed that there was (Invercargill City Council, 2018b): (i) 19 per cent decrease in the total number of businesses across the city-centre compared to a 26 per cent increase in nearby suburban areas; (ii) 22 per cent decrease in the total workforce across the city-centre compared to 28 per cent increase in nearby suburban areas; (iii) 30 per cent decrease in the proportion of retail businesses across the city-centre compared to 13 per cent increase in nearby suburban areas; and (iv) 29 per cent decrease in the proportion of retail employees across the city-centre compared to 61 per cent increase in nearby suburban areas. Accordingly, this economic analysis gives a clear narrative of how despite gradual population decline in the area, there is more spending in suburban centres compared to the slow spending in the city-centre (Invercargill City Council, 2018b). The implication being a shift in the shopping patterns of residents and visitors, who have increasingly preferred not to shop in the city centre, as they can meet all their commercial and retail needs in the suburban centres.

Whereas city-centre residential living has been noted to be uneconomically viable when promoting inner-city vitality in Invercargill, a joint venture (referred to as the HWCP Management Ltd) was formed between private interest groups (51 per cent stake), and ICC's property unit (49 per cent stake), to facilitate the redevelopment of a commercial retail precinct in the city-centre (HWCP, 2019). Invercargill's HWCP inner-city redevelopment block proposes to create a bustling central business district by demolishing and redeveloping most parts of an entire block of existing buildings on the pre-existing site (HWCP, 2019). This city-centre regeneration approach focuses on the redevelopment of an entire city block of underutilised (and mostly earthquake-prone) historical buildings within the boundaries of four major streets in the inner-city. The final redevelopment project aims to offer a functional precinct that will engage customer experience while integrating the new development with the surrounding historical buildings.

Furthermore, the Invercargill Licensing Trust (ILT) proposed the demolition of a class two heritage building on the local district plan, and the development of a new hotel – the ILT hotel project, as a strategy to promote Invercargill's city-centre (Invercargill City Council, 2018b). The eight-level ILT hotel is proposed to incorporate 80 suites, bars, cafés, restaurants, parking slots, and other guest amenities.

4.7 Impacts of the earthquake-prone building legislation on CCR in the two cities

The discussed CCR efforts in Whanganui and Invercargill imply that although the cities fall under the medium to high-risk seismic hazard areas of New Zealand, they may have different approaches to the commercial revitalisation of their inner-cities. Consequently, some examples are used to explain the attitude of the public regarding the contribution of historical buildings to their CCR strategies, and the unintended consequences of the existing BEPBAA on the conservation of the buildings.

4.7.1 Whanganui

The Thains building is an integral part of Whanganui's Edwardian-styled gateway to the main street of the city-centre, located at the corner of Taupo Quay and Victoria avenue (see Figure 4.4). It is a three-storey unreinforced masonry building (see Figure 4.5) with some proportion of timber construction materials (Aigwi, Egbelakin, et al., 2019). The building is listed as a heritage class B building under the local council's district plan. Whereas the ground floor was affected by flooding in 2015, it is currently an earthquake-prone building with a severely low 5% NBS rating (Aigwi, Egbelakin, et al., 2019). Consequently, the building owner made a resource consent application to Whanganui District Council in August 2017 to demolish the building. The owner cited the feasibility of seismic strengthening and lack of tenants as some of the reasons in favour of demolition.

Figure 4.4: Whanganui's main street entrance

Figure 4.5: Thains Building

Since retaining the building was no longer an option that was economically feasible from the owner's perspective, a proposal was made for the community or the council to either compensate the full seismic upgrade and refurbishment cost or purchase the building if they required it to be saved. Without any luck, the owner further submitted to the council to approve the demolition consent as an incentive to enhance the prospects of selling the building to a buyer who could seismically upgrade and redevelop the building. However, as members of the Whanganui's earthquake-prone buildings (EQPB) task force, Mainstreet Whanganui, and other heritage advocates were concerned about the heritage significance of the building to the city's central streetscape, they sought for alternative options to conserve the building. Opportunities for seismic strengthening cost-sharing with neighbouring building owners were also explored by the EQPB task force but not pursued.

In May 2018 Whanganui district council called for public submissions on the application for demolition by the owner of Thains building (Whanganui District Council, 2019a). The council received 32 submissions that opposed the application to demolish Whanganui's Thains building from a total of 33 submissions, with only one neutral submission (Whanganui Chronicle, 2019b). A primary concern of most of the submitters that opposed the demolition consent was that it would create an irrevocable loss of the region's substantial heritage assets, and negatively impact the values of historic heritage, which is contrary to Whanganui district council's heritage policies and objectives provided in the district plan. Another concern by the public opponents was that an approved demolition consent for the Thains building would generate a precedent for more demolitions of inner-city historical buildings on Victoria avenue – Whanganui's main street.

The general theme of the opponents' recommendation was for Whanganui district council to work with the Thains building owner to establish the best alternatives for seismic strengthening and reuse, which could offer useful information and future direction for owners of other underutilised earthquake-prone buildings in Whanganui's city-centre. Otherwise, the council would have to bear the burden of dealing with an abundance of old historical buildings that have been abandoned by their owners due to the high cost of seismic strengthening and low return on investment. The demolition consent application was declined in August 2018 (RNZ, 2019). This decision validated a 'heritage conservation' approach to city-centre regeneration in Whanganui with the following supporting factors including (i) inconsistencies with the Resource Management Act 1991 (RMA, 1991); (ii) the inability of the application to demonstrate an exploration of all feasible alternatives leading to demolition as the last option; and (iii) the community support towards retaining heritage buildings.

After the unsuccessful building consent application for demolition, the owner of Thains building eventually sold it to one of the submitters who advocated to conserve the building during the public hearing process. Though the new owner intended to retain and conserve the historical building and was already planning to close for renovations on 31st July 2019 after receiving support from Whanganui Heritage Grant Fund (Whanganui Chronicle, 2019a), the Thains building was devastated by a fire that broke out in the upper floor residences on 20th July 2019. The fire made the building to be structurally unstable (Whanganui Chronicle, 2019c). Following inspections and assessments by WDC's building control officers, an independent engineer, and fire investigators, on the extent of damage and risks the Thains building would pose to the passers-by and adjacent buildings and businesses, the building was deemed a 'Dangerous Building' under sections 121 and 124 of New Zealand's Building Act 2004 (MBIE, 2004). Based on the advice from the post-fire risk assessment and investigations of the building (see Figures 4.6a, 4.6b and 4.6c), a resource consent application to demolish the building was approved by WDC in the interests of public safety (Whanganui Chronicle, 2019c; Whanganui District Council, 2019b).


Figure: 4.6a


Figure: 4.6b


Figure: 4.6c

Figure 4.6: The extent of damage caused by fire. Source: (Whanganui Chronicle, 2019c)

4.7.2 Invercargill

The ongoing city-centre regeneration strategies in Invercargill are discussed using the situations surrounding two significant projects in the area (refer to Figure 4.7) – HWCP inner-city redevelopment block, and the ILT Hotel development.

Figure 4.7: Invercargill city-centre regeneration project scope. Source: (Google Maps, 2019a)

4.7.2.1 HWCP inner-city redevelopment block

The HWCP Management Ltd made an application to Invercargill City Council (ICC) in October 2018 for resource consent to redevelop a block of several underutilised commercial historical buildings within the city-centre into a multi-faceted facility to be named 'Invercargill Central' (Invercargill City Council, 2019). The proposed location for the HWCP redevelopment project has boundaries with four major central streets (i.e., Dee, Esk, Kelvin, and Tay streets; on their east, south, west, and north sides, respectively). See Figure 4.8.

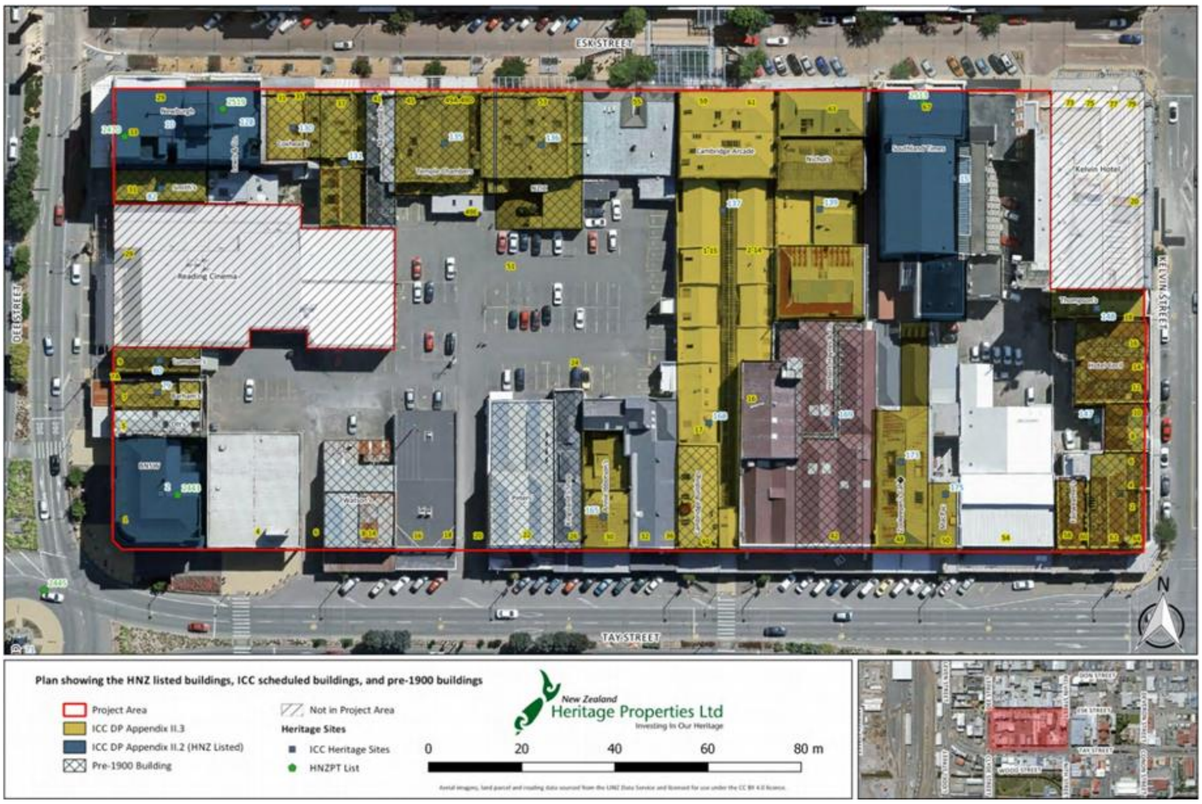


Figure 4.8: HWCP inner-city redevelopment block. Source: (Woods, Cropper, & Cawte, 2019)

The building consent application proposed two stages of redevelopment to rescue Invercargill's city-centre from its existing decline trajectory, and, for the inner-city which has accumulated more than a century's historical building stock with heritage elements, to start functioning credibly as the entertainment and retail core of the city through the reinforcement of feasible commercial activities by 2021. The current cost estimate for capital expenditure on the HWCP project was between $180 to 200 million NZD (Invercargill City Council, 2019).

The applicant proposed the following activities in the first stage (Invercargill City Council, 2019): (i) demolition of two Category-2 heritage buildings on the national heritage list (Heritage New Zealand, 2019b), and assessed locally to have medium heritage values; (ii) alteration to the façade of an additional Category-2 heritage building on the national list (Heritage New Zealand, 2019b), and assessed locally to have a high heritage value; (iii) demolition of 13 historical buildings characterised as Class-2 historical buildings in ICC's district plan, and assessed to have low heritage values; (iv) retention of the façades of three Class-2 historical buildings with optimal architectural components on Esk street; and (v) incorporation of one Category-1 heritage building on the national heritage list (Heritage New Zealand, 2019b). A total of 16 historical buildings in the ICC's district plan were affected. Additionally, a multi-faceted facility was proposed for the second stage of the redevelopment to include: anchor retail shops, boutiques, housing apartments and office blocks (targeted at attracting extra 1500 people daily to the city-centre), restaurants and food courts, an enclosed multi-level carpark (with about 850 parking slots), outdoor dining spaces and open-air alleyways, and, a central medical facility (Invercargill City Council, 2019).

The technical team of the applicant argued that the real situations of most of the existing historical buildings in the proposed redevelopment site did not match up with the economic reality of rejuvenating them (Invercargill City Council, 2019). This argument was due to the combination of some broader economic forces, the awareness of their seismic vulnerability and compliance to the recently amended BEPBAA, activating an unsustainable and unbridgeable gap between the cost of the seismic retrofit and enough return on investment. They also argued that the destruction and redevelopment of a significant proportion of old historical buildings would be deemed appropriate in addressing the scale of the vulnerability of the area, to bring back vibrancy to the city-centre.

Figure 4.9: Seismic rating summary of HWCP inner-city redevelopment block. Source: (McDougall & Marriott, 2019)

Besides, after undergoing engineering assessments, the seismic capacity of the majority of listed historical building stock that was planned for demolition in the

HWCP inner-city redevelopment was found to be less than 33 per cent NBS rating (MBIE, 2016a), with about 90 per cent of the buildings scoring between 10 per cent to 20 per cent NBS ratings (Invercargill City Council, 2019). Figure 4.9 depicts the seismic rating summary of these buildings. Also, the feasibility of retaining the façades of most of the buildings on the block was very low, when issues such as likely strengthening costs, technical challenges and the originality of their heritage parapets were explored by during the engineering assessments (Invercargill City Council, 2019).

The public was notified on October 2018, to give their opinions about the HWCP inner-city redevelopment resource consent application. Out of an overall 44 submissions, 24 were in support of the application, ten opposed, and nine were neutral (Invercargill City Council, 2019). The recommendations of those in support of the application were based on arguments that the seismic strengthening costs versus the loss of heritage values of the listed historical buildings to be demolished, would adequately balance the positive CCR impacts of the application, in line with the sustainability principles of the Resource Management Act 1991 (RMA, 1991) and the proposed policies and objectives of ICC's district plan.

Those that opposed the application emphasised the disproportionately low mitigation measures for the heritage that would be lost through demolition and façadism, in comparison to the proposed mitigation measures in the application. Accordingly, they were more of the point of view that the HWCP project should have emphasised on the retention of heritage character through incorporating the conservation and reuse of the historical buildings in a more persuasive manner

(Invercargill City Council, 2019). Moreover, the recommendations from the submitters that remained neutral on application emphasised that, although a significant loss of heritage elements after demolition would negatively impact the coherence of Invercargill's city-centre streetscape, sacrificing a number of these historical buildings for the project would eventually promote a sense of place and create a substantial economic boost for the future development of the wider city-centre (Invercargill City Council, 2019).

The HWCP application for resource consent was deemed worthy of endorsement by the decision commissioners of the hearing process and was approved in June 2019 with no submissions for appeal made (Invercargill City Council, 2019). The conditions for approval required the consent holder to: (i) make funds available (i.e., $20,000 NZD/year for 'Anchor tenants' that would be occupying at least 5,000m^2 of the redevelopment site) for the Neighbourhood Retailers Group (NRG) to manage the vibrancy of retail activities in the city-centre before the commencement of any demolition; (ii) lodge recordings of any alterations or demolitions of the affected heritage buildings with Heritage New Zealand and ICC; (iii) maintain and conserve the Category-1 heritage building (Bank of New South Wales building) on the corner of Dee Street in accordance with its registered covenant, and ensure that any building consent application for any adjacent or adjoining new buildings to the former bank building, must include recommendations from a conservation architect; (iv) prior to alteration of any heritage building, submit a façade retention plan prepared by a qualified conservation architect and engineer to ICC for authorisation; (v) ensure the reuse of salvaged heritage materials from the demolished buildings in the construction of the new replacement buildings and other building projects; and (vi) disseminate all information gained from archaeological investigations, historical research, and the heritage recordings of the altered or demolished buildings, to the public at every completion stages of the redevelopment project.

It could be understood for the Invercargill case study that, the management of historical buildings in the CCR strategy, aims to conserve only the best heritage elements of the buildings, hence, encouraging regeneration of the city-centre through demolition and rebuild. The implication of the circumstances surrounding the approval of the HWCP redevelopment project irrespective of the significant loss of heritage buildings from demolition validates a 'demolition for redevelopment' approach to city-centre regeneration in Invercargill.

4.7.2.2 The Invercargill licensing trust (ILT) hotel

The Invercargill licencing trust (ILT) was established in 1944 through public election to monopolise the sale and supply of alcohol in Invercargill, with an obligation of investing the profits on community development projects. In line with the Southland Regional Development Strategy to upsurge the region's population with 10,000 additional people by the year 2025 (Southland Regional Development Strategy, 2016), the ILT submitted resource consent application to ICC in September 2018 for (Invercargill City Council, 2018b): (i) the demolition of a Victorian-styled historical building including other adjoining existing buildings on the site without heritage classification; and (ii) the construction and operation of an innovative eight-level hotel building that would integrate 80 hotel suites, a café, a restaurant, function venues, bars, parking spaces, and guest amenities –

see Figures 4.10 and 4.11. The former T&G building also referred to as 'Caledonian', is in a corner location at 73-81 Dee Street in Invercargill's city-centre. It was built in 1885 and is currently a Class-2 historical building in ICC's district plan (Invercargill City Council, 2018b).

There was a public notification of the application on 13th August 2018, and a thorough community engagement hearing process was initiated. Accordingly, out of 18 submissions made to ICC, ten were in total support, one gave conditional support, two were neutral, and five opposed the application.

Figure 4.10: Existing Caledonian building within the streetscape. Source: (Invercargill City Council, 2018b)

Figure 4.11: Existing Caledonian building within the streetscape and artwork of the proposed ILT hotel project. Source: (McStay & Cawte, 2017)

The arguments of those in support of the ILT proposal were based on some positive impacts of the new hotel project towards fostering the regeneration of Invercargill's city-centre, and the implications of city-centre decline from retaining the existing Caledonian building. The positive impacts of proposed ILT project include (Invercargill City Council, 2018b): (i) direct employment and economic benefits; (ii) positive redevelopment impacts from project's outcomes (i.e., through comprehensive architectural and urban design ideologies, enhanced activation of pedestrian-friendly environments at street level, and provision of entertainment places to entice visitors and residents to the city-centre); and (iii) indirect benefits to remaining city-centre heritage fabric through potential economically viable adaptation of adjoining buildings. Moreover, the application supporters also argued that although the Caledonian building has been assessed to be of moderate-high heritage significance, the negative impacts of retaining the existing Caledonian heritage building would include several engineering and economic challenges ranging from costly façade retention and unrealistic adaptive reuse to costly seismic upgrade of the entire building's existing structural state of less than 20 per cent NBS rating (Invercargill City Council, 2018b).

The submitters who opposed the application argued that the negative impacts of the proposed ILT project would create some direct negative impacts from demolition, through the loss of the Caledonian building's heritage significance, and the cumulative effects on other adjoining historical buildings in the city-centre (Invercargill City Council, 2018b). However, the applicant offered some direct mitigation efforts to safeguard the entire loss of heritage fabric, such as $50,000 NZD contribution to Invercargill's heritage fund, the incorporation and reuse of heritage components, and off-sets from minor futuristic impacts on heritage retention (Invercargill City Council, 2018b).

Eventually, an evaluation of the significance of the potential positive and adverse effects from the demolition of the Caledonian building and construction of the new ILT hotel as advised by the supporters and opponents of the application were weighed against the objectives and policies of ICC's district plan and the Resource Management Act 1991 (RMA, 1991). The application was approved after meeting the environmental outcomes of ICC's district plan by a considerable margin. The

ILT hotel project was also justified to contribute significantly to the advancements in the sustainable management of physical resources and land use in Invercargill's city-centre.

4.8 Discussion

This paper adopted the case study method (Yin, 2017) to describe the city-centre regeneration (CCR) strategies pursued by two provincial areas (Whanganui and Invercargill) in New Zealand, and examined their approach to CCR.

Findings from the Invercargill case revealed a 'demolition for redevelopment' approach to CCR. The major arguments that justified the support of this approach by Invercargill's public include several engineering and economic challenges (such as (i) costly seismic upgrade of the entire building's existing structural state to meet the required seismic strengthening requirements; (ii) costly façade retention; and (iii) unfeasible adaptive reuse), versus the higher prospects of spill-over benefits (West & Orr, 2003) from the new development. The implication of the 'demolition for redevelopment' approach for Invercargill is that though it facilitated the depletion of a significant number of Invercargill's inner-city heritage building stock, it was considered the best strategy to CCR in Invercargill due to their low attachment to place (Manzo & Perkins, 2006; Plunkett et al., 2018). While these findings are in line with a similar study conducted by (Moore, 2016), other studies have highlighted the non-feasibility of the 'demolition for redevelopment' approach for the regeneration of rural areas (Hao, Sliuzas, & Geertman, 2011; Zhang, 2005; Zhang, 2008).

On the flip side, a 'heritage conservation for regeneration' approach to CCR was identified from the examined Whanganui case study. This approach emerged as a result of the disapproval through public submissions to demolish the Thains building. The arguments revolved around the community support towards saving heritage buildings to sustain the city-centre's main streetscape. The submitters believed that using the low seismic rating and expensive seismic upgrade of the building as an opportunity for demolition would create an irrevocable loss of the region's substantial heritage assets (Maio, Ferreira, & Vicente, 2018), and negatively impact the values of historic heritage, which is contrary to Whanganui district council's heritage policies and objectives provided in the district plan. Accordingly, these findings align with other similar studies that have highlighted the benefits of the 'heritage conservation for regeneration' approach (Ren*, 2008; Zhong & Chen, 2017).

Inconsistencies with the Resource Management Act 1991 (RMA, 1991) and the Thains building's application not being able to demonstrate an exploration of all feasible alternatives, leaving demolition as the last option, justifies Whanganui's stronger attachment to place (Manzo & Perkins, 2006; Plunkett et al., 2018) and the heritage conservation attitude to city-centre regeneration. Whanganui district council has been observed to be proactive in providing support for building owners to conserve their heritage buildings. Some examples in Whanganui where historical buildings and façades in the city-centre were successfully conserved to regenerate the city-centre include: (i) 15A Victoria Avenue, where the building owner went through all the processes of seismically strengthening and architecturally restoring the building because of the passion for built heritage

(Heritage EQUIP, 2017); (ii) refurbishment and seismic strengthening of council-owned projects (such as the opera house, art gallery, museum, etc.,) implying WDC's attitude of leading by example; (iii) the new buyers of the Thains building who bought the historical building with the intention of preserving it; and (iv) the façade retention by owners of the cotton-on building – 84 Victoria Avenue.

Differing levels of 'attachment to place' were identified in both case studies, based on the strong arguments in the submissions for building consent that supported the demolition and rebuild of historical buildings in Invercargill, and conservation of historical buildings in Whanganui, towards CCR. Whereas a stronger attachment to place (Manzo & Perkins, 2006; Plunkett et al., 2018) was exhibited in Whanganui, a weaker attachment to place was observed in Invercargill.

Furthermore, as the BEPBAA mandates owners of seismically vulnerable heritage buildings to make hefty investments to comply with the new safety requirements, there is an impediment to classify provincial city centres as 'Priority Areas' according to the building act. The 'Priority Areas' requirement may have greatly contributed to building owners within those areas to prefer not to engage with the council because they may not want to financially commit to the compliance cost of retrofitting their buildings. Hence, the motivation for owners of historical buildings in provincial city centres to invest in the seismic upgrade is usually low due to the poor economics of the property market in these areas. Since the socio-economic activities that happen in provincial city centres greatly influence the sustainability of the areas, investments in strengthening and preserving the city-centre historical buildings would make these areas lively and busy with retail, business, and social activities.

Mayors of the Manawatu-Whanganui region (i.e., Whanganui, Rangitikei, Manawatu, Tararua District Councils) have been very proactive in driving the change on how New Zealand's provincial areas with lesser resources are expected to effectively comply with the "one-size-fits-all" BEPBAA and still thrive when compared to bigger cities such as Auckland and Wellington. These Mayors long realised that the existing BEPBAA would threaten the sustainability of provincial town centres in New Zealand if there is an absence of extensive regulatory and non-regulatory incentives by the central government to promote compliance in smaller cities.

The central government have started to address the disproportionate influence of the BEPBAA on New Zealand's provincial areas with the following regulatory and financial incentives: (i) some adjustments have been made to the funding pathway of Heritage EQUIP (Heritage EQUIP, 2019a) which now supports provincial areas with funds to pay for professional services for seismic assessments, including structural engineering and architectural plans; (ii) In addition, owners of buildings in New Zealand who were previously required to seismically upgrade their buildings after the building's estimated value exceeds a substantial alteration threshold of 25%, would only do so now if the value of the alteration is greater than $150,000 NZD or whichever is higher (Salesa, 2019); (iii) only the façades, verandas and parapets of priority routes need to be strengthened within half the regular legislative timeframe, while the seismic upgrade of remaining building can be done in full time; and (iv) section 133AT in the Building Act now exempts access and fire requirements during building consent applications for seismic upgrade.

4.9 Conclusion

This paper presented and described the city-centre regeneration strategies of two case study areas – Whanganui and Invercargill. Both case study areas are good examples of New Zealand's provincial areas currently struggling with a city-centre decline, partly due to the cost-benefit implications of owners' willingness to invest in seismic strengthening of their underutilised historical buildings. Findings from an exploratory case study research of the examined provincial cities revealed two different approaches to city-centre regeneration for the two examined cities: (i) Invercargill – 'demolition for redevelopment'; and (ii) Whanganui – 'heritage conservation for regeneration'. Also, while the BEPBAA has created logical arguments that have put earthquake-prone historical buildings in the spotlight for demolition in an area, the same legislation has been used as a catalyst to provide opportunities for the conservation and seismic upgrade of the earthquake-prone historical buildings in areas another area.

The conditions of the historical building stock in the two city centres greatly influenced the attitudes of the public in their submissions to either support or oppose the building consent applications for demolition. The poorly maintained, deteriorating historical buildings in Invercargill's city-centre including the categories I and II listed buildings in the HWCP inner-city redevelopment block project, and that on the ILT hotel site, were left to decay for so long, that it got to a point where the deterioration of the walls and façades of these buildings became an eyesore to the public. Such poor conditions of the city-centre historical buildings contributed to the low value attributed to heritage buildings held by Invercargill's public. On the other hand, Whanganui District Council has been more proactive in securing government funding for the maintenance and seismic strengthening of their cultural amenities (e.g., the opera house, museum, art galleries), which has made the public value their inner-city heritage buildings more. These findings imply that the actions (or inactions) of both councils shape the way their communities perceive the value of the historical buildings in their city centres.

The energy that Whanganui's Mainstreet organisation and earthquake-prone building task force put into promoting the conservation of heritage following the enactment of the BEPBAA could also be considered as an initiative that promoted a stronger attachment to place in Whanganui. It could, therefore, be asserted that it is the BEPBAA that triggered conversations that have created strong community support for heritage conservation in Whanganui. If the BEPBAA were not in place, the conversations about heritage conservation would still be developing, and there would not have been much financial support from the government to strengthen and conserve heritage buildings. Although the Invercargill public demonstrated a weaker attachment to place (Mihaylov & Perkins, 2014) by, the local investors behind the HWCP inner-city redevelopment block project and ILT hotel considered these redevelopment projects as very important towards stimulating the regeneration of Invercargill's city-centre. These local investors went through the rigorous processes of buying the historical buildings from their existing owners and getting approvals from the council, sacrificing some of the buildings for demolition, and preserving a few with significant heritage values (Forino, MacKee, & von Meding, 2016) when they could have taken an easier and less costly approach by developing on green sites in the suburbs.

The decreasing retention and increasing demolitions trends of heritage buildings in New Zealand's provincial city centres as a result of the BEPBAA, have now triggered discussions that have contributed to the recent regulatory and financial incentives initiated by the local and central government to address the unintended consequences of the legislation on the vitality of provincial areas. Though these unintended consequences of the legislation may have created opportunities for incentives, further research should explore if the allocated financial incentives for the protection and conservation of heritage buildings in New Zealand's provincial areas has influenced their heritage building retention and demolitions counts. It would also be useful to explore a cost-benefit analysis for both approaches to city-centre regeneration, i.e., 'demolition for development' and 'heritage conservation for regeneration' in further studies.

The limitations of this study's findings include its focus on historical buildings in New Zealand's provincial city centres, and, the use of fewer case studies. However, while further studies should explore the use of more case studies, this study's findings could apply to other countries with similar characteristics to New Zealand in the context of this paper.

Chapter 5. From drag to brag: Role of government grants in enhancing the built heritage protection efforts in New Zealand's provincial regions

This chapter was developed from Publication № 4, *has been submitted in final form to the Journal of Rural Studies.*

Abstract

The protection of heritage buildings is essential because these buildings signpost the narration of a community's past into the future. Investment in the protection of heritage buildings through incentives in the form of government grants provides a lifeline for the future conservation of built heritage, which can boost an urban area's local economy. This study sought to evaluate the distribution of heritage buildings in New Zealand, examine the allocation of significant government funding sources for the protection of the heritage buildings, and explore the implications of this allocation on future built heritage protection efforts in New Zealand's provincial regions.

The document analysis revealed that while the per capita distribution of heritage buildings was highest in New Zealand's provincial regions, major urban centres received the highest share of government funding. Findings from the key informant interviews identified three major themes as implications of the current incentive allocation on built heritage protection efforts in New Zealand's provincial

regions: (i) disproportionately low allocation of government grants to provincial regions; (ii) lack of sophistication among property investors in provincial regions; and (iii) “emergency solution” mindset of government funding regulators.

The implication of these findings is that though New Zealand’s government heritage grant systems are the most extensive non-regulatory incentives for the protection of built heritage, the provincial regions disproportionately burdened with heritage buildings may struggle to keep up with their conservation efforts. As a recommendation, the central government can assist by directing more discretionary grants to provincial regions to encourage future efforts towards protecting their heritage buildings.

5.1 Introduction

When is an old building considered a historical building? New Zealand’s founding document, the Treaty of Waitangi, was signed in 1840. By the turn of the century, many towns were rapidly expanding with substantial investment in the infrastructure and buildings (Aigwi, Phipps, et al., 2019). Although such original buildings have become the cornerstone of New Zealand’s heritage, it was not until the late 1950’s – early 1960’s that these buildings started gaining some attention as heritage assets in New Zealand. This was signalled by the establishment of the Historic Places Act (1954), currently legislated by the Heritage New Zealand Pouhere Taonga Act (2014) with a mission to identify, protect, and conserve New Zealand’s historical and cultural heritage, such as buildings and ancient monuments (Jenkins, 2018).

New Zealand's heritage buildings may have been neglected for many years, but the 2010/2011 Canterbury earthquakes uncovered the real impacts of seismic events on the remaining heritage buildings (Ingham & Griffith, 2010). Lessons from the Canterbury earthquakes timely highlighted the real threat of losing a significant proportion of the country's heritage buildings to demolition (Dizhur et al., 2011), and the significance of these buildings as 'community anchors' in post-disaster recovery (Senaldi, Magenes, & Ingham, 2015). As a proactive action, the New Zealand Ministry of Business, Innovation and Employment MBIE (2016a) introduced the Building (Earthquake-prone Buildings) Amendment Act 2016, to reduce the number of injury and deaths during future earthquakes in New Zealand.

Historical buildings are significant due to the many advantages they provide including the conservation of the history and narration of a city's existence, sustenance of the architectural history, shared cultural identity and significance of a place, economic viability through tourism, and an increased sense of belonging and attachment to a place (Aigwi et al., 2018; Aigwi, Egbelakin, et al., 2019; Aigwi, Ingham, et al., 2020). Heritage buildings are also unique examples of quality and timelessness, which contributes to urban culture and values. These qualities distinguish them from contemporary buildings, and so, the protection of heritage buildings for sustainable development requires huge concerns from policymakers, regulators, developers, investors, and users (Conejos, Langston, Chan, & Chew, 2016). Though many heritage buildings may not be economically valuable, they are usually retained within functional urban projects because of the significant externalities which they can contribute to the regeneration of urban communities through their conservation (Graham, 2002).

Whereas some of New Zealand's earliest cities such as Auckland (New Zealand's economic hub) and Wellington (New Zealand's government hub) experienced rapid population and economic growth over the years and renewed most of their building stock during the second half of the 20th century to accommodate this growth, other cities such as Whanganui and Invercargill, which are now in provincial regions, did not (Aigwi, Phipps, et al., 2019). Hence, in those legacy cities experiencing a decline, the existing/original building stock was often sufficient to accommodate their users. As the buildings aged, they became more costly to maintain. Presently, while the city centres of New Zealand's bigger cities are dominated by contemporary buildings, the provincial cities tend to feature an abundance of historical buildings. With the lack of investment in provincial cities, their building stock is structurally vulnerable and no longer fits the current expectations of life safety during natural disasters such as earthquakes. At the same time, historical buildings are essential cultural assets (Carr & Servon, 2008; Mallach & Brachman, 2013), but their retention is often marginalised (Ryberg-Webster & Kinahan, 2014) in provincial cities.

Though historical buildings may have significant heritage values (Thompson, Rosenbaum, & Schmitz, 2011), the burden of heritage conservation in provincial regions is usually higher due to insufficient incentives for their protection and regular maintenance. While the existing protection of heritage buildings in New Zealand may be considered to have presented detrimental public impediments from strict regulatory compliance requirements with almost no reward for those who complied, financial incentives usually provide positive and extensive justification for more public involvement in responsible heritage conservation activities.

As communities continue to participate in creating history and prospective futures, their transient nature in stakeholder decision-making is emphasised (Aigwi, Phipps, et al., 2020; Cairns, Goodwin, & Wright, 2016). Accordingly, there are several organisational and social structures that provincial communities should address with connections to challenges, intuitions and diligence proffered by future-orientated critiques (Stevenson, 2002). Provincial communities now question their future-shaping abilities, with issues relating to power and control during decision-making among government stakeholders at higher levels being raised (Marchais-Roubelat & Roubelat, 2016). With time, the resilience of provincial communities would be expected to review their ability to manage and survive future threats, while government stakeholders continue to manage transnational communities of interest in an accountable and transparent manner (Tonn, Scheb, Fitzgerald, & Stiefel, 2012).

This paper, therefore, addresses the above issues by (i) evaluating the distribution of heritage buildings in New Zealand; (ii) examining the allocation of significant government funding sources for the protection of heritage buildings; and (iii) exploring the implications of incentive allocation on future built heritage protection efforts in New Zealand's provincial regions.

5.2 The heritage significance of historical buildings: Public good vs private benefit

The heritage significance of historical buildings usually contributes to the distinctiveness of the buildings, either based on their rarity or historic narration of the era (i.e., post-war, interwar, Victorian, Edwardian, colonial, etc.) they were built. The following standard systems are used to objectively capture these values to measure their level of significance (Avrami, Mason, & de la Torre, 2000): (i) historical; (ii) aesthetic; (iii) social; (iv) technical; (v) economic; and (vi) associational. Each of these significance levels is further categorised based on the rarity of historical buildings in aspects of their outstanding cultural values, uniqueness or number, or, the degree to which the historical buildings are typical of a group that they might be determined to belong to (Avrami et al., 2000). The combined heritage significances and values contained in a historical building represent its cultural significance. For example, whereas churches, schools and cinemas represent social significance, a house may possess historical or aesthetic significance. Besides, the building materials and the details employed in a building's construction may express a high level of technical significance, while associational significance often refers to a building that a famous person or group once lived or worked in.

Historical buildings with heritage significance can, therefore, communicate some historical aspects to present-day users, local communities, tourists, or passers-by because of their "public good" values (Navrud & Ready, 2002; Poor & Smith, 2004). The implication is that historical buildings with heritage values are usually perceived as "public good" by those who visit the buildings or drive past them or walk past them to enjoy the buildings and potentially gain knowledge from their experience (Avrami et al., 2000; Throsby, 2003). While the public enjoys the benefits of listed heritage buildings without making any financial contribution towards the buildings, the upkeep and maintenance costs are usually carried by the owners of such buildings (Throsby, 2003). It even becomes more challenging for these owners when the generated benefits of the public good are difficult to estimate (Kling, Revier, & Sable, 2004).

Owners can also generate sufficient financial return from owning a heritage building. For instance, if a private owner operates a heritage building as a museum or some form of tourist attraction, and can charge rent premiums from tenants or admission fees from tourists, this income due to the heritage status would represent "private benefits" to the owner. The private benefits in this instance would outweigh the public good. In this case, there are sufficient incentives for owners to maintain their buildings and ensure their asset complies with the building standards (i.e. structurally sound). Some New Zealand examples where private benefits of heritage are sufficient for owners to retain the buildings largely exist in major urban centres; e.g., Britomart in Auckland, and the Eastbourne Ferry Terminal Building in Wellington. In these two locations, the buildings can generate rent equivalent to premium contemporary buildings and their heritage characteristics are sought after in the property markets.

Sadly the reality is that in provincial areas, the economic value of heritage buildings is usually low (Dümcke & Gnedovsky, 2013). While owners in those areas are facing pressures from regulatory compliance, the retention of heritage requires commitment and involvement of multiple stakeholders across the public and private sectors to help retain these assets for future generations.

5.3 The protection of heritage buildings in New Zealand

In New Zealand, the significance of heritage buildings is recognised in section (6) of the Resource Management Act (RMA, 1991), which specifies the protection of heritage buildings from inappropriate use, development and subdivision (Heritage New Zealand, 2018). Hence, the Resource Management Act (RMA, 1991) sustains historical places of significant cultural and historical heritage values including heritage buildings, by identifying and recognising them in the 'list' (Heritage New Zealand, 2019b), and, in district plans as heritage statutory roles of local authorities to protect the buildings. The difference between Heritage New Zealand listings and local authority scheduling is that the former provides no protection for listed buildings, while the latter does trigger a process by which heritage buildings can be protected.

5.3.1 New Zealand's register of heritage buildings – 'The list.'

The most valued and significant places of cultural and historical heritage in New Zealand are identified by a register of heritage buildings, referred to as 'the list' which was established under Section 22 of the Historic Places Act 1993 (Heritage New Zealand, 2019b). The Historic Places Act 1993 overlooks the Historic Places Trust's earlier system of building classification, which pre-dated the 1993 system of registration.

The list is sustained under the Heritage New Zealand Pouhere Taonga Act 2014 by Heritage New Zealand (2019b). In line with the Resource Management Act 1991, 'the list' serves as a source of information and notification regarding significant heritage places, historic areas, historic places, wāhi tapu areas, wāhi tapu areas, and wāhi tūpuna, to owners, government agencies, community organisations, the public, and local authorities (RMA, 1991). See Table 5.1 for the classification of 'the list'.

Table 5.1: Classification of 'The list.'

S/N	Category	Description	Quantity
1.	**Historic places**	Buildings, archaeological sites, and memorials, and are further classified into two categories:	**5428**
		<u>Category 1</u> - historic places that have outstanding or unique cultural or historical significance or value.	1031
		<u>Category 2</u> - historic places that have cultural or historical significance or value.	4397
2.	**Historic areas**	Groups of historic places that are connected such as heritage precincts, historical and cultural areas, or geographical areas with several properties or sites.	**130**
3.	**Wāhi tapu**	Places such as urupā, maunga tapu, punawai, and funerary sites that are sacred to Māori for spiritual, traditional, mythological, ritual or religious purposes.	**107**
4.	**Wāhi tapu areas**	Areas that have more than one wāhi tapu.	**72**
5.	**Wāhi tūpuna**	Places of high importance to Māori for ancestral significance and related traditional and cultural values	**10**

Source: (Heritage New Zealand, 2019b)

Furthermore, an entry on the list does not guarantee automatic protection of the property by Heritage New Zealand. The entry does not also directly create legal obligations or regulatory consequences on heritage property owners, or specific control of rights over the property. Nevertheless, an entry on the list can provide heritage subsidy opportunities and facilitate heritage properties to be considered for inclusion in the heritage schedules of district plans (Heritage New Zealand, 2019b). It is the responsibility of local authorities to control the kind of changes that can be made to a heritage property, as outlined in the heritage schedules of their district plans, and involve Heritage New Zealand Pouhere Taonga in the process to advocate for the conservation of heritage values (Heritage New Zealand, 2019b). Also, local authorities are obligated to advise Heritage New Zealand Pouhere Taonga when they receive building consent applications regarding any property on the list, to allow for the provision of conservation advice to the local authorities and the property owners (Heritage New Zealand, 2019b).

5.3.1.1 Major threats to 'The list.'

From a total of 1604 Category I and Category-II private and public heritage buildings currently on New Zealand's national heritage register, 176 have been demolished since 2009 (Heritage New Zealand, 2018). A majority of these buildings were derelict and were faced with threats from fires, development activities, earthquakes, and demolition by neglect, which may all be interrelated in most cases (Heritage New Zealand, 2018). Other Heritage New Zealand statistics show that about seven heritage-listed buildings in New Zealand are being demolished every year since 2006 till present as a result of these highlighted threats (Heritage New Zealand, 2018). Consequently, whereas about 28 heritage buildings on the national heritage register have been demolished so far due to neglect, and new developments, seven have been demolished due to damage from fires since 2009 (Heritage New Zealand, 2018). In 2018 alone, two heritage-listed buildings were demolished due to fires.

The heritage buildings in New Zealand are vulnerable to natural hazards. Following the earthquakes that occurred in the Canterbury region between 2010-2012, Seddon in 2013, and Kaikōura in 2016, the risks to New Zealand's heritage buildings from seismic events have been highlighted to exhibit potentially devastating impacts (Ingham et al., 2018). Accordingly, there has been a rise in the proportion of heritage buildings in New Zealand that have been deemed as earthquake-prone under the Building Act (Building Act, 2004). The Building (Earthquake-prone Buildings) Amendment Act outlines risk-based timeframes for earthquake-prone buildings to be assessed and strengthened to enhance their safety (MBIE, 2016a). These timeframes may put pressure on some owners of earthquake-prone heritage buildings, particularly those in high or medium risk regional centres to demolish their buildings. Since 2009, about 138 heritage buildings from the heritage list have been demolished due to earthquake damages (Heritage New Zealand, 2018). Besides, the statistics of demolished heritage buildings being scheduled on district plans but not on the national heritage register are expected to be even higher due to other demolition threats from fires, new developments, and neglect (Heritage New Zealand, 2018).

5.3.2 Heritage statutory roles of local authorities under different legislations

The Resource Management Act (RMA) 1991 requires local authorities to include schedules of heritage buildings in their district plans, with such scheduling triggering the resource consent process when additions, alternations or demolition are proposed (RMA, 1991). The participation of local authorities in the protection and management of New Zealand's heritage includes activities such as (Heritage New Zealand, 2019c): (i) preparation of statutory processes, heritage policy statements and district plans under the Resource Management Act (ii) provision of strategic direction on local heritage matters; (iii) stimulation of public interest and partnerships in heritage conservation; and (iv) management of built heritage in their local territories. Accordingly, local authorities are tasked to protect and manage New Zealand's heritage under different legislations such as the RMA 1991, Local Government Act 2002 (LGA), Building Act (BA) 2004, and the Heritage New Zealand Act 2014 (HNA) (Heritage New Zealand, 2019c). The heritage statutory roles of local authorities under different legislations are summarised in Figure 5.1.

Resource Management Act 1991

Responsible for:

- Recognising and providing for the protection and sustainable management of historic heritage from improper use, development, and subdivision.
- Preparation of district plans and policies to include the management of adverse impacts on heritage as part of resource consent processes.
- Gathering information and monitoring their region or district's environmental state in accordance with section 35 of the RMA.
- Compliance to planned rules and relevant statutory requirements as owners of heritage places such as parks, archaeological sites, buildings, infrastructure and reserves.
- Ensuring that their heritage assets have been researched and assessed for heritage values, and also, are managed according to conservation principles, in order to set a good lead for the management of heritage in the region or district.
- Ensuring the Treaty of Waitangi principles by forming Maori partnerships.
- Developing policies aimed at addressing the integration of the objectives of iwi management plans and policies with their planning practices.

Local Government Act 2002

Responsible for:

- Ensuring that community-based objectives are reflected in district plans, in accordance with the LGA requirements for consultation.
- Providing strategic direction to address the impacts of positive or negative growth of new developments on heritage places.
- Following a sustainable development method to strategic planning and land use, for community plans.
- Finding appropriate public uses for heritage places.
- Providing opportunities for Maori contribution to the local authority decision-making processes

Building Act 2004

Responsible for:

- Safeguarding the health, safety and comfort of people, protecting their property from damage, and facilitating efficient use of energy in all buildings and structures.
- Adopting a flexible approach regarding any significant cultural or historical value of a heritage building.
- Granting or rejecting building consent applications in line with building code compliance.
- Requiring owners of insanitary or dangerous buildings to fix their buildings to avoid demolition.

Heritage New Zealand Act 2014

Responsible for:

- Managing, maintaining, and preserving any historic place or area, including wāhi tapu, wāhi tūpuna, or wāhi tapu areas, in agreement with Heritage New Zealand.
- Providing 'early warning system' to Heritage New Zealand by using the links between building consent processes and Project Information Memos (PIMs), to enable Heritage New Zealand advocate for historical and cultural heritage protection in the interest of the public.
- Providing guidance on district plan provisions regarding the sustainable management of historic heritage.

Figure 5.1: New Zealand's legislation and heritage statutory roles of local authorities. Source: Heritage New Zealand (2019c)

5.4 Financial incentives for the protection of heritage buildings in New Zealand

Financial incentives are usually provided by the government as a form of motivation for owners of heritage buildings, towards retaining, maintaining, investing in, and responsibly rehabilitating their buildings. Grants are the most common system of government financial assistance for the protection of heritage buildings in New Zealand. These grants are usually given in the form of either performance-based/discretionary grants (based on the quality of an application, the financial need of the project, the available funds, or other factors) or entitlement grants (based on interested party meeting specific set requirements) (McCleary, 2005). Table 5.2 summarises significant financial incentive schemes that have been established by New Zealand's central and local government to offer grants for the protection and conservation of heritage places (Heritage New Zealand, 2019a).

Table 5.2: Significant financial incentive schemes for the protection of heritage buildings in New Zealand

Funding Organisations	Year established	Purpose	Value of grant	Criteria for grant disbursement
National heritage preservation incentive fund (NHPIF) by Heritage New Zealand (2019a)	2003	To provide financial incentives for the conservation of only privately-owned heritage places of national significance (i.e., category one historic places) due to their ineligibility to secure funding from other sources such as the Lottery Grants Board.	• Yearly disbursement of up to 50 per cent of the cost of heritage conservation works; and • at most NZ$ 100,000 for individual grants.	• Level of proposed conservation standards; • the extent of national significance and public benefit of the conservation project; • cost-effectiveness and monetary value in the interest of the national public; • level of urgency of the project; • category of heritage to be protected; and • the geographic spread of the project.
Heritage EQUIP (2019a)	2016	To provide financial support and professional advice for owners of privately-owned earthquake-prone historical buildings with heritage value	• Yearly disbursement of up to 50 per cent of the cost of earthquake strengthening works (i.e., for up to at least 34 per cent NBS rating) carried out on all sizes of an earthquake-prone heritage building; • a grant of at most NZ$ 400,000; • additional financial support for the protection of earthquake-prone heritage buildings in provincial areas (i.e., outside Wellington, Auckland, and Christchurch) that are in the high or medium seismic hazard zones: (i) up to 67 per cent of the costs of seismic strengthening works; (ii) funding of seismic upgrade works exceeding 34% NBS rating for outstanding buildings with significant heritage values at risk; (iii) grants up to 50 per cent of the cost of professional advice, and up to $50,000 NZD for engineering plans, detailed seismic assessments, conservation, and reports; and (iv) grants up to 67 per cent of both the cost of seismic upgrade professional advice for multiple buildings (i.e., up to $30,000 NZD for professional advice and up to $250,000 NZD for seismic upgrade works).	The heritage building must: • be verified (i.e., by a territorial authority or chartered professional engineer) to be earthquake-prone under the Building (Earthquake-prone Buildings) Amendment Act 2016 (MBIE, 2016); • be on the national heritage register or scheduled in a district plan, but priority will be given to Category 1 or 2 historic place in a high or medium seismic risk area as specified under the Building (Earthquake-prone Buildings) Amendment Act 2016; and • (iii) be of private ownership (i.e., private trusts, companies and individuals).
Others: • Canterbury Earthquake Heritage Buildings Trust Fund (2019) • Lottery Environment and Heritage Committee (2019) • Territorial Authority Grants • Unreinforced Masonry Buildings Securing Fund (MBIE, 2019) • Incentives for Historic Heritage Toolkit (Heritage New Zealand, 2019a)				

5.5 Data and methods

The objectives of this study include: (i) to evaluate the distribution of heritage buildings in New Zealand; (ii) to examine the allocation of significant government funding sources for the protection of heritage buildings; and (iii) to explore the implications of incentive allocation on future built heritage protection efforts in New Zealand's provincial regions.

The study followed a mixed-methods approach employing the analysis of existing documents, and key informant interviews for data collection.

5.5.1 Document analysis

The document analysis technique was done to address the first and second research objectives of this paper. Document analysis is an organised form of qualitative enquiry mode that entails the extraction, evaluation and clarification of trends or facts in existing documents (such as computer-based, internet-based, or paper-based), to elicit meaning for an in-depth understanding of a fundamental research problem (Bowen, 2009; Rapley, 2008; Strauss & Corbin, 2008). Documents can provide the following (Bowen, 2009; Goldstein & Reiboldt, 2004): (i) contextual information; (ii) extra questions as part of interviews; (iii) a means to track and observe growth and changes; (iv) additional supplementary sources; (v) validation of results from other sources of information. While the advantages of the document analysis technique include its cost-effectiveness, time-efficiency, and readily available data sources that usually do not affect a research procedure, some significant limitations may include challenges during document retrieval, inadequate details to solve the complete research problem, and the likelihood of bias during the selection of document sources.

Population counts were extracted from Statistics New Zealand (Statistics New Zealand, 2018b), while the heritage building count was sourced from Heritage New Zealand website (Heritage New Zealand, 2019b). Funding information was extracted from the National Heritage Preservation Incentive Fund (NHPIF) and Heritage EQUIP reports (Heritage EQUIP, 2019b; Heritage New Zealand, 2019b). This information was carefully examined and evaluated for interpretative constructs and significant findings.

5.5.2 Face-to-face and key informant interviews

Key informant interviews with subject matter experts followed the document analysis to explore the implication of incentive allocation on built heritage protection efforts in New Zealand's provincial regions. This data collection technique allows key informants to provide insights and more reflective knowledge on a topic and make appropriate conclusions relating to their observations (Marshall, 1996). The key informant interview technique is an affordable means of collecting quality data from experts within a brief period. However, there might be some bias if the key informants have not been correctly identified and chosen (Marshall, 1996). However, potential limitations of using this method may include; bias when an interviewer unintentional influences the responses of the subject matter experts, wrongful identification and selection of subject matter experts, and incomplete information when subject matter experts disclose only politically-accepted information (Marshall, 1996).

Five key informants were selected based on their expertise regarding the research problem, their official roles in their organisations, and, their confidence level to respond to interview questions, to purposefully provide informed insights into the phenomenon of the research (Creswell & Poth, 2018; Yin, 2017). The selected key informants serve in senior positions in their organisations (e.g., chief planner – Heritage New Zealand, heritage manager – Ministry of Culture and Heritage, Mayor – Whanganui District Council, Mayor - Invercargill City Council senior officer, and Mayor – Rangitikei District Council). Four interviews were done in person while one was done through telephone due to practical reasons. The duration for each interview varied between 45 to 90 minutes. An interview schedule outlining open-ended questions was used to moderate the discussion process to ensure that all questions were addressed. To maintain the quality, consistency and efficiency of data collected in the different interviews, the interviews were audio-recorded, and notes were taken. Themes were then developed from the audio recorded transcripts and the notes using thematic analysis (Braun et al., 2019). Although new themes stopped emerging after the third interview, adequate interpretative results were constructed after the fifth interview (Braun et al., 2019).

5.6 Findings and discussion

The following findings have been highlighted from the document analysis.

5.6.1 Distribution of heritage buildings in New Zealand's regions

Per capita distribution of heritage buildings in a region is a measure of the total number of heritage buildings in that region divided by the total population of the region. For this research analysis, only Category I and II heritage buildings on "the list" are considered (Heritage New Zealand, 2019b). To assess the per capita distribution of heritage buildings for a region, the number of heritage buildings in the area is divided by its population. Table 5.3 shows the counts of Category I and II heritage buildings for New Zealand's 16 regions excluding Chatham Islands (Heritage New Zealand, 2019b), and the 2018 population count of these areas (Statistics New Zealand, 2018b).

Table 5.3: Per capita distribution of Category I and II heritage buildings for New Zealand's regions

Region	Category I and II heritage buildings	Population count	Number of people per heritage building	Per capita ratio
West Coast	26	32,600	1,255	0.080%
Marlborough/Nelson/Tasman	171	150,600	880	0.114%
Gisborne/Hawke's Bay	125	215,000	1,720	0.058%
Otago/Southland	352	328,300	930	0.107%
Taranaki/Whanganui/Manawatu	135	363,300	2,690	0.037%
Wellington/Wairarapa	233	521,500	2,240	0.045%
Canterbury	354	624,200	1,765	0.057%
Waikato/Bay of Plenty	152	774,500	5,095	0.020%
Northland/Auckland	333	1,875,000	5,630	0.018%

Figure 5.2 depicts the per capita ratio of heritage buildings in New Zealand's regions. This analysis reveals that the most 'heritage-rich' areas on the per capita basis are found in provincial regions. The top three areas with the highest concentration of listed buildings are all in the South Island of New Zealand, which may be attributed to the vast investment in their built environment during the early 1860s gold rush in the Otago and West Coast, and the boom of grape farming and wineries in the Marlborough region (Wilson, 2005).

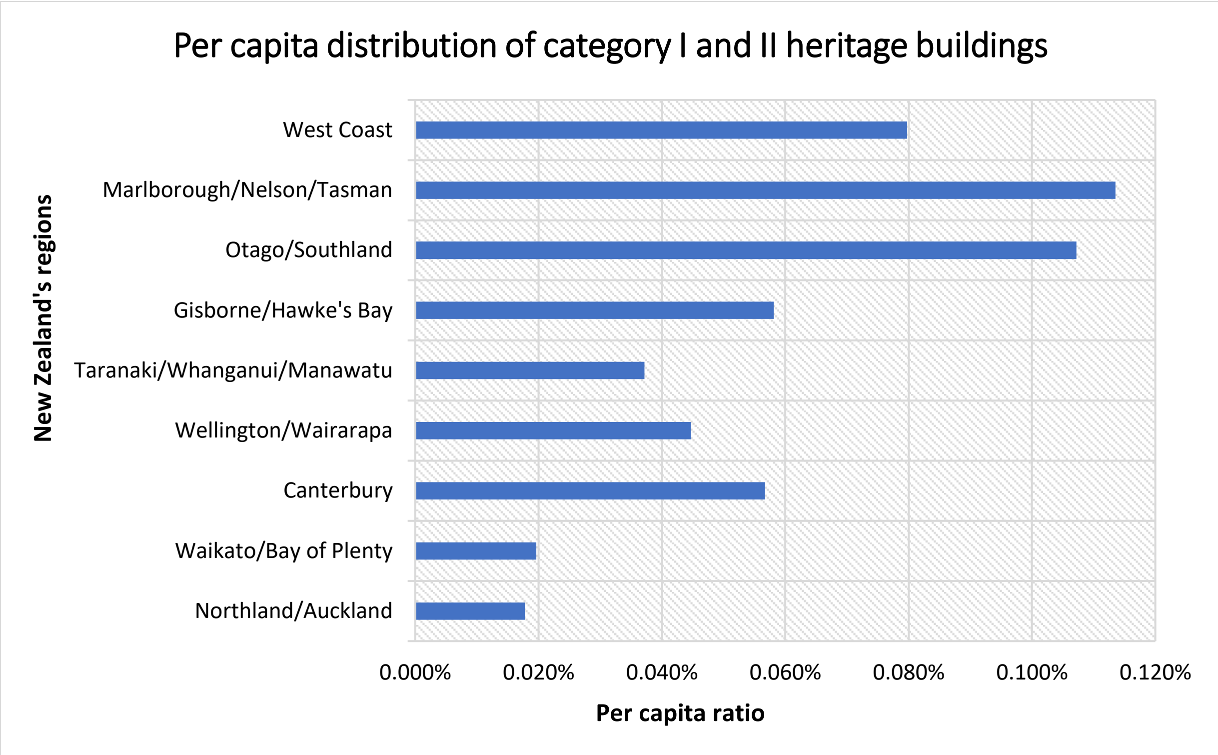


Figure 5.2: Per capita ratio of heritage buildings for New Zealand's regions

It could be observed from Figure 5.2 that while New Zealand's provincial regions in the South Island (such as Marlborough/Nelson/Tasman, Otago/Southland, West Coast, and Gisborne/Hawke's Bay) has the highest per capita distribution of heritage buildings, the more prominent regions (such as Northland/Auckland and Waikato/Bay of Plenty) have the least. The low per capita ratio observed in the

Taranaki/Whanganui/Manawatu region could be linked to the extended period of population decline experienced in the area between 1996 and 2013 (Statistics New Zealand, 2018b). It is also observed that the Canterbury and Wellington/Wairarapa regions have slightly higher per capita distribution of heritage buildings, which could be attributed to the significant demolition of category I and II heritage buildings after the 2011/2012 Canterbury earthquakes (Rouse & McCracken, 2014). These findings make more of a narrative of an uneven distribution of heritage buildings and population counts across New Zealand's more prominent versus provincial regions.

5.6.2 Allocation of significant government funding sources for the protection of the heritage buildings

To examine the allocation of significant government funding sources for the protection of heritage buildings, funding information is extracted from National Heritage Preservation Incentive Fund (NHPIF) and Heritage EQUIP reports (Heritage EQUIP, 2019b; Heritage New Zealand, 2019b) and presented in Tables 5.4 and 5.5.

Table 5.4: Allocation of Heritage Equip grant across New Zealand's regions

Region		2019	2018	2017
West Coast	NZ$	0	0	0
Marlborough/Nelson/Tasman		0	58,917	174,700
Gisborne/Hawke's Bay		0	48,000	12,000
Otago/Southland		50,000	52,632	192,253
Taranaki/Whanganui/Manawatu		31,990	200,000	246,337

Wellington/Wairarapa		142,472	1,209,526	583,448
Canterbury		400,000	319,212	200,000
Waikato/Bay of Plenty		0	0	0
Northland/Auckland		250,000	78,118	1,500,000

Source: (Heritage EQUIP, 2019b)

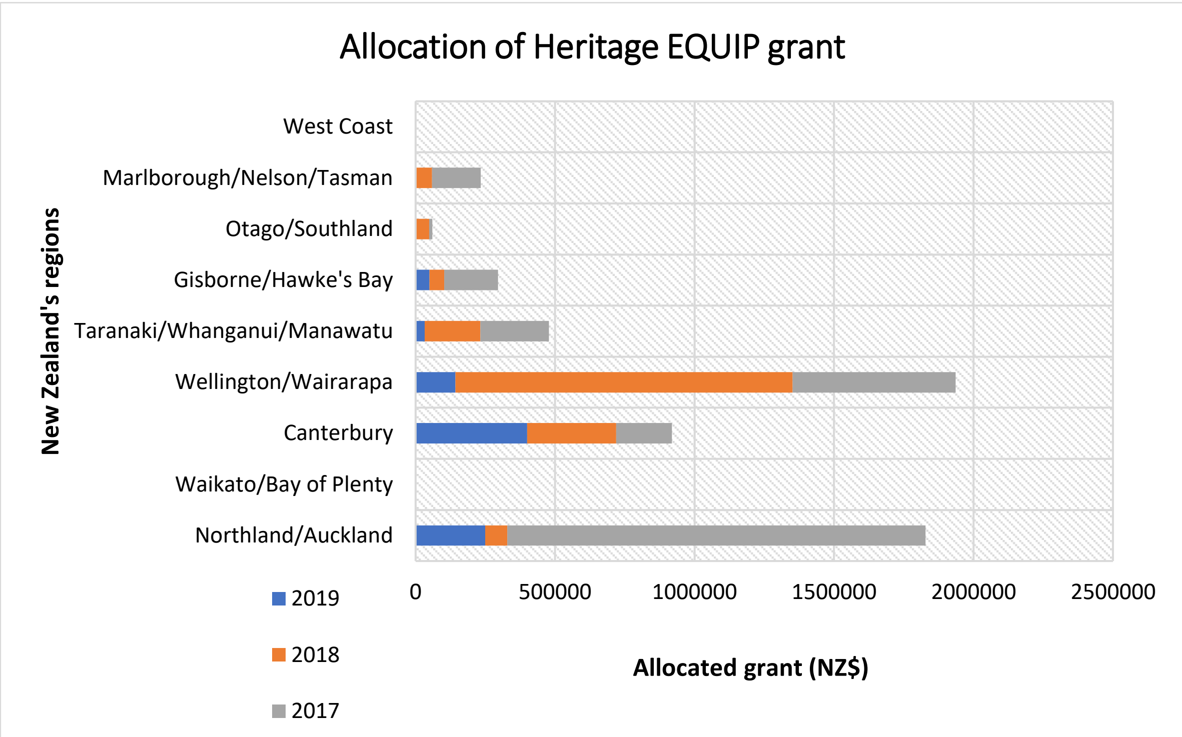


Figure 5.3: Allocation of Heritage Equip grant across New Zealand's regions

Findings from Figure 5.3 shows that most of the Heritage Equip funding has been allocated to New Zealand's more prominent regions (i.e. Northland/Auckland in 2017, Wellington/Wairarapa in 2018, and Canterbury in 2019). While some provincial regions such as Taranaki/Whanganui/Manawatu, Gisborne/Hawke's Bay Marlborough/Nelson/Tasman, and Otago/Southland have benefited a little, other provincial regions such as the West Coast, and Waikato/Bay of Plenty, have never benefited from the Heritage Equip funding since its inception in 2016 (Heritage EQUIP, 2019b).

These findings are in line with a similar study (New Zealand Historic Places Trust Pouhere Taonga, 2013), which also noted that most of the government funding for private owners of New Zealand's heritage buildings go to the more prominent regions such as Auckland, Wellington and the Canterbury region. These two similar findings could be credited to well-resourced councils in prominent regions that coordinate easier access to expertise (from planning and heritage consultants) for private owners of heritage buildings. On the other hand, it is only recently that Whanganui and Invercargill initiated a role for heritage advisors in their city councils (Invercargill City Council, 2018a; LinkedIn, 2019).

Table 5.5: Allocation of National Heritage Conservation Incentive Fund (NHPIF) across New Zealand's regions

Region	West Coast	Marlborough/Nelson/Tasman	Gisborne/Hawke's Bay	Otago/Southland	Taranaki/Whanganui/Manawatu	Wellington/Wairarapa	Canterbury	Waikato/Bay of Plenty	Northland/Auckland
NZ$									
2018	0	129,000	11,000	143,650	132,500	89,250	102,975	79,000	124,700
2017	0	45,041	42,290	25,950	22,500	139,860	105,000	180,000	340,000
2016	0	0	0	32,000	69,875	45,050	51,325	13,800	175,000
2015	0	0	22,920	26,840	100,000	243,340	88,000	0	140,700
2014	0	0	11,000	79,100	80,500	197,500	30,070	6,000	229,815
2013	0	0	70,000	89,240	25,000	11,500	181,728	35,000	305,000
2012	0	10,000	65,550	75,000	90,000	53,000	0	23,000	107,000
2011	0	16,000	0	12,150	30,000	110,000	46,000	35,000	0
2010	0	73,700	165,203	134,781	11,750	14,000	12,750	120,000	145,000
2009	0	28,380	9,650	145,276	16,000	109,000	129,119	13,156	239,469

2008	0	0	67,416	112,665	11,045	0	61,408	181,291	310,113
2007	0	0	13,000	12,714	59,514	77,656	87,363	152,660	164,130
2006	175,000	0	77,490	145,500	9,250	75,000	95,000	0	12,255
2005	10,000	67,500	54,000	0	0	5,000	75,000	93,500	0
2004	0	0	0	0	75,000	55,500	0	0	95,000

Source: (Heritage New Zealand, 2019b)

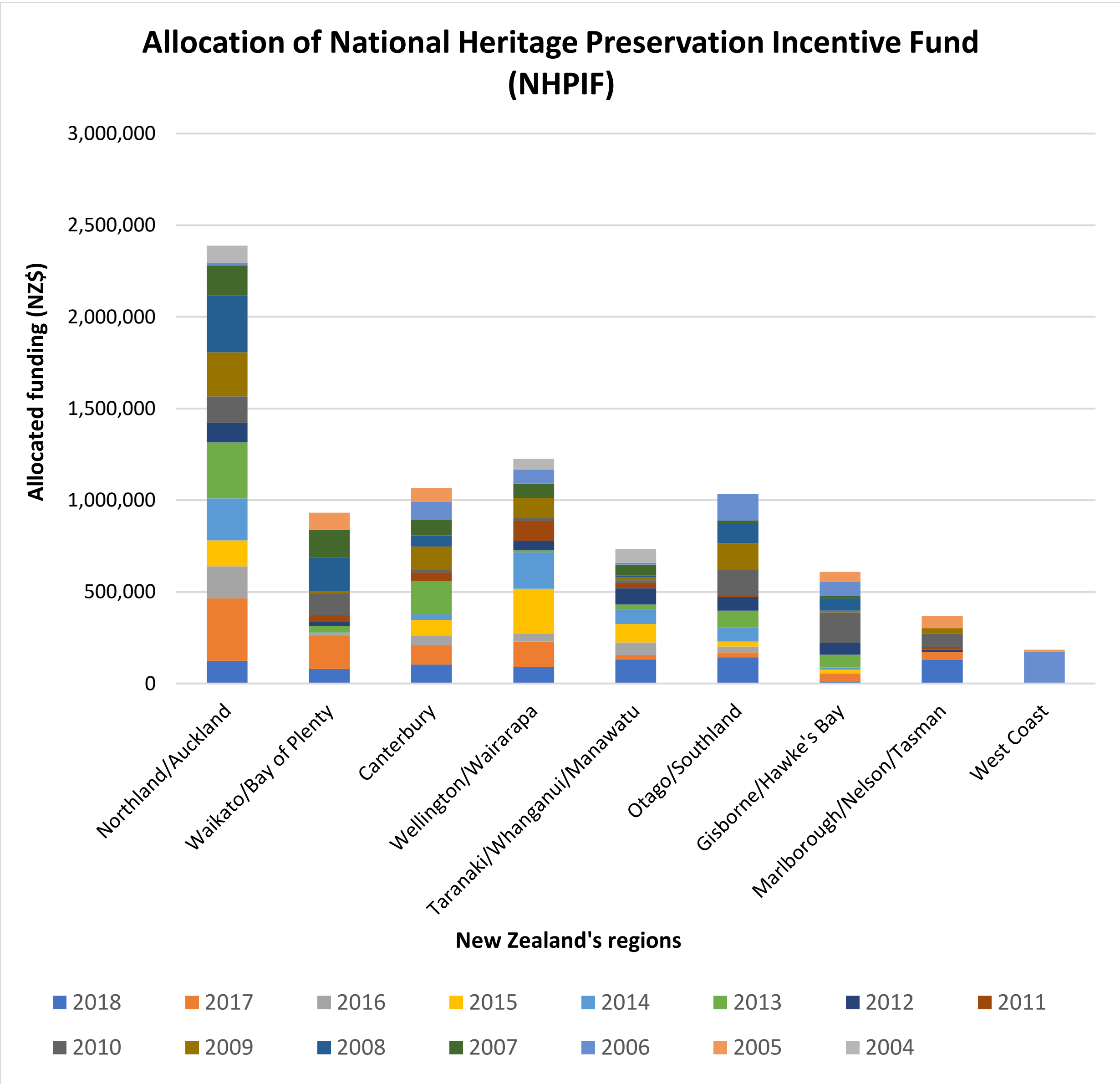


Figure 5.4: Allocation of NHPIF across New Zealand's regions

It could also be observed from Figure 5.4 that most of the NHPIF have been allocated to private owners in the more prominent regions (i.e., Northland/Auckland, Wellington/Wairarapa, and Canterbury). Such more prominent regions got the most NHPIF between the year 2013 and 2017. Also, these findings are in line with the New Zealand Historic Places Trust Pouhere Taonga (2013) which found that these more prominent regions are at the forefront of heritage conservation because of the “lion’s share” funding they get from the central government grant and their self-generated funding (e.g., Auckland Council Built Heritage Protection Fund, Wellington City Council’s Built Heritage Incentive Fund and the Canterbury Earthquake Heritage Buildings Fund) for the protection of heritage buildings.

Otago/Southland, which is a major provincial region in New Zealand, has been observed to have received a substantial allocation of NHPIF grant. This could be attributed to the huge investment in the protection of heritage buildings by several private owners of heritage buildings in the city centre, to regenerate the city’s heritage precinct (Loughrey, 2017). However, other provincial regions (such as West Coast, Marlborough/Nelson/Tasman, Gisborne/Hawke’s Bay, and Taranaki/Whanganui/Manawatu, are observed to have received the least NHPIF grant. The kind of patchy financial incentives that have been allocated to these other provincial regions by the central government, and their low capability to generate their own funds, may have contributed to delays in the course of protecting their heritage buildings.

5.6.3 The implication of incentive allocation on built heritage protection efforts in New Zealand's provincial regions

Findings from the key informant interviews follow a description of extensive beliefs obtained from the interviewees, rather than their average or representative opinions. The interviewees presented their views on the implication of incentive allocation on built heritage protection efforts in New Zealand's provincial regions. Accordingly, three critical implications of incentive allocation on built heritage protection efforts in New Zealand's provincial regions emerged:

5.6.3.1 Disproportionately low allocation of government grants to provincial regions

Most of the heritage protection government grants often go to more prominent regions with higher-profile private heritage buildings that would likely yield significant public benefits. In more prominent regions like Auckland and Wellington, many heritage buildings have been lost to development (Heritage New Zealand, 2018). While those remaining heritage buildings become very significant due to their rarity value, their conservation is often advocated by the public. Such remaining heritage buildings often benefit more from government heritage protection grants because of the higher public demand. Since these buildings typically have higher market values, private owners can charge higher rents that can support the maintenance of the buildings from the income generated from owning the buildings. Accordingly, the significant aesthetic and architectural character of most of the heritage buildings in these more prominent regions have been kept intact over the years through continuous maintenance, hence, making the buildings in more prominent regions overqualified for government incentives when they become available.

Conversely, since the heritage buildings in the regions are often still in precincts, or clusters, these buildings also possess increased collective value, as recognised in places like Whanganui, Napier and Oamaru (Heritage New Zealand, 2018). most of New Zealand's provincial regions have left their heritage buildings to deteriorate over the years due to lower demand and property value. The continuous deterioration of the heritage buildings in provincial regions often reduces the heritage significance and property values of the buildings (Yakubu et al., 2017). The rents charged by owners of heritage buildings are often insufficient to maintain the buildings, which makes the buildings underqualified when central government financial incentives become available. Hence, provincial regions receive lesser financial incentives.

The implication of lesser incentive allocation to provincial regions could discourage owners of heritage buildings in these regions from investing in the protection of their buildings, notably when the private benefits they get from the buildings cannot support the cost of continuous maintenance of the buildings. The lack of maintenance of these heritage buildings causes the buildings to deteriorate to the extent that they become an eyesore to the public whenever they drive or walk past. A collection of these kinds of decaying heritage buildings in central parts of provincial cities eventually contribute to city-centre decline as a result of their building conditions, and other socio-economic and regulatory consequences.

5.6.3.2 'Unsophisticated' investors in provincial regions

It has been observed that property owners in provincial are less savvy and lacking sophistication of their big-city counterparts. Heritage building owners in provincial regions tend to be older and own buildings debt-free. Primarily, many owners view their assets as a supplementary retirement income and are not motivated to invest in the maintenance and building upgrades since often they are not able to charge higher rent (high vacancy rates in provincial towns means occupants can find affordable options elsewhere). This category of investors may find it challenging to get a loan from banks for maintenance and regulatory compliance. Also, due to financial and human resource-constrained local councils, there is little information available about funding options for owners of heritage buildings.

'Unsophisticated' investors in provincial regions usually believe they may not have anything to lose from not investing in maintaining their heritage buildings when they do not qualify for government financial incentives. They often tend not to have a good knowledge regarding assessing the heritage values of their buildings to qualify for nomination to enter the national heritage register, using straightforward and more cost-effective engineering solutions to maintain the architectural and structural integrity of their buildings to the required standards recognised by insurance companies. At this point, it becomes more difficult for them to get loans from banks and financial incentives from government funding bodies.

Furthermore, 'unsophisticated' investors in provincial regions are usually unwilling to apply for government grants due to some shared experiences from other local investors whose applications fell short of anticipated financial demand or expectations, especially when the value of the available grant is meagre. Also, most of these investors are often inclined towards doing nothing by not pursuing government grants to protect their heritage buildings due to some perceived meddling with property rights. This perception may contribute to the investors not submitting applications to evade too much paperwork or other related conditions for government grants such as heritage covenants and public access provisions. As grants usually will not offer solutions in situations of abandoned heritage buildings or 'demolition by neglect', where owners refuse to maintain and repair their heritage buildings due to lack of financial incentives, or in situations of 'orphaned buildings' where owners cannot be contacted or identified, provincial regions in New Zealand continue to lag in the aspect of built heritage conservation.

Consequently, the more prominent regions with more sophisticated investors who have more enthusiasm and extensive information on how to go about protecting their heritage buildings usually get most of the incentives as soon as they become available.

5.6.3.3 'Emergency solution' mindset of government funding regulators

Funding programs for the protection of heritage buildings in New Zealand are seen as reactive to significant natural hazard events when providing necessary continuous support to increase the resilience of the country's heritage. Moreover, much of the government funding is directed to more prominent regions (e.g., Canterbury and Wellington regions) that have been or have a higher tendency to be affected by natural disasters such as earthquakes. These more prominent regions use these funds as an opportunity to invest more in preserving and protecting their heritage buildings. Provincial regions that do not fall under these categories are usually less prioritised by funding regulators. For instance, some of the funding programs in New Zealand (such as Heritage Equip and the Canterbury Earthquake Heritage Buildings Trust Fund) are pilot or temporary programs, with start and termination dates which are usually a few years apart. This kind of approach indicates an "emergency solution" mindset, which does not reflect the fact that the protection of built heritage is a continuous activity, and heritage buildings in low-risk disaster provincial regions require funding for maintenance.

5.7 Conclusion

The retention of heritage buildings is essential because these buildings serve as signposts that lead a narration of a community's past into the future (Aigwi et al., 2018). Investment in the protection of these buildings through heritage incentive in the form of government grants provides a lifeline for the future conservation of built heritage, which can boost the local economy of a place. This study sought to evaluate the per capita distribution of heritage buildings for different regions in New Zealand, examine the allocation of significant government funding sources for the protection of the heritage buildings, and explore the implication of incentive allocation on future built heritage protection efforts of New Zealand's provincial regions.

Findings from the document analysis revealed that while the per capita distribution of heritage buildings was highest in New Zealand's provincial regions, the more populous and economically advantaged regions received the most apportionment of significant government funding for the protection of heritage buildings. Besides, findings from the key informant interviews identified three major themes as the implication of incentive allocation on the built heritage protection efforts New Zealand's provincial regions: (i) disproportionately low allocation of government grants to provincial regions; (ii) unsophisticated investors in provincial regions; and (iii) "emergency solution" mindset of government funding regulators. Findings from this study imply that though New Zealand's government heritage grant systems are the most extensive non-regulatory incentives for the protection of built heritage (New Zealand Historic Places Trust Pouhere Taonga, 2013), the provincial regions may still be struggling to conserve their oversupply of heritage buildings.

In Australia, some financial aspects including the availability of private or public sector funding sources were identified from existing literature as one of the major challenges to the retention of heritage places (Perovic, Coffey, Kajewski, & Madan, 2015). The New Zealand government is now making greater financial commitments through incentives to support the protection of heritage assets for the sustainable development of provincial regions (Nahkies, 1999). The idea about financial incentives is that they are useful towards increasing the effectiveness of heritage regulatory mechanisms by offering an alternative to expensive appeals to territorial authorities, building owners and investors. Although nearly 60% of New Zealand's regional heritage plans now make provisions for financial incentives (such as incentive funds, consent fee waivers, and rates relief) and regulatory incentives (such as the relaxation of yard space and parking zone rules) to protect built heritage, there is a critical deficiency regarding the provision of rules, policies and objectives to facilitate the seismic upgrade of historical buildings in about 2/3 of the plans (Heritage New Zealand, 2018). However, in a setting where financial incentives are made available to offset heritage regulatory costs, the reality in provincial regions is such that not much private benefits go to owners who cannot charge higher rents, or charge people for admiring their old buildings.

In provincial regions where the value of heritage buildings is usually higher than the conservation cost, there is a gap that should be filled through increased financial incentives in the form of grants by the central government. In more prominent regions, there is less need for extra allocation of central government grants to these areas because of their buoyant economy and ability to generate their local heritage funds. There are more public benefits of protecting heritage buildings in New Zealand's provincial regions (Aigwi et al., 2018). As a result, more provincial authorities (such as Dunedin, Whanganui, and Invercargill), are now changing their attitudes towards the protection of heritage by establishing positions for heritage consultants (or champions) and committing funds for their local heritage. These regions are now incorporating heritage buildings at the core of their city-centre regeneration programmes (Aigwi, Filippova, Ingham, & Phipps, 2020). There is also more focus on regions within the Heritage EQUIP programme which is encouraging, as extra incentives are now being channelled to provincial regions to support owners of earthquake-prone historical buildings with grants for the seismic upgrade, professional advice, and initial uptake (Heritage EQUIP, 2019a).

Just like wine that gets better and more valued according to its vintage and maturity if conserved in the right conditions, the value of a heritage building would appreciate if the right conditions to conserve these buildings are maintained. Also, future regeneration strategies through the protection of heritage buildings would achieve better equity if the hegemony between provincial versus more prominent regions is challenged (Fainstein, 2016), and public funds are allocated to favour provincial regions the more. Hence, to boost the protection of the many heritage buildings in New Zealand's provincial regions, policymakers and funding organisations should increase the financial incentives that are allocated to these regions to encourage the regeneration of the distressed regions (Ryberg-Webster & Kinahan, 2017). This move by the government will help the provincial regions with more collections of heritage buildings to maintain and redevelop their already lower-market-priced buildings in the future.

Other incentives in the form of public engagement and education are also crucial for the seismic resilience of marginalised provincial regions (Yumagulova & Vertinsky, 2019) because many owners still do not know how to go about getting incentives from the government to upgrade their buildings. The heritage champions and planning team of provincial government authorities are encouraged to engage private owners of heritage buildings, by working through grant application processes with them and connecting them with successful, sophisticated network of investors in more prominent regions to learn how to stay motivated to protect their heritage buildings.

This research has evaluated the per capita distribution of heritage buildings for different regions in New Zealand, examined the allocation of significant government funding sources for the protection of the heritage buildings, and explored the implication of incentive allocation on future built heritage protection efforts of New Zealand's provincial regions. Together with increased financial incentives to promote voluntary participation by owners of heritage buildings in New Zealand's provincial regions, this research presents improved insights for policy and central financial incentive regulators to understand the challenges faced by provincial regions in their efforts to protect their abundant heritage buildings. A significant limitation of this study is its exclusively New Zealand context. However, the recommendations from this study could be applied to provincial regions in other countries facing similar challenges in this paper. Further studies may consider evaluating the proportion of underutilised heritage buildings in the main streets of provincial regions in New Zealand with implications for town-centre regeneration.

Chapter 6. Identifying parameters for a performance-based framework: Towards prioritising underutilised historical buildings for adaptive reuse in New Zealand

This chapter was developed from Publication № 5, *which has been published in final form in Cities Journal,* 102, 102756. DOI: https://doi.org/10.1016/j.cities.2020.102756

Abstract

This paper identifies the parameters for a performance-based framework to prioritise underutilised historical buildings for adaptive reuse interventions while discussing its effectiveness towards promoting sustainable and resilient urban areas in New Zealand.

A narrative review of extant literature is done to justify the need for the performance-based framework and build a list of relevant parameters that elucidates all or part of a typical decision-making process regarding the selection of historical buildings for adaptive reuse in New Zealand.

Five main priority aspects with significant evaluation criteria that have been identified from this study are economic sustainability, built-heritage conservation, socio-cultural aspects, building usability, and regulatory aspects. This paper's

originality pertains to the development of parameters for a performance-based framework that offers a basis for relevant adaptive reuse stakeholders to prioritise underutilised historical buildings while balancing their diverse objectives. Accordingly, the performance-based framework has been validated to justify the relevance of its applicability to the different outlined parameters, towards prioritising underutilised historical buildings for adaptive reuse in New Zealand.

6.1 Introduction

A majority of historical buildings around the world are often viewed as assets that are essential for the development of local tourism, due to the heritage and socio-cultural values they possess (Bedate, Herrero, & Sanz, 2004; Pedersen, 2002). These buildings play a crucial role in the socio-economic and cultural development of society (CPWD, 2013) by providing a physical link and progression of cultural evidence to the past (Goodwin et al., 2009). Most town centres in New Zealand typically feature old and vacant historical buildings. Although most of these buildings possess heritage values, a significant proportion of the buildings are underutilised (Yakubu et al., 2017). Accordingly, poor building conditions, socio-economic factors, and building regulatory requirements, have been identified as causal factors to the desertion and high vacancy rate of most historical buildings in New Zealand's provincial town centres (Aigwi, Phipps, et al., 2019; Yakubu et al., 2017).

The increasing awareness that it is cheaper to convert older buildings for newer functions rather than abandoning them for demolition and reconstruction is one of the critical factors that have promoted the vast interest in the adaptive reuse strategy (Aigwi et al., 2018; Ball, 2002; Bullen & Love, 2011a; Pearce, DuBose, & Vanegas, 2004). Some studies have identified cases and concepts, with implications suggesting that performance upgrading of heritage buildings through adaptive reuse create tremendous influences on the sustainable development of a built environment (Bromley et al., 2005; Plevoets & Van Cleempoel, 2019; Rohracher, 2001). In a quest to minimise the socio-economic costs of developing a sustainable and resilient urban area, and, the environmental cost of demolition, the adaptive reuse approach becomes beneficial to the government, communities, building owners/investors, and developers in realising that an essential aspect of any successful urban regeneration strategy is the reuse of heritage buildings (Ball, 1999; Wilkinson & Osmond, 2018; Yakubu et al., 2017).

While promoting sustainable and resilient urban areas through the retention of historical buildings, some trade-offs may exist among relevant decision-makers. These trade-offs need to be balanced among the respective adaptive reuse decision-making stakeholders who may have both direct and indirect interests in reusing underutilised historical buildings (Aigwi, Phipps, et al., 2020). Since these relevant stakeholders may have a common urban regeneration goal, but diverse opinions about the adaptive reuse approach, various factors based on their different perceptions on the adaptive reuse approach will need to be considered and deliberated upon, hence making the decision-making process very difficult (Wang & Zeng, 2010). Although some adaptive reuse decision-making tools have been recognised from other studies (Caccavelli & Gugerli, 2002; Conejos, Chew, & Yung, 2017; Geraedts & Van der Voordt, 2007; Langston & Shen, 2007; Langston & Smith, 2012; Love & Bullen, 2009; S. Wilkinson, H. Remøy, & C. Langston, 2014), the necessity for yet another tool to prioritise optimal building alternatives, while balancing the diverse interests of adaptive reuse stakeholders (Aigwi, Phipps, et al., 2020) in an urban regeneration decision-making setting is essential.

6.2 Objective and literature review

This paper aims to identify relevant parameters for a performance-based decision-making framework to prioritise the most suitable historical building options for adaptive reuse interventions in New Zealand. A narrative literature review is done to synthesise a comprehensive description of existing adaptive reuse decision-making models to identify inconsistencies in knowledge (Baker, 2016; Green et al., 2006; Machi & McEvoy, 2016; Onwuegbuzie & Frels, 2016), and hence, facilitate the formation of relevant parameters for the development of the proposed performance-based framework.

6.2.1 Adaptive reuse and its impacts on fostering sustainable and resilient urban areas

The adaptive reuse approach focuses on changing the use of an existing building to enable it to function as a contemporary building while preserving its useful and valuable features (Ball, 2002; Shehata, Moustafa, Sherif, & Botros, 2015). Hence, this change of use process involves the conservation and reuse of functionally obsolete or old underutilised historical buildings for new and more appropriate functions. The concept of adaptive reuse implies: changing an existing building's original use to serve new functions (Douglas, 2006); retaining the original features and structure of an existing building (Love & Bullen, 2009); or extending the useful life of an existing building (Mansfield, 2002; Wong, 2017).

From an economic point of view, it is often cheaper and faster to redevelop historical buildings through adaptive reuse, when compared to demolition and rebuild (Aigwi et al., 2018; Bullen & Love, 2011b; Douglas, 2006; Heath, 2001; Langston & Shen, 2007), except in situations that may require total structural reconstruction of the buildings which could be labour-intensive (Shipley, Utz, & Parsons, 2006). Consequently, when applying the adaptive reuse approach to redevelop a specific floor area of an existing building, it is noted that it could take about half the time required to demolish and rebuild the same floor area of a new building from scratch (Larkham, 2002). This reduced timeframe implies that there will be a corresponding reduction in the financing costs and the impact of inflation on the overall construction, leading to a minor interruption of cash flow from tenants (Highfield & Gorse, 2009; Langston & Shen, 2007). Also, since most of the existing building's structural components are already in place to serve as raw materials for adaptive reuse, and the contract periods are typically shorter than that of the rebuild, the borrowing cost for the redevelopment projects are usually minimised (Shipley et al., 2006). Past studies have also recognised adaptive reuse as a viable option towards improving the economic situation of an urban area through an increase in property values of adapted historical buildings (Chau, Wong, Leung, & Yiu, 2003; Yau, Wing Chau, Chi Wing Ho, & Kei Wong, 2008; Yiu & Leung, 2005).

Nevertheless, some indirect costs which may be encountered in the adaptation process, such as regulatory requirements, structural complexities of historical buildings projects (Bullen, 2007; Kohler & Yang, 2007; Wilkinson, James, & Reed, 2009), and environmental cost of demolition waste (Yuan, Shen, Hao, & Lu, 2011), may weaken the adaptive reuse economic argument when compared to the cost of a new building. In addition, some renovations could be more labour-intensive compared to new constructions, especially when an adapted historical building is protected through legislation as a heritage building that requires the conservation of certain heritage features (Aigwi, Phipps, et al., 2020). Accordingly, in such situations, renovations could be more expensive, and even worse in times and regions where labour costs are higher than the cost of materials (Shipley et al., 2006). Although the process of identifying the value for money for adaptive reuse implementation is mostly linked to monetary return, focusing on only financial matters may likely introduce bias into an adaptive reuse decision-making process (Langston, Wong, Hui, & Shen, 2007).

While minor precedence is often given to the socio-cultural impacts of adaptive reuse during reuse deliberations (Bullen & Love, 2011a), socio-cultural aspects have been highlighted as key to achieving successful urban regeneration strategies (Mısırlısoy & Günçe, 2016a). A most suitable new use for an underutilised historical building should have the capacity to meet the immediate needs of a local community and improve the quality of lifestyle of its people. Improving the quality of lifestyle for the residents of an area would contribute to enhancing the significance of place through a sustained societal life (Engelhardt, Unakul, & Endrina, 2007). Adaptive reuse of historical buildings has been found to promote the conservation of core heritage values of the buildings, hence, retaining attractive streetscapes that would add character and sense of place to host communities (Bullen, 2007; Langston & Shen, 2007). Built heritage conservation through adaptive reuse has also been suggested as practically sustainable concepts for urban regeneration planning (Alpopi & Manole, 2013; Nasser, 2003). Also, while the benefits of adapting historical buildings have been found to promote built heritage conservation (Aigwi et al., 2018; Plevoets & Van Cleempoel, 2011, 2019), some other studies have stressed on the success of the new adapted functions concerning local community development, as essential adaptive reuse goals (Douglas, 2006; Shehata et al., 2015). Accordingly, a substantial reduction in the number of vacant historical buildings in an area through adaptive reuse would potentially create a more vibrant community that could enjoy an improved quality of life from the socio-cultural viable new use of the buildings (Yakubu et al., 2017).

From an environmental stance, the process of adapting historical buildings for new uses promotes sustainable communities through the significant reduction in building materials and energy consumption, and reduced pollution (CO_2 emission) from construction activities (Itard & Klunder, 2007), while maintaining the unique characteristics, and retaining the cultural identity of the buildings (Boarin, 2016). Since all buildings, including historical buildings, contain embodied energy, reusing the functionality of existing buildings, their components, and salvaged materials would help conserve this energy (Binder, 2003). Also, the adaptive reuse process has been noted to be a better way to minimise the impact of environmental interruptions from ground contamination, dust, hazardous and falling materials, when compared to new construction activities (Bullen & Love, 2010). The impact of these environmental interruptions could cause detrimental interference to the existing ecosystems, hence, causing degradation of natural habitats and biodiversity of species (Koren & Butler, 2006). Nevertheless, it has been argued that the practicality of meeting regulatory requirements of indoor air quality, acoustic and thermal performances of historical buildings through adaptive reuse, may not be entirely achievable due to the dependence of the adaptive reuse process on the usability and required end use of the building (Wilkinson et al., 2009). Although the environmental performance of an adapted historical building may not entirely match that of a newly constructed building, its social gains could balance this drawback (O'Donnell, 2004). Also, since most historical buildings do not usually promote passive environmental systems, the adaptive reuse approach could provide an opportunity to try out different innovative technologies, towards developing diverse solutions to promote sustainable development (Bullen, 2007).

Additionally, in active seismic regions, the adaptive reuse concept could be considered a feasible approach to promote seismic resilience in high seismic hazard areas, when applied to earthquake-prone historical buildings (Aigwi et al., 2018). In New Zealand for instance, since most change of use alterations would trigger the seismic retrofit requirements of earthquake-prone buildings (EPBs) if the value exceeds 25% of the building's ratable value (MBIE, 2016b), the adaptive reuse process could serve as a useful approach to motivate building investors to upgrade historical EPBs, towards the development of seismic resilient communities.

6.2.2 Situations faced by decision-makers during adaptive reuse project prioritisation deliberations

Typical situations encountered by adaptive reuse decision-makers are discussed in detail to determine relevant attributes and factors to be deliberated upon in the process of selecting optimal historical building alternatives for adaptive reuse interventions.

During adaptive reuse debates, it is essential to consider the reuse potentials of historical buildings in ways that would be socio-economically viable to their local community. According to Murtagh (2006), firstly, an evaluation of the potential property market and location characteristics must be done by answering the following questions: (i) is there an oversupply of underutilised historical buildings? (ii) is there adequate demand for the proposed new use? (iii) how strategic is the location of the historical building to be reused? (iv) is the location easily accessible to services such as transportation and parking facilities? (v) How can the social and demographic character of the local area impact the feasibility of the reuse project? (vi) what type of local development is ongoing, and who are the competitors? (vii) what is the current or prospective environmental quality of the historical building's surroundings? (viii) What kind of uses exists within other surrounding buildings?

Also, the building characteristics of the historical buildings are analysed in terms of the physical conditions of the buildings, historical and architectural features, and how these buildings comply with relevant regulatory requirements. Accordingly, the following questions should be addressed (Wang & Zeng, 2010): (i) how stable are the structural elements, and what is the existing condition of the non-structural elements of the buildings? (ii) do the buildings have a significant amount of architectural and historical fabric that meets the criteria of the national heritage register? (iii) how feasible is it for the buildings to conserve the heritage fabric? (iv) Would existing regulatory (i.e., building code, seismic, planning, and zoning, heritage, health and safety, fire, disability) requirements permit the potential new use of the buildings? All these questions need to be deliberated upon by the stakeholders during the adaptive reuse decision-making process.

Furthermore, while conducting a stakeholder analysis for pertinent actors of the adaptive reuse decision-making process to understand their background and roles for transparency and coherence of the process, the actors are classified under four categories of stakeholders (i.e., investors, producers, regulators, and users). As the investors (i.e., private building owners, developers or government) may mostly be concerned about the return on investment, the government in this context play an important role by creating stimulus through planning regulations that will promote the adaptive reuse projects. Besides, the producers (i.e., building professionals such as architects, engineers, heritage conservation experts, quantity surveyors, project managers, etc.) who bear most of the risk from other stakeholder groups may be most concerned about timing, clarity, and closure of the entire reuse process. While the role of regulators (i.e., health and safety, heritage, seismic code, planning and zoning compliance officers) is to ensure that producers maintain strict compliance with relevant regulatory procedures, the users (i.e., tenants, leaseholders, and public) may be most concerned about enhanced reuse strategies by representing demand either directly or indirectly.

There is, therefore, a need to identify the parameters of a framework that can be used to weigh the above-highlighted situations faced by decision-makers during adaptive reuse project prioritisation deliberations, in order to balance their differing interests while selecting optimal historical building alternative from a pool of historical building options.

6.2.3 The performance-based planning approach for adaptive reuse decision-making

Performance-based planning involves the application of performance trends to promote the strategic development of significant long-range plans and activities in a manner that would guaranty efficient and effective outcomes (T. Frew, D. C. Baker, & P. Donehue, 2016b). The application of performance-based planning approach is prevalent within the public sector as a means to improve desired urban collaborative decisions with the use of evaluation-based techniques (Aigwi, Egbelakin, et al., 2019; Baker, Sipe, & Gleeson, 2006). Some developed countries such as New Zealand, Australia, the USA and Great Britain have successfully applied performance-based planning approaches to enhance decision-making in natural resource planning relating to building regulations and land use planning (Frew et al., 2016b). As a result, the basis for the development of a performance-based planning approach is usually on the impact of land use as a function of its physical intensity and features, rather than traditional zoning impacts on land use (Baker et al., 2006).

When applying the performance-based planning ideology to an adaptive reuse decision-making setting, predetermined criteria and priority aspects can be evaluated in a subjective manner to set quantitative boundaries on acceptable adaptive reuse standards (Aigwi, Egbelakin, et al., 2019). Accordingly, the core components of the performance-based planning approach relating to adaptive reuse decision-making should include the criteria and priority aspects that would describe in detail an effective and efficient adaptive reuse outcome, and a methodology to describe the influences of acceptable measurement standards on the desired adaptive reuse outcome (Aigwi, Egbelakin, et al., 2019). Performance-based planning approaches should, therefore, be explored by adaptive reuse decision-makers to promote seismic resilience through the retention of historical buildings.

6.2.4 Review of some existing adaptive reuse decision-making toolkits and frameworks

The purpose of this narrative literature review is to establish if efforts have been made to identify relevant parameters to prioritise optimal building options from a list of vacant historical building alternatives for adaptive reuse interventions towards a sustainable and resilient urban regeneration. Various frameworks have been advanced towards assisting decision-makers in assessing the complexities around making best decisions regarding the adaptive reuse potentials of existing buildings (Caccavelli & Gugerli, 2002; Conejos, Chew, et al., 2017; Geraedts & Van der Voordt, 2007; Langston & Shen, 2007; Langston & Smith, 2012; Love & Bullen, 2009; S. Wilkinson et al., 2014).

Caccavelli and Gugerli (2002), developed the TOBUS decision-making tool to prioritise and select the best retrofit solutions and cost estimation for individual existing office buildings. The TOBUS framework was developed for the owners of office buildings, construction professionals and real estate investors, to analyse the indoor environmental quality, energy consumption, physical state and functional obsolescence of the buildings' elements and services. Although the design of the TOBUS allows its users to address professional and multi-disciplinary problems associated with the refurbishment of buildings, it targets only office buildings. In a similar study, (Love & Bullen, 2009), examined the use of NABERS (National Australian Built Environment Rating System) to assess the influence of occupants behaviour on the environmental performance of adapted commercial buildings. Accordingly, the underlying parameters and methodologies of both the TOBUS and NABERS frameworks fall outside the scope of this paper study because they: (i) are incapable of prioritising and ranking most suitable historical buildings from a group of alternatives for adaptive reuse intervention; and (ii) do not consider economic, socio-cultural, heritage conservation, and usability values of the existing buildings. Moreover, although the addressed environmental aspects in the TOBUS and NABERS frameworks are important, the occupant's survey and checklist methodologies are unable to deal with subjective views of all relevant stakeholders involved in an adaptive reuse decision-making process, while balancing their diverse interests.

Another study conducted by Langston and Smith (2012), led to the development of the iconCUR framework which applies the MCDA weighted matrix method to map performance scores of built assets in 3D space and identifies the best course of property decision action to pursue over time. The iconCUR framework practically demonstrates the ability of mapping both decision criteria (e.g., building condition, utilisation, and reward) and sub-criteria (e.g., mutual utility and stakeholder concern), with attributes (e.g., regulatory compliance, design standard, and sustained service level) and alternatives (e.g., retain, renovate, reuse, or reconstruct). Likewise, Geraedts and Van der Voordt (2007) presented a checklist – Transformation Meter, to support adaptive reuse decision-makers on whether or not to start a transformation process of reusing empty office spaces as residential dwellings. The application of the Transformation Meter to investigate the potential of transforming existing office buildings into residential spaces is done by conducting the following steps on case study buildings: (i) quick scan; (ii) market feasibility and location characteristics scan; (iii) transformation class determination scan; (iv) financial feasibility scan; and (v) risk assessment scan.

Baker, Moncaster, and Al-Tabbaa (2017) examined five UK case studies to ascertain why decisions on whether or not to reuse or demolish underutilised existing office buildings are made. Their findings were assessed against decisions produced by both the iconCUR framework and Transformation Meter decision-making tools. Accordingly, it was revealed that although the two theoretical decision support tools assessed 18 out of the 19 office buildings across the five case studies to have moderate to excellent transformability potentials, in reality, only 9 out of the 19 buildings were demolished. The reasons for the demolition were specified to be beyond the scope of the theoretical frameworks. In conclusion, the study highlighted that although the iconCUR framework and Transformation Meter decision-making tools were suitable for their proposed use, significant adjustments still needed to be made when applying them for different uses, or on masterplan sites (Baker et al., 2017).

Furthermore, the ARP (adaptive reuse potential) model was developed to identify and evaluating the embedded physical life of obsolete historical buildings at any point of the buildings' life cycle, to establish a right timing for adaptive reuse intervention on buildings (Langston & Shen, 2007). This method is capable of transforming traditional adaptive reuse decision-making procedures to better sustainable strategies, practices, and outcomes. Moreover, the application of the ARP method to evaluate the embedded physical life of historical buildings requires the estimated present age (in years), and the projected physical life (in years) of the buildings. Some obsolescence factors (i.e., economic, social, functional, physical, technological, and legal) of the buildings are also required to evaluate the adaptive reuse potential of historical buildings because of their negative impact of reducing the useful life of the buildings. A similar study was conducted by Conejos, Chew, et al. (2017) on the basis of the ARP model for developing the AdaptSTAR model, which is a subjective checklist of adaptive reuse design plans. The purpose of the AdaptSTAR model was to establish the consideration of adaptive reuse in the initial design process of new buildings, towards maximising future adaptability of existing buildings. However, the methodologies of both the ARP and AdaptSTAR models are not suitable for the study discussed in this paper because they both require continuous monitoring of new buildings and expert assessment of obsolescence factors in individual buildings.

Ferretti, Bottero, and Mondini (2014) explored the application of the Multi-Attribute Value Theory (MAVT) in a decision-making process to choose the best performing industrial historical buildings for touristic adaptive reuse purposes in Italy. Although the findings revealed the efficiency of the MAVT technique in choosing the most suitable industrial historical buildings to be adapted for touristic purposes, the use of expert panels was identified as the major limitation for the framework development.

This study is therefore timely as it identifies parameters for a framework to prioritise optimal building alternatives from a group of underutilised inner-city commercial historical buildings for adaptive reuse interventions while balancing the diverse interests of relevant stakeholders involved in an urban regeneration decision-making process in New Zealand. This knowledge gap has enabled the authors of this paper to form a list of priority aspects and measurement criteria for the development of the proposed performance-based framework.

6.3 Research Methodology

This study focuses on identifying parameters for the development of a performance-based framework to prioritise optimal historical building alternatives during adaptive reuse decision-making processes in New Zealand. To achieve this aim, the qualitative research approach through a narrative literature review was conducted to create a comprehensive account of existing adaptive reuse decision-making models.

A narrative literature review is a comprehensive and critical analysis of existing knowledge on a research topic, usually done to establish a theoretical focus or context for the topic (Baker, 2016; Green et al., 2006; Machi & McEvoy, 2016; Onwuegbuzie & Frels, 2016). Knowledge gaps identified from this study's narrative literature review facilitated the formation of parameters applicable to the development of the proposed performance-based framework. The performance-based framework has been validated with the use of a focus group workshop encompassing decision-makers ranging from owners/developers/users of historical buildings, building professionals, to heritage, legal, and council/community representatives (Aigwi, Egbelakin, et al., 2019).

6.3.1 Definition of priority aspects and criteria for the performance-based framework

The proposed performance-based framework presents five focal aspects (i.e., economic sustainability, built heritage conservation, socio-cultural aspects, building usability, and regulatory aspects), which are measured by relevant criteria (see Table 6.1). These priority aspects, relevant to assessing the reuse potential of heritage buildings towards building sustainable and resilient urban areas, are discussed below:

6.3.1.1 Economic sustainability

Potential new uses for underutilised historical building should be able to stimulate a buoyant economy for the host community. It is also expected that the successfully adapted building will have the capacity to generate enough profit that will be used for its future self-sustenance (Douglas, 2006). Besides, economic efficiency is also attained, where the tangible and intangible benefits of reuse projects outweigh the overall cost (i.e., capital regeneration cost, future running cost, and maintenance cost) of the projects (Orbasli, 2002). According to Engelhardt et al. (2007), the following factors have been suggested to be used as indicators when measuring the economic benefits of successfully adapted projects: (i) the numbers of newly established businesses and employment prospects for the local workforce, the increased value of surrounding properties, and the increased revenue from tourism for local businesses. Accordingly, other studies have identified a tremendous increase in the economic value of land and property, gained through the commercially viable new use of most adapted historical buildings (Heath et al., 2013; Mısırlısoy & Günçe, 2016a; Wang & Zeng, 2010). The increase in the economic value of the adapted buildings will eventually transfer to other surrounding properties with time, just like a ripple effect (Cook & Thomas, 2003). For heritage buildings, this chain reaction could also boost potential financial gain through increased from cultural tourism in the area (Gravagnuolo, Angrisano, & Fusco Girard, 2019; Gravagnuolo, Girard, Ost, & Saleh, 2017), as visitors would be attracted to the area because of its attractive streetscape, and collection of revitalised historical buildings. An adapted historical building in a site with good topography, plot size, and scenery, will be attractive to potential tenants or buyers due to its location potentials.

Additionally, potential savings from the reuse of construction materials (Aigwi et al., 2018; Bullen & Love, 2010; Langston et al., 2007; Yildirim, 2012), shorter construction period due to already existing structural elements of the main structure (Douglas, 2006; Yung & Chan, 2012), and potential job creation from a viable new building function (Heath et al., 2013), are identified as useful economic indicators to measure the performance levels of successfully adapted historical buildings.

Table 6.1: Details of the proposed performance-based framework to evaluate adaptive reuse performance parameters for underutilised historical buildings in New Zealand

Priority aspects	Criteria	Description	Contributions																	
			(Aigwi et al., 2018)	(Bullen & Love, 2010)	(Bullen & Love, 2011a)	(Conejos, Chew, et al., 2017)	(Douglas, 2006)	(Elsorady, 2014)	(Heath et al., 2013)	(Langston et al., 2007)	(McCormick, 2002)	(Mısırlısoy & Günçe, 2016a)	(Murtagh, 2006)	(Nasser, 2003)	(Shipley et al., 2006)	(Wang & Zeng, 2010)	(Wilkinson et al., 2009; Wilkinson & Remøy, 2018; S. J. Wilkinson, H. Remøy, & C. Langston, 2014)	(Wilson, 2010)	(Yildirim, 2012)	(Yung & Chan, 2012)
Economic Sustainability	Property value	- Increased property and land value gained from potential viable new use.	✔	✔			✔		✔			✔			✔	✔				
	Construction cost	- Potential cost savings from the reuse of construction materials	✔	✔					✔	✔								✔	✔	✔
	Construction timeline	- Potential shorter construction period due to already existing structural elements of the main structure	✔				✔			✔										✔
	Location	- The historical building is located in a site with good topography, plot size, and scenery, that would be attractive to potential tenants or buyers	✔	✔	✔					✔	✔				✔					✔
	Job creation	- Increased job creation from potential viable new building function								✔										✔
	Revenue from tourism	- Potential financial gain through increased revenue from tourism.	✔									✔						✔		✔
Built Heritage conservation	Sense of place	- The building has intrinsic heritage links that exhibit a positive public image over its lifecycle thereby maintaining a sense of place	✔		✔		✔							✔						✔
	Historic and cultural development	- The building has significant heritage fabric that can be conserved to promote the historical and cultural development of the area	✔		✔					✔				✔						✔
	Aesthetic contribution to the streetscape	- The building has aesthetic features that would sustain the visual heritage appeal of the surrounding streetscape	✔		✔									✔				✔		✔
	Architectural history	- The building has original, inherent fabric that would sustain the architectural history and narration of towns existence	✔									✔		✔						
Socio-cultural	Shared cultural identity	- The building has features that would help to sustain a shared cultural identity of a place	✔					✔					✔							✔
	Attachment to place	- The building is capable of promoting a feeling of belonging and attachment to place	✔									✔		✔						
	Maintained cultural significance	- The building is capable of contributing to the cultural significance of place	✔					✔					✔							✔
	Public's interest in refurbished heritage buildings	- The building has better potential to trigger the public's interest in refurbished historical buildings, through a culturally sustainable new use	✔									✔		✔			✔			
	Practical social amenity	- The building is capable of serving as a practical social amenity to its neighbourhood	✔					✔					✔							✔

Building Usability	Space utilisation	- Offers an opportunity for the introduction of both spatial and structural transformations.			✓										✓					
	Accessibility	- The building is situated in an area with a proximity to transport facilities that provide easy access for vehicular and pedestrian movement.		✓	✓										✓		✓			
	Flexibility for a future new use	- The building has significant components or arrangements that can support functional alterations for future reuse.		✓											✓					
	Material durability	- The building's interior and exterior fabric is made up of durable construction materials that could be retained for the building's future new use.			✓										✓		✓			
	Natural lighting & indoor air quality	- The design of the historical building maximises natural lighting and indoor air quality without significant mechanical involvement.		✓											✓					
	Technological innovations	- The building displays higher prospects for undergoing innovative construction finishes that would be consistent with current technological trends.			✓										✓		✓			
	Orientation and solar access	- The building has an orientation that can be maximised to provide excellent opportunities for passive solar strategies.		✓	✓										✓		✓			
	Desired interventions for building	- Do nothing					✓					✓			✓					
		- Sell the building																		
		- Minor renovation or cosmetic upgrade																		
		- Demolish and rebuild																		
		- Conversion for new functions																		
	Desired new use for building	- Residential dwellings													✓		✓			
		- Commercial (retail and offices)																		
		- Mixed-use (residential and commercial)																		
		- Cultural																		
		- Institutional (Library, educational facility, etc.)																		
		- Religious																		
		- Industrial (manufacturing or storage)																		
		- Government																		
		- Police station																		
		- Hospital/clinic																		
		- Fire station																		
		- Civil defence																		
		- Rest home																		
		- Parking																		
	Target users of the redeveloped building	- First home buyers		✓													✓			
		- Commercial (Retailers, offices, cinema, hotel, cafés and restaurants)																		
		- Restaurants & Cafes																		
		- Baby boomers (Senior citizens: 1940s – 1960s)																		
		- Generation X (1960s – 1980s)																		
		- Generation Y (the early 1980s – early 2000s)																		
Regulatory	Building code requirements	- Promote compliance with the current building code in assuring a safe, healthy, and resilient place for its users.	✓																	
	Seismic resilience	- Promote seismic resilience to minimise injury or death, property damage, and business interruption in the event of an earthquake	✓																	
	Heritage requirements	- The building has significant features with heritage value to be conserved according to the provisions in the NZPT act.			✓															
	Fire, emergency, and disability requirements	- The building's existing use is flexible to comply with current legislation for disability requirements, fire protection and safety, and emergency escape.		✓												✓				
	Health and safety requirements	- The building's existing use is flexible to comply with current standards that offer enhanced living space for its users such as comfort, indoor air quality, and environmental health and safety.	✓													✓				
	Zoning and planning requirements	- The building's existing use is flexible to conform to the current urban masterplan, zoning and planning specifications.	✓							✓						✓				

6.3.1.2 Built heritage conservation

Some heritage conservation charters, push for the architectural and heritage character of historical buildings to be conserved during maintenance and redevelopment interventions, to promote sustainability (ICOMOS, 1931, 1964, 2010, 2013, 2019). Given that, the mandate on heritage conservation has led to the scheduling of several heritage buildings into district plans, thereby protecting them from unsympathetic alterations or demolition through regulations. Other heritage and sustainable development charters have given the following conditions to be met before a historical building can be modified for reuse (NSW & RAIA, 2008; UNESCO, 2009). Accordingly, the new use should (i) have a minimal impact on the building's heritage significance and background; (ii) be able to add a compatible and contemporary meaning that can provide value for future generations; (iii) enhance the spirit of a place; and (iv) conserve the culturally significant fabric of the building.

In active seismic parts of the world, earthquake-prone historical buildings with heritage values are viewed as public goods (Navrud & Ready, 2002). These buildings have been surveyed to provide physical links and the progression of cultural evidence to the past (Goodwin et al., 2009). It is of the essence to conserve these earthquake-prone historical buildings through reuse because of their intrinsic heritage links that exhibit a positive public image over their lifecycle, thereby maintaining a sense of place (Aigwi et al., 2018; Douglas, 2006; Yung & Chan, 2012). Moreover, built heritage conservation through adaptive reuse has also been suggested to promote the sustainable historical and cultural development of urban areas through the conservation of significant heritage fabric

(Bullen & Love, 2011a; Langston et al., 2007; Nasser, 2003). Accordingly, the visual heritage appeal of streetscapes with a significant number of reused historical buildings will be sustained through reuse, due to the aesthetic contribution of the buildings to the streetscapes (Wilson, 2010). Also, the architectural history and narration of a community's existence are sustained, due to the conserved original, inherent fabric of reused historical buildings (Mısırlısoy & Günçe, 2016a).

6.3.1.3 Socio-cultural aspects

Socio-cultural aspects usually incorporate the impacts of a historical building's new use to its local area through promoting the quality of lifestyle and exposure enjoyed by residents within the community (Langston et al., 2007). The cultural diversity and communal life in the area are also sustained (Mısırlısoy & Günçe, 2016a). While serving as shared memory, a successfully adapted historical building will help to link residents to their roots, with which they can all reflect on as a collective cultural identity (Butina-Watson & Bentley, 2007; Murtagh, 2006). As well, an adapted historical building is capable of providing a practical social amenity to its neighbourhood, revealed through improved social relationships, trust, support, and connectedness amongst residents (Elsorady, 2014).

Moreover, the new use of a repurposed historical building should be able to attend to the immediate needs of the local community (Engelhardt & Rogers, 2009). Accordingly, general satisfaction in the new use of a historical building is capable of providing users with a feeling of belonging and attachment to place (Aigwi et al., 2018). However, socio-cultural aspects are often less prioritised for adaptive reuse projects, possibly because they are believed to be challenging to measure (Mısırlısoy & Günçe, 2016b). Hence, to achieve successful adaptive reuse projects repurposed historical buildings should be socio-culturally justifiable.

6.3.1.4 Building Usability

While focusing on the perspective of the end-users (or the public), building usability is a very much neglected aspect of measuring building performance (Jensø, Hansen, & Haugen, 2004). In understanding and applying the concepts of building usability (or functionality in use) within the adaptive reuse context, all aspects of the stakeholders' expectations regarding the selection of most suitable adapted historical buildings are considered (Alexander, 2006). The definition of building usability suggests three main determinant factors (Arge, 2004): (i) effectiveness (i.e., is the proposed building perceived to be fit for its intended new use?); (ii) efficiency (i.e., how long will it take to implement the new use?); and (iii) satisfaction (i.e., what is the attitude of the end-users towards the intended new use?). A British study investigated the concept of building usability by assessing the contributions of building adaptability, usefulness, functionality in use, accessibility, flexibility, and ease of use, towards outlining the effectiveness, efficiency, and satisfaction of a building's new use (Alexander, Huovala, & Kaya, 2003).

The theoretical principle of applying building usability within the adaptive reuse approach underlines that usability cannot be measured without enquiring for whom, and the usefulness for which an intended new purpose is for. The notion of an adaptive reuse decision-making process, where all relevant stakeholders are brought together within a given time frame, implies the uncertainty of actions maintained by the transparent and coherent nature of compromises sorted out between the actors. Given that, the nature of these compromises consider both the suitability of the opportunity used to attain the result, and also, other objectives of the actors (Alexander, 2006). Following the above theoretical development of building usability, it could be argued that building usability is realised through the interaction between the intended reuse of the buildings, and the perceived user experience, design and organisation processes.

Accordingly, for the performance-based framework development, the building usability priority aspect is measured under four main criteria with sub-parameters to be deliberated upon by all relevant stakeholders in the adaptive reuse decision-making process to select most suitable historical building alternative:

(i) What is the desired intervention for new use (Baker et al., 2017; Wilkinson & Remoy, 2011)?

- Do nothing?
- Sell the building?
- Minor renovation?
- Demolish and rebuild?
- Convert for a new use?

(ii) What is the most suitable target use for the building alternatives (Wilkinson et al., 2009; S. Wilkinson et al., 2014)? (e.g., residential dwellings, or commercial – i.e., retail, offices, cinema, hotel, cafes, restaurant, or public space, or mixed-use – i.e., residential and commercial, or cultural – i.e., arts centre, or institutional – i.e., library, educational facility, or religious, or industrial – i.e., manufacturing or warehouse, or government use, or public toilet, or police station, or hospital/clinic, or fire station, or civil defence centre, or aged rest home, or parking space?);

(iii) Who are the target users (S. Wilkinson et al., 2014)? (Such as first home buyers, or commercial purposes, or cultural groups, or educational institutions, or religious groups, or manufacturers, or government, or health sector, or students, or 'Baby boomer' generation, or Generation-X, or Generation-Y?); and

(iv) What is the desired optimal functionality in use (Baker et al., 2017; Douglas, 2006; Wilkinson & Remøy, 2018)? (i.e., offers a better opportunity for both spatial and structural transformations, or is situated in an area with a proximity to transport facilities that provide easy access for both vehicular and pedestrian movement; or has significant components or arrangements that can support functional alterations for future reuse, or the building's design maximises natural lightening and indoor air quality with lesser mechanical involvement, or the building displays higher prospects for undergoing innovative construction finishes that would be consistent with current technological trends, or the building has an orientation that can be maximised to provide excellent opportunities for passive solar gains?).

6.3.1.5 Regulatory aspects

It is crucial for decision-makers to consider all regulatory aspects of historical buildings when prioritising a list of these buildings to select the best alternative for adaptive reuse intervention. According to Mason (2009), it is expected that these regulatory aspects should be able to help accomplish a building's functional, socio-cultural, economic, and environmentally sustainable development goals when weighing up most suitable historical building options for reuse. Accordingly, an optimal historical building alternative should be able to comply with the current building code in guaranteeing a safe, healthy, and resilient place for its users (Wang & Zeng, 2010). Also, the existing use of the building should conform to the current urban masterplan, zoning, and planning specifications.

Furthermore, when considering seismic resilience in the case of historical buildings in active seismic areas, it will be essential to consider the compliance level of the buildings to seismic retrofit requirements put in place to minimise injury or death, property damage, and business interruptions in the event of an earthquake. Other regulatory requirements put in place to conserve the heritage features of the historical buildings should also be adhered to. Moreover, the existing use of an optimal selection should be able to comply with current standards that promote enhanced living spaces for its users, such as comfort, indoor air quality, and environmental health and safety. Finally, regulations regarding disability requirements, fire protection and safety, and emergency escape should not be left out as well.

6.4 Results and validation

Findings from the literature review led to the development of a performance-based framework. See Figure 6.1 for the design logic of the framework, which involves a data collection system that integrates the global resilience and heritage retention concepts within the New Zealand context through provincial case study collaborations. Also, the performance-based framework has been validated through a focus group workshop interface that was aimed at testing stakeholders' visualisation and assessment of integrated multi-criteria adaptive reuse and town centre regeneration priority aspects, through iterative weighting and scoring scenarios (Aigwi, Egbelakin, et al., 2019). Accordingly, the implication of decisions based on the weighted priority aspects was evaluated against identified historical building alternatives to achieve performance-based planning outcomes and improved seismic resilience solutions through the sustainable reuse of underutilised earthquake-prone historical buildings (Aigwi, Egbelakin, et al., 2019).

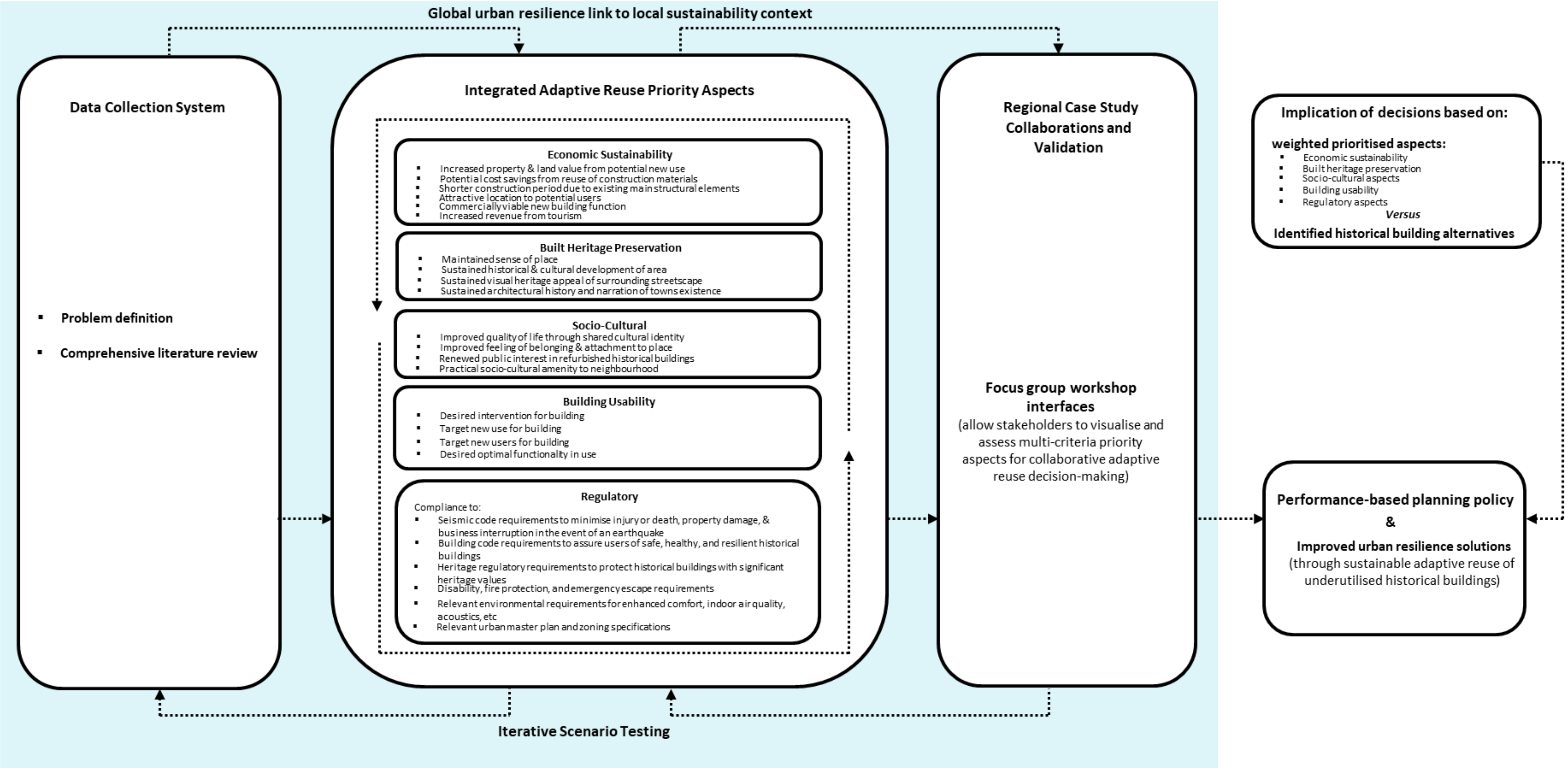


Figure 6.1: Performance-based framework design logic and validation

6.5 Discussion

This paper identifies crucial adaptive reuse concerns necessary for evaluation by adaptive reuse stakeholders (Aigwi, Phipps, et al., 2020) through the formative phases of adaptive reuse decision-making deliberations so that determinations towards achieving sustainable and resilient urban areas can be enhanced. Table 6.1 provides details of the performance-based framework's five priority aspects for evaluating the adaptive reuse performance parameters for historical buildings. Each priority aspect represents distinctive significances, which, when combined, brings about a holistic synthesis of the framework for adaptive reuse project prioritisation. Moreover, the priority aspects of the performance-based framework are interwoven, as shown in Figure 6.1, towards promoting sustainable and resilient urban areas in New Zealand.

The adaptive reuse concept is a recommended intervention that lies at the core of the developed performance-based framework. The identified priority aspects that could contribute towards creating sustainable and resilient urban areas through the adaptive reuse approach are economic sustainability, built heritage conservation, socio-cultural aspects, building usability, and regulatory aspects. The economic sustainability aspect of the performance-based framework aims to increase local commercial activities, property and land value of nearby buildings, job creation, and revenue from tourism due to the potential new use of the historical building. Whereas built heritage conservation aims to promote historic and cultural development, the socio-cultural aspects target improvement in shared cultural identity, sense of belonging, the cultural significance of place, and the historical building's life cycle during an adaptive reuse decision-making process. Also, while the building usability aspect aims to minimise the obsolescence and high vacancy rate of the historical buildings through deliberations about target new use, potential users, and functionality of the historical building, the regulatory aspect aims to balance regulatory deliberations among relevant stakeholders to promote compliance to the building code, seismic, environmental health and safety, fire, emergency, and disability requirements of historical buildings.

However, some identified barriers that could constrain the adaptive reuse concept have been categorised under capital investment, building condition, and regulations (Bullen & Love, 2011c), and fine-tuned to the New Zealand context. The barriers under capital investment include lack of historical building investors, poor marketability and corporate image of historical buildings, lack of incentives for historical building investors, low occupier demand of historical buildings, the high future value of underlying land, and high retrofit costs. Also, those under building conditions include location, residual service life, functionality, internal layout, structural integrity, and space utilisation of the existing historical building. Furthermore, the regulatory barriers include governance restrictions, seismic retrofit, zoning, and planning, building code, heritage conservation, and health and safety regulatory requirements.

The decision-making processes of an adaptive reuse project prioritisation need to account for other aspects aside economic gains if a proper interpretation and assessment of the potentials of historical building alternatives are to be realised (Heath et al., 2013). Too much emphasis on only monetary issues could trigger a biased decision-making process (Langston et al., 2008). The financial return on investment is undeniably commonly connected to identifying value for money on adaptive reuse project development projects. Nevertheless, other relevant issues are beginning to become significant, especially for socio-cultural development projects towards urban regeneration. Issues such as building usability, built heritage conservation, socio-cultural, and regulatory aspects, for instance, could be even more essential when evaluating the social sustainability of a declining urban area. As no separate priority aspect or criterion can adequately address all complex issues in an adaptive reuse project prioritisation process, a multiple-criteria decision-making technique proposes a considerable benefit. Moreover, socio-cultural costs and benefits usually have lesser links to financial issues and do not have exponential depreciation in significance with time, hence, should not be discounted together with cash flows (Langston, 2013).

6.6 Conclusion

This paper presents the parameters for the development of a performance-based framework, to prioritise the most suitable historical building options for adaptive reuse intervention from a list of underutilised buildings. This research's innovation is projected for its future real-world application. The purpose is to provide more targeted and effective decision-making outcomes in situations where shrinking cities are faced with several options to evaluate the potentials of retaining their abundant historical buildings towards building sustainable and resilient urban areas. The developed performance-based framework is resourceful because it is designed to apply a multi-criteria methodology for validation. The validation exercise involved sifting through a local council's portfolio of underutilised historical building stock at an appropriate timing, to flag and evaluate the adaptive reuse potentials of the building against the five identified priority aspects in the performance-based framework. The implication of prioritising optimal historical building alternatives is that decision-makers could then concentrate on investing in adaptive reuse projects with the utmost potential added value to an immediate urban area.

This paper's performance-based framework identifies relevant parameters to be considered during adaptive reuse decision-making processes for urban regeneration while balancing diverse stakeholder's objectives to promote performance-based planning while prioritising optimal historical building alternatives. The identified parameters for the performance-based framework is recommended as both practical and reasonable while providing a range of values within known limits to facilitate the determination of prioritisations and rankings. The outcome of this study contributes to the enhancement of New Zealand's quest for attaining sustainable and resilient provincial urban areas through the retention of underutilised historical buildings. A limitation of this paper is that the parameters for the performance-based framework were identified within the context of underutilised historical buildings in New Zealand. However, it is very flexible for modification and application to all types of existing buildings in other areas, while carefully considering the contexts of each future applications to ensure the accuracy of the validation process. Another limitation of this paper is the use of only a focus group workshop for the validation process, due to its technical over-dependence on the number of participants involved in the focus group, their expertise around all the aspects included in the framework, their understanding of the complexities of the process and also their experience on adaptive reuse projects. The use of case studies or simulations methods would improve this shortcoming to facilitate the implementation of performance-based urban regeneration strategies, particularly in provincial areas. Accordingly, the performance-based framework has been validated with real-life case studies (Aigwi, Egbelakin, et al., 2019) to justify its appropriateness for use as a holistic approach to urban regeneration.

Chapter 7. A performance-based framework to prioritise underutilised historical buildings for adaptive reuse interventions in New Zealand

This chapter was developed from Publication № 6, *which has been published in final form in the Journal of Sustainable Cities and Society*, 48(1), 101547. DOI: https://doi.org/10.1016/j.scs.2019.101547

Abstract

While the efficacy of salvaging underutilised historical buildings to promote sustainable and resilient provincial urban areas in New Zealand has been identified from past studies, there is still an absence of a performance-based framework to rank optimal historical building alternatives for adaptive reuse interventions. This paper focuses on evaluating a performance-based Multiple Criteria Decision Assessment (MCDA) methodology to prioritise underutilised historical buildings for adaptive reuse intervention in a major provincial area in New Zealand, towards achieving a resilient town-centre regeneration for the area.

A focus group workshop was conducted with relevant stakeholders involved in an existing town centre regeneration agenda for Whanganui, to explore and balance their opinions for optimal selection of a vacant historical building for adaptive reuse intervention from a group of proposed buildings. The participant mix

comprised a combination of building professionals, historical building owners/developers/users, legal, heritage, and council/community representatives.

The findings establish the usefulness of the validated performance-based framework in prioritising underutilised historical buildings for adaptive reuse while balancing the diverse interests of all stakeholders in the adaptive reuse decision-making process. Hence, this paper provides a significant contribution to the development of a methodology that integrates adaptive reuse stakeholders' diversified interests, for the selection of optimal case study building alternatives. The consensus of the multidisciplinary stakeholder group was found to be consistent and insensitive to reasonable changes in weighting. Also, the validated framework enabled the decision-makers to achieve a logical result and support the visualisation of the impact of different priority aspects and criteria on adaptive reuse interventions in New Zealand.

7.1 Introduction

As the populations of New Zealand's major urban areas continue to rise, a significant proportion of large, provincial areas (i.e., medium and small urban areas) exhibit decline or stagnancy in their population growth (Cameron, 2017; Jackson & Brabyn, 2017). Economist *Shamubeel Eaqub* has disparagingly invented a term for New Zealand cities currently facing severe decline or stagnancy in their populations as 'Zombie cities' (National Business Review, 2014), some of which are among New Zealand's earliest cities, with significant collections of historical buildings. Accordingly, some factors such as building conditions, socio-economic factors, and earthquake-prone building legislation, have been identified as causal triggers to the shrinkage of New Zealand's provincial areas, reflected through the high vacancy rate of historical buildings in these areas (Yakubu et al., 2017). Based on these identified urban shrinkage triggers, recommendations have been made on how town centre regeneration via the reuse of older historical buildings could be used as a conscious strategy to promote compliance to the seismic regulatory demands of potential users of adapted buildings, and the retention of historical buildings (Yakubu et al., 2017).

While several studies have noted the effectiveness of reusing historical buildings as a sustainable mechanism to motivate investors and to invest in the upgrade of underutilised historical buildings, the adaptive reuse approach has become even more popular towards building resilient urban areas (Aigwi et al., 2018; Ball, 2002; Bromley et al., 2005; Pearce et al., 2004; Rohracher, 2001). Accordingly, in a quest to select optimal building alternatives for adaptive reuse intervention from a group of historical buildings, there tend to be some disparities in the opinions of the relevant stakeholders (Hong & Chen, 2017). Some multiple factors to be deliberated upon may also create a cumbersome decision-making process.

It is also noteworthy of the popularity of applying performance-based planning to the public sector as an avenue for improving the effectiveness and efficiency of urban collaborative decision-making processes through evaluation-based techniques (Baker et al., 2006). Performance-based approaches have been successfully applied in some developed countries including the USA, Australia, New Zealand, and Great Britain, in an attempt to promote decision-making in natural resource planning involving land use and building regulations (T. Frew,

D. Baker, & P. Donehue, 2016a). Consequently, the performance-based planning approach is usually developed based on the philosophy of the influence of land use as a function of its physical characteristics and intensity, rather than the influence of traditional zoning on the land use (Baker et al., 2006).

When considering the decision-making process involving the ranking of underutilised historical buildings for adaptive reuse interventions, the performance-based planning ideology could be applied to subjectively evaluate predetermined priority aspects and criteria to set quantitative boundaries on acceptable adaptive reuse levels. Accordingly, the two main components of performance-based planning in the context of prioritising historical buildings for adaptive reuse interventions should include: (i) the reuse priority aspects and criteria that will give a detailed description of a desired adaptive reuse outcome; and, (ii) the methodology to define the impacts of the measurement standards of acceptable limits of influence on the desired adaptive reuse outcome. Hence, the performance-based planning approach should be explored to promote seismic resilience through the reuse of historical buildings in New Zealand.

It is within the context of the aforementioned that this paper asks the ensuing questions:

Q1. How can the diverse interests of all stakeholders in an adaptive reuse decision-making process be balanced?

Q2. How can vacant historical buildings be prioritised and ranked for adaptive reuse project interventions?

This paper, therefore, focuses on evaluating an integrated performance-based MCDA framework that will: (i) balance the diverse interests of all stakeholders involved in an adaptive reuse decision-making process; and (ii) prioritise and rank vacant historical building alternatives for adaptive intervention, in Whanganui, a New Zealand provincial area, towards achieving sustainable town-centre regeneration for the area. Following this, a creative approach through collaborative involvement of relevant adaptive reuse stakeholders is applied to test the framework. The framework is tested by attributing scores to the adaptive reuse potentials of the historical buildings to be prioritised, while considering the parameters of the prioritisation framework, to establish best adaptive reuse preferences for the alternative buildings. Additionally, to avoid potential drawbacks in the subjective allocation of weights to the priority aspects of the developed framework, a sensitivity analysis is done to check how stable the optimal selected alternative building would be under variations of the input parameters.

7.2 Promoting seismic resilience in New Zealand through adaptive reuse of underutilised historical buildings

The massive influx of migrants to New Zealand during the late-19th century led to the development and prosperity of New Zealand's earliest cities and huge investment in the built environment (Friesen, 2009). These present-day historical buildings serve as a physical link to the past and provide evidence of identity and origins of an area (Ahmad, 2006; Goodwin et al., 2009). Moreover, many of the historical buildings in New Zealand's provincial town centres are assessed as earthquake-prone (Cattanach et al., 2008). An earthquake-prone building (EPB) is defined as a building or part that has the potential to collapse when its ultimate capacity is surpassed in the event of a moderate earthquake and would probably injure or kill people in or near the building, or destroy other nearby properties (MBIE, 2016a).

In New Zealand, a building is assessed as potentially earthquake-prone when it scores less than one-third of the New Building Standard (NBS) rating after a detailed seismic assessment has been conducted on it by certified structural engineers (NZSEE, 2017). The aftermath of the Canterbury earthquakes and further risk of seismic occurrences in New Zealand have contributed to the increased quest for seismic resilience through the use of regulatory mechanisms (Paton & Johnston, 2017). As a pragmatic regulatory mechanism put in place by the New Zealand Government to promote seismic resilience during earthquakes, EPB owners are mandated to strengthen their buildings to a minimum requirement of 34 per cent NBS rating within a specified timeframe. Otherwise, the buildings will be demolished (MBIE, 2016a).

Although earthquake risks are mitigated through strengthening, the retrofit cost and other redevelopment costs to satisfy other building code requirements such as fire safety, disability access, indoor air quality, etc., are borne by building owners who may be most interested in return on investment. Because most owners of earthquake-prone historical buildings may be unsure of the returns on investment in the strengthening and redevelopment process, they tend to abandon these buildings for demolition and relocate to urban fringes (Yakubu et al., 2017). The potential choice of historical building owners abandoning their buildings for demolition could eventually result in changing previously vibrant provincial city centres into unattractive places (Martinez-Fernandez et al., 2012). Consequently, demolition could negatively influence the economic and social vibrancy of the immediate locality, thereby leading to urban shrinkage (Wiechmann & Pallagst, 2012; Yakubu et al., 2017). The detrimental impacts of city-centre shrinkage include loss of income from tourism; reduced tenancy; demolition of a significant proportion of the inner-city building stock; economic and population decline; reduced ratable income, and; loss of amenity and employment opportunities (Colvin et al., 2000; Schilling & Friedman, 2002). With the existence of these negative impacts, a vicious loop that raises the chances of residents relocating out of a depressed city-centre is created (Friedrichs, 1993; Lang, 2000).

Evidence from New Zealand's historical census data has shown a downward spiral in the status of city-centre vitality across provincial areas when compared to the major urban areas (Statistics New Zealand, 2018b). Possible explanations as to why some present-day New Zealand provincial areas with a significant collection of historical buildings are in decline, and some are not, could be linked to the resilience phenomenon. 'Resilience' stems from the Latin word 'Resilio', which means to bounce back (Klein, Nicholls, & Thomalla, 2003). The meanings and origins of resilience are even more ambiguous when applied in different ways (Blewitt & Tilbury, 2013; Chelleri, 2012; Davoudi, Brooks, & Mehmood, 2013; Folke, 2006; Kim & Lim, 2016; Meerow, Newell, & Stults, 2016), to different academic contexts (Adger, 2000; Friend & Moench, 2013; Lhomme, Serre, Diab, & Laganier, 2012; Pendall et al., 2010).

Accordingly, resilience has been progressively used in urban research, and defined as: the capacity of an urban system to maintain continuity or to rapidly bounce back to desirable functions during a disturbance, to positively adjust to change, and to swiftly transform the system towards sustainability (Meerow et al., 2016). Hence, an urban area becomes resilient when it can assess, strategise, and act in order to prepare for, and respond to disturbances which could be natural or manmade, expected or unforeseen, sudden or gradual. General academic focus on resilience is mainly on three fundamental aspects: climate change, terrorism, and natural disasters (Coaffee, 2008; Pickett, Cadenasso, & Grove, 2004; Sharifi & Yamagata, 2016). Hence, typical seismic resilience strategies put forward by policy regulators are usually conceived in line with these above three fundamental aspects towards minimising the risk of disturbances posed to an urban system.

Since typical New Zealand city centres feature old historical buildings, the majority of which are underutilised, the conservation and reuse of these buildings could go a long way in contributing to the growing need for seismic resilience in declining New Zealand cities. The adaptive reuse trend has been noticeably recognised from previous studies as a performance-based planning approach to improve seismic resilience and sustainability through the reuse of vacant earthquake-prone historical buildings (Aigwi et al., 2018; Ball, 2002; Bullen, 2007; Bullen & Love, 2010, 2011a, 2011b, 2011c; Douglas, 2006; Langston & Shen, 2007; Latham, 2016; Pearce et al., 2004; Wilkinson et al., 2009). The practical reuse inclinations from these studies emphasise the need to retain the original identity, character, structure, and real significance of older historical buildings through the adaptive reuse process.

Furthermore, the growing perception that it is more economical to repurpose historical buildings for newer functions rather than demolition and rebuild is one of the significant factors that have contributed to the vast interest in the adaptive reuse approach (Ball, 2002; Pearce et al., 2004). Other studies have identified that performance upgrading of historical buildings through adaptive reuse usually have a tremendous influence on the promoting the resilience and sustainability of a built environment (Bromley et al., 2005; Rohracher, 2001). In a quest to minimise the social and economic costs of redeveloping an urban area to be more resilient and sustainable, the adaptive reuse approach could be beneficial to governments, communities, building owners, and developers (Bullen & Love, 2011a; Wilkinson et al., 2009). As many cities have started to realise that an essential aspect of any successful urban regeneration plan is the reuse of historical buildings for new functions, the objectives of adapting historical buildings appear to overlap with several desired outcomes of resilience and sustainability (Ball, 1999). Accordingly, the adaptive reuse approach if embraced by relevant decision-makers, could, therefore, serve as a useful performance-based mechanism to motivate investors to invest in upgrading underutilised historical buildings, towards creating resilient city centres in New Zealand.

While building resilient urban areas through adaptive reuse, it is crucial to balance the tradeoffs that exist between economic sustainability, built heritage conservation, socio-cultural, building usability and seismic regulatory aspects. In harmonising these highlighted aspects, a decision on the building alternative that will gain precedence for adaptive reuse intervention from a list of historical buildings needs to be agreed upon by adaptive reuse stakeholders. The characterisation of stakeholders in this context are persons who are being identified to have a direct or indirect interest in the reuse of underutilised historical buildings, including the operations and outcome of future reuse interventions on the buildings.

Nevertheless, a decision-making process to select optimal historical buildings for adaptive reuse project intervention involves diverse stakeholders who in most cases, have conflicting viewpoints about adaptive reuse. Since these stakeholders all share a common goal of focusing on selecting the best historical building alternative for adaptive reuse, their diverse perspectives are deliberated upon until a consensus is reached. Each stakeholder group will typically interpret differently the reuse potentials of the historical buildings to be adapted (Hong & Chen, 2017). For example, while government representatives, architectural historians, and heritage advocates may be concerned about preserving heritage features of the historical buildings by ensuring heritage regulations are adhered to, structural engineers may be interested in reducing the number of deaths and property damages, especially in the event of a natural disaster. Conversely, building owners, developers, investors, and other building professionals may consider time as money throughout the adaptive reuse process (Wang & Zeng, 2010).

Consequently, in choosing a most suitable building alternative for an adaptive reuse intervention, these various factors to be considered by the decision-makers could create a complicated selection process because of the form of interaction that exists between these factors (Wang & Zeng, 2010). While built heritage conservation, for example, would potentially promote the mark of local recognition, the economic benefits from adaptive reuse intervention projects could influence the motivation for socio-cultural aspects and changes in public relationships. Therefore, an evaluation-based adaptive reuse decision-making approach would be useful for this study to prioritise underutilised historical that could be retained for future generations while considering relevant priority aspects from the extant literature.

7.2.1 Review of some existing adaptive reuse decision-making frameworks

Some existing methodologies have been developed for the evaluation of adaptive reuse potentials for existing buildings. Accordingly, a review is therefore done to establish if these existing methodologies have made attempts to balance the diverse interests of all stakeholders involved in an adaptive reuse decision-making process for historical buildings, and, prioritise vacant historical buildings for adaptive reuse implementation from a group of buildings.

The "TOBUS" was developed to prioritise and select the best refurbishment solutions and cost estimation for existing office buildings (Caccavelli & Gugerli, 2002). This framework was developed for office building owners, construction professionals and real estate investors to analyse the indoor environmental quality, energy consumption, physical state and functional obsolescence of the buildings' elements and services. Although the design of the TOBUS allows its users to address professional and multi-disciplinary problems associated with the refurbishment of buildings, it targets only office buildings. In a similar study, (Love & Bullen, 2009), examined the use of "NABERS" (National Australian Built

Environment Rating System) to assess the influence of occupants behaviour on the environmental performance of adapted commercial buildings. The underlying methodologies of both the TOBUS and NABERS frameworks are not appropriate for this study because they: (i) are incapable of prioritising and ranking most suitable building from a pool of existing buildings for adaptive reuse implementation (ii) do not consider economic, socio-cultural, heritage conservation, and creative values of existing buildings. Moreover, although the addressed environmental aspects in these two frameworks are essential, the occupant's survey and checklist methodologies are unable to deal with subjective views of stakeholders involved in an adaptive reuse decision-making process for vacant historical buildings.

Furthermore, the ARP (adaptive reuse potential) model was developed to identify and evaluate the embedded physical life of obsolete historical buildings at any point of the buildings' life cycle, to establish a right timing for adaptive reuse intervention on buildings (Langston & Shen, 2007). This method is capable of transforming traditional decision-making procedures to better sustainable strategies, practices, and outcomes. Moreover, the application of the ARP method to evaluate the embedded physical life of historical buildings requires the estimated present age (in years), and the projected physical life (in years) of the buildings. Some obsolescence factors (i.e., economic, social, functional, physical, technological, and legal) of the buildings are also required to evaluate the adaptive reuse potential of historical buildings because of their negative impact of reducing the useful life of the buildings.

A similar study was conducted by (Conejos, Conejos, et al., 2017) based on the ARP model to develop the AdaptSTAR model, which is a subjective checklist of adaptive reuse design plans. The purpose of the AdaptSTAR model was to establish the consideration of adaptive reuse in the initial design process of new buildings, towards maximising future adaptability of existing buildings. However, the methodologies of both the ARP and AdaptSTAR models are not suitable for the study discussed in this paper because they both require continuous monitoring of new buildings and expert assessment of obsolescence factors. Hence, some of the parameters in the adaptive reuse existing models have allowed the authors of this paper to form an initial list of criteria to measure the priority aspects of the proposed prioritisation framework that would be used to balance the diverse interests of all adaptive reuse stakeholders when prioritising optimal vacant historical buildings for adaptive reuse implementation.

7.2.2 Development of the prioritisation evaluation framework

7.2.2.1 Definition of the Priority Aspects and Criteria

Appendix 8 describes in detail the five main priority aspects of the prioritisation evaluation framework shown in Figure 7.1.

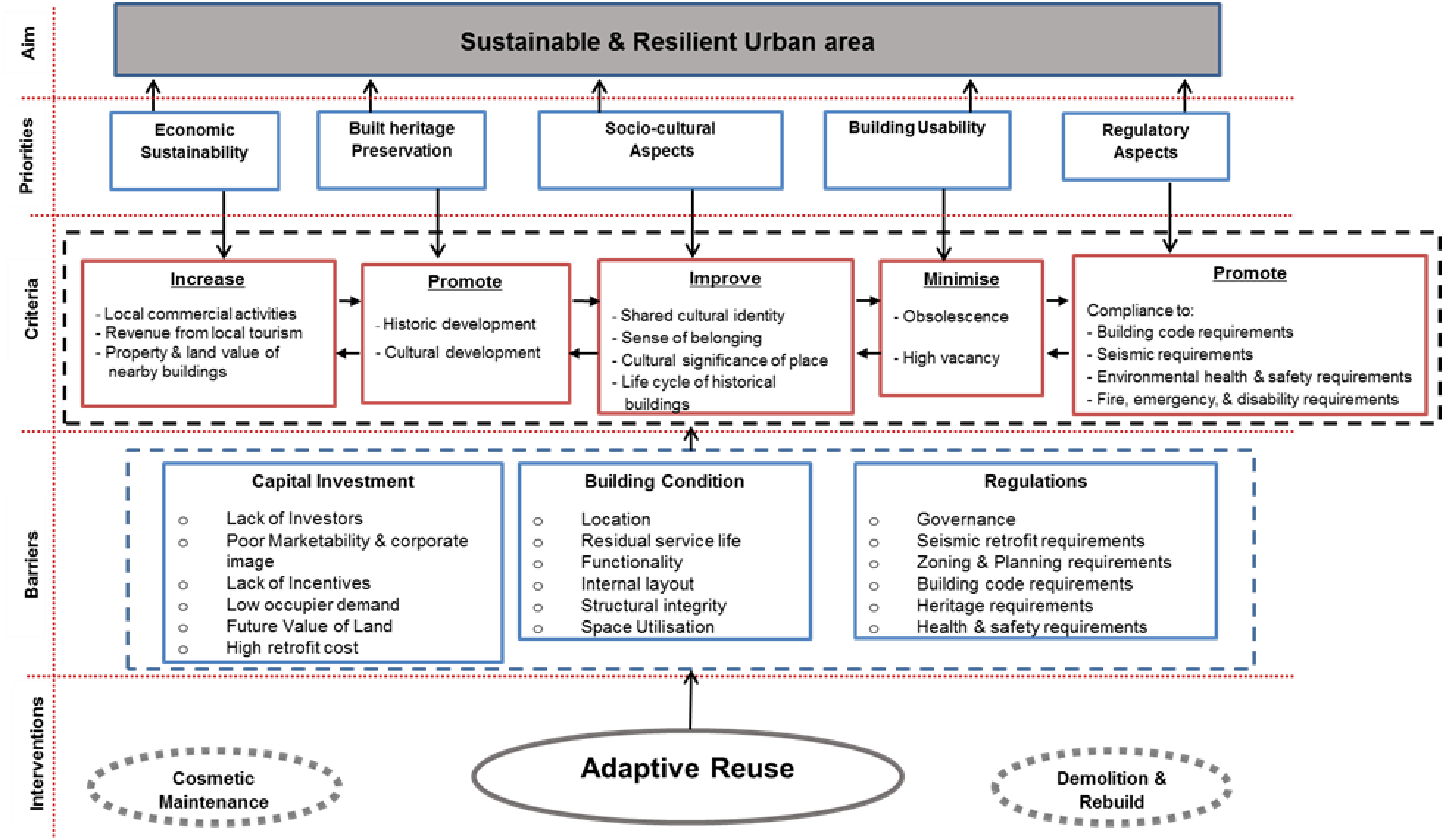


Figure 7.1: Adaptive reuse prioritisation framework development

7.3 Methodology

The focus of this study is on testing a framework to (i) balance the diverse interests of all stakeholders involved in an adaptive reuse decision-making process; and (ii) prioritise and rank vacant historical building alternatives for adaptive intervention. To achieve these two main objectives, the multiple criteria decision assessment (MCDA) is adopted to offer a formalised process for providing both systematic and transparent support during the decision-making process (Belton & Stewart, 2010). There are typically four significant phases when using the MCDA technique (McKenna et al., 2018): (i) identifying, understanding and establishing the alternatives and criteria; (ii) defining and eliciting both inter-criteria preferences (scores) and intra-criteria preferences (weightings), and other qualitative information; (iii) ranking best alternative by aggregating the choice functions; and (iv) exploring the sensitivity of optimal outcome with reference to variations of all assessed parameters.

The combined analytical hierarchy process (AHP) and Fuzzy-Delphi (FD) MCDA methods have been reviewed for the development of the prioritisation framework because of the complex multi-criteria nature of the adaptive reuse decision-making process. The AHP which falls under the utility theory is a widely applied approach for reducing multi-dimensional problems to a one-dimensional form (Saaty, 2004). The AHP, usually signified by a hierarchical structure, can measure perfect balances of both intangible and tangible criteria by adaptive reuse stakeholders. The AHP has a crucial feature of quantifying the subjective judgments made by decision-makers, through assigning corresponding mathematical values to options, by the relative importance of the options being considered (Yang & Lee, 1997). Also, the FD method is an appropriate technique that will be used as a construct to handle the issues of uncertainty and ambiguity that may occur in the survey techniques and responses of the MCDA process (Chang, Huang, & Lin, 2000).

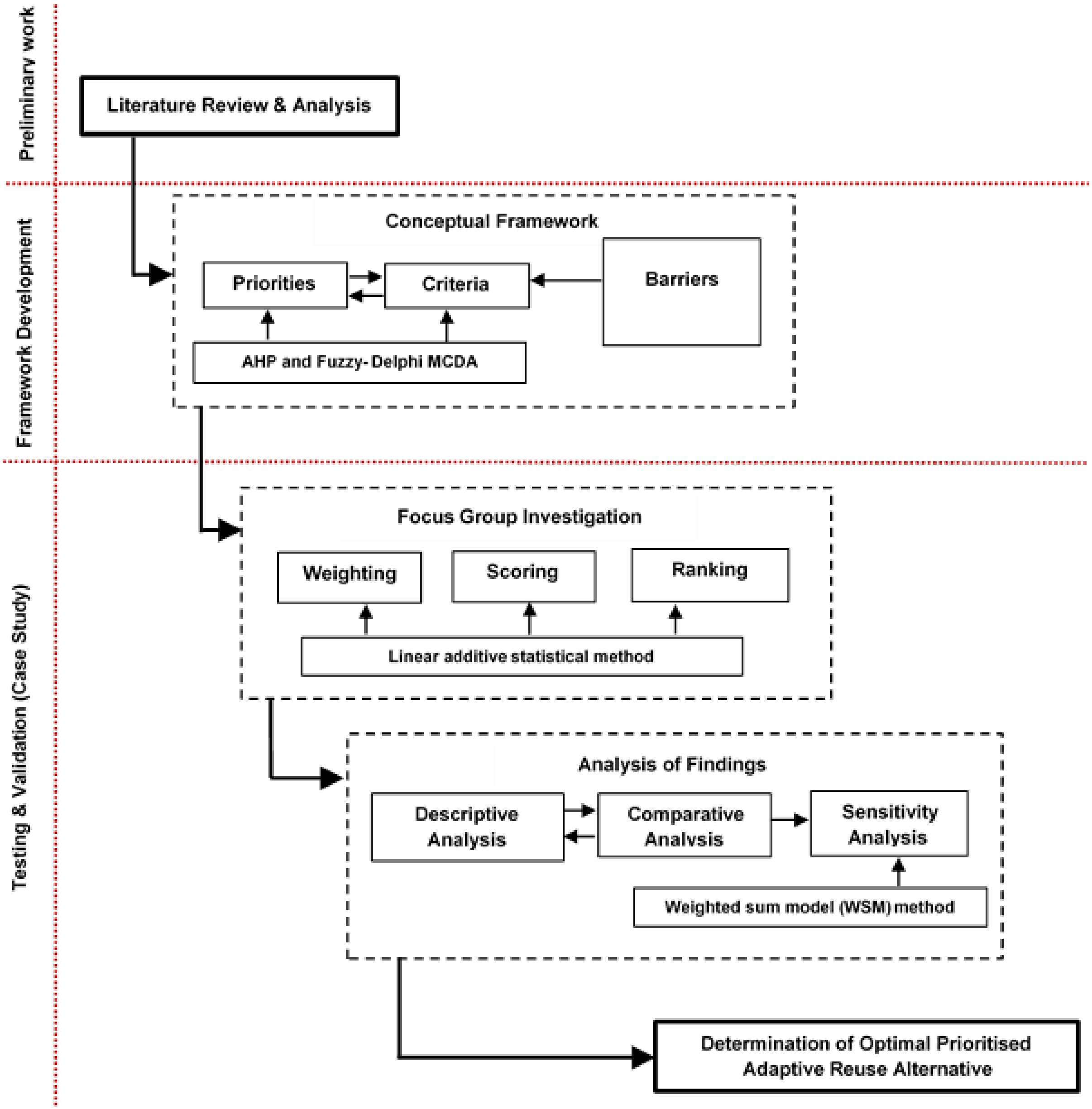


Figure 7.2: Research Design and logic

The combination of the AHP and FD techniques is an effective and efficient group communication approach that will evade major psychological distractions pertinent to round-table deliberation, designed to systematically elicit decisions from selected experts. A vital strength of the AHP-FD method would be the anonymous merging of ideas from different experts, using iterations and structured feedback responses, that will prevent group domination when reaching a consensus (Hsueh, Lee, & Chen, 2013). Also, the fuzzy logic addresses artificial uncertainty and ambiguity by representing the level of preferences with ratios or exact numbers. Figure 7.2 depicts the research design logic of this study.

7.3.1 Data collection

A focus group interview was conducted with relevant stakeholders, to explore and balance their opinions for prioritising an optimal selection of a vacant historical building for adaptive reuse intervention, from two proposed building alternatives. The focus group workshop was chosen as the most appropriate data collection technique for this study due to the provided opportunity of testing assumptions and gathering beliefs and opinions from experienced participants (Krueger & Casey, 2014). The workshop was conducted with relevant stakeholders representing different portfolio and striving for a common goal, which is the sustainable regeneration of Whanganui's town centre. A total of 22 local participants were selected for the workshop. The participant mixture comprised a combination of building owners/developers/users of historical buildings (23.6 per cent), building professionals (18.2 per cent), legal representatives (4.6 per cent), heritage representatives (18.2 per cent), and local government council representatives/community representatives (31.7 per cent).

7.3.2 Case study buildings (Alternatives)

Using the multi-stage random sampling approach (Gravetter & Forzano, 2018; Noor Ul Amin, Arif, & Hanif, 2018), 12 buildings were initially selected out of about 400 vacant historical buildings in Whanganui's town centre, and eventually narrowed down to two critical case study historical building alternatives by the local council for ranking. The multi-stage random sampling approach was adopted because it allows large clusters of historical buildings to be broken down into smaller groups in multiple stages to attain a more manageable data collection from a geographically discrete population that requires face-to-face contact. Although a drawback to the multi-stage random sampling technique is that it requires a high level of subjectivity, it is famous for its high degree of flexibility, and its cost and time effective probability design (Jackson, 2015). Table 7.1 shows some similar features of the two buildings selected historical building alternatives.

Table 7.1: Comparative characteristics of the two alternatives

	Alternative *A1* - *Thains Building*	**Alternative *A2* - *Wakefield Chamber***
		
Characteristics		
Year of Build	1908	1929
Ownership	Private	Government
Location	Corner site Mainstreet entrance (i.e., gateway building to CBD from the south)	Corner site
Natural disaster risks	Earthquake-prone; 5% NBS rating Flooding	Earthquake-prone; <34% NBS
Number of storeys	Three	Four

District Heritage category	Class B	Class B
Main construction materials	Unreinforced brick masonry; Timber	Concrete frames; Unreinforced brick masonry
Façade/ Parapet/ Veranda	Yes	Yes
Frontage plaster	Yes	No
Frontage brick masonry	Yes	No
Frontage concrete	Yes	Yes
Frontage timber/ Steel	No	No

Source: Authors – Physical observation and review of existing building document

7.3.3 Application of the prioritisation framework

Participants of the focus group workshop were engaged to explore the applicability and validity of the framework to prioritise the optimal selection of vacant historical buildings for adaptive reuse intervention. To avoid bias in the decision-making process, the 22 participants were randomly grouped into four categories, with each group having a unique colour code. The groups were colour-coded into blue, green, purple, and red groups, and had a minimum of 5 and a maximum of 6 participants respectively.

The validation exercise involved the application of weights to each priority aspects and their criteria and also applying scores to the alternative case study buildings. The essence of the weighting and scoring technique was to allocate a number to separate alternatives, priorities, and criteria to reflect the value judgment of the decision-makers (Belton & Stewart, 2010). The weights allocated to a specific criterion reflect its relative importance in the decision-making process and are an essential aspect of generating learning outcomes from the MCDA process (Wright

& Goodwin, 2009). The scores indicate the relative importance of separate alternatives for each criterion.

The statistical approach for testing the prioritisation framework followed the linear additive principle for the weighting and scoring. The linear additive statistical technique has been adopted for this research due to the independent nature of the different criteria, and, uncertainty is not incorporated into the model (Belton & Stewart, 2010). Accordingly, a three-stepped weighting and scoring process was used to weight the priority aspects and criteria and score the alternative buildings, as proposed in the linear additive statistical approach is discussed in the following section.

7.3.4 The weighting and scoring process

The formal definition of the additive weighted scoring principle is as follows (Kaluzny & Shaw, 2009): For n alternatives and m criteria, let the score of alternative j about criterion i be v_{ij}. Also, let the weight assigned to priority aspects i be Wi, and standardised so that $\sum_{i=1}^{m} Wi = 100$. The combined score of an alternative j is assessed as $S_j = \sum_{i=1}^{m} v_{ij}Wi$. The alternative that has the maximum score after the weighting and scoring procedure becomes the preferred solution. The arrangement of alternatives from highest to lowest scores, therefore, provides a final consensus priority.

The first step involved the use of a local scoring scale (i.e., between 0 to 10) to compare the alternative case study buildings on how well they will fulfil each criterion (Belton & Stewart, 2010). Ten being the most likely desired alternative, zero the least likely, and scores ranging between 0-10 for other alternatives that lie within the least likely to most likely scenarios (Kipp, Hatton, & Seville, 2017). Since only two alternative buildings were proposed for this study, once the highest score of 10 is assigned to one of the buildings for each criterion, the second building then scores 0. The second step involves determining a weight that will indicate the relative importance of each priority aspect and criteria within the framework, to the decision-makers. The third step involves allocating points totalling 100 to individual criterion within each separate priority aspect. However, to get the actual weight for each criterion under a priority aspect, the weight for that particular priority aspect was multiplied by the weight of each criterion and divided by 100. The workshop facilitators guided each group to support the group leaders. Appendix 9 shows the weighting and scoring procedure for all groups.

7.3.5 Selection of the preferred alternatives

A decision on agreed alternatives is the final step in the MCDA process, after the scoring and weighting processes. The information required to make a final decision originates from a decision matrix which provides the results from the weighting and scoring processes. The decision matrix presents the total scores at the bottom (refer to Appendix 9). The result is a performance matrix which involves assigning a weight to a criterion and then multiplying that criterion by its score relative to each alternative building. The total weighted score of the MCDA was then achieved by comparing the total weighted scores for each alternative ***A1 and A2*** and converted to a percentage by dividing by the total possible score for the priority area. Although bearing in mind that the criteria for each score were different, the alternative with the highest total score (i.e., in percentage) was the preferred choice.

7.4 Results and analysis of findings

The development and testing of the prioritisation framework with the focus group participants enabled the selection of the optimal historical building alternative for adaptive reuse intervention in Whanganui. From the two alternatives that were presented, ***A2*** was given priority by all four (Blue, Green, Red, and Purple) focus groups. A breakdown of the decision-making process for each group is given in the subsequent sections.

Focus group 1 – Blue

Data from the weighting and scoring process showed that the blue group considered ***A2*** as a preferred alternative for adaptive reuse implementation towards regenerating Whanganui's CBD streetscape. The results from this group indicate the participants' beliefs of ***A2*** to contribute more to improving the economic sustainability of Whanganui's CBD (28 per cent) as compared to ***A1*** (7 per cent). Also, ***A2*** was preferred due to some identified potentials of contributing towards built heritage conservation (15 per cent) and seismic resilience (15 per cent) in the assessment criteria. The results also suggest that an adaptive reuse intervention using ***A2*** will contribute towards improving the economic activities of the CBD by increasing growth in the retailing, tourism, and leisure sectors, hence leading to the local community's increased spending power. Accordingly, property owners or developers could yield economic returns from the adaptive reuse of ***A2***. However, the least priority was given to promoting the community socio-cultural aspects (7 per cent) through the adapting ***A2*** for new purposes.

Focus group 2 – Green

The green group also preferred ***A2*** to be used as a benchmark building for the adaptive reuse as the participants of this group ranked heritage conservation as the priority contribution from ***A2*** (22.5 per cent) and ranked the ease of reusing the building as least priority (3.5 per cent). This preference placed emphasis on the need to protect historic townscapes, built heritage and promote cultural linkages, which has high potentials in contributing to the sustainable development of the town centre through the adaptive reuse intervention of ***A2***.

Focus group 3 – Purple

With a total standardised weighted score of 42.45 per cent and 57.55 per cent for ***A1*** and ***A2*** respectively, the participants of the purple group preferred ***A2*** as the most suitable building that will deliver economic sustainability (22.50 per cent), followed by socio-cultural values (16.80 per cent) to Whanganui's main street if its existing use is changed for other functions. The highest priority given to economic sustainability denotes that there could be a considerable increase in the value of ***A2***, as a result of an increase in commerce and reinvestment opportunities, aesthetic appeal, and tourism of the area. Accordingly, an increase in the property's value will lead to a corresponding increase in the tax revenue on the property to the local council. This resultant increase becomes significant because property taxes are considered the single most significant source of revenue generation for New Zealand's local authorities. Although ***A1*** was highly prioritised by this group to promote the conservation of built heritage (20 per cent) for the area, the least was given to the socio-cultural aspects (0 per cent). This 0 per cent score for ***A1*** suggests that the purple group participants do not believe that there will be any form of socio-cultural benefits to the town centre regeneration strategy if ***A1*** is redeveloped. On the flip side, building usability (3.25 per cent) was the least preferred priority aspect for ***A2***, as ranked by the participants of this group. However, demand for a successfully adapted ***A2*** will potentially optimise the value of the buildings by acknowledging their residual usefulness.

Focus group 4 – Red

Overall, findings from the weighting and scoring process indicate that the participants of the red group preferred ***A2*** (87.25 per cent) to ***A1*** (12.75 per cent). Just like the other three groups, the highest weighted priority aspect for ***A2*** was economic sustainability (40 per cent), closely followed by building usability (21.25 per cent). The participants of the red group believe changing the use of ***A2*** with a community endorsed new use and target market for the building as a starting point, will go a long way in improving the value of other old historical buildings in Whanganui's town centre. Additionally, this preference insinuates that repurposing existing buildings for other functions such as residential (apartments), commercial (retail and offices), and mixed-use (residential and commercial) will serve as a viable opportunity for the area to regenerate economic sustainability by reducing the vacancy rate and natural decay of ***A2*** (See Appendix 9).

However, while heritage conservation, socio-cultural aspects and seismic resilience were the least preferred priority aspects with total standardised weighted scores of 10 per cent, 10 per cent and 6 per cent respectively for ***A2***, three significant priority aspects (economic sustainability, heritage conservation and socio-cultural aspects) all had 0 per cent scores because they were not rated at all for ***A1***. The possible basis for 0 per cent scores could be the participants do not in any way agree that ***A1*** will contribute economic sustainability (i.e., increased job creation, revenue from tourism, and local commercial activities), heritage conservation (i.e., visual heritage retention, sense of place, historic and architectural sustainability), and socio-cultural values (i.e., feeling of belonging, shared cultural identity, etc.) to the regeneration of Whanganui's central streetscape.

7.4.1 Sum weightings of all four focus groups

Table 7.2 presents a decision matrix for the total standardised weighted scores from all four focus groups. From the two alternatives that were presented at the workshop, ***A2*** was most preferred by all four groups (refer to Appendix 9 for details). The total standardised weightings for ***A2*** was 69.9 per cent compared to 30.1 per cent for ***A1***. The weightings for the optimal priority aspects was also gained. Economic sustainability (33.75 per cent) in terms of ***A1*** and ***A2*** being capable of financing themselves through a commercially viable new use, increasing local commercial activities and revenue from tourism, was given the highest weight by all four groups. This result is not surprising as economic sustainability is also highlighted as the focus for Whanganui's sustainable and resilient town centre regeneration strategy (Whanganui District Council, 2016). Following economic sustainability was built heritage conservation and building usability aspects with a weight of 21.25 per cent each. It was followed by built heritage conservation with 13.13 per cent. Socio-cultural aspects and seismic resilience had lower total standardised weighted scores of 12.50 per cent, 11.25 per cent, respectively. These low results imply that although socio-cultural aspects and seismic resilience are critical priority aspects, they have not been considered by the focus group participants in this study as immediate factors for the sustainable regeneration of Whanganui's town centre.

Table 7.2: Decision matrix for the prioritisation framework from all four groups

	Total standardised weighted scores (%)								
Priority	**Blue**		**Green**		**Purple**		**Red**		***Wi***
	A1	*A2*	*A1*	*A2*	*A1*	*A2*	*A1*	*A2*	
Economic Sustainability (P_1)	7.0	28.00	21.00	9.00	7.50	22.50	0.00	40.00	W_1 = 33.75
Built Heritage Conservation (P_2)	5.0	15.00	7.50	22.50	20.00	5.00	0.00	10.00	W_2 = 21.25
Socio-Cultural Aspects (P_3)	3.0	7.00	0.00	20.00	0.00	10.00	0.00	10.00	W_3 = 12.50
Building Usability (P_4)	10.2	9.80	6.50	3.50	13.20	16.80	3.75	21.25	W_4 = 21.25
Seismic Resilience (P_5)	0.0	15.00	5.00	5.00	1.75	3.25	9.00	6.00	W_5 = 11.25
	25.20	**74.80**	**40.00**	**60.00**	**42.45**	**57.55**	**12.75**	**87.25**	**100**

7.4.2 Determination of optimal prioritised adaptive reuse alternative

Considering the decision matrix with the two alternatives $A1$ and $A2$ and the five priority aspects P_1, P_2, P_3, P_4, and P_5, when the weighted sum model (WSM) technique is used (Triantaphyllou, 2013), the optimal chosen alternative and ranking of the two alternatives are shown in Table 7.3 from the equation:

$$Pi = \sum_{j=100}^{N} a_{i,j} W_J, \text{ for } i = 1,2,3, \ldots, M. \qquad (7.1)$$

The WSM technique is governed by the additive utility supposition. The most preferred alternative is that which matches up to the largest priority value (Triantaphyllou, 2013).

Table 7.3: Decision matrix for the optimal chosen alternative

Total standardised weighted scores	*Wi*	Alternatives	
		A1	*A2*
Groups			
Blue		25.20%	74.80%
Green		40.00%	60.00%
Purple		42.45%	57.55%
Red		12.75%	87.25%
Final prioritised alternatives		**30.1%**	**69.9%**
Priority aspects (P_i)			
Economic sustainability (P_1)	$W_1 = 33.75$	8.88%	24.88%
Built heritage conservation (P_2)	$W_2 = 21.25$	8.13%	13.13%
Socio-cultural aspects (P_3)	$W_3 = 12.50$	0.75%	11.75%
Building usability (P_4)	$W_4 = 21.25$	8.41%	12.84%
Seismic resilience (P_5)	$W_5 = 11.25$	3.94%	7.31%
Final Prioritised Alternatives		**30.1%**	**69.9%**
Ranking		1	2*

* indicates the optimal chosen alternative

7.4.3 Sensitivity analysis to determine the most critical priority aspect

As the optimal alternative scores have been determined for all priority aspects, it is assumed that the scores are fixed, and the weight distribution is adjustable. The final generated conclusion may be impacted by adjusting the allocated weights across each criterion and priority aspects. To evade potential drawbacks and gaming when weights are subjectively allocated, a sensitivity analysis is deemed worthwhile to gauge the stability of an optimal selected alternative decision under variations in the input parameters (i.e., weights of each priority aspects and scores of each alternative) (Caterino, Iervolino, Manfredi, & Cosenza, 2008). Moreover, the sensitivity analytical approach helps to determine the slightest change in the actual weights of each priority aspect, that can alter the current ranking of the optimal alternative solution.

In most MCDA techniques, the actual rank of each priority aspect usually represents the value of the assigned weights to the decision priority. However, the intuitive acceptance that a priority aspect that has the highest weight automatically becomes the critical one may not always be factual, as in some cases, the critical priority aspect is the one with the lowest weight (Winston & Goldberg, 2004). By observing the weights of the five priority aspects in Table 7.4, P_1 seems to be the most significant one. Accordingly, in this paper, a sensitivity analysis using the weighted sum method (Triantaphyllou, 2013) is performed on the weights of all priority aspects (W_i) ranked by the four groups (refer to Appendix 9), to determine how much adjustment is required to generate a change to this current final preference.

The lowest absolute change $\delta'_{k,i,j}$ indicated as absolute-top (AT) required to adjust the current weight W_k of P_k (*i.e.,* W_1 of P_1) in order to reverse the current ranking of alternatives *A1* and *A2* is attained using equation (7.2) below (Triantaphyllou, 2013):

$$\delta'_{k,i,j} < \frac{(P_j - P_i)}{(A_{j,k} - A_{i,k})} \text{ x } \frac{100}{W_k}, \quad \text{if } (A_{j,k} > A_{i,k}). \tag{7.2}$$

Also, the $\delta'_{k,i,j}$ value will become feasible if the condition in equation (3) is satisfied:

$$\frac{(P_j - P_i)}{(A_{j,k} - A_{i,k})} \leq W_k \tag{7.3}$$

From Tables 7.2 and 7.3, equation (7.2) becomes:

$$\delta'_{1,1,2} < \frac{(30.1 - 69.9)}{(8.88 - 24.88)}, \qquad \text{or} \qquad \delta'_{1,1,2} < 2.49$$

Since $\delta'_{1,1,2}$ is < W_1 (i.e., 33.75), the AT value is feasible. Hence, the modified weight W_1* of P_1 for this case becomes:

W_1* = 33.75 – 2.49 = 31.26

Following the above procedure, the other modified weights W_2*, W_3*, W_4*, and W_5* as shown in Table 7.4 are derived. Also, the corresponding degree of criticality of the i-th priority aspect also referred to as the per cent-top (PT) value, is derived when the AT value is divided by the weight Wi of each priority aspects (Caterino et al., 2008). Accordingly, the sensitivity value of Pi is the reciprocal of its PT value. For the AT and PT values that are non-feasible (N.F.) for robust priority weights, the coefficient of sensitivity will be zero. By considering the PT definition of sensitivity analysis, a survey of adjustments to the existing optimal alternative solution is observed in Table 7.4.

Building usability (P_4) is observed to be the most critical priority aspect of the decision-making process due to its lowest PT value of 58 per cent, and a corresponding highest sensitivity coefficient of 0.01724. Three of the five priority weights (i.e., W_1, W_3, and W_5) may assume considerable variations in values without determining an optimal solution that is different from ***A2***. Only P_4 and P_2 with PT changes of 58 per cent and 63 per cent respectively are considered significant enough to suggest that the optimal selected alternative ***A2*** for adaptive reuse intervention is sufficiently stable due to their high sensitivity coefficients.

Table 7.4: The sensitivity of priority weights, and absolute-top and per cent-top changes

Priority aspects (P_i)	W_i	W_i^* **(AT)**	**PT (%)**	**Sensitivity**
Economic sustainability (P_1)	$W_1 = 33.75$	31.26	93	0.01075
Built heritage conservation (P_2)	$W_2 = 21.25$	13.29	63	0.01587
Socio-cultural aspects (P_3)	$W_3 = 12.50$	8.88	71	0.01408
Building usability (P_4)	$W_4 = 21.25$	12.27	58	0.01724
Seismic resilience (P_5)	$W_5 = 11.25$	N.F.	N.F.	0

N.F. = Non-Feasible [i.e., δ value does not satisfy equation (9.3)]

7.5 Discussion

This paper examines the testing of a performance-based MCDA methodology that integrates diversified concerns for the selection of a most suitable historical building alternative for adaptive reuse intervention in Whanganui. The framework validation process helped to improve the understanding of workshop participants on how the adaptive reuse priority aspects regarding underutilised historical buildings could be weighted to rank an optimal solution using the performance-based concept towards delivering useful and sustainable planning results for Whanganui's urban regeneration pursuit. While the validation process of typical adaptive reuse decision-making processes tends to be posed with challenges of applying flexibility of opinions among the various stakeholders, this study applied the evaluation-based adaptive reuse prioritisation framework to explore and quantify the effectiveness of performance-based planning. Accordingly, the evaluation process was done to measure how, and under what circumstances evaluation-based solutions could be applied to urban regeneration through the retention and reuse of optimal historical buildings in New Zealand.

Findings from the evaluated framework described in this paper enabled decision-makers to achieve a logical result, and, support the visualisation of the impact of separate priority aspects and criteria on the optimal selected alternative solution ***A2***. A potential increase in job creation from new building function and a corresponding increase in local commercial activities from changing the use of ***A2*** determined the rank. The sensitivity analysis reliably showed a reasonably steady effect concerning the robust and critical priority aspects of the decision-making process. Moreover, the studied alternatives ***A1*** and ***A2*** were critical to the MCDA process as a result of the discussion around them being specific to the impacts that the buildings might have towards achieving a resilient and sustainable town centre for Whanganui. Given that, the priority aspects and corresponding criteria were detailed to induce the participants to engage deeply with their opinions. Also, the use of case study buildings that are well-known to the participants helped to generate a stable impression for the real-world issues relating to adaptive reuse, and inferences based on their personal experiences with the buildings. These kinds of experiences are usually way better than what the workshop facilitators would have created and conveyed within a short period. As well, although the prioritisation framework was tested with only two alternatives ***A1*** and ***A2***, it is capable of comparing an unlimited number of alternatives depending on the context in which it is applied.

Besides, the weighting and scoring process enabled the participants in diverse positions to adequately express their viewpoints, hence creating room for the evaluation of influences among the various issues relating to using the adaptive reuse approach as a sustainable development intervention for vacant historical buildings in Whanganui's town centre. The findings imply that utmost efforts should be made on improving the economic viability of Whanganui's town centre by the urban regeneration decision-makers. The lowest preference attributed to seismic resilience by all four focus groups could indicate that, because Whanganui is not located in a high seismic hazard region of New Zealand (MBIE, 2016a), the participants did not consider the seismic resilience aspect of the framework as an immediate priority aspect that would contribute to a sustainable regeneration of the area. The final prioritised building outcome ***A2*** was accepted by all four focus group participants irrespective of their diverse backgrounds, with the adaptive reuse potentials for the building extensively recognised.

7.6 Conclusion

The study in this paper delineates the testing of a new approach to balance the adaptive reuse potential of underutilised historical buildings via a multidisciplinary stakeholder group and consensus of scores and weights based on five priority aspects, each containing a range of criteria. Accordingly, four separate sub-groups undertook the assessment. Their conclusions were found to be consistent and insensitive to reasonable changes in weighting. The effectiveness of a prioritisation framework to rank most suitable vacant historical building alternative for adaptive reuse project intervention in Whanganui, while balancing the diverse interests of relevant urban regeneration stakeholders has also been demonstrated by this study.

The framework consists of five priority aspects selected from the extant literature review. The priority aspects that were balanced include economic sustainability, built heritage conservation, socio-cultural aspects, building usability, and seismic resilience. The neighbourhood characteristics and local context of the case study urban area were considered in the identification of the priority aspects, which makes it very comprehensive. Based on the results of the weighting and scoring process, ***A2*** was preferred to ***A1***, and the most significant priority aspect that emerged was economic sustainability (24.88 per cent). The second most significant priority aspect revealed that built heritage conservation (13.13 per cent) has become more vital than safety concerns from seismic resilience. The implication of this finding is that a majority historical earthquake-prone building that has been abandoned for demolition due to lack of investment in seismic strengthening up to the required per cent NBS ratings are worthy of conservation. Furthermore, the results also reveal that socio-cultural aspects (11.75 per cent), building usability (12.84 per cent), and seismic resilience (7.31 per cent), all contribute an essential influence on the adaptive reuse project prioritisation process. However, while seismic resilience ranked far less critical than other priority aspects, it may imply that the issue is yet to stimulate the necessary awareness of adaptive reuse stakeholders in delivering sustainable urban regeneration projects in New Zealand.

Furthermore, the recommended viable reuse for the selected alternative ***A2*** was for mixed-use purposes (i.e., residential – apartments; and commercial – retail and offices). Consequently, the influence that the selected functional change of ***A2*** will have on Whanganui's town centre regeneration strategy is that there would be an enhancement in the social and modal transportation diversity within its neighbourhood (Geyer & Quin, 2018). The target new use would also help to guarantee a more stable socially cohesive neighbourhood for its potential users in aspects of convenience, walkability, and smarter resource reuse. Potential users would be able to access several amenities within a single vicinity while saving time and reducing the costs of transportation and pollution.

Also, increased foot traffic from the mixed-use development would benefit the retailers as most potential residential tenants would likely become steady customers as a result of convenience. The diversity of the mixed-use development poses a lesser economic risk for investors, especially in instances where a downturn in demand for commercial spaces would push an investor to benefit from the residential side. Additionally, the conversion of performance standards for mixed-use developments have been successfully implemented at the local government level in the United States for over 40 years, and in Australia for over 20 years (Wypych, Sipe, & Baker, 2005).

Three possible limitations of this study include: (i) although the weighting and scoring process using additive models can be justified with careful attention to structuring, linearity is frequently inappropriately assumed if not properly detailed; (ii) the development and testing of the framework solely for the New Zealand context; and (iii) the ranking of optimal alternative from only two case study historical buildings. However, the framework is flexible in comparing and evaluating more than two building alternatives, which could be nonhistorical or new buildings in other locations and diverse settings. In such cases, the alternatives, priority aspects and criteria will depend on the interests of the decision-makers. Moreover, the time constraint is foreseen as a possible drawback of the framework's ability to compare and evaluate more than two alternatives using a focus group workshop. Hence, future studies involving more than two alternatives may consider providing extra time for workshop participants to rank optimal solutions.

The evaluation methodology of this study's performance-based framework could be used as a useful guide for other researchers and decision-makers who are striving to build resilient urban areas through the retention and reuse of historical buildings. Further studies may consider validating the framework with more than two buildings in other locations, and, developing it into a computerised decision support model.

Chapter 8. Characterisation of adaptive reuse stakeholders and the effectiveness of collaborative rationality towards building resilient urban areas

This chapter was developed from Publication № 7, *which has been published in final form in the Journal of Systemic Practice and Action Research,* 33(3), 1-11. DOI: *https://doi.org/10.1007/s11213-020-09521-0*

Abstract

In an adaptive reuse decision-making setting, there is usually an occurrence of conflicting beliefs, opinions, interests, and resources among relevant stakeholders. Knowing who these stakeholders are and why, through a collaborative approach, will allow stakeholders with diverse interests regarding adaptive reuse to come together and participate either directly or indirectly in any stage of the decision-making process.

This paper examines the usefulness of collaborative rationality among stakeholders involved in an adaptive reuse decision-making process. The specific objectives include: to characterise the stakeholders involved in an adaptive reuse decision-making process; and; investigate how their collaborative rationality can be effectively integrated into the adaptive reuse decision-making process.

After a review of existing literature, four typical categories of stakeholders involved in an adaptive reuse decision-making process were identified: i) investors; ii) producers; iii) regulators; and iv) users. Also, the effectiveness of collaboration among the diverse stakeholders of an adaptive reuse decision-making process was validated using a focus group workshop to incorporate transparency, common goal, ideal speech, and consistency into the process. These findings imply that the active collaboration among characterised adaptive reuse stakeholders is important to mitigate the risk of manipulation of an adaptive reuse decision-making process, and, for policymakers to understand better the expectations and needs of the public, thereby, enhancing consents for optimal adaptive reuse decisions.

8.1 Introduction

The characterisation of relevant stakeholders and the collaborative rationality that exists amongst them in a decision-making process is in due course, crucial to the successful execution of any sustainable development plan. In most adaptive reuse decision-making contexts, there is usually an occurrence of conflicting beliefs, opinions, interests, and resources among relevant stakeholders (Aigwi, Egbelakin, et al., 2019). Hence, it would be beneficial to all participants involved in an adaptive reuse decision-making process, if they all understand who the other actors are, how their interests are interlinked, and how the collaborative approach functions (Innes & Booher, 2010).

Collaborative approaches are established settings that allow stakeholders with diverse interests to come together and jointly participate in any stage of a decision-making process. Their participation in the decision-making process could be direct, indirect, formal or informal (Van Den Hove, 2006). A decision-making process is collaboratively balanced when all stakeholders with various perspectives about a common problem engage in a head-on dialogue to jointly deliberate on the issue (Innes & Booher, 2010). To introduce collaboration into a decision-making process, all stakeholders involved are entitled to express their opinions and be listened to, whether the views make sense or not. Techniques should be introduced into the decision-making process to jointly assure the comprehensibility, accuracy, and sincerity and legitimacy of the stakeholder's views regarding an issue at hand (Innes & Booher, 2010) to reach a logical conclusion.

Several collaborative approaches have been progressively designed, applied and analysed as effective decision-making techniques for stakeholders to reach a consensus regarding complex issues in diverse contexts (Aas, Ladkin, & Fletcher, 2005). For example, collaborative rationality is being demonstrated by the European Commission’s “a white paper” on governance, in which collaboration is included with accountability, coherence, openness and effectiveness, as ideologies of good governance (European Commission, 2001). Also, in the domains of sustainable development, collaborative approaches include focus group interviews, expert participatory interviews, consultative forums, stakeholder’s workshops, consensus forums, sustainability negotiations, regulatory negotiations, deliberative interviews, policy simulation exercises, etc (Derak, Cortina, & Taiqui, 2017; Nguyen, Wells, & Nguyen, 2019; Van Den Hove, 2006).

The adaptive reuse idea is a sustainable technique that implies changing the original use of an existing building (Aigwi et al., 2018; Douglas, 2006) while retaining its original structure and fabric (Bullen & Love, 2009), to extend the building's useful life (Mansfield, 2002). Most complex adaptive reuse problems call for joint strategies among different stakeholders with varied interests, to work together for the realisation of shared satisfying outcomes. The role of collaboration in an adaptive reuse decision-making process seeks to improve the process to achieve a common outcome that is agreed by all stakeholders involved.

Accordingly, collaboration involves a constructive exploration of the viewpoints of different stakeholders involved in a decision-making process, and a collective search for solutions that would go beyond their narrow visualisation of what is possible (Ansell & Gash, 2008; Gray, 1989). Decision-making through collaboration addresses these problems by creating a shared understanding of the underlying problems including ways to tackle them (Innes & Booher, 2010; Mayer, Van Bueren, Bots, Van Der Voort, & Seijdel, 2005). Additionally, the introduction of a collaboration process for the resolution of conflicting interests among adaptive reuse stakeholders could be crucial in the transformation of adversarial interactions into mutually acceptable outcomes. For that reason, the interests of all stakeholders involved in the decision-making process will be equally and fairly represented (Bond, 2011).

However, while collaborative approaches are being recognised as a critical element of sustainable development goals (Van Den Hove, 2006), intense conflicts of interests often exist over adaptive reuse issues (Aigwi, Egbelakin, et al., 2019). Consequently, the concept of collaboration through the inclusion of stakeholder diversified interests and engagement has not been so prevalent in the adaptive reuse decision-making context (Wilson, 2016). This paper, therefore, examines the roles of the relevant stakeholders in an adaptive reuse decision-making process, and the collaborative rationality that exists among them. The specific objectives are to (i) characterise the stakeholders involved in the adaptive reuse decision-making process, and (ii) investigate how the collaborative rationality can be effectively integrated into the decision-making process.

8.2 Characterisation of adaptive reuse stakeholders

Adaptive reuse stakeholders (or 'actors') are persons who devote their knowledge, interests, resources and time into adaptive reuse development plans. For this study, these persons are participants involved in provincial town centre regeneration strategy in New Zealand, using the adaptive reuse approach as a sustainable development tool for the redevelopment of old and vacant historical buildings (Aigwi et al., 2018; Yakubu et al., 2017). They include building owners, developers, building professionals, heritage officers, local council officers, planners, legal representatives, etc. It is practically unavoidable to lack cooperation among these stakeholders while working on adaptive reuse elements such as economic and environmental sustainability, socio-cultural aspects, seismic resilience, heritage conservation through energy conservation (Elsorady, 2017), and historical building usability aspects. Nevertheless, weak communication and cooperation among the key adaptive reuse actors could result in the loss of time and money (Miles, Netherton, & Schmitz, 2015). Moreover, besides some financial, logistics and design-related issues posed to the adaptive reuse process, conflicting motives, interests and expectations among the key actors are also sneaky challenges (Cullingworth & Caves, 2013). These challenges could serve as undermining detriments to using adaptive reuse as a viable approach for the redevelopment of disappearing urban areas (Aigwi, Phipps, et al., 2019; Cullingworth & Caves, 2013). It is, therefore, essential to define and characterise the roles of key players involved in an adaptive reuse decision-making process. Who are they, and why? For this paper, these stakeholders are classified under four main stakeholder groups based on their different interests regarding adaptive reuse (Mısırlısoy & Günçe, 2016a): 'investors', 'producers', 'regulators', and 'users'.

8.2.1 Investors

The 'investors' in an adaptive reuse decision-making process could be private historical building owners, funding organisations, government, tenants, etc. The standpoint of 'investors' regarding adaptive reuse is normally pragmatic and business-oriented (Stipe, 2003). The ultimate motivation for participating in an adaptive reuse project is often financially influenced. They tend to be more concerned about both the return on investment from implementing the adaptive reuse project and also the well-being of the 'users' and the community (Stipe, 2003). They are the risk bearers, hence they usually critically weigh the potentials of reusing an existing building to make a significant profit (or at least to break-even), before venturing into such projects. Before investing in an adaptive reuse project, 'investors' usually try to determine what type of financial incentives are available to them. They also try to carefully understand the regulations that accompany these incentives.

Furthermore, the most common scenario experienced by the 'investor' is the uncertainty regarding which stakeholder group would benefit the most after investing in an adaptive reuse project (Rypkema & Wiehagen, 2000). In the United

States, for example, a number of investment incentives (i.e., federal rehabilitation tax credits, public grants, local property tax abatement through rate reliefs and deferment, revolving funds, and low-interest loan pools) are made available by the government, to attract capital from potential 'investors' (Rypkema & Wiehagen, 2000). In New Zealand, potential adaptive reuse 'investors' do not have access to significant incentives at the national level due to the absence of a central heritage credit scheme that rewards investors for redeveloping their buildings in a sustainable manner (Aigwi, Phipps, et al., 2019; Robert, 2013). However, only regulatory incentives are provided to 'investors" by local authorities in the form of consent fee waivers, historic heritage rates relief, district plan regulatory incentives, and heritage-related grants (Robert, 2013). There are also non-regulatory incentives for 'investors' such as insurance rebates, urban strategy, events and promotion, tax relief through tax depreciation, heritage loans and grants, public-private partnerships, etc., at the local level (Robert, 2013). Additionally, tenants of adapted historical buildings do not get any form of incentives through tax credits for choosing such sites. Since the procedure for acquiring these incentives is typically cumbersome, 'investors' often acknowledge that without adequate and readily accessible incentives, an adaptive reuse project will be too challenging to actualise (Bond, 2011). However, this is outside the scope of this research.

8.2.2 Producers

The 'producer' stakeholder group entail all participants in the main preparation and actualisation of an adaptive reuse decision-making process. They are made up of building professionals who could vary for different projects. The building professionals that fall under this category include engineers, architects, heritage conservation experts, quantity surveyors, designers, building contractors, etc. Producers are usually hired by investors after a decision for an existing building's new use has been established due to their expertise. The primary responsibility of the 'producer' is to continuously ensure the feasibility of an adaptive reuse project while ensuring the right composition of the project's implementation team (Gratz, 2007). The 'producers' usually orchestrate the adaptive reuse process by bearing most of the risks from other stakeholder groups. They play a vital role in forming a 'fabric of civilisation' through determining a community's aesthetic, health, and functional character (Peiser & Frej, 2003). They are also responsible for keeping an adaptive reuse project afloat (Miles et al., 2015). According to Bond (2011), 'producers' are often concerned about the timing, clarity, and closure of a particular project before embarking on it. The timing of an adaptive reuse project relates to the certainty and speed at which the project will be completed and readily available in the market. Whereas clarity involves the certainty and clarity of a project's design and redevelopment procedure, closure describes the project's advancement after it has been cleared by both regulatory and community review processes (Howe, 2003).

Most 'producers' prefer demolition and rebuild to trying to salvage an obsolete historical building through adaptive reuse (Yakubu et al., 2017). They feel the process of converting an old historical building into functional spaces for both commercial and residential tenants is discouraging. Hence they often get frustrated from trying to maintain standard heritage procedures during negotiations with heritage authorities (Trujillo, 2011). They also believe that the adaptive reuse process is time-consuming, complicated, and more expensive when compared to demolition and rebuilding. These opinions could be true in most cases (Trujillo, 2011). Moreover, the 'producers' get more confused especially when they are unsure of the heritage conservation agency they must work with (i.e., at the local, state or national level), during the redevelopment process. This becomes a problem because of the varying viewpoints of these agencies on how best to conserve a heritage building through adaptive reuse.

Take an instance, where the heritage conservation agencies at both local and national levels have equal jurisdiction over an adaptive reuse task. Accordingly, in New Zealand, development plans for historical buildings are approved at the national level only when national heritage conservation incentives have been awarded for that project (Heritage New Zealand Pouhere Taonga, 2017). The 'producer' also must abide by local building regulations approved by the local historic heritage board. In situations like this, the 'producer' is frustrated due to the loss of time and money while waiting for these agencies, who are demanding different treatments for the heritage features of the adaptive reuse project, to reach a compromise (Bond, 2011). Additionally, in some cases, it becomes difficult for members of a separate heritage review board to reach an agreement within the board regarding a most suitable conservation approach, let alone working together with a 'producer' team for the actualisation of an adaptive reuse project.

Additionally, the 'producers' often make every effort to achieve flexibility in an adaptive reuse project, for promoting innovation and creativity in the adaptive reuse design. On the other hand, too much compromise in an adaptive reuse project could result in a fuzzy project, and eventually, a possible financial failure.

Apart from financial gains, the most significant challenge from the producers' standpoint regarding adaptive reuse, remains to create a balance between the design expectation of the 'producer' group, the 'regulators' including heritage conservationists, and the prospective 'users'.

8.2.3 Regulators

The 'regulators' are typically government representatives at both local and national levels, with the role of enacting rules and ensuring that the 'producers' maintain strict compliance with relevant regulatory procedures during the adaptive reuse process. Such regulations include; building regulations, health and safety regulations, heritage regulations, planning and zoning regulations, etc. Moreover, 'regulators' are usually responsible for granting building consents, managing the review of historical designs, and enforcing zoning. They usually act as either information providers or development facilitators during adaptive reuse procedures.

According to (Mason, 2009), the expectations of 'regulators' regarding the success of an adaptive reuse project is that a project can only be considered successful if it helps accomplish its economic, socio-cultural, environmental and functional goals of providing a sustainable regeneration of an area (Mason, 2009). The 'regulators' who are directly involved with 'producers' during the design review, consent approval and zoning phases, for instance, believe that 'producers' could be annoyingly too pushy with their proposed redevelopment strategies (Bond, 2011), hence, not necessarily concerned about compliance to laid down rules. Typically, 'regulators' are not exclusively invested in the direct or indirect benefits from an adaptive reuse project, but rather, their focus is on enforcing the relevant rules. Furthermore, 'regulators' are increasingly being faced with the challenge of monitoring 'producers' trying to by-pass historic design review processes, as well as not conforming to current building standards (Rypkema, 2008). Additionally, from a critical perspective, 'regulators' believe the adaptive reuse process for the redevelopment of historical buildings is both complicated and unnecessarily more time-consuming (Gratz & Mintz, 2000; Rypkema, 2008).

8.2.4 Users

The 'user' stakeholder group could be members of the community, passers-by, original users (i.e., existing tenants of an adapted historical building's original function), or contextual users (i.e., potential or future tenants of an adapted building) (Bond, 2011). 'Users' provide enhanced strategies for an adapted building's new use by representing demand either directly or indirectly through implementing a functional use of the building. Although the contribution of the 'user' stakeholder category is very crucial to an adaptive reuse process, they are often ignored during decision-making. 'Users' are more concerned about the aesthetic and economic viability of an adapted building's new function in accommodating the changing demand from its context. Also, 'users' usually expect adapted buildings to be reversible to accommodate new needs when existing needs are no longer viable in the future.

8.3 Effectiveness of collaborative rationality

Collaborative strategies are focused on balancing diverse interests among different stakeholders to achieve more constructive outcomes rather than destructive ones (Ball, Rebori, & Singletary, 2000). While constructive outcomes promote the viable solution and enhanced communication and relationships between relevant stakeholders, destructive outcomes usually foster mistrust, coercion and animosity (Innes & Booher, 2010). Most adaptive reuse decision-making processes involve the contribution and cooperation of a diverse range of stakeholders (Miller & Buys, 2008). However, the cause of conflict among stakeholders in an adaptive reuse decision-making process remains the inability to engage all stakeholders' interests through direct dialogue (Innes & Booher, 2010).

Besides, the collaborative process necessitates the expertise and interdependency of various stakeholders, right from a project's conception phase through its design, construction, completion, and functional phases (Miles et al., 2015). This kind of interdependency could arise in the process of a building owner/developer gaining building permits from the local council, or building professionals (i.e., Architects, Engineers, Quantity surveyors, etc.) consulting with local or regional heritage conservation officers, in ensuring that regulatory standards for the conservation of historic buildings are incorporated into the redevelopment plans of the buildings.

The Habermas' theory based on the inter-subjective social phenomena principles, proposes a model of interactive rationality that recognises an inseparable link between communication and the social world (Tuler, Dow, Webler, & Whitehead, 2017; Van Den Hove, 2006). Hence, building on Habermas theory, to achieve a successful decision-making outcome, the following vital essentials are proposed to be integrated into the design of a collaborative adaptive reuse decision-making process.

- **Emphasis on a common interest** – when different adaptive reuse stakeholders strive to achieve a common goal rather than merely adjusting their diverse interests.
- **Transparency** – the perceptions, orientations and values of each stakeholder's interests are transparent and open to the critique of others.
- **Ideal speech situation** – a situation whereby only the natural vigour of the finest argument counts. Also, there are no external restrictions and deliberate behaviour of the stakeholders in this situation.
- **Consistency in stakeholders' beliefs and actions** – each adaptive reuse stakeholder endeavours to stand by what they have argued and justify their beliefs and actions with rationality that is consistent.

A major criticism of Haberman's work is that most models developed based on this theory often place too much emphasis on consensus, hence, disregarding the process of negotiation (Leeuwis, 2000). Nevertheless, Van Den Hove (2006) argues that since Haberman's collaboration model contributes some powerful principles employed in the design of collaborative processes, it should not be disallowed, but preferably be combined with a negotiation model.

8.4 Conceptual framework development and validation

An adaptive reuse project prioritisation framework was developed and validated using a focus group workshop to select an optimal historical building alternative for adaptive reuse project intervention in a New Zealand provincial town centre (Aigwi, Egbelakin, et al., 2019). The focus group workshop was conducted with relevant stakeholders representing different portfolio and professional backgrounds regarding adaptive reuse (i.e., users, investors, producers and regulators). To ensure effective stakeholder participation in an adaptive decision-making process, this study enabled the development of a conceptual framework for the integration of collaboration into the adaptive reuse decision-making process including the key essentials of collaboration: (i) emphasis of common interest; (ii) transparency; (iii) ideal speech situation; and (iv) consistency in stakeholder's belief and actions (see Figure 8.1).

A reflection on the agreements among the stakeholders during the weighting and scoring process in an adaptive reuse decision-making study conducted by Aigwi, Egbelakin, et al. (2019), showed that the agreements among the stakeholders were more likely reached through compromise than consensus, although some form of negotiations existed in-between. This finding is consistent with a similar study conducted by Van Den Hove (2006). Besides, while the attribution of equal weights to sets of alternative options may reduce any potential social conflicts that may arise within a stakeholder group, the actors of that group have to agree on a preferred choice during the ranking process by reaching a consensus (Munda, 2004).

Still, some stakeholders might take advantage of the adaptive reuse decision-making system and try to manipulate its collaborative process by pushing their interests. This could be a possible risk of integrating the collaborative approach into existing adaptive reuse decision-making techniques. Accordingly, a transparent, collaborative process with well-defined procedures tends to reduce such risks (Brocklesby, 2009; Le Menestrel & Van Wassenhove, 2004).

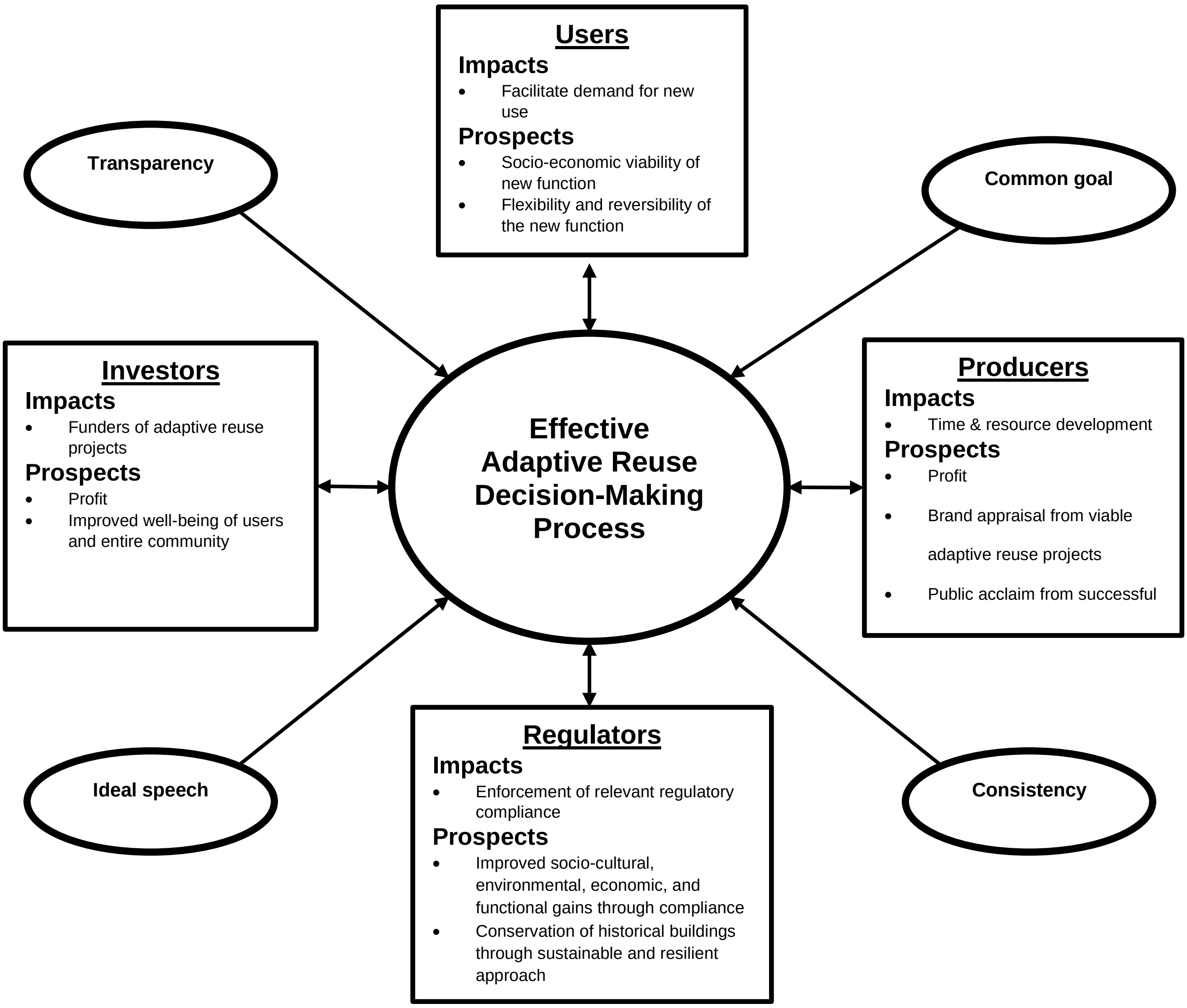


Figure 8.1: Conceptual framework for an effective adaptive reuse decision-making process

8.5 Implications for consensus, negotiation, or compromise

Stakeholders involved in a decision-making process through collaboration usually attain mutual conclusion to deliberated issues by consensus (Ball et al., 2000). In an adaptive reuse decision-making context, consensus may not necessarily denote a preferred alternative or unanimous consent given by all relevant stakeholders, but instead, a decision supported by all. According to Innes and Booher (2010), a consensus is reached when about 90 per cent of all stakeholders involved in a decision-making process is in support of a decision. Although the process of developing consensus could be time-consuming (Ball et al., 2000), it is essential for a vibrant collaboration among stakeholders in an adaptive reuse decision-making process. However, in past debates about distinguishing consensus from compromise, some argue that stakeholders cannot achieve real consensus without compromise (Ball et al., 2000).

A compromise could be described as a way to achieve consensus by adjusting and settling differences through agreement from all stakeholders involved in a decision-making process (Webster & McKechnie, 1996). A successful compromise reached during an adaptive reuse decision-making process will determine if all stakeholders involved are satisfied with the final decision. Furthermore, the process of collaboration among adaptive reuse stakeholders involves sequences of negotiations (Bond, 2011). The rationale for negotiation is that it brings about agreed adjustments in opinions through required commitments, rather than changing the fundamental opinions of the different stakeholders (Ball et al., 2000). Collaboration through negotiation could be applied to the adaptive reuse decision-making process context through problem-solving by principled negotiation (Fisher, Ury, & Patton, 2011). Principled negotiation commits each stakeholder to recognise, accept and address the interests of other stakeholders constructively, for the advancement of their self-interests (Fisher et al., 2011).

8.6 Conclusion

As the adaptive reuse concept develops, there are greater prospects of applying an understanding of the characterisation the stakeholders involved in an adaptive reuse decision-making process, and the effectiveness of collaboration among the relevant actors to construct stakeholder perspectives towards achieving more inclusive urban areas. Findings from this study identified and discussed four main stakeholder categories (i.e., investors, producers, regulators, and users) in a typical adaptive reuse decision-making process. Also, the effectiveness of collaboration among the diverse stakeholders of an adaptive reuse decision-making process has been validated in a focus group workshop conducted by Aigwi, Egbelakin, et al. (2019) through the incorporation of transparency, common goal, ideal speech, and consistency into the process. These findings imply that the effective collaboration that exists among characterised adaptive reuse stakeholders ranges between consensus-coordinated processes aimed at achieving a common interest and compromise-coordinated processes, towards adjusting the interests of the different stakeholders. Recognising the inevitable compromise dimension of collaboration among stakeholders could be useful in the design, implementation, and evaluation of adaptive reuse decision-making processes.

The dynamic involvement of stakeholders in an adaptive reuse decision-making process could increase public awareness on local concerns by delineating the opportunity for compromise, consensus, or agreement (Scolobig, Thompson, & Linnerooth-Bayer, 2016). Policymakers could be more guided on the expectations and needs of the public, thereby, enhancing consents (Dietz, 2013) for the optimal adaptive reuse decisions. Accordingly, this study's conceptual framework aims to promote a better understanding of the characteristics of major adaptive reuse decision-makers through 1) active participation of the stakeholders for future adaptive reuse prioritisation exercises; 2) public consciousness and knowledge regarding adaptive reuse issues; 3) transparency and accountability among the stakeholders; 4) trust and organised networking among the stakeholders; 5) legitimacy and quality of adaptive reuse decisions.

Collaborative methodologies for sustainable decision-making outcomes are now stretching beyond the domains of theoretical focus and advocacy into that of real-life applications. Although a limitation of this research is that the conceptual framework has only been tested in an adaptive reuse decision-making process in a New Zealand provincial area, it could be applied to other countries with similar decision-making contexts. Also, to mitigate the risk of manipulation of the adaptive reuse decision-making process, emphasis on a common goal, ideal speech, transparency, and consistency among all stakeholders should be encouraged. This study, therefore, recommends that the effectiveness and quality of an optimal adaptive reuse decision-making solution could be improved by incorporating the proposed conceptual framework into future adaptive reuse projects.

Chapter 9. Efficacy of adaptive reuse for the redevelopment of underutilised historical buildings: Towards the regeneration of New Zealand's provincial town centres

This chapter was developed from Publication № 8, *which has been published in final form in the International Journal of Building Pathology and Adaptation,* 36(4), 385-407. DOI: https://doi.org/10.1108/IJBPA-01-2018-0007

Abstract

Most provincial town centres in New Zealand typically feature old and vacant historical buildings, the majority of which possess heritage values. The growing perception that it is cheaper to repurpose these underutilised historical buildings rather than demolishing and rebuilding them is one of the factors that have made the adaptive reuse approach so popular. However, will this also be the case for provincial town centres in New Zealand? The purpose of the study discussed in this paper is to identify and explore the key factors that could influence the efficacy of reusing underutilised historical buildings. Also, to check for significant differences in the effect that each perceived factor would have on reuse efficacy as a justifiable resilient and sustainable approach, towards regenerating a major provincial town centre in New Zealand striving to overcome inner-city shrinkage.

A focus group workshop was conducted with 22 stakeholders involved in an existing town centre regeneration agenda for Whanganui. Closed-ended questionnaires were administered to the workshop participants to measure their opinions regarding the efficacy of the adaptive reuse approach for the regeneration of Whanganui's town centre. The participant mix comprised a combination of structural engineers, quantity surveyors, architects, estate valuers, building owners/developers, legal representatives, heritage representatives, and local government council representatives.

The study reported a high proportion of respondents that strongly agreed to the positive impacts of adaptive reuse with regards to the discussed priority aspects, hence, justifying the efficacy of the approach, towards delivering a vibrant town centre for Whanganui. Also, findings from Friedman's analysis suggests that there were no significant differences among all perceived adaptive reuse efficacy criteria by the workshop participants, therefore justifying the reuse approach for redeveloping historical buildings.

This paper's originality pertains to the practicality of changing the use of underutilised historical buildings in the city-centre of Whanganui, New Zealand, to create viable new uses required by the community, to renegotiate seismic resilience and regeneration for the area.

9.1 Introduction

Old historic buildings typically possess features capable of contributing to society's culture and conservation of its architectural history in an extensive manner

(Langston et al., 2007). A significant number of these historical buildings play a crucial role in the socio-economic and cultural development of society (CPWD, 2013) by providing a physical link and progression of cultural evidence to the past (Goodwin et al., 2009). Also, inner-city historical buildings are usually considered assets for the development of local tourism, due to the heritage and socio-cultural values they possess (Ahmad, 2006; Bedate et al., 2004; Pedersen, 2002). However, empirical evidence has identified factors such as urban shrinkage (Martinez-Fernandez et al., 2012), obsolescence (Langston, 2011), and self-congruity perspectives (Sirgy et al., 2005), to be responsible for the underutilisation of historical buildings. It is therefore essential to conserve and maintain these buildings due to the core heritage and cultural values they present.

In New Zealand, most provincial town centres typically feature old and vacant historical buildings, the majority of which possess heritage values. Findings from a recent study identified building conditions, socio-economic factors, and building regulations, as causal factors to the high vacancy rate of historical buildings in New Zealand's provincial town centres (Yakubu et al., 2017). The conservation and reuse of these disused buildings could go a long way in contributing to the growing need for regenerating the inner-cities of these provincial town centres. The adaptive reuse trend has been noticeably recognised from previous studies as a practical approach to improving resilience and sustainability of obsolete historical buildings (Ball, 2002; Bullen, 2007; Bullen & Love, 2010, 2011b; Douglas, 2006; Gallant & Blickle, 2005; Langston & Shen, 2007; Latham, 2016; Pearce et al., 2004; Wilkinson et al., 2009). This reuse inclination emphasises the need to retain the original identity, character, structure and real significance of older historical buildings through the adaptive reuse process (ICOMOS, 2010, 2013).

Furthermore, the growing perception that it is cheaper to convert older buildings for newer functions rather than demolishing and rebuilding them is one of the significant factors that have contributed to the vast interest in the adaptive reuse approach (Ball, 2002; Pearce et al., 2004). In a quest to minimise the social and economic costs of redeveloping an urban area to be more resilient and sustainable, the adaptive reuse approach is beneficial to governments, communities, building owners, and developers (Bullen & Love, 2011a; Wilkinson et al., 2009). While some cities have started to realise that an essential aspect of any successful urban regeneration plan is the reuse of historical buildings for new functions, the objectives of adapting historical buildings appear to overlap with several desired outcomes of resilience and sustainability (Ball, 1999). Hence, there is a need to consider the efficacy of using the adaptive reuse approach as an effective strategy for urban regeneration plans (Bullen & Love, 2009).

In the above context, the study discussed in this paper focuses on identifying and exploring the key factors that could influence the efficacy of adaptive reuse, and, checking for significant differences in the effect that each perceived factor would have on the adaptive reuse efficacy as a justifiable resilient and sustainable town centre regeneration (TCR) approach. A focus group workshop was conducted with relevant stakeholders involved in a current TCR agenda for Whanganui, a major provincial area in New Zealand. Findings from this study offer potential strategic insights on how vacant historical buildings that are adapted for new uses could promote the resilient and sustainable growth of provincial town centres in New Zealand and other areas of the world.

9.1.1 Overview of the current situation

Whanganui is a typical provincial city located on the west coast of the North Island in New Zealand and has a town-centre famous for its collection of built heritage precincts (Yakubu et al., 2017). These heritage buildings possess some original architectural character that dates as far back as pre-1935. In the past, Whanganui had about 10 per cent of the total number of heritage buildings in New Zealand. Accordingly, due to their popularity with visitors, these buildings were worth about 40 million NZD a year to the economy of the local area (Statistics New Zealand, 2017a).

With a territorial area of about 2,400km^2 inhabited by about 43,000 people, Whanganui has a population density of approximately 18 people per km^2 and has experienced population decline at a rate of 1.1 per cent (i.e., by 486 people) since the 2006 census (Statistics New Zealand, 2017a). Statistics from the 2013 census presents the total number of vacant buildings in Whanganui to be 1,839, as compared to 1,449 buildings from the 2006 Census (Statistics New Zealand, 2017a). This trend depicts an increase in vacant buildings in the region with a vacancy rate of 21.2 per cent. According to Yakubu et al. (2017), socio-economic factors, poor building conditions, and building regulations were identified as dominant contributing factors to the steady decline of Whanganui's town centre.

The local review of Whanganui district council's 2010 district plan led to the introduction of Whanganui's existing town centre regeneration strategy, with the overall vision of making Whanganui's town centre visible (Whanganui District Council, 2016). The strategy focuses on providing a general comprehensive plan that will balance conflicting stakeholder objectives and interests, to achieve best resilient and sustainable outcomes for the area (Whanganui District Council, 2016).

9.1.2 Research objectives

1. To identify and explore the key factors that could influence the efficacy of adaptive reuse in regenerating Whanganui's town centre; and
2. To check for significant differences in the effect that each perceived factor would have on adaptive reuse efficacy, towards a justifiable resilient and sustainable town-centre regeneration.

9.2 Literature review

In this section, a review of the contextually relevant literature to the indicators of urban regeneration, and the concepts of resilience and adaptive reuse is covered.

9.2.1 The rationale for regenerating provincial town centres

Historical buildings in typical provincial town centres usually experience high vacancy rate due to some contributing factors such as poor building conditions, socio-economic factors, and building regulations (Yakubu et al., 2017), hence, causing these buildings to be irrelevant to the original purpose for which they were built. The resultant effect of these identified factors on typical provincial town centres is "urban shrinkage" (Martinez-Fernandez et al., 2012; Rink et al., 2010; Wiechmann & Pallagst, 2012; Yakubu et al., 2017). Some socio-economic factors have been reported to contribute to a high vacancy rate of historical buildings in provincial town centres (Yakubu et al., 2017). The social factors were identified as: population decline, mass emigration from inner-city, reduced disability and car park access, and competition from modern construction; while low property values, depressed property market, and high lease cost were identified as the causal economic factors (Yakubu et al., 2017).

Furthermore, an issue widely ignored by researchers is that when considering sustainable activities, there is a wide margin in the relationship between low occupancy levels of historical buildings in provincial town centres, when compared to bigger cities, which usually experience housing shortage (Buttimer & Ott, 2007). Within the limits of the sustainability agenda, there is a substantial debate necessitating the improvement of the historical building stock in all areas, including provincial town centres (Brundtland Commission, 1987). This debate is driven by the potential financial and socio-cultural resources that would most likely be gained by the affected communities (Kohler & Hassler, 2002). In recognising the significance of vacant historical buildings, little consideration is given to the buildings in provincial town centres in New Zealand (Yakubu et al., 2017). Acknowledging this fact will, therefore, promote both cultural and socio-economic vitality for these areas by encouraging the efficient reuse of heritage resources (Myers & Wyatt, 2004). Also, the reliance on market-centred policy and community self-help solutions that most government proffer, have not been so far justifiable in bringing the town centres of these smaller cities back to life (Alston, 2004).

9.2.2 Adaptive reuse in the context of community resilience

Resilience describes the manner in which various systems can "bounce back" after experiencing disturbances, and this has been established in the fields of ecology, physical sciences and engineering (Bodin & Wiman, 2004; Walker, Holling, Carpenter, & Kinzig, 2004; Woods, Leveson, & Hollnagel, 2012). Several meanings have been attributed to the term "resilience", and have been applied to diverse contexts, ranging from social, economic, community, psychological, ecological, and physical resilience, to disaster resilience (Gallopín, 2006; Klein et al., 2003; Manyena, 2006; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; Smith, Brown, & Saunders, 2016; Zhou, Wan, & Jia, 2010). Although resilience has become more popular over the years and has been defined in several ways (Pendall et al., 2010), its numerous definitions are still argued to be vague and fuzzy (Bhamra, Dani, & Burnard, 2011; Markusen, 2003). The concept of resilience was initially introduced within environmentally friendly systems, and later on adopted by sociology and economic systems, which usually require the consideration of some socio-economic entities such as cities, regions or countries in spatial settings (Dolega & Celińska-Janowicz, 2015).

Community resilience is the ability of a community to tackle a disturbance by anticipating for it, preparing for it, responding to it, and recovering from it (Foster, 2007a, 2007b). From an economic point of view, Hill, Wial, and Wolman (2008) define community resilience as the ability of a community to successfully recover from an economic shock that has thrown the area off its growth pathway or has the potential to do so. Likewise, a more general description of economic resilience suggests the degree to which local authorities can ride global economic blows, work within the limits of their urban area, and have high social inclusion levels by quickly bouncing back to normal state after a disturbance (Ashby, Cox, McInroy, & Southworth, 2009). Still on the focus of community resilience, the introduction of the adaptive reuse approach as a viable tool to regenerate provincial urban areas posed with declining socio-economic and environmental well-being of its residents could go a long way in promoting resilience for the sustainable development of the areas.

The rationale behind the concept of community resilience through adaptive reuse presents a potential for changing its focus in existing urban regeneration plans by improving some rigid conservative interventions and analysis. To begin with, resilience thinking considers the alteration of a system as normal, with the inclusion of dynamism as an intrinsic fragment of the way systems operate. The resilience thinking also emphasises the essence of assuming alteration and elucidating stability, contrary to assuming stability and elucidating alteration (Folke, Colding, & Berkes, 2003).

The resilience concept has been included in this paper to justify the importance of radical adaptive reuse strategies that will generate better opportunities for urban regeneration, through an increase in community-led social, economic and environmental initiatives (Brown, 2011). However, suggestions from some post-recession urban regeneration analysis conducted in Hong Kong and London respectively, infer that resilience could be better seen as a dynamic process whereby alteration and constant reinvention of a system justify its socio-economic and environmental strength, rather than just "bouncing back" (Raco & Street, 2012).

9.2.3 What is adaptive reuse?

Old vacant historical buildings that are fast approaching possible demolition could be considered as "raw material mines" for new building projects (Langston, 2008). Merely leaving the fabric and basic structure of these historical buildings intact and changing their use has been argued to be a more sustainable approach, when compared to assigning building materials from demolition to new building applications (Ball, 1999; Bullen & Love, 2009; Douglas, 2006; Langston, 2008; Wilkinson et al., 2009). This technique is labelled "adaptive reuse". Adaptive reuse also referred to as "adaptation" in some literature, implies the change of use of an existing building (Douglas, 2006); the retention of the original fabric and structure of the building (Bullen & Love, 2009); or the extension of the useful life of the building (Mansfield, 2002). The adaptive reuse process involves the conservation of functionally obsolete or old disused historical buildings for new and more appropriate functions (Ijla & Broström, 2015; Shehata et al., 2015). Moreover, the adaptive reuse approach focuses on repurposing an existing building to enable it to function as a contemporary building while preserving its useful features (Douglas, 2006; Wilkinson et al., 2009). Adaptive reuse could occur either "within use" or "across use" (Wilkinson et al., 2009). For instance, the "within use" concept would entail an existing commercial building being reused for other commercial purposes, while the "across use" concept would involve changing the use of the commercial building for residential purposes (Ellison & Sayce, 2007).

The adaptive reuse approach which has been successfully used to redevelop different kinds of existing buildings, from government buildings, defence estates, airfields, to historical buildings, is also considered a strong base for most sustainable development plans and government policies in most parts of the world (Langston & Shen, 2007). Looking beyond conservation and satisfying the desires of new users, adaptive reuse contributes to improving the economic, socio-cultural, and environmental conditions of provincial areas that desire regeneration (Bullen & Love, 2010, 2011b). With the aim of increasing the number of reused historical buildings in provincial towns, the adaptive reuse approach has also been argued to be a more sustainable alternative for promoting and incentivising seismic resilience and urban revitalisation efforts in active seismic areas (Ijla & Broström, 2015) such as New Zealand. Likewise, to support the sustainability agenda of provincial urban areas, having a significant proportion of old vacant historical buildings, a broader urban regeneration strategy could be that these buildings be reused as a substitute to demolition and rebuild (Ball, 1999; Bullen & Love, 2011b; Wilkinson et al., 2009). Hence, the benefits of adaptive reuse have been identified to improve the economic, social, and environmental performance of existing buildings (Bullen, 2007), including heritage buildings (Bullen & Love, 2011b; Yung & Chan, 2011). However, building owners and property developers may still show reluctance in embracing this strategy due to some perceived problems relating to increased maintenance, seismic safety, health and safety, building design inefficiencies, decreased rental returns, zoning, uncertainty, and commercial risk (Bullen & Love, 2010).

In modern conservation theory, adaptive reuse could be considered an essential approach to actualise viable urban regeneration strategies. Some other existing theories on the adaptive reuse approach have been compared and classified based on its efficacy for urban regeneration, and, from the perspectives of architecture and heritage conservation. Accordingly, a typological theoretical approach to the efficacy of adaptive reuse involves the historical analysis of adapted case study buildings, organised based on the building type (Latham, 2016) and host space typology (Douglas, 2006). The focus of the typological approach is on the cause of the building deterioration, the barriers, and critical success factors towards reusing each building typology (Plevoets & Van Cleempoel, 2011). Unlike the typological approach, a technical theoretical approach focuses on the practical improvements of the load-bearing structure, the building envelope, and the comfort, safety and energy efficiency of the adapted buildings (Douglas, 2006; Highfield & Gorse, 2009). Moreover, a strategic theoretical approach of adaptive reuse emphasises analysis of the different strategies and processes to be adopted for the conversion of existing historical buildings through, suggested possible methods of justifying the alteration of an existing building (Breitling & Cramer, 2012; Brooker & Stone, 2004; Plevoets & Van Cleempoel, 2011). Additionally, a creative approach initiates an adaptive reuse plan of action that would synergise the typological, technical and strategic approaches to incorporate the practical aspects of adaptive reuse for potential end-users of adapted historical buildings (Hasnain & Mohseni, 2018).

While some historical buildings have been adapted to suit new functions in a slightly pragmatic manner over the years (Powell, 1999), a critical reflection on the efficacy of the adaptive reuse approach for urban regeneration is quite recent (de Arce, 2014). There is a need for a better understanding of some priority aspects that could impact the reuse of obsolete historical buildings, towards achieving justifiable resilient provincial town centres. These factors are discussed comprehensively in the subsequent sub-sections.

9.2.4 Impacts of adapting vacant historical buildings in provincial areas

Some significant impacts of adaptive reuse to provincial town centres are discussed in the following subsections under the headings: economic aspects, socio-cultural aspects, environmental aspects, built-heritage conservation, seismic resilience, building usability, and town centre regeneration.

9.2.4.1 Economic aspects

An adapted historical building's new function should be able to benefit its users economically. It is often expected that the building's new use will possess the potential to generate profit for its future maintenance. A successful adaptive reuse project should contribute to an increase in the values of property in the area, and also, boost cultural tourism (Mısırlısoy & Günçe, 2016b). For instance, a historical building that is repurposed to serve a new function as an art gallery will enable the users to sell their products within the building's premises, hence making the physical continued existence of the building to depend on its economic sustainability. The indicators for measuring the economic benefits of adaptive reuse projects should include the numbers of newly established businesses and employment prospects for the local workforce; an increased value of surrounding properties, and increased revenue from tourism for local businesses (Chan & Lee, 2008; Engelhardt & Rogers, 2009; Jonas, 2006).

The adaptive reuse process is usually faster and cheaper than demolishing an existing building and rebuilding it from scratch, except there is a requirement for a full structural reconstruction (Langston et al., 2007). The required time to demolish and reconstruct a given floor area of an existing building, have been suggested to be about twice the time needed to redevelop the same floor area, with adaptive reuse (Johnson, 1996; Larkham, 2002). This reduced redevelopment timeframe will also reduce both the financing cost and the impact of inflation on the costs of construction (Highfield & Gorse, 2009; Langston et al., 2007). As a result, there will be less disruption to cash flow and operations of organisations that do not wish to relocate, thus reducing the expenses from temporary accommodations. Furthermore, the costs of adaptive reuse projects are usually lower than the cost of demolition and rebuild (Douglas, 2006), given that the contract periods of adaptive reuse projects are usually shorter, and also the structural materials of the existing buildings are already in place, the borrowing cost would be reduced (Shipley et al., 2006). The demolition and reconstruction of existing buildings are most often more expensive than changing the use of the building (Ball, 2002; Bullen, 2007; Douglas, 2006; Shipley et al., 2006). Additionally, the adaptive reuse approach has been demonstrated to be a preferable option in the revitalisation of the economic condition of a community through increased property values (Yiu & Leung, 2005). A Hong Kong study investigated the impact of repurposing historical buildings for new functions on a highly dense existing residential property (Chau et al., 2003). It was revealed from this study that there was a 9.8 per cent increase in the value of the property compared to another existing building in the same area that did not go through the adaptation process (Chau et al., 2003). In another Hong Kong study, the impact of adaptive reuse on residential property was also investigated (Yau et al., 2008). Findings from the study showed that there was an improvement of 6.6 per cent in the value of the repurposed property (Yau et al., 2008).

However, there are some cases where the cost of repurposing older buildings for new functions surpasses that of a new build (Kohler & Yang, 2007). Most notably, when the existing buildings have structural complexities, legislation or listing requirements (Wilkinson et al., 2009). Also, because the process of developing a new building from scratch is relatively more straightforward, its cost could be argued to be often lower than that of the adaptive reuse process (Bullen, 2007). In a study done in Canada, uncertainty and erroneous risk perception of high adaptation costs by bankers made it more difficult for property developers to secure financial support for projects relating to adaptive reuse (Shipley et al., 2006). When considering categorising the disruptions caused by the process of adapting historical buildings into indirect costs, the economic argument of adaptive reuse may be weakened (Chau et al., 2003). These disruptions could come as a result of the loss of convenience during the redevelopment process, and the loss of goodwill from tenants into indirect costs. Also, some historical buildings may not have the capacity to reach new building regulatory standards even after undergoing the adaptive reuse process (Bullen & Love, 2011b). As a result, these buildings (primarily commercial buildings) would degenerate to a state where their layout is inappropriate for change-of-use, making them uneconomical (Bullen & Love, 2011a, 2011b, 2011c; Wilkinson et al., 2009).

9.2.4.2 Socio-cultural aspects

Socio-cultural factors would incorporate the impacts of a historical building's newly adapted function to its local area, the quality of life within the community, and other socio-cultural activities. These historical buildings help to link residents to their roots by serving as collective memory, with which they can all reflect on their personal and cultural identities (Butina-Watson & Bentley, 2007). Although socio-cultural aspects are often less prioritised for adaptive reuse projects possibly because they are difficult to measure, to achieve a successful adaptive reuse project, repurposed historical buildings should be socio-culturally justifiable (Mısırlısoy & Günçe, 2016b). The new use of the repurposed historical buildings should be able to attend to the needs of the local community and also, contribute socio-cultural benefits to its users by proposing new activities for them. A most suitable function could lead to an increase in the quality of lifestyle and education in the area (Mısırlısoy & Günçe, 2016b). Furthermore, the adaptive reuse of historical buildings could also enhance the cultural diversity and significance of a place by promoting the continuity of societal life (Engelhardt et al., 2007).

The social merits of adapting vacant historical buildings for new functions could occasionally be provided through the core heritage values possessed by the buildings (Langston et al., 2007). Redeveloping historical buildings for other uses could go a long way in presenting attractive streetscapes that could add character and provide a secure image and sense of status to communities (Bullen, 2007). The resultant decline in vacant or dilapidated buildings would potentially create a more vibrant community and increased living standards from revitalization and increased investment (Yakubu et al., 2017). Also, other unsocial behaviours and crime would be significantly reduced.

9.2.4.3 Environmental aspects

The process of repurposing historical building for new functions involves lesser material consumption, reduced energy consumption, reduced transportation energy, and reduced pollution from construction, hence promotes resilient and sustainable places (Itard & Klunder, 2007). Moreover, the adaptive reuse process can contribute to climate change by reducing the emissions of CO_2 (Bullen, 2007). The change of use approach is safer in reducing the extent of environmental disturbances that may arise from hazardous materials, ground contamination, dust, and hazard from falling materials (Bullen & Love, 2010). This disturbance could cause interference with eco-systems, habitat degradation, and reduced biodiversity, and hence decrease air and water quality, which could, in turn, encourage the spread of diseases to humans and animals (Koren & Butler, 2006).

Instead of owners of existing historical buildings and property developers just settling for demolition, the change of use strategy offers a better way to efficiently and effectively redevelop these buildings in a manner that will not pose any harm to the environment. Most historical buildings contain embodied energy (Binder, 2003), which could be saved by reusing the building's functionality, components, and recycled materials (Bullen & Love, 2010). Additionally, in the case of site work downtime caused by inclement weather, the adaptive reuse process could reduce this issue through the presence of the work enclosure presented by the existing buildings. Also, the process of demolishing heritage buildings and rebuilding could waste materials (DEH, 2004), and also pose significant threats to environmental sustainability. Findings from a study done in the Netherlands revealed that the adaptive reuse process would lead to the generation of less waste, use of fewer materials, and most likely lesser energy, as compared to demolishing and rebuilding (Itard & Klunder, 2007).

However, it has been argued that the required standards (i.e., the quality of thermal, acoustic, and indoor air) of applying the adaptive reuse for existing buildings may not be attainable (Bullen, 2007). For instance, there will be varying compliance with functional standards because it will depend on the physical state and required end use of the building (Wilkinson et al., 2009). Although adaptive reuse does not contain the creative element of a new building, creativity is, however, argued to depend on being able to fit contemporary needs into what already exists (Bullen, 2007). The performance of an adapted existing building may not completely match that of an entirely new building, but its social gain could balance this limitation (O'Donnell, 2004).

9.2.4.4 Built heritage conservation

Heritage conservation charters, mandate that when historical buildings with heritage values are being redeveloped, their architectural and heritage character should be maintained and conserved for future generations (ICOMOS, 1931, 1964, 2010, 2013, 2019). Accordingly, the mandate on heritage conservation has led to the scheduling of several heritage buildings into district plans, thereby protecting them from unsympathetic alterations or demolition through regulations. Built heritage conservation through adaptive reuse has been suggested as practical and sustainable concepts for urban regeneration planning (Alpopi & Manole, 2013; Nasser, 2003). Moreover, the adaptive reuse approach has been well-thought-out as an essential strategy towards the conservation of built heritage (Jessen &

Schneider, 2003). Although the benefits of repurposing historical buildings for new functions have been argued to promote built heritage conservation (Plevoets & Van Cleempoel, 2011), some literature emphasise the success of the new functions and local community development as vital adaptive reuse goals (Douglas, 2006; Rodwell, 2008; Shehata et al., 2015). The positive interaction between built heritage conservation, adaptive reuse and town centre regeneration is that the conservation of heritage buildings will secure successful town centre regeneration projects by safeguarding the social, economic, and environmental benefits of the built heritage expenditures, through adaptive reuse (Rojas, 1999).

9.2.4.5 Seismic resilience and building usability

Since New Zealand is in an active seismic region of the world, it is always essential to include seismic resilience in its resilience and sustainable development plans. The purpose of seismic resilience in New Zealand's provincial areas would be to recover or maintain functionality and create adjustments that would accommodate thriving and learning during earthquakes while reducing the adverse effects of future earthquake occurrences in the areas (Smith et al., 2016). A provincial area could be considered as seismic-resilient if it possesses the capacity to absorb and minimise the disruptive and adverse effects of an earthquake and efficiently respond to the earthquake event (Bruneau et al., 2003). The adaptive reuse concept could be considered a feasible approach to renegotiate seismic resilience for the vacant historical buildings in New Zealand's provincial areas as most of these buildings are being assessed as earthquake-prone (Yakubu et al., 2017). Since most change of use alterations would trigger the seismic strengthening requirements of earthquake-prone buildings (EPBs) if the value exceeds 25 per cent of the building's ratable value (MBIE, 2016a), adaptive reuse could, therefore, serve as a useful approach to motivate building investors to retrofit these EPBs, towards creating a seismic resilient community.

Building usability is another crucial aspect to consider when changing the use of a historical building. According to Elzeyadi (2002), successfully reused spaces should typically reflect the following psycho-social and physical qualities: aesthetics and ambient comfort, ergonomics, and space utilization, lighting quality, privacy, heritage value, life safety and security, temperature, maintenance services, noise and auditory levels, and relative humidity. Quite a few methodologies for the selection of optimal new adapted functions for vacant historical buildings have been developed with an emphasis on the need for definite compatibility between the spatial characteristics of the buildings and the requirements of the new adapted functions (Hong Kong Buildings Department, 2016; Langston, 2011; Langston et al., 2007). Accordingly, Hillier and Hanson (1989) have developed a model (Space Syntax) that could be used to investigate the extent to which the design alteration of historical buildings and space arrangement can address the socio-spatial and possible economic needs of the new adapted functions.

9.2.5 Adaptive reuse and town centre regeneration (TCR)

TCR is a holistic and integrated approach adopted for the resolution of urban problems to generate a resilient improvement in the physical, social, economic and environmental conditions of a degenerated urban area (Roberts & Sykes, 2000). The TCR strategy is a response to the opportunities and challenges of urban deterioration in a specific place, and at a particular time (Roberts & Sykes, 2000). Most TCR strategies usually involve the group effort of local authorities, public, private, and other voluntary sectors to achieve a precise aim of improving the quality of life for residents of a community. The theory of urban regeneration is primarily concerned with the organisational and institutional dynamics of managing urban change by displaying several essential features (Roberts et al., 2016).

In the domain of TCR, adaptive reuse could catalyse the improvement of the liveability of historic precincts, which is the desired outcome of the relationship between human and environmental characteristics (Van Kamp, Leidelmeijer, Marsman, & De Hollander, 2003). Liveability is greatly influenced by the conditions of public spaces such as streets, public facilities, parks, etc., where people can interact with one another naturally. Hence, repurposing vacant historical buildings for new functions could substantially contribute to improving the liveability of provincial precincts through the stimulation of prospects for resilient and sustainable social interactions among community members (Yung & Chan, 2012). Typical liveability indicators include property values, business activities and tourism, numbers of visitors per day, community character and pride, social cohesion and equity, and diversified land use (Dale & Newman, 2009; Van Kamp et al., 2003). Therefore, embracing adaptive reuse could provide an added benefit to the regeneration of New Zealand's shrinking provincial town centres in a sustainable way (Yakubu et al., 2017). The adaptive reuse strategy could also motivate local authorities and owners of vacant historical buildings in provincial town centres to minimise the economic, socio-cultural and environmental costs, in a quest for continued urban development.

9.3 Research method

This study focuses on examining the efficacy of using the adaptive reuse approach to regenerate Whanganui's town centre, and in doing so, identifies and explores influential factors to the usefulness of adapting the obsolete and vacant historical building for new functions. A focus group workshop was conducted with relevant stakeholders to explore their assumptions, beliefs, and opinions regarding the research topic (Krueger & Casey, 2014). Closed-ended questionnaires were administered to the focus group participants to measure their opinions regarding the efficacy of the adaptive reuse approach to regenerate Whanganui's town centre. The rationale for using the focus group technique is that it is a practically cost-effective way of gathering many data within a short timeframe, and also, the data can be easily quantified with little impact on its reliability and validity (Popper, 2005). The focus group approach also allowed the workshop participants to probe, prompt, and clarify questions with the workshop facilitators.

The purposeful sampling technique was used to choose participants for the focus group workshop, based on their vast knowledge regarding Whanganui's existing town centre regeneration pursuit. Purposeful sampling allows research to be carried out in a particular setting where individuals or events are deliberately selected to provide detailed insights on a research focus (Maxwell, 2012). This sampling approach also promotes the involvement of participants who are experienced in the subject matter (Babbie, 2013; Easterby-Smith et al., 2012;

Neuman, 2014; Tavakol & Dennick, 2011). The participant mix comprised a combination of structural engineers, quantity surveyors, architects, estate valuers, building owners/developers, legal representatives, heritage representatives, and local government council representatives. The profile of the focus group workshop participants is provided in Table 9.1. A total of 22 participants attended the focus group workshop. The administered questionnaires were exclusively completed by all participants in about 45 minutes and returned to the workshop facilitators.

Responses from the questionnaire survey were analysed using the IBM SPSS statistical software. The responses were collated, number-coded and manually inputted into the SPSS spreadsheet with each question number as a column heading and separate rows for each participant's answers. The spreadsheet data was checked for accuracy, and the proportion of participants who selected each response was calculated and displayed on bar charts. To measure the level of internal consistency of all completed questionnaire items, a reliability test was done in SPSS using the Cronbach's alpha technique (Tavakol & Dennick, 2011). Additionally, the Friedman test (Friedman, 1937) was used to check for significant differences in the effect that each perceived questionnaire item under separate priority aspects would have on the efficacy of adaptive reuse, towards Whanganui's town-centre regeneration.

Table 9.1: Profile of focus group workshop participants

Category	Frequency	Per cent
Profession of Participants		
Building owners/developers	6	27.3
Building professionals	4	18.2
Local council representatives	7	31.7
Heritage representatives	4	18.2
Legal representatives	1	4.6
Total	**22**	**100%**
Organisational Portfolio		
Senior Management	12	54.6
Middle Management	3	13.6
Supervisor/team leader	5	22.7
Other	2	9.1
Total	**22**	**100%**
Level of Professional Experience (Years)		
< 1	1	4.6
1-5	3	13.6
6-10	5	22.7
11-20	4	18.2
>20	9	40.9
Total	**22**	**100%**
Gender		
Male	14	63.6
Female	8	36.4
Total	**22**	**100%**

9.3.1 Questionnaire reliability check

The reliability of a data collection instrument is the extent to which it consistently measures a concept. For this study, the Cronbach's alpha test (Tavakol & Dennick, 2011) was used to assess the degree of internal consistency among the set criteria that were assessed in the questionnaires. From equation 6.1, the alpha coefficient (α) was evaluated as:

$$\propto = \frac{k \times \bar{c}}{\bar{v} + (k-1)\bar{c}} \geq 0.7 < 0.8 \qquad (6.1)$$

…where k = total number of questions

$\overline{c}$ = average of the covariance that exists between all items

$\overline{v}$ = average of the variance of items

Scale: All questions on the significance of adaptive reuse to Whanganui's town centre regeneration strategy

Table 9.2: Case Processing Summary

		No of participants	%
Cases	Valid	22	100.0
	Excluded[a]	0	0.0
	Total	22	100.0

a. Listwise deletion based on all variables in the procedure.

Table 9.3: Summary Question Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	Total No of Questions
Item Means	1.509	1.182	1.818	0.636	1.538	0.031	25
Item Variances	0.947	0.251	1.446	1.195	5.759	0.138	25

Table 9.4: Reliability Test

Cronbach's Alpha (α)	**Cronbach's Alpha based on standardised items**	**Total No of Questions**
0.706	0.651	25

From the SPSS analysis, the Cronbach's alpha coefficient (α) of 0.706 > 0.7 (refer to tables 9.2 – 9.4 above), indicates an acceptable level of internal consistency among all the measured items in the questionnaire.

9.3.2 Friedman's test

Friedman's test was employed for this study since adaptive reuse efficacy was repeatedly measured under different priority aspects of Whanganui's TCR plan.

For this study, the Null hypothesis is that there would be no significant differences in the effect that each perceived questionnaire item under separate priority aspects would have on the efficacy of adaptive reuse.

Accordingly, the decision rule would imply that if the significance value (p) is less than 0.05, the Null hypothesis should be rejected.

9.3.3 Likert scale

A five-point Likert scale was used to weigh the attitudes (i.e., 1 = positive attitude; 5 = Negative attitude) of the focus group participants by allowing them to express the extent of their opinions, and also levels of agreement or disagreement regarding each item of the questionnaire (Likert, 1932). Responses from the SPSS analysis is provided below.

9.4 Findings and discussion

The results from the questionnaire survey highlight factors that could influence the decision-making process of adapting obsolete and vacant historical buildings for new functions in Whanganui's town centre.

9.4.1 The significance of adaptive reuse to Whanganui's TCR strategy

In response to the opportunities and challenges of urban deterioration in Whanganui, (Roberts & Sykes, 2000), this study established the significance of using the adaptive reuse approach as a viable technique that would provide resilient town centre for the area. Adaptive reuse was considered by a significant proportion of the focus group participants to be a very practical approach to regenerating Whanganui's town centre because it was considered a more sustainable way to promote seismic resilience, the conservation of heritage buildings, and, improve the economic and socio-cultural sustainability of the area. Accordingly, about 82 per cent of respondents believed to a large extent that built heritage conservation from adaptive reuse would drive Whanganui's existing town centre regeneration (TCR) strategy. Other adaptive reuse significant factors the respondents believed would contribute to driving Whanganui's TCR strategy to a large extent were found to include; compliance practices to present and future earthquake requirements (69 per cent), the usability of the historical building (57 per cent), and the increased future value of building (80 per cent). As far as the structure of historical buildings remains functional, 74 per cent of the respondents believed to a large extent that adaptive reuse would be a most resilient and sustainable approach for the regeneration of Whanganui's town centre. The high proportion of participants that believed to a large extent the usefulness of adaptive reuse through built heritage conservation imply that a conservation culture of built heritage in Whanganui would promote the socio-economic and environmental benefits of heritage expenditures through adaptive reuse. Also, most owners of old historical buildings would be motivated to upgrade their buildings as a response to the declining usability of the buildings through adaptive reuse (Pearce et al., 2004).

Furthermore, from an economic perspective, the adaptive reuse approach was considered to a large extent by 71 per cent of the respondents to be a much faster and cheaper alternative for redeveloping historical buildings when compared to the cost and time it would take to demolish and rebuild from scratch (Johnson, 1996; Larkham, 2002). This high response regarding the economic impact on the usefulness of adaptive reuse is significant given that a reduced redevelopment timeframe will bring about the lesser impact of inflation on the construction costs, hence reduced disruption to cash flow (Langston, 2008). Also, 75 per cent of the respondents believed to a large extent that adapting historical buildings for new functions would boost the eco-efficiency of the buildings, by using low energy impact materials, well-organised heating, and insulation. Additionally, 69 per cent of the respondents believed to a large extent that changing the functions of the historical buildings in Whanganui's town centre would present an excellent opportunity to transform Whanganui's built environment in a more aesthetically appealing way. Hence, the conserved historical buildings would promote the retention of architectural streetscapes and a maintained sense of place for the area (Hong & Chen, 2017).

9.4.2 Adaptive reuse prospects and obstacles relevant to Whanganui's TCR agenda

Findings from the questionnaire survey show the proportion of respondents who strongly agreed to some prospects and obstacles that may influence a successful adaptation of historical buildings in Whanganui's town centre. The prospects include: enhanced property market due to strategic location of building (86.4 per cent), prospects for technical innovation (68.2 per cent), increased inner-city population density (63.6 per cent), high demand for redeveloped historical buildings (77.3 per cent), and higher economic prospects in comparison to demolition and rebuild (72.7 per cent). Furthermore, when compared to a similar adaptive reuse survey carried out by Bullen (2007), the adaptive reuse approach was also significantly supported as a positive approach and a more sustainable option that would promote the long-term usefulness of existing buildings, than demolishing and rebuilding them. For the adaptive prospects, results from Friedman's statistical analysis ($p = 0.487 > 0.05$) implies that the null hypothesis should be retained. Refer to Figure 9.1, Tables 9.5 and 9.6 for a representation of these findings.

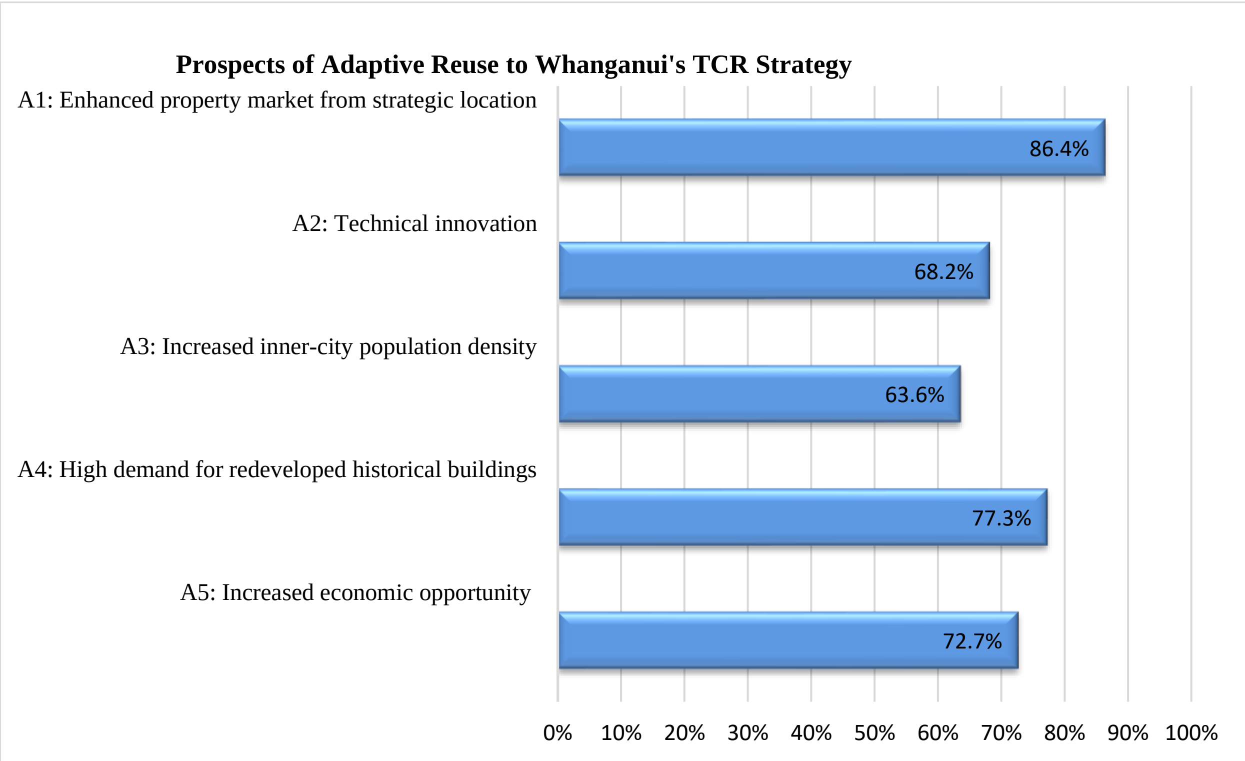


Figure 9.1: Prospects of adaptive reuse to Whanganui's TCR strategy

Table 9.5: Ranks - i

	Mean Rank
A1	2.66
A2	3.18
A3	3.23
A4	2.91
A5	3.02

Table 9.6: Friedman's Test Statistics[a] - i

N	22
Chi-Square	3.441
Degree of freedom	4
Asymptotic significance	0.487

On the flip side, the respondents strongly agreed that the following factors could serve as obstacles to a resilient and sustainable regeneration of Whanganui's town centre: seismic regulatory requirements (81.8 per cent), heritage regulatory requirements (77.3 per cent), health and safety regulatory requirements (68.2 per cent), the feasibility of reusing building materials (72.7 per cent), impact on aesthetic fabric (59.1 per cent), availability and cost of materials to match existing fittings, elements, and fixtures (54.6 per cent), the procedure for planning approval (63.6 per cent), non-strategic building location and marketability (86.4 per cent), and structural integrity after redevelopment (77.3 per cent).

In a similar study, some of the above barriers were also believed to impede the efficacy of adaptive reuse for existing buildings, towards sustainable urban regeneration (Bullen, 2007). The finding suggests that the location of historical buildings is a critical marketability component for adaptive reuse. For instance, a historical building sited in an unplanned location would have a lower marketability potential after a redevelopment process. Hence, this becomes a key obstacle to the adaptive reuse process. Other significant proportions of the identified obstacles were connected to regulations, which may be considered too rigid when incorporating technical and safe innovations into the adaptive reuse process. Besides, a p value of $0.220 > 0.05$ from Friedman's statistical analysis implies that the null hypothesis should be retained. Refer to Figure 9.2, Tables 9.7 – 9.8 for a summary of these findings.

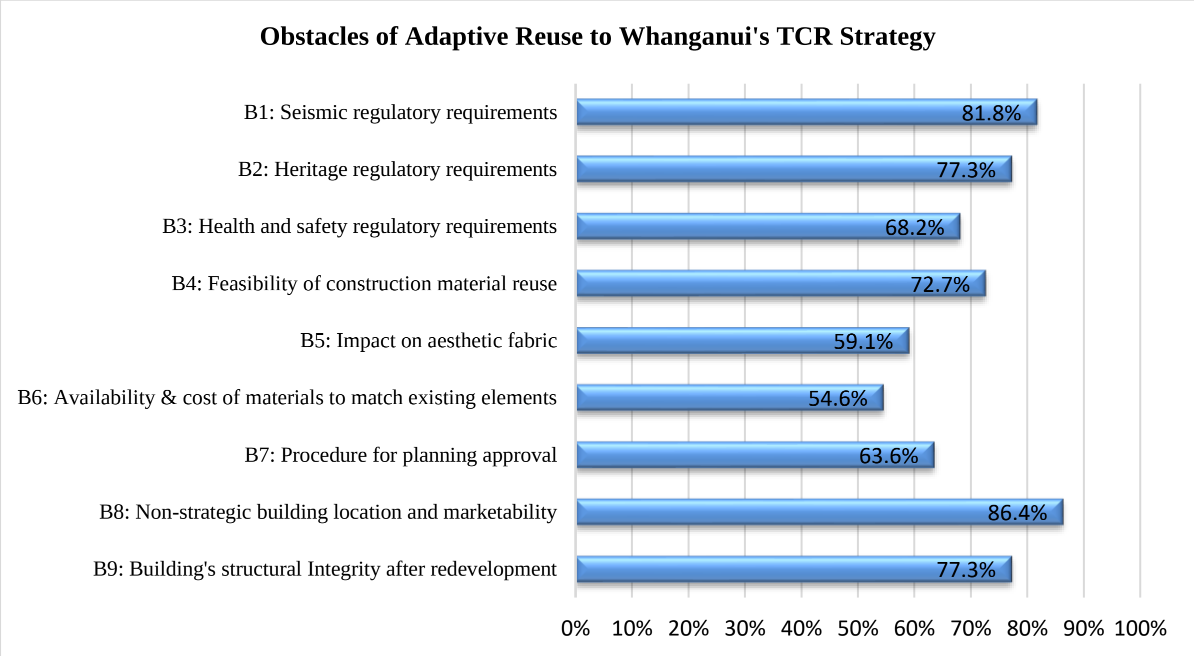


Figure 9.2: Obstacles of adaptive reuse to Whanganui's TCR strategy

Table 9.7: Ranks - ii

	Mean Rank
B1	4.66
B2	4.77
B3	5.09
B4	5.00
B5	5.45
B6	5.86
B7	5.41
B8	4.34
B9	4.41

Table 9.8: Friedman's Test Statistics[a] - ii

N	22
Chi-Square	10.693
Degree of freedom	8
Asymptotic significance	0.220

9.4.3 Efficacy of adaptive reuse to the economic viability of Whanganui's town centre

As the identification of value for money on development projects is indeed commonly related to monetary return, respondents were asked the extent to which they believed adapted new functions for vacant historical buildings would contribute to Whanganui's economic resilience and sustainability in the aspects of some identified economic criteria. While 68.2 per cent of the respondents believed that new functions for the vacant historical buildings would to some extent promote Whanganui's economic viability by increasing revenue from tourism, 81.8 per cent believed to a large extent that the new function of the building would boost local commercial activities in Whanganui's town centre. Accordingly, about 72.7 per cent of the respondents also believed to a large extent that increased commercial activities in Whanganui's town centre from the building's new function, will trigger a corresponding increase in property and land values of neighbouring buildings.

The key to realising economic prospects from adaptive reuse projects is discovering the right combination of new uses for older buildings (Langston et al., 2007; Plevoets & Van Cleempoel, 2011). The successful adaptation of an abandoned historical building could result in employment and arousal of the economic growth of the surrounding environment (Chan & Lee, 2008). For an adaptive reuse project to become economically viable, its revenue should be adequate to cover both redevelopment and running costs, with lesser or no dependence on external sources of funds, while gaining profits for the expected beneficiary groups (Bullen & Love, 2009). Such benefits which include an increase in cost recovery, productivity rate, work efficiency and increased number of visitors and tourists to an area, will typically indicate how economically viable the new adapted function will be for that area (Shehata et al., 2015). Results from Friedman's statistical analysis ($p = 0.689 > 0.05$) implies that the null hypothesis should be retained. Figure 9.3, and Tables 9.9 – 9.10 illustrates these findings.

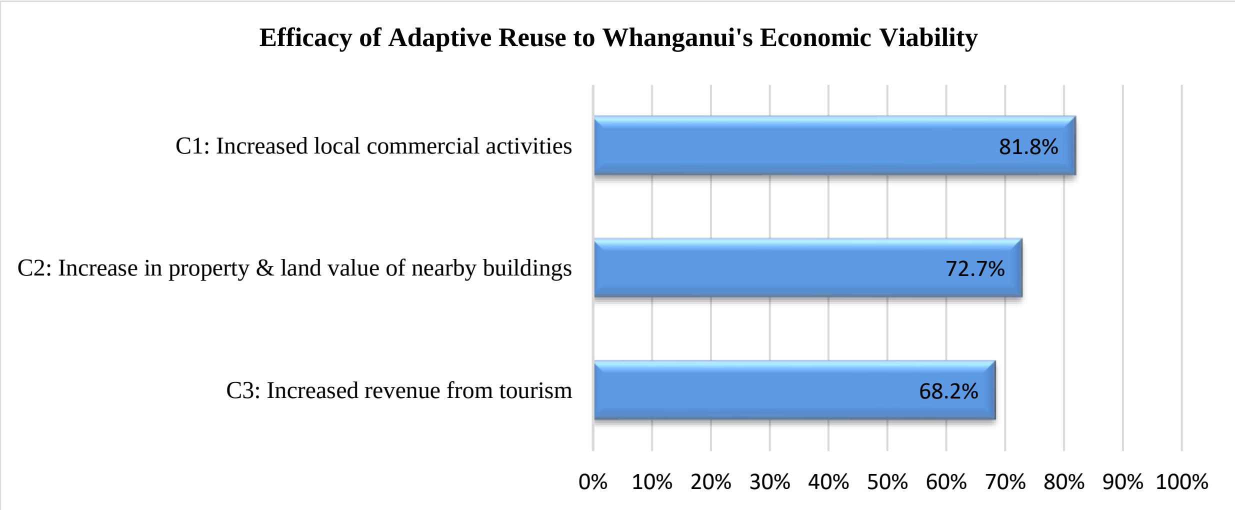


Figure 9.3: Efficacy of adaptive reuse to Whanganui's economic viability

Table 9.9: Ranks - iii

	Mean Rank
C1	2.05
C2	2.07
C3	1.89

Table 9.10: Friedman's Test Statistics[a] - iii

N	22
Chi-Square	0.745
Degree of freedom	2
Asymptotic sig.	0.689

9.4.4 Efficacy of adaptive reuse to Whanganui's socio-cultural sustainability

77.3 per cent of the focus group respondents strongly agreed that new functions for the vacant historical buildings in Whanganui's town centre would promote the socio-cultural capability of the area through an increase in the lifecycle of the buildings. The respondents also strongly agreed that the adapted buildings would contribute to the cultural significance of the place (81.8 per cent). Moreover, while 86.4 per cent of the respondents agreed that the adaptive reuse approach would promote Whanganui's socio-cultural aspects by creating a collective cultural identity for the residents of the area, 68.2 per cent of the participants agreed that a sense of belonging and attachment to the area would be felt by the residents of Whanganui if the adaptive reuse approach is adopted to redevelop the obsolete historical buildings in the town centre. These above findings suggest that apart from monetary return on investment from adaptive reuse redevelopment projects, socio-cultural aspects are becoming progressively significant (Langston et al., 2007). Also, concerns such as the functionality and cultural efficiency of historical buildings are crucial to resilience assessments in a broader social context. Correspondingly, findings from Friedman's statistical analysis ($p = 0.769 > 0.05$) implies that the null hypothesis should be retained. Figure 9.4 and Tables 9.11 – 9.12 depicts these findings.

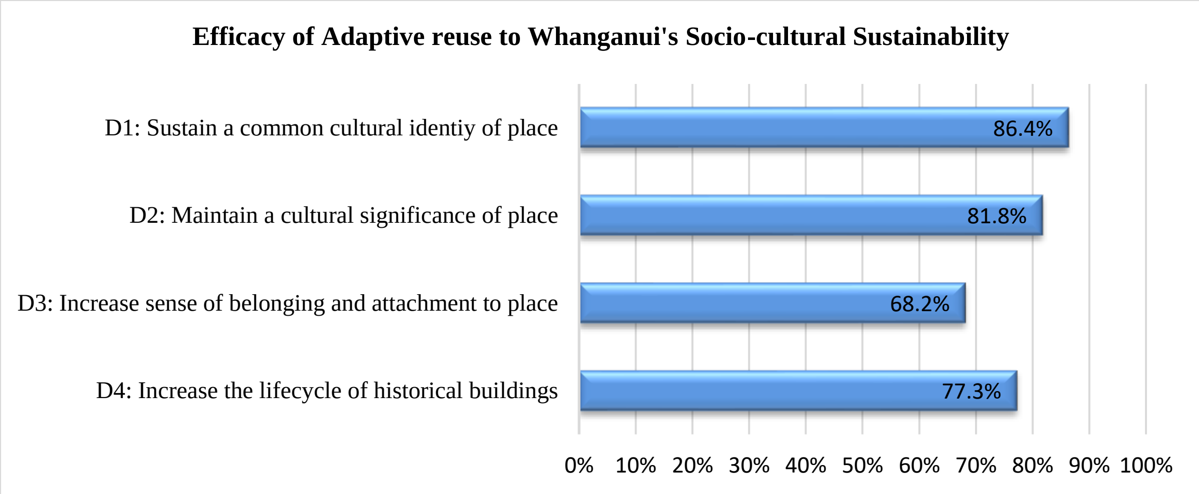


Figure 9.4: Efficacy of adaptive reuse to Whanganui's socio-cultural sustainability

Table 9.11: Ranks - iv

	Mean Rank
D1	2.57
D2	2.36
D3	2.45
D4	2.61

Table 9.12: Friedman's Test Statistics[a] - iv

N	22
Chi-Square	1.133
Degree of freedom	3
Asymptotic Sig.	0.769

9.4.5 Efficacy of adaptive reuse to the conservation of Whanganui's built heritage

When questioned about the efficacy of adaptive reuse to the conservation of built heritage in Whanganui's town centre, 77.3 per cent of the respondents strongly agreed that the adaptive reuse approach would go a long way in promoting the retention of the visual heritage features of Whanganui's central streetscape, while 68.2 per cent agreed to the conservation of the history and narration of the town's existence. Also, 68.2 per cent of the respondents strongly agreed that embracing the adaptive reuse approach in redeveloping vacant historical buildings, would stimulate the conservation of Whanganui's built heritage by sustaining the architectural history of the central streetscape. Moreover, 81.8 per cent strongly agreed that the memories of the abandoned historical buildings would be conserved through adaptive reuse.

The above responses on the impact of adaptive reuse on the conservation of built heritage in Whanganui's town centre are in line with findings from a similar survey done by Mısırlısoy and Günçe (2016b). The study attributed some benefits of architectural conservation through adaptive reuse to sustainable urban regeneration, hence extending the role of architectural conservation from just heritage conservation to urban regeneration and sustainable development (Bullen & Love, 2011a). Results from Friedman's statistical analysis ($p = 0.649 > 0.05$) implies that the null hypothesis should be retained. Refer to Figure 9.5, and Tables 9.13 – 9.14 for a representation of these findings.

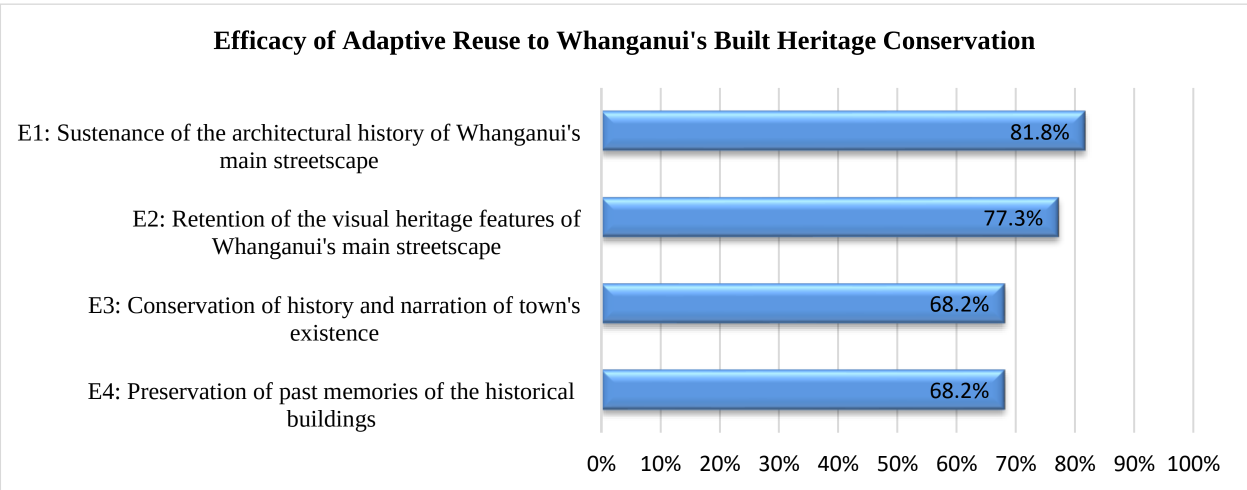


Figure 9.5: Efficacy of adaptive reuse to Whanganui's built heritage conservation

Table 9.13: Ranks - v

	Mean Rank
E1	2.30
E2	2.52
E3	2.68
E4	2.50

Table 9.14: Friedman's Test Statistics[a] - v

N	22
Chi-Square	1.647
Degree of freedom	3
Asymptotic Sig.	0.649

9.5 Conclusion

The prevalence of vacant historical buildings in New Zealand's provincial town centres could be considered an essential driver for adaptive reuse, as this concept is a fast-growing global topic. The study discussed in this paper examined the efficacy of the adaptive reuse approach to revitalise underutilised historical buildings in one of New Zealand's major provincial areas, as a substitute for cosmetic maintenance or demolition and rebuild of these buildings. The practicality of the adaptive reuse approach endorses the potentials of Whanganui's disused historical buildings in a manner that is both resilient and sustainable. Most responses from this study emphasised the usefulness of adaptive reuse within the priority aspects of Whanganui's existing TCR strategy. Given that, the significance, prospects, and obstacles of adaptive reuse, and its efficacy on economic, socio-cultural, and built heritage conservation aspects, with regards to the regeneration of Whanganui's town centre were also highlighted. The study reported a high proportion of respondents that strongly agreed to the positive impacts of adaptive reuse, which justifies the efficacy of this approach in delivering a vibrant town centre for Whanganui. Also, findings from Friedman's analysis suggests that no significant differences existed among all measured adaptive reuse efficacy criteria by the workshop participants, therefore justifying the approach.

The participants of the focus group workshop strongly believed that the adaptive reuse process would be able to create an economically viable town centre for Whanganui, and, building owners and investors would most likely be able to get a return on an investment after redeveloping their historical buildings. Also, the conservation of built heritage through adaptive reuse would help to maintain the cultural identity of vacant historical buildings in provincial town centres in New Zealand by providing a new life for the buildings. The adaptive reuse process should not in any way interfere with the heritage values of existing buildings, especially in situations where the components and materials that were originally used to construct the buildings are no more readily available and must be specially manufactured (Rypkema & Wiehagen, 2000). While the adaptive reuse approach is important in a quest to attain low-level energy consumption and environmental sustainability goals (Thomsen & Van der Flier, 2006), it should not be considered in isolation from environmental issues (Mısırlısoy & Günçe, 2016b).

The high proportion (81.8 per cent) of participants that strongly considered seismic regulatory requirements as an obstacle to adaptive reuse suggests that a better understanding of its efficacy by potential building owners and investors would serve as an excellent start to motivate these stakeholders in strengthening earthquake-prone buildings, towards developing seismic resilient communities. Furthermore, since the adaptive reuse of historical buildings is still a developing seismic resilience concept in New Zealand, it could be made more attractive to building owners and investors through the introduction of legislation that will minimise planning and building code requirements, and also incorporate flexibility in the design of new buildings to be able to accommodate new functions for the buildings in the future. Accordingly, there is an urgent call for the development of policies and strategies that will promote adaptive reuse for the resilient and sustainable redevelopment of historical building stock, towards regenerating shrinking provincial town centres in New Zealand. Moreover, some array of options needs to be well evaluated by building owners and developers when considering using the adaptive reuse approach to redevelop their buildings for new functions.

However, some doubts regarding the efficacy of adaptive reuse may still exist due to too much concentration on only economic aspects by potential investors and developers. Raising awareness by educating the public on other potentials of adaptive reuse, such as socio-cultural, environmental, and heritage conservation aspects would go a long way in promoting resilient and sustainable urban areas through adaptive reuse. Besides, in the course of this study, some questions regarding developing an adaptive reuse strategy to balance the diverse interests of different stakeholders involved in an urban regeneration decision-making process emerged. These questions would be addressed in future research. A community approach to stakeholder engagement should be considered in typical adaptive reuse decision-making processes, to identify and select the most appropriate new functions for underutilised historical buildings, based on the identified needs of the communities. Adaptive reuse should, therefore, be embraced by building investors/owners, building professionals, local authorities, and communities, as a logical resilient and sustainable approach towards regenerating shrinking town centres in New Zealand and other parts of the world.

Chapter 10. Summary and recommendations for future research

10.1 Summary

This thesis evaluated the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on the retention of historical buildings in New Zealand's provincial city centres towards promoting seismic resilience through adaptive reuse. One main research question (RQmain) was considered for this thesis to address the stated research problem in Section 1.2. Accordingly, in order to design an effective strategy to answer the research question and enable an empirical and systematic investigation into the stated research problem, seven research objectives (RO1 to RO7) were presented.

Also, a total of eight papers were integrated into this thesis as publication outputs for the seven research objectives. Each paper was presented in a chapter format. The titles of the chapters are in line with the titles used in the papers. The thesis was organised into ten chapters, including the introduction and summary chapters.

10.1.1 Introduction chapter

This thesis commenced with an introductory chapter which presented the thesis background, research problem, research rationale, research question and objectives, research methodology, ethical considerations, research scope, research significance, and thesis outline.

10.1.2 Chapter 2

Chapter two was developed from the first paper publication, which addressed the first research objective (RO1). RO1 identified representative examples of New Zealand's earliest cities currently experiencing inner-city decline and determined the fundamental factors that may have contributed to their decline. This was attained by (i) identifying provincial cities among New Zealand's earliest cities currently experiencing inner-city shrinkage; and (ii) examining if there are links between the identified shrinking cities and impacts of the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016. Data was gathered using document analysis, key informant electronic interviews, and face-to-face interviews.

Findings from the document analysis through the population growth trend, income status, employee growth count, and property price trends, justified Whanganui and Invercargill as representative examples of New Zealand's earliest cities currently experiencing an inner-city decline. Also, findings from the key informant interviews and face-to-face interviews identified six major themes as the fundamental factors that may have contributed to their decline: (i) pressure on building owners from the BEPBAA compliance deadlines; (ii) attitudes of councils in different seismic hazard areas; (iii) risk of future amendment of legislation; (iv) safety concerns and high seismic retrofit costs (v) 'unsophisticated investors' in provincial areas; and (vi) lack of actual seismic retrofit cost data sharing.

The implication of these findings is for relevant policy regulators and researchers to have a better understanding of the unintended, intended, and future consequences of how the BEPBAA may have promoted the prevalence of derelict and underutilised commercial earthquake-prone historical buildings in the inner cores of typical provincial areas in New Zealand.

10.1.3 Chapter 3

Chapter three was developed from the second paper publication, which addressed the second research objective (RO2). RO2 investigated the proportion of vacant older inner-city buildings in the city-centre of Whanganui (one of the representative provincial areas in New Zealand currently experiencing inner-city decline), identified the underlying causal factors, and recommended possible ways to increase the demand for these older buildings. This was realised by (i) investigating the proportion of totally/partially existing vacant older buildings within the inner-city of Whanganui; (ii) identifying the underlying factors that contributed to the emergence of the vacant buildings and the consequences of the prevalent vacancy rate on provincial inner-cities; and (iii) recommending possible ways to increase the demand for these older buildings. Data was collected through field survey and face-to-face interviews.

Findings from the field survey revealed that 47 buildings were vacant out of the 55 observed buildings. The level of vacancy was categorised into partially vacant (i.e., where less than half of the units on a particular floor are empty), mostly vacant (i.e., where about half of the units of a particular floor are empty), and fully vacant (i.e., where all floors are entirely empty). Besides, 65 per cent of the upper floors of all the surveyed older buildings in the major high street of Whanganui exhibited some form of vacancy as compared to 21 per cent of the ground floors. Moreover, part of the underlying factors that contributed to the emergence of the vacant buildings was identified from the field survey as poor building conditions such as (i) poor aesthetic conditions, (ii) lack of disability access, and (iii) poor car park access (i.e., no access to private parking).

Also, findings from the face-to-face interviews categorised other underlying factors that contributed to the emergence of the vacant buildings in Whanganui's city-centre into social factors, economic factors, and the influence of building regulations. Accordingly, the social factors include (i) population decline (82 per cent); (ii) emigration from the inner-city to urban fringes due to social threats and poor conditions of the buildings (71 per cent); (iii) poor disability and carpark access (75 per cent); and competition from modern construction and low demand for older buildings (69 per cent). The economic factors include: (i) low property values (86 per cent); (ii) depressed property market (78 per cent); and (iii) high lease cost (73 per cent). In addition, the influence of building regulations includes: (i) high seismic performance expectations from tenants (76 per cent); and (ii) high demand for specific aesthetic and accessibility requirements (68 per cent).

These findings led to the provision of significant recommendations on how property redevelopment through the adaptive reuse approach can be used as a responsive and sustainable strategy that can attend to the changing needs of owners, occupiers and visitors of underutilised earthquake-prone historical buildings in Whanganui, as well as ensure compliance with regulatory requirements of seismic strengthening for the buildings.

10.1.4 Chapter 4

Chapter four was developed from the third paper publication, which addressed the third research objective (RO3). RO3 examined the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on the city-centre regeneration strategies of Whanganui and Invercargill – two representative provincial areas in New Zealand currently experiencing a city-centre decline. This was accomplished by investigating the approaches to City Centre Regeneration (CCR) pursued by Whanganui and Invercargill using the case studies data collection instrument.

The findings revealed that while Whanganui showed a 'stronger attachment to place' and applied the 'heritage conservation for regeneration' approach to city-centre regeneration, Invercargill showed a 'weaker attachment to place' and applied the 'demolition for redevelopment' approach. It was also found that whereas the earthquake-prone building legislation has created logical arguments that have put earthquake-prone historical buildings in the spotlight for demolition in areas with a 'weaker attachment to place', the same legislation has been used as a catalyst to provide opportunities for the seismic upgrade and conservation of the earthquake-prone historical buildings in areas with a 'stronger attachment to place'.

These discoveries imply that the actions (or inactions) of different councils regarding the conservation of historical buildings in their city centres, shape the way their communities would perceive the value of these buildings.

10.1.5 Chapter 5

Chapter five was developed from the fourth paper publication, which addressed the fourth research objective (RO4). RO4 ascertained the role of public funding in promoting the retention of heritage buildings in New Zealand's provincial regions. This was achieved by (i) evaluating the distribution of heritage buildings in New Zealand; (ii) examining the allocation of significant government funding sources for the protection of heritage buildings; and (iii) exploring the implications of incentive allocation on future built heritage protection efforts in New Zealand's provincial regions. The data collection instruments adopted were document analysis and key informant electronic interviews.

Findings from the document analysis revealed that while the per capita distribution of heritage buildings was highest in New Zealand's provincial regions, major urban centres received the highest allocation of government funding. Also, findings from the key informant interviews identified three major themes as implications of the current incentive allocation on built heritage protection efforts in New Zealand's provincial regions: (i) disproportionately low allocation of government grants to provincial regions; (ii) lack of sophistication among property investors in provincial regions; and (iii) 'emergency solution' mindset of government funding regulators.

The implication of these findings is that though New Zealand's government heritage grant systems are currently the most extensive non-regulatory incentives for the protection of built heritage, the provincial regions disproportionately burdened with an oversupply of heritage buildings may struggle to keep up with their conservation efforts. As a recommendation, the central government can assist by directing more discretionary grants to provincial regions to encourage future efforts towards protecting heritage buildings in these smaller cities.

10.1.6 Chapter 6

Chapter six was developed from the fifth paper publication, which addressed the first part of the fifth research objective (RO5). The first part of RO5 identified the relevant parameters required for the development of a performance-based multiple criteria decision assessment framework that will prioritise optimal underutilised commercial earthquake-prone historical buildings for adaptive reuse interventions while balancing the diverse interests of all stakeholders involved. This was realised through the use of narrative literature review data collection method.

Five main priority aspects with significant evaluation criteria were identified as economic sustainability, built-heritage conservation, socio-cultural aspects, building usability, and regulatory aspects. The implication of this study pertains to the development of parameters for a performance-based framework that offers a basis for relevant adaptive reuse stakeholders to prioritise underutilised historical buildings while balancing their diverse objectives.

10.1.7 Chapter 7

Chapter seven was developed from the sixth paper publication, which addressed the second part of the fifth research objective (RO5). The second part of RO5 validated the performance-based multiple criteria decision assessment framework that will prioritise optimal underutilised commercial earthquake-prone historical buildings for adaptive reuse interventions while balancing the diverse interests of all stakeholders involved. This was achieved through the use of the MCDA weighting and scoring technique in a focus group workshop.

The findings established the usefulness of the validated performance-based framework to prioritise optimal underutilised commercial earthquake-prone historical buildings for adaptive reuse interventions while balancing the diverse interests of all stakeholders involved. Also, the findings provided a significant contribution to the development of a methodology that can integrate the diversified interests of adaptive reuse stakeholders for the selection of optimal case study building alternatives. In addition, the validated framework enabled the decision-makers to achieve a logical result and support the visualisation of the impact of different priority aspects and criteria on adaptive reuse interventions of underutilised commercial earthquake-prone historical buildings in New Zealand.

10.1.8 Chapter 8

Chapter eight was developed from the seventh paper publication, which addressed the sixth research objective (RO6). RO6 determined the characterisation of the stakeholders involved in an adaptive reuse decision-making process towards city-centre regeneration and ascertained how collaborative rationality could be effectively integrated into the decision-making process. This was achieved by: (i) characterising the stakeholders involved in the adaptive reuse decision-making process; and (ii) investigating how the collaborative rationality can be effectively integrated into the decision-making process. Data was gathered using the integrative literature review technique.

The adaptive reuse decision-making stakeholders were characterised under four categories: (i) investors (i.e., building owners, funding organisations, government); (ii) producers (i.e., building professionals); (iii) regulators (i.e., heritage, health and safety, planning, and building code regulators); and (iv) users (i.e., members of the community, passers-by, original users such as existing tenants of an adapted historical building's original function, and contextual users such as potential or future tenants of an adapted historical building). Also, collaborative rationality was found to be effective in a typical adaptive reuse decision-making process through the incorporation of transparency, common goal, ideal speech, and consistency into the process.

These findings imply that the active collaboration among the characterised adaptive reuse stakeholders is important to mitigate the risk of manipulation of an adaptive reuse decision-making process, and, for policymakers to have a better understanding of the expectations and needs of the public, thereby, enhancing consents for optimal adaptive reuse decisions.

10.1.9 Chapter 9

Chapter nine was developed from the eighth paper publication, which addressed the seventh research objective (RO7). RO7 examined the efficacy of applying adaptive reuse as a sustainable intervention to retain the underutilised earthquake-prone commercial historical buildings in the city-centre of Whanganui – a representative declining provincial area in New Zealand, towards promoting seismic resilience and vitality of the area. This was attained by: (i) identifying and exploring the key factors that could influence the efficacy of adaptive reuse; and (ii) checking for significant differences in the effect that each perceived factor would have on the adaptive reuse efficacy as a justifiable sustainable intervention for city-centre regeneration. Data was collected using the closed-ended questionnaire survey technique in a focus group workshop.

The study reported a high proportion of respondents that strongly agreed to the positive impacts of adaptive reuse with regards to the discussed priority aspects, hence, justifying the efficacy of the approach, towards delivering a vibrant city-centre for Whanganui. Also, findings from Friedman's analysis suggested that there were no significant differences among all perceived adaptive reuse efficacy criteria by the workshop participants, therefore, justifying the approach as a sustainable intervention for redeveloping historical buildings in Whanganui's city-centre.

The implication of the findings from this study pertains to the practicality of changing the use of underutilised commercial earthquake-prone historical buildings in the city-centre of Whanganui, to create viable new uses required by the community, to renegotiate seismic resilience and urban regeneration for the area.

10.1.10 Conclusion

The main research question for this thesis is – 'what are the main factors that contribute to the loss of historical buildings in New Zealand's provincial city centres as a result of the Building (Earthquake-prone Buildings) Amendment Act 2016, and how can the retention of the buildings be improved?'

The following research objectives (RO1 to RO7) have adequately answered this research question.

RO1: identified Whanganui and Invercargill as representative examples of New Zealand's earliest cities currently experiencing an inner-city decline, and determined the fundamental factors that may have contributed to their decline;

RO2: investigated the proportion of vacant older inner-city buildings in the city-centre of Whanganui, identified the underlying causal factors, and recommended possible ways to increase the demand for these older buildings;

RO3: examined the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016 on the city-centre regeneration strategies of Whanganui and Invercargill;

RO4: ascertained the role of public funding in promoting the retention of heritage buildings in New Zealand's provincial regions;

RO5: identified the relevant parameters required for the development of a performance-based framework that will prioritise earthquake-prone historical buildings for adaptive reuse interventions;

RO6: determined the characterisation of the stakeholders involved in an adaptive reuse decision-making process towards city-centre regeneration, and ascertained how collaborative rationality could be effectively integrated into the decision-making process; and

RO7: examined the efficacy of applying adaptive reuse as a sustainable approach to retain the underutilised earthquake-prone commercial historical buildings in the city-centre of Whanganui.

This thesis is the first of its kind in New Zealand to evaluate the impact of the Building (Earthquake-prone Buildings) Amendment Act 2016, by bringing out the unintended consequences of the legislation to the surface, to understand how this amended legislation has influenced the way building owners and other stakeholders of earthquake-prone historical buildings in New Zealand's provincial areas now see these buildings. Since local councils are mandated by the amended act to enforce compliance for building owners, this thesis validated the adaptive reuse approach as a sustainable intervention and developed a performance-based framework to encourage building owners to redevelop their earthquake-prone historical buildings in the inner-cities of New Zealand's provincial regions, towards renegotiating seismic resilience and city-centre regeneration for the areas.

Furthermore, this thesis provides significant policy contribution for New Zealand, by exploring the impacts of the act on owners of commercial earthquake-prone historical buildings, based on their location. This contribution is important for policy regulators because currently, the Building (Earthquake-prone Buildings)

Amendment Act 2016 only considers medium, high, or low seismic hazard areas in its strengthening requirements and does not distinguish New Zealand's provincial regions from bigger cities. Additionally, other active seismic countries around the world faced with different earthquake-prone building legislations can learn from the New Zealand experience by considering other sustainable approaches to promote seismic resilience through the retention of earthquake-prone historical buildings.

10.2 Future research

Based on the constraints worked with to accomplish this thesis, the findings are not generalisable but can be transferred to other areas. Consequently, there are interesting opportunities for future research.

Firstly, the findings from this thesis could be transferred to other local councils in New Zealand, especially provincial local councils that have an abundance of underutilised earthquake-prone commercial historical buildings in their city centres, are struggling with inner-city decline partly due to the impacts of the Building (Earthquake-prone Buildings) Amendment Act 2016, and searching for sustainable interventions to improve seismic resilience and regenerate their city centres through the adaptive reuse approach.

Secondly, though the unintended consequences of the Building (Earthquake-prone Buildings) Amendment Act 2016 may have created new opportunities for regulatory and financial incentives in New Zealand's regional centres, the implications for early adopters have not been examined. Further research should examine if incentives for early adopters would influence a reduction in the number of heritage buildings that are being demolished in New Zealand's provincial regions.

Thirdly, the developed performance-based planning framework, was validated using only two Whanganui case study historical buildings as alternatives. Further studies can explore validating the framework beyond two case study buildings in other urban areas in New Zealand. Also, developing the performance-based framework into a computerised decision support model would be another useful follow-up study.

Lastly, similar cases to the two representative examples used in this thesis (i.e., Whanganui and Invercargill) may exist in other active seismic countries around the world, who are also considering other sustainable interventions to promote seismic resilience through the retention of earthquake-prone historical buildings. It is possible to do a cross-cultural study with these overseas locations in the future. Lessons gathered in New Zealand from this thesis could be valuable to such future research endeavour.

References

Aas, C., Ladkin, A., & Fletcher, J. (2005). Stakeholder collaboration and heritage management. *Annals of tourism research, 32*(1), 28-48.

Accordino, J., & Johnson, G. T. (2000). Addressing the vacant and abandoned property problem. *Journal of Urban Affairs, 22*(3), 301-315.

Adams, J. S. (2005). Hoyt, H. 1939: The structure and growth of residential neighborhoods in American cities. Washington, DC: Federal Housing Administration. *Progress in Human Geography, 29*(3), 321-325.

Adger, W. N. (2000). Social and ecological resilience: are they related? *Progress in human geography, 24*(3), 347-364.

Adhya, A. (2017). Introduction: The Shrinking City Phenomenon. In *Shrinking Cities and First Suburbs* (pp. 1-10): Springer.

Agnello, L., & Schuknecht, L. (2011). Booms and busts in housing markets: Determinants and implications. *Journal of Housing Economics, 20*(3), 171-190.

Ahmad, Y. (2006). The scope and definitions of heritage: From tangible to intangible. *International Journal of Heritage Studies, 12*(3), 292-300.

Aigwi, I. E., Egbelakin, T., & Ingham, J. (2018). Efficacy of adaptive reuse for the redevelopment of underutilised historical buildings: Towards the regeneration of New Zealand's provincial town centres. *International journal of building pathology and adaptation, 36*(4), 385-407.

Aigwi, I. E., Egbelakin, T., Ingham, J., Phipps, R., Rotimi, J., & Filippova, O. (2019). A performance-based framework to prioritise underutilised historical buildings for adaptive reuse interventions in New Zealand. *Sustainable Cities and Society, 48*, 101547. doi:https://doi.org/10.1016/j.scs.2019.101547

Aigwi, I. E., Filippova, O., Ingham, J., & Phipps, R. (2020). Unintended consequences of the earthquake-prone building legislation: An evaluation of two city centre regeneration strategies in New Zealand's provincial areas.

International Journal of Disaster Risk Reduction, 49, 101644. doi:10.1016/j.ijdrr.2020.101644

Aigwi, I. E., Ingham, J., Phipps, R., & Filippova, O. (2020). Identifying parameters for a performance-based framework: Towards prioritising underutilised historical buildings for adaptive reuse in New Zealand. *Cities, 102*, 102756. doi:10.1016/j.cities.2020.102756

Aigwi, I. E., Phipps, R., Ingham, J., & Filippova, O. (2019). *Urban transformation trajectories of New Zealand's earliest cities undergoing decline: Identifying links to the newly enforced Building (Earthquake-Prone Buildings) Amendment Act 2016.* Paper presented at the 43RD AUBEA Conference, 6 – 8 November 2019, Noosa QLD, Australia. pp 591-611. https://www.researchgate.net/publication/339138793_Urban_transformation_trajectories_of_New_Zealand's_earliest_cities_undergoing_decline_Identifying_links_to_the_newly_enforced_Building_Earthquake-Prone_Buildings_Amendment_Act_2016.

Aigwi, I. E., Phipps, R., Ingham, J., & Filippova, O. (2020). Characterisation of Adaptive Reuse Stakeholders and the Effectiveness of Collaborative Rationality Towards Building Resilient Urban Areas. *Systemic Practice and Action Research, 33*(3), 1-11. doi:https://doi.org/10.1007/s11213-020-09521-0

Alexander, F. S. (2001). *Renewing Public Assets for Community Development.* Governement Innovators Network, Harvard Kennedy School Retrieved from https://www.innovations.harvard.edu/

Alexander, K. (2006). The application of usability concepts in the built environment. *Journal of Facilities Management, 4*(4), 262-270.

Alexander, K., Huovala, R., & Kaya, S. (2003). Case study: NCR, Discovery Centre, Dundee. Draft report. CIB Task group 51, Usability of workplaces. In: University of Salford.

Alpopi, C., & Manole, C. (2013). Integrated urban regeneration–solution for cities revitalize. *Procedia Economics and Finance, 6*, 178-185.

Alston, M. (2004). 'You don't want to be a check-out chick all your life': The out-migration of young people from Australia's small rural towns. *Australian Journal of Social Issues, 39*(3), 299-313.

Altman, I., & Low, S. M. (2012). *Place attachment* (Vol. 12): Springer Science & Business Media.

Altman, I., & Wohlwill, J. F. (2012). *Human behavior and environment: Advances in theory and research* (A. Irwin, R. Amos, & F. W. Joachim Eds. First ed. Vol. 2). New York: SpringerScience+Business Media; Plenum Press.

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of public administration research and theory, 18*(4), 543-571.

Arge, K. (2004). Forprosjekt.–effektiv bruk av arealer. *Note, NBI.*

Ashby, J., Cox, D., McInroy, N., & Southworth, D. (2009). An international perspective of local government as steward of local economic resilience. *Report by the Centre for Local Economic Strategies: Manchester*.

Avrami, E., Mason, R., & de la Torre, M. (2000). Report on research. *Values and Heritage Conservation: research report. Los Angeles: The Getty Conservation Institute*, 3-11.

Babbie, E. R. (2013). *The basics of social research* (Sixth ed.). Wadsworth, USA: Cengage Learning.

Bagliano, F. C., & Morana, C. (2012). The Great Recession: US dynamics and spillovers to the world economy. *Journal of Banking & Finance, 36*(1), 1-13.

Baker, D. C., Sipe, N. G., & Gleeson, B. J. (2006). Performance-based planning: perspectives from the United States, Australia, and New Zealand. *Journal of Planning Education and Research, 25*(4), 396-409.

Baker, H., Moncaster, A., & Al-Tabbaa, A. (2017). Decision-making for the demolition or adaptation of buildings. *Proceedings of the Institution of Civil Engineers: Forensic Engineering, 170*, 144-156.

Baker, J. D. (2016). The purpose, process, and methods of writing a literature review. *AORN Journal, 103*(3), 265-269.

Ball, A., Rebori, M., & Singletary, L. (2000). Introduction to Collaborative Process. *Managing Natural Resource Disputes – No. 1.* Retrieved from http://www.unce.unr.edu/publications/files/nr/other/fs9984.pdf

Ball, L. (2014). Long-term damage from the Great Recession in OECD countries. *European Journal of Economics and Economic Policies: Intervention, 11*(2), 149-160.

Ball, R. (1999). Developers, regeneration and sustainability issues in the reuse of vacant industrial buildings. *Building Research & Information, 27*(3), 140-148.

Ball, R. (2002). Re use potential and vacant industrial premises: revisiting the regeneration issue in Stoke-on-Trent. *Journal of Property Research, 19*(2), 93-110.

Balsas, C. J. L. (2000). City center revitalization in Portugal: Lessons from two medium size cities. *Cities, 17*(1), 19-31.

Balsas, C. J. L. (2004). City centre regeneration in the context of the 2001 European capital of culture in Porto, Portugal. *Local economy, 19*(4), 396-410.

Balsas, C. J. L. (2007). City centre revitalization in Portugal: a study of Lisbon and Porto. *Journal of Urban design, 12*(2), 231-259.

Bampton, R., & Cowton, C. J. (2002). The E-Interview. *Qualitative Social Research, 3*(2).

Banerjee, A., Maurya, A. K., & Lämmel, G. (2018). A review of pedestrian flow characteristics and level of service over different pedestrian facilities. *Collective Dynamics, 3*, 1-52.

Bartlett, J. E., & Bartlett, M. E. (2011). Workplace bullying: An integrative literature review. *Advances in Developing Human Resources, 13*(1), 69-84.

Bass, M., Chen, D., Leonard, J., Leonard, J., Mueller, L., Cheryl, L., . . . Snyder, K. (2005). Vacant Properties: The True Costs to Communities. *National Vacant Properties Campaign. Retrieved on May, 4*, 2012.

Baxendine, S., Cochrane, B., Pool, I., & Poot, J. (2004). An Interpretation of New Zealand's Regional Employment Change by Means of Classic Shift-Share Analysis 1986-2001. *Labour, Employment and Work in New Zealand.*

Beaumont, C. E. (1994). *How superstore sprawl can harm communities and what citizens can do about it*: National Trust for Historic Preservation.

Beauregard, R. A. (1986). Urban form and the redevelopment of central business districts. *Journal of Architectural and Planning Research*, 183-198.

Beauregard, R. A. (2013). *Voices of decline: The postwar fate of US cities*: Routledge.

Beck, A., & Peacock, C. (2009). *New loss prevention: Redefining shrinkage management*: Springer.

Bedate, A., Herrero, L. C., & Sanz, J. Á. (2004). Economic valuation of the cultural heritage: application to four case studies in Spain. *Journal of cultural heritage, 5*(1), 101-111.

Belton, V., & Stewart, T. (2010). Problem structuring and multiple criteria decision analysis. In *Trends in multiple criteria decision analysis* (pp. 209-239): Springer.

Bhamra, R., Dani, S., & Burnard, K. (2011). Resilience: the concept, a literature review and future directions. *International Journal of Production Research, 49*(18), 5375-5393.

Binder, M. L. (2003). *Adaptive reuse and sustainable design: a holistic approach for abandoned industrial buildings.* (Master's degree). University of Cincinnati, Ohio. (ucin1053607193)

Birch, E. L. (2002). Having a longer view on downtown living. *Journal of the American Planning Association, 68*(1), 5-21.

Blewitt, J., & Tilbury, D. (2013). *Searching for resilience in sustainable development: Learning journeys in conservation*: Routledge.

Blight, F. C. (2013). Auckland Transport City Rail Link Notice of Requirement: Statement of Planning Evidence. Retrieved from https://at.govt.nz/media/1168540/crlplanningeffectsevidenceoffionablight.pdf

Boarin, P. (2016). *Bridging the gap between environmental sustainability and heritage preservation: towards a certified sustainable conservation,* *adaptation and retrofitting of historic buildings.* Paper presented at the 50th International Conference of the Architectural Science Association (ANZASCA), 7-9 December, Adelaide.

Bodin, P., & Wiman, B. (2004). Resilience and other stability concepts in ecology: Notes on their origin, validity, and usefulness. *ESS bulletin, 2*(2), 33-43.

Bond, C. (2011). *Adaptive reuse: Explaining collaborations within a complex process.* Department of Planning, Public Policy & Management, University of Oregon,

Bothara, J., Jury, R., Wheeler, K., & Stevens, C. (2008). *Seismic assessment of buildings in Wellington: experiences and challenges.* Paper presented at the Proceedings of 14th World Conference on Earthquake Engineering, Beijing.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative research journal, 9*(2), 27-40.

Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic analysis. *Handbook of Research Methods in Health Social Sciences*, 843-860.

Breitling, S., & Cramer, J. A. (2012). *Architecture in existing fabric: planning, design, building*: De Gruyter.

Briffault, R. (1999). A Government for Our Time--Business Improvement Districts and Urban Governance. *Columbia Law Review, 99*, 365-477.

Brocklesby, J. (2009). Ethics beyond the model: How social dynamics can interfere with ethical practice in operational research/management science. *Omega, 37*(6), 1073-1082.

Bromley, R. D., Tallon, A. R., & Thomas, C. J. (2005). City centre regeneration through residential development: Contributing to sustainability. *Urban Studies, 42*(13), 2407-2429.

Brooker, G., & Stone, S. (2004). *Rereadings: interior architecture and the design principles of remodelling existing buildings*: Riba Enterprises.

Brown, B., Perkins, D. D., & Brown, G. (2003). Place attachment in a revitalizing neighborhood: Individual and block levels of analysis. *Journal of environmental psychology, 23*(3), 259-271.

Brown, K. (2011). *Rethinking progress in a warming world: Interrogating Climate Resilience Development.* Paper presented at the Paper submitted for "Rethinking Development in an Age of Scarcity and Uncertainty" EADI/DSA Conference, York.

Brundtland Commission. (1987). *Our Common Future*. Report of the World Commission on Environment and Development. United Nations. Retrieved from http://www.un-documents.net/ocf-02.htm

Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'Rourke, T. D., Reinhorn, A. M., . . . von Winterfeldt, D. (2003). A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake spectra, 19*(4), 733-752.

Bryman, A. (2008). Qualitative Research in Organizations and Management. *An International Journal of methods and methodology, 3*(2), 159-168.

Buchanan, D. A., & Bryman, A. (2009). The organizational research context: Properties and implications. In *The SAGE handbook of organizational research methods* (pp. 1-18).

Building Act. (2004). Building Act. Retrieved from http://www.legislation.govt.nz/act/public/2004/0072/141.0/DLM306036.html

Bullen, P. A. (2007). Adaptive reuse and sustainability of commercial buildings. *Facilities, 25*(1/2), 20-31.

Bullen, P. A., & Love, P. E. (2009). Residential regeneration and adaptive reuse: learning from the experiences of Los Angeles. *Structural Survey, 27*(5), 351-360.

Bullen, P. A., & Love, P. E. (2010). The rhetoric of adaptive reuse or reality of demolition: Views from the field. *Cities, 27*(4), 215-224.

Bullen, P. A., & Love, P. E. (2011a). Adaptive reuse of heritage buildings. *Structural Survey, 29*(5), 411-421.

Bullen, P. A., & Love, P. E. (2011b). *Adaptive reuse of heritage buildings: Sustaining an icon or eyesore.* Paper presented at the COBRA 2011 - Proceedings of RICS Construction and Property Conference, UK.

Bullen, P. A., & Love, P. E. (2011c). A new future for the past: a model for adaptive reuse decision-making. *Built Environment Project and Asset Management, 1*(1), 32-44.

Burayidi, M. (2013a). *Downtowns: Revitalizing the centers of small urban communities*. New York: Routledge.

Burayidi, M. (2013b). *Resilient downtowns: a new approach to revitalizing small- and medium-city downtowns*. New York: Routledge.

Butina-Watson, G., & Bentley, I. (2007). *Identity by design*. Oxford: Elsevier Ltd.

Buttimer, R., & Ott, S. H. (2007). Commercial real estate valuation, development and occupancy under leasing uncertainty. *Real Estate Economics, 35*(1), 21-56.

Buzar, S., Ogden, P., Hall, R., Haase, A., Kabisch, S., & Steinfiihrer, A. (2007). Splintering urban populations: emergent landscapes of reurbanisation in four European cities. *Urban Studies, 44*(4), 651-677.

Caccavelli, D., & Gugerli, H. (2002). TOBUS—a European diagnosis and decision-making tool for office building upgrading. *Energy and buildings, 34*(2), 113-119.

Cairns, G., Goodwin, P., & Wright, G. (2016). A decision-analysis-based framework for analysing stakeholder behaviour in scenario planning. *European Journal of Operational Research, 249*(3), 1050-1062.

Cameron, G., & Muellbauer, J. (2001). Earnings, unemployment, and housing in Britain. *Journal of Applied Econometrics, 16*(3), 203-220.

Cameron, M. P. (2017). The relative (un) certainty of subnational population decline. *Policy Quarterly, 13*.

Canterbury Earthquake Heritage Buildings Trust Fund. (2019). About the Trust. Retrieved from http://www.savecanterburyheritage.org.nz/about/

Carr, J. H., & Servon, L. J. (2008). Vernacular culture and urban economic development: Thinking outside the (big) box. *Journal of the American Planning Association, 75*(1), 28-40.

Caterino, N., Iervolino, I., Manfredi, G., & Cosenza, E. (2008). Multi-criteria decision making for seismic retrofitting of RC structures. *Journal of Earthquake Engineering, 12*(4), 555-583.

Cattanach, A., Alley, G., & Thornton, A. (2008). *Appropriateness of Seismic Strengthening Interventions in Heritage Buildings: A Framework for Appraisal.* Paper presented at the 2008 NZSEE Conference.

Central Public Works Department. (2007). *Handbook on Seismic Retrofit of Buildings* (Devdas Menon & Amlan K Sengupta Eds.): Directorate General, Central Public Works Department.

Centre for Rural Studies. (2002). *Dalits and the State*. New Delhi, India: Concept Publishing Company.

Chambliss, D. F., & Schutt, R. K. (2018). *Making sense of the social world: Methods of investigation*: Sage Publications.

Chan, E. H., & Lee, G. K. (2008). Contribution of urban design to economic sustainability of urban renewal projects in Hong Kong. *Sustainable Development, 16*(6), 353-364.

Chang, P.-T., Huang, L.-C., & Lin, H.-J. (2000). The fuzzy Delphi method via fuzzy statistics and membership function fitting and an application to the human resources. *Fuzzy Sets and Systems, 112*(3), 511-520.

Chang, T. C., & Huang, S. (2011). Reclaiming the city: Waterfront development in Singapore. *Urban Studies, 48*(10), 2085-2100.

Chau, K., Wong, S., Leung, A., & Yiu, C. (2003). Estimating the value enhancement effects of refurbishment. *Facilities, 21*(1/2), 13-19.

Chelleri, L. (2012). From the «Resilient City» to Urban Resilience. A review essay on understanding and integrating the resilience perspective for urban systems. *Documents d'anàlisi geogràfica, 58*(2), 287-306.

Cheshire, P. C., & Hay, D. G. (1989). *Urban Problems in Western Europe: an economic analysis*: Hyman.

Chukwudumogu, I. C., Levy, D., & Perkins, H. (2019). The influence of sentiments on property owners in post-disaster rebuild: A case study of Christchurch, New Zealand. *Property Management, 37*(2), 243-261.

Coaffee, J. (2008). Risk, resilience, and environmentally sustainable cities. *Energy Policy, 36*(12), 4633-4638.

Coburn, A., & Spence, R. (2006). *Front matter*: Wiley Online Library.

Coca-Stefaniak, J. A., Parker, C., Quin, S., Rinaldi, R., & Byrom, J. (2009). Town centre management models: A European perspective. *Cities, 26*(2), 74-80.

Colvin, A., Fergusson, I., & Phillips, H. (2000). Renewing the Urban Landscape: The Dilemma of Vacant Housing. *Center for Public Policy Research–The Thomas Jefferson Program in Public Policy at the College of William Mary for The International City/County Management Association, 7.*

Conejos, S., Chew, M. Y., & Yung, E. H. (2017). The future adaptivity of nineteenth century heritage buildings. *International Journal of Building Pathology and Adaptation, 35*(4), 332-347.

Conejos, S., Conejos, S., Chew, M. Y., Chew, M. Y., Yung, E. H., & Yung, E. H. (2017). The future adaptivity of nineteenth century heritage buildings. *International journal of building pathology and adaptation, 35*(4), 332-347.

Conejos, S., Langston, C., Chan, E. H., & Chew, M. Y. (2016). Governance of heritage buildings: Australian regulatory barriers to adaptive reuse. *Building Research & Information, 44*(5-6), 507-519.

Connell, J., Lynch, C., & Waring, P. (2001). Constraints, compromises and choice: Comparing three qualitative research studies. *The Qualitative Report, 6*(4), 1-15.

Cook, S., & Thomas, C. (2003). An alternative approach to examining the ripple effect in UK house prices. *Applied Economics Letters, 10*(13), 849-851.

Coombs, W. T. (1993). Philosophical underpinnings: Ramifications of a pluralist paradigm. *Public Relations Review, 19*(2), 111-119.

Couch, C., Fraser, C., & Percy, S. (2008). *Urban regeneration in Europe*: John Wiley & Sons.

CPWD. (2013). *Handbook on Conservation Hertage Buildings*: Central Public Works Department, New Delhi.

Crane, J. (1991). The epidemic theory of ghettos and neighborhood effects on dropping out and teenage childbearing. *American journal of Sociology*, 1226-1259.

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*: Sage publications.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (Fourth ed.): Sage publications.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*: Sage.

Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC medical research methodology, 11*(1), 1.

Cullingworth, J. B., & Caves, R. (2013). *Planning in the USA: policies, issues, and processes*: Routledge.

Dale, A., & Newman, L. L. (2009). Sustainable development for some: green urban development and affordability. *Local environment, 14*(7), 669-681.

Davies, M. S. (1997). Business Improvement Districts. *Urban Law Annual; Journal of Urban and Contemporary Law, 52*(1), 187-223.

Davies, R., & Bennison, D. (1978). Retailing in the city centre: the characters of shopping streets. *Tijdschrift voor economische en sociale geografie, 69*(5), 270-285.

Davoudi, S., Brooks, E., & Mehmood, A. (2013). Evolutionary resilience and strategies for climate adaptation. *Planning Practice & Research, 28*(3), 307-322.

de Arce, R. P. (2014). *Urban transformations and the architecture of additions*. London: Routledge.

Deakin, H., & Wakefield, K. (2014). Skype interviewing: Reflections of two PhD researchers. *Qualitative research, 14*(5), 603-616.

Decker, F., & McCracken, S. (2018). Central banking in Australia and New Zealand: historical foundations and modern legislative frameworks. *Research Handbook on Central Banking*, 245.

DEH. (2004). Adaptive reuse: preserving our past, building our future. Retrieved from http://www.environment.gov.au/heritage/publications/adaptive-reuse

Department of Internal Affairs. (2006). *Fire safety and evacuation of buildings regulations (SR 2006/23)*. Wellington

Department of the Environment. (1994). *Vital and viable town centres: Meeting the challenge*. United Kingdom: Stationery Office Books.

Department of the Environment Transport and the Regions. (2000). *Our Towns and Cities: The Future, Delivering an Urban Renaissance*: Her Majesty's Stationery Office London.

Derak, M., Cortina, J., & Taiqui, L. (2017). Integration of stakeholder choices and multi-criteria analysis to support land use planning in semiarid areas. *Land use policy, 64*, 414-428.

DeWalt, K., & DeWalt, B. (2011). Informal interviewing in participant observation. *Participant Observation-a guide for fieldworkers*, 137-156.

Dietz, T. (2013). Bringing values and deliberation to science communication. *Proceedings of the National Academy of Sciences, 110*(Supplement 3), 14081-14087.

Dizhur, D., Ingham, J., Moon, L., Griffith, M., Schultz, A., Senaldi, I., . . . Centeno, J. (2011). Performance of masonry buildings and churches in the 22 February 2011 Christchurch earthquake. *Bulletin of the New Zealand Society for Earthquake Engineering, 44*(4), 279-296.

Dolega, L., & Celińska-Janowicz, D. (2015). Retail resilience: A theoretical framework for understanding town centre dynamics. *Studia Regionalne i Lokalne*(2 (60)), 8-31.

Douglas, J. (2006). *Building adaptation* (Second ed.). London: Routledge.

Dowall, D. E. (1986). Planners and office overbuilding. *Journal of the American Planning Association, 52*(2), 131-132.

Downs, A. (1997). The challenge of our declining big cities. *Housing Policy Debate, 8*(2), 359-408.

Dowrick, D. J. (1998). Damage and intensities in the magnitude 7.8 1931 Hawke's Bay, New Zealand, earthquake. *Bulletin of the New Zealand National Society for Earthquake Engineering, 31*(3), 139-163.

Dubin, R. A. (1998). Maintenance decisions of absentee landlords under uncertainty. *Journal of housing economics, 7*(2), 144-164.

Dümcke, C., & Gnedovsky, M. (2013). *The social and economic value of cultural heritage: literature review*. Retrieved from http://archive.interarts.net/descargas/interarts2557.pdf

Dunedin City Council. (2013). Warehouse precinct revitalisation plan. Retrieved from https://www.dunedin.govt.nz/__data/assets/pdf_file/0006/291930/Warehouse-Plan-2013.pdf

Eaqub, S. (2014). *Growing apart: regional prosperity in New Zealand* (Vol. 18). New Zealand: Bridget Williams Books.

Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2012). *Management research*: Sage.

Egbelakin, T., Wilkinson, S., Potangaroa, R., & Ingham, J. (2013). Improving regulatory frameworks for earthquake risk mitigation. *Building Research & Information, 41*(6), 677-689.

Ellison, L., & Sayce, S. (2007). Assessing sustainability in the existing commercial property stock: Establishing sustainability criteria relevant for the commercial property investment sector. *Property Management, 25*(3), 287-304.

Elsorady, D. (2017). Sustainability and Conserved Energy Value of Heritage Buildings. *Renewable Energy and Sustainable Development, 3*(1), 104-117.

Elsorady, D. A. (2014). Assessment of the compatibility of new uses for heritage buildings: the example of Alexandria National Museum, Alexandria, Egypt. *Journal of cultural heritage, 15*(5), 511-521.

Elzeyadi, I. M. (2002). *Ten palaces tell their stories: Environmental quality assessment of offices inside adaptively re-used historical palaces in Cairo, Egypt.* University of Wisconsin, Milwaukee.

Engelhardt, R. A., & Rogers, P. R. (2009). *Hoi an protocols for best conservation practice in Asia: professional guidelines for assuring and preserving the authenticity of heritage sites in the context of the cultures of Asia.* (9292232428).

Engelhardt, R. A., Unakul, M. H., & Endrina, E. (2007). *Asia Conserved: Lessons Learned from the UNESCO Asia-Pacific Heritage Awards for Culture Heritage Conservation (2000-2004)*: United Nations Educational, Scientific Cultural Organization.

Erlandson, D. A. (1993). *Doing naturalistic inquiry: A guide to methods*: Sage.

European Commission. (2001). European Governance. A White Paper. *COM (2001), 428*, 25.

Everton, A. R., & Hughes, D. J. (2017). *Studies in public law and the retail sector.* London: Routledge.

Fainstein, S. (2016). Financialisation and justice in the city: A commentary. *Urban Studies, 53*(7), 1503-1508.

Faulk, D. (2006). The process and practice of downtown revitalization. *Review of Policy Research, 23*(2), 625-645.

Fellows, R. F., & Liu, A. M. (2015). *Research methods for construction*: John Wiley & Sons.

Ferretti, V., Bottero, M., & Mondini, G. (2014). Decision making and cultural heritage: An application of the Multi-Attribute Value Theory for the reuse of historical buildings. *Journal of cultural heritage, 15*(6), 644-655.

Filippova, O., & Noy, I. (2019). Earthquake-Strengthening Policy for Commercial Buildings in Small-Town New Zealand. *Disasters*. doi: https://doi.org/10.1111/disa.12360

Fisher, R., Ury, W. L., & Patton, B. (2011). *Getting to yes: Negotiating agreement without giving in*: Penguin.

Fogelson, R. M. (2003). *Downtown: its rise and fall, 1880-1950*: Yale University Press.

Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global environmental change, 16*(3), 253-267.

Folke, C., Colding, J., & Berkes, F. (2003). Synthesis: building resilience and adaptive capacity in social-ecological systems. *Navigating social-ecological systems: Building resilience for complexity and change, 9*(1), 352-387.

Forino, G., MacKee, J., & von Meding, J. (2016). A proposed assessment index for climate change-related risk for cultural heritage protection in Newcastle (Australia). *International Journal of Disaster Risk Reduction, 19*, 235-248.

Forsberg, H., Medway, D., & Warnaby, G. (1999). Town centre management by co-operation: evidence from Sweden. *Cities, 16*(5), 315-322.

Foster, K. A. (2007a). *A Case Study Approachto Understanding Regional Resilience*. Annual Conference of the Association of Collegiate Schools of Planning, Texas.

Foster, K. A. (2007b). Snapping back: What makes regions resilient? *National Civic Review, 96*(3), 27-29.

Francaviglia, R. V. (1996). *Main street revisited: Time, space, and image building in small-town America*: University of Iowa Press.

Frew, T., Baker, D., & Donehue, P. (2016a). Performance based planning in Queensland: A case of unintended plan-making outcomes. *Land Use Policy, 50*, 239-251.

Frew, T., Baker, D. C., & Donehue, P. (2016b). Performance based planning in Queensland: A case of unintended plan-making outcomes. *Land use policy, 50*, 239-251.

Frieden, B. J., & Sagalyn, L. B. (1991). *Downtown, inc: How America rebuilds cities*: MIT press.

Friedman, M. (1937). The use of ranks to avoid the assumption of normality implicit in the analysis of variance. *Journal of the american statistical association, 32*(200), 675-701.

Friedrichs, J. (1993). A theory of urban decline: economy, demography and political elites. *Urban Studies, 30*(6), 907-917.

Friend, R., & Moench, M. (2013). What is the purpose of urban climate resilience? Implications for addressing poverty and vulnerability. *Urban Climate, 6*, 98-113.

Friesen, W. (2009). The demographic transformation of inner city Auckland. *New Zealand Population Review, 35*(1), 55-74.

Gabriel, S. A., & Nothaft, F. E. (2001). Rental housing markets, the incidence and duration of vacancy, and the natural vacancy rate. *Journal of Urban Economics, 49*(1), 121-149.

Gallant, B. T., & Blickle, F. W. (2005). Commentary: The Building Decommissioning Assessment: A New Six-Step Process to Manage Redevelopment of Brownfields with Major Structures. *Environmental Practice, 7*(2), 97-107.

Gallopín, G. C. (2006). Linkages between vulnerability, resilience, and adaptive capacity. *Global environmental change, 16*(3), 293-303.

Geraedts, R. P., & Van der Voordt, D. (2007). *A tool to measure opportunities and risks of converting empty offices into dwellings.* Paper presented at the Proceedings of International conference Sustainable urban areas, (25th - 28th June), Roterdam.

Geyer, H., & Quin, L. (2018). Social diversity and modal choice strategies in mixed land-use development in South Africa. *South African Geographical Journal, 101*(1), 1-21.

Gillette Jr, H. (1985). The evolution of the planned shopping center in suburb and city. *Journal of the American Planning Association, 51*(4), 449-460.

Glaeser, E. L., & Gyourko, J. (2005). Urban decline and durable housing. *Journal of political economy, 113*(2), 345-375.

Glock, B., & Häussermann, H. (2004). New trends in urban development and public policy in eastern Germany: dealing with the vacant housing problem at the local level. *International Journal of Urban and Regional Research, 28*(4), 919-929.

Goldstein, A. E., & Reiboldt, W. (2004). The multiple roles of low income, minority women in the family and community: A qualitative investigation. *The qualitative report, 9*(2), 241-265.

Goldstein, J., Jensen, M., & Reiskin, E. (2001). *Urban vacant land redevelopment: Challenges and progress*: Citeseer.

Goodwin, C., Tonks, G., & Ingham, J. (2009). Identifying heritage value in URM buildings. *SESOC Journal, 22*(2), 16-28.

Google Maps. (2019a). Invercargill project scope. Retrieved from https://www.google.com/maps/place/Don+Street+%26+State+Highway+6,+Invercargill,+9810/@-46.4118654,168.3484475,269m/data=!3m1!1e3!4m5!3m4!1s0xa9d2c49b967825df:0x98623e46a4827ec0!8m2!3d-46.4108008!4d168.3474411

Google Maps. (2019b). Map of New Zealand showing Whanganui and Invercargill. Retrieved from https://www.google.com/maps/search/map+of+nz+showing+whanganui+and+invercargill/@-40.3674037,160.5022715,6z

Graham, B. (2002). Heritage as knowledge: capital or culture? *Urban Studies, 39*(5-6), 1003-1017.

Gratz, R. B. (2007). Reports from the Edge: The Vacant-Building Syndrome. *Next American City*.

Gratz, R. B., & Mintz, N. (2000). *Cities back from the edge: New life for downtown*: John Wiley & Sons.

Gravagnuolo, A., Angrisano, M., & Fusco Girard, L. (2019). Circular Economy Strategies in Eight Historic Port Cities: Criteria and Indicators Towards a Circular City Assessment Framework. *Sustainability, 11*(13), 3512.

Gravagnuolo, A., Girard, L. F., Ost, C., & Saleh, R. (2017). Evaluation criteria for a circular adaptive reuse of cultural heritage. *BDC. Bollettino Del Centro Calza Bini, 17*(2), 185-216.

Gravetter, F. J., & Forzano, L.-A. B. (2018). *Research methods for the behavioral sciences*: Cengage Learning.

Gray, B. (1989). *Collaboration: Finding common ground for multiparty problems*. San Francisco, California: Jossey-Bass Inc.

Green, B. N., Johnson, C. D., & Adams, A. (2006). Writing narrative literature reviews for peer-reviewed journals: secrets of the trade. *Journal of chiropractic medicine, 5*(3), 101-117.

Grimes, A., & Tarrant, N. (2013). A New Zealand Urban Population Database: Motu Working Paper No. 13-07 Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2309710

Grix, J. (2018). *The foundations of research*: Macmillan International Higher Education.

Gunder, M. (2002). Auckland's motorway system: a New Zealand genealogy of imposed automotive progress 1946-66. *Urban Policy and Research, 20*(2), 129-142.

Haase, A., Rink, D., Grossmann, K., Bernt, M., & Mykhnenko, V. (2014a). Conceptualizing urban shrinkage. *Environment and Planning A, 46*, 000-000.

Haase, A., Rink, D., Grossmann, K., Bernt, M., & Mykhnenko, V. (2014b). Conceptualizing urban shrinkage. *Environment and Planning A, 46*(7), 1519-1534.

Hall, P., & Hay, D. (1980). *Growth centres in the European urban system*: Univ of California Press.

Hall, V., & McDermott, C. J. (2016). Recessions and recoveries in New Zealand's post-Second World War business cycles. *New Zealand Economic Papers, 50*(3), 261-280.

Hao, P., Sliuzas, R., & Geertman, S. (2011). The development and redevelopment of urban villages in Shenzhen. *Habitat International, 35*(2), 214-224.

Hasnain, H., & Mohseni, F. (2018). Creative ideation and adaptive reuse: a solution to sustainable urban heritage conservation. *IOP Conference Series: Earth and Environmental Science, 126*(1), 012075.

Hay, R. (1998). Sense of place in developmental context. *Journal of environmental psychology, 18*(1), 5-29.

Healy, M., & Perry, C. (2000). Comprehensive criteria to judge validity and reliability of qualitative research within the realism paradigm. *Qualitative market research: An international journal, 3*(3), 118-126.

Heath, T. (2001). Adaptive re-use of offices for residential use: the experiences of London and Toronto. *Cities, 18*(3), 173-184.

Heath, T., Oc, T., & Tiesdell, S. (2013). *Revitalising historic urban quarters*: Routledge.

Helms, A. C. (2003). Understanding gentrification: an empirical analysis of the determinants of urban housing renovation. *Journal of Urban Economics, 54*(3), 474-498.

Heritage EQUIP. (2017). AE Kitchen building, Whanganui. Retrieved from https://heritageequip.govt.nz/case-studies/ae-kitchen-building-whanganui

Heritage EQUIP. (2019a). Eligibility for Heritage EQUIP funding. Retrieved from https://heritageequip.govt.nz/

Heritage EQUIP. (2019b). Funded projects. Retrieved from https://heritageequip.govt.nz/funding-your-project/heritage-equip-funding/funded-projects

Heritage New Zealand. (2018). Advocating for Heritage: National Assessment of RMA Policies and Plans – Heritage Provisions. Retrieved from http://www.heritage.org.nz/protecting-heritage/advocating-for-heritage

Heritage New Zealand. (2019a). Funding for Heritage Protection. Retrieved from http://www.heritage.org.nz/protecting-heritage/funding-for-heritage-protection

Heritage New Zealand. (2019b). The List. Retrieved from http://www.heritage.org.nz/the-list

Heritage New Zealand. (2019c). Protecting Heritage: Local Government. Retrieved from http://www.heritage.org.nz/protecting-heritage/local-government

Heritage New Zealand Pouhere Taonga. (2017). *National Heritage Preservation Incentive Fund*. Retrieved from http://www.heritage.org.nz/protecting-heritage/national-heritage-preservation-incentive-fund

Heritage New Zealand Pouhere Taonga Act. (2014). Heritage New Zealand Pouhere Taonga Act. Public Act No 26. Retrieved from http://www.legislation.govt.nz/act/public/2014/0026/26.0/DLM4005414.html

Hernandez, T., & Jones, K. (2008). The strategic evolution of the BID model in Canada. *Business improvement districts: Research, theories, and controversies, 401*.

Highfield, D., & Gorse, C. (2009). *Refurbishment and upgrading of buildings* (Second ed.). London: Routledge.

Hill, E., Wial, H., & Wolman, H. (2008). *Exploring regional economic resilience*. Working Paper, Institute of Urban and Regional Development. University of California, Berkeley.

Hillier, B., & Hanson, J. (1989). *The social logic of space*: Cambridge university press.

Hirokawa, K. H., & Gonzalez, I. (2010). Regulating Vacant Property. *Urban Lawyer, 42*(3).

Historic Places Act. (1954). Historic Places Act 1954 (1954 No 14). Retrieved from http://www.nzlii.org/nz/legis/hist_act/hpa19541954n14191/

Hoffer, E. (1973). *Reflections on the human condition*. New York: Harper & Row.

Hollander, J. B., Pallagst, K., Schwarz, T., & Popper, F. J. (2009). Planning shrinking cities. *Progress in Planning, 72*(4), 223-232.

Hong Kong Buildings Department. (2016). *Practice Guidebook for Adaptive Re-use of and Alteration and Addition Works to Heritage Buildings*. Hong Kong: Heritage Unit, Buildings Department

Hong, Y., & Chen, F. (2017). Evaluating the adaptive reuse potential of buildings in conservation areas. *Facilities, 35*(3/4), 202-219.

Howe, K. W. (2003). Private sector involvement in historic preservation. *A Richer Heritage: Historic Preservation in the Twenty-First Century*, 279-311.

Hoyt, H. (1939). The structure and growth of residential neighborhoods in American cities.

Hoyt, L. (2006). Importing ideas: The transnational transfer of urban revitalization policy. *International Journal of Public Administration, 29*(1-3), 221-243.

Hsueh, S.-L., Lee, J.-R., & Chen, Y.-L. (2013). DFAHP multicriteria risk assessment model for redeveloping derelict public buildings. *International Journal of Strategic Property Management, 17*(4), 333-346.

Hughes, J. W., & Bleakly, K. D. (1975). *Urban homesteading*. New Brunswwick, NJ: Center for Urban Policy Research: Rutgers University.

Hummon, D. M. (1992). Community attachment. In *Place attachment* (pp. 253-278): Springer.

Hutson, H. R., Anglin, D., Kyriacou, D. N., Hart, J., & Spears, K. (1995). The epidemic of gang-related homicides in Los Angeles County from 1979 through 1994. *Jama, 274*(13), 1031-1036.

HWCP. (2019). Reimagined. Redeveloped. Revitalised. Retrieved from https://hwcp.nz/

ICOMOS. (1931). *The Athens Charter for the Restoration of Historic Monuments. The First International Congress Architects and Technicians of Historic Monuments, UNESCO, Athens.*

ICOMOS. (1964). *The Venice Charter: International charter for the conservation and restoration of monuments and sites*. Venice ICOMOS.

ICOMOS. (2010). *The New Zealand Charter for the Conservation of Places of Cultural Heritage Value*. Auckland: ICOMOS New Zealand.

ICOMOS. (2013). *The Burra Charter: The Australia ICOMOS charter for places of cultural significance 1999: with associated guidelines and code on the ethics of co-existence*. Burwood: Australia ICOMOS.

ICOMOS. (2019). *The Paris Charter: The Future of Our Pasts - Engaging Cultural Heritage in Climate Action* (ICOMOS Ed.). Paris ICOMOS.

Ides, C. (2002). Corporate strategy: the role of the centre. *Handbook of strategy and management*, 98.

Ijla, A., & Broström, T. (2015). The Sustainable Viability of Adaptive Reuse of Historic Buildings: the experiences of Two World Heritage Old Cities; Bethlehem in Palestine and Visby in Sweden. *International Invention Journal of Arts and Social Sciences, 2*(4), 52-66.

Ingham, J., Dizhur, D., Giaretton, M., Walsh, K., Derakhshan, H., Jafarzadeh, R., . . . Masia, M. (2018). *Securing of Unreinforced Masonry Parapets and Facades – From Fundamental Research to National Policy*. Paper presented at the 10th Australasian Masonry Conference, Sydney, Austaralia.

Ingham, J., & Griffith, M. (2010). Performance of unreinforced masonry buildings during the 2010 Darfield (Christchurch, NZ) earthquake. *Australian Journal of Structural Engineering, 11*(3), 207-224.

Innes, J. E., & Booher, D. E. (2010). *Planning with complexity: An introduction to collaborative rationality for public policy*: Routledge.

Invercargill City Council. (2018a). Heritage buildings pop-up consultation coming to city. Retrieved from https://icc.govt.nz/heritage-buildings-pop-consultation-coming-city/

Invercargill City Council. (2018b). ILT hotel application: Decision of Commissioner. Retrieved from https://icc.govt.nz/ilt-hotel-application/

Invercargill City Council. (2019). HWCP inner city block development: Decision of Commissioners Retrieved from https://icc.govt.nz/hwcp-inner-city-block-development/

Itard, L., & Klunder, G. (2007). Comparing environmental impacts of renovated housing stock with new construction. *Building Research & Information, 35*(3), 252-267.

Jackson, N., & Brabyn, L. (2017). The mechanisms of subnational population growth and decline in New Zealand 1976-2013. *Policy Quarterly, 13*.

Jackson, N., Brabyn, L., Maré, D., Cameron, M., & Pool, I. (2019). From ageing-driven growth towards the ending of growth. Subnational population trends in New Zealand. In *Studies in the Sociology of Population* (pp. 161-193): Springer.

Jackson, S. L. (2015). *Research methods and statistics: A critical thinking approach*: Cengage Learning.

Jacobs, K. (2004). Waterfront redevelopment: a critical discourse analysis of the policy-making process within the Chatham maritime project. *Urban Studies, 41*(4), 817-832.

Jenkins, V. (2018). Protecting the natural and cultural heritage of local landscapes: Finding substance in law and legal decision making. *Land use policy, 73*, 73-83.

Jensø, M., Hansen, G. K., & Haugen, T. I. (2004). Usability of buildings: Theoretical framework for understanding and exploring usability of buildings. *Facilities Management and Maintenence*, 225.

Jessen, J., & Schneider, J. (2003). Conversions–the new normal. In C. Schittich (Ed.), *Building in Existing Fabric–Refurbishment Extensions New Design*. Basel: Birkhauser.

Johnson, A. (1996). Rehabilitation and re-use of existing buildings. In E. D. Mills (Ed.), *Building Maintenance and Preservation: A guide to design and management* (2nd ed., pp. 209-230). Oxford: . Architectural Press.

Johnson, C. (2009, February 8th, 2009). Breakthrough on 'Broken Windows'. *The Boston Globe*. Retrieved from http://www.dcvb-nc.com/cr/Broken_Windows-%20Lowell02-08-09.pdf

Jonas, D. (2006). Heritage Works: The reuse of historic buildings in regeneration. *A toolkit of good practice.* . Retrieved from http://www.bpf.org.uk/sites/default/files/resources/Heritage-Works-2013.pdf

Kaluzny, B., & Shaw, R. (2009). Sensitivity Analysis of Additive Weighted Scoring Methods. *Technical Report, DRDC CORA TR 2009-002*.

Kasperson, R. E., Renn, O., Slovic, P., Brown, H. S., Emel, J., Goble, R., . . . Ratick, S. (1988). The social amplification of risk: A conceptual framework. *Risk analysis, 8*(2), 177-187.

Kim, D., & Lim, U. (2016). Urban resilience in climate change adaptation: A conceptual framework. *Sustainability, 8*(4), 405.

Kipp, R., Hatton, T., & Seville, E. (2017). *Supporting robust decision making on seismic resilience investments: development and trial application of a Decision Support Tool. Resilient Organisations Report 2017/02.* Retrieved from https://www.resorgs.org.nz/resources/publications/

Kitzinger, J., & Barbour, R. (1999). *Developing focus group research: politics, theory and practice*: Sage.

Klein, R. J., Nicholls, R. J., & Thomalla, F. (2003). Resilience to natural hazards: How useful is this concept? *Global Environmental Change Part B: Environmental Hazards, 5*(1), 35-45.

Kling, R. W., Revier, C. F., & Sable, K. (2004). Estimating the public good value of preserving a local historic landmark: the role of non-substitutability and citizen information. *Urban Studies, 41*(10), 2025-2041.

Kohler, N., & Hassler, U. (2002). The building stock as a research object. *Building Research & Information, 30*(4), 226-236.

Kohler, N., & Yang, W. (2007). Long-term management of building stocks. *Building Research & Information, 35*(4), 351-362.

Koren, H., & Butler, C. (2006). The interconnection between the built environment ecology and health. In *Environmental Security and Environmental Management: The Role of Risk Assessment* (pp. 111-125). Dordrecht: Springer.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*: New Age International.

Krause, N. (2002). A comprehensive strategy for developing closed-ended survey items for use in studies of older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 57*(5), S263-S274.

Kraut, D. T. (1999). Hanging out the no vacancy sign: eliminating the blight of vacant buildings from urban areas. *New York University Law Review, 74*, 1139-1786.

Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research* (5th ed.). New Delhi: Sage.

Kvale, S. (1983). The qualitative research interview: A phenomenological and a hermeneutical mode of understanding. *Journal of phenomenological psychology, 14*(2), 171.

Lang, R. E. (2000). Did neighborhood life-cycle theory cause urban decline? *Housing Policy Debate, 11*(1), 1.

Langston, C. (2008). *The sustainability implications of building adaptive reuse*. Paper presented at the CRIOCM 2008 International Research Symposium on Advancement of Construction Management and Real Estate, Beijing, China

Langston, C. (2011). *Estimating the useful life of buildings*. Paper presented at the 36th Annual Conference for Australian University Building Educators, Bond University, Gold Coast, Australia.

Langston, C. (2013). *Life-cost approach to building evaluation*: Routledge.

Langston, C., & Shen, L. Y. (2007). Application of the adaptive reuse potential model in Hong Kong: A case study of Lui Seng Chun. *International Journal of Strategic Property Management, 11*(4), 193-207.

Langston, C., & Smith, J. (2012). Modelling property management decisions using 'iconCUR'. *Automation in Construction, 22*, 406-413.

Langston, C., Wong, F. K., Hui, E. C., & Shen, L.-Y. (2007). Strategic assessment of building adaptive reuse opportunities in Hong Kong. *Building and Environment, 43*(10), 1709-1718.

Langston, C., Wong, F. K., Hui, E. C., & Shen, L.-Y. (2008). Strategic assessment of building adaptive reuse opportunities in Hong Kong. *Building and Environment, 43*(10), 1709-1718.

Larkham, P. (2002). *Conservation and the City*. New York: Routledge.

Latham, D. (2016). *Creative Reuse of Buildings: Volume One*: Routledge.

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods*: Sage Publications.

Le Menestrel, M., & Van Wassenhove, L. N. (2004). Ethics outside, within, or beyond OR models? *European journal of operational research, 153*(2), 477-484.

Leeuwis, C. (2000). Reconceptualizing participation for sustainable rural development: towards a negotiation approach. *Development and change, 31*(5), 931-959.

Lehrer, U., & Laidley, J. (2008). Old mega-projects newly packaged? Waterfront redevelopment in Toronto. *International Journal of Urban and Regional Research, 32*(4), 786-803.

Leo, C., & Anderson, K. (2006). Being realistic about urban growth. *Journal of Urban Affairs, 28*(2), 169-189.

Lerch, D. (2017). *The Community Resilience Reader: Essential Resources for an Era of Upheaval*. Washington: Island Press.

Lewis-Beck, M., Bryman, A. E., & Liao, T. F. (2003). *The Sage encyclopedia of social science research methods*: Sage Publications.

Lhomme, S., Serre, D., Diab, Y., & Laganier, R. (2012). Urban technical networks resilience assessment. In *Resilience and urban risk management* (Vol. 109, pp. 109-117): Routledge in association with GSE Research.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of psychology, 22*, 55.

LinkedIn. (2019). Whanganui District Council hiring Heritage Advisor.. Retrieved from https://www.linkedin.com/jobs/view/heritage-advisor-at-whanganui-district-council-1355760108/?originalSubdomain=nz

Listokin, D. (2017). *Landmarks Preservation and the Property Tax: Assessing Landmark Buildings for Real Taxation Purposes*: Routledge.

Lloyd, M., McCarthy, J., McGreal, S., & Berry, J. (2003). Business improvement districts, planning and urban regeneration. *International Planning Studies, 8*(4), 295-321.

Logan, J. R., & Molotch, H. L. (2007). *Urban fortunes: The political economy of place*: Univ of California Press.

Lorch, B. J., & Smith, M. J. (1993). Pedestrian movement and the downtown enclosed shopping center. *Journal of the American Planning Association, 59*(1), 75-86.

Lötscher, L., Howest, F., & Basten, L. (2004). Monitoring a shrinking German City. *Department of Geography, Ruhr-University Bochum*, 361-370.

Lottery Environment and Heritage Committee. (2019). What we fund. Retrieved from https://www.communitymatters.govt.nz/lottery-environment-and-heritage/

Loughrey, D. (2017). Push for heritage fund rise. *Otago Daily Times*. Retrieved from https://www.odt.co.nz/news/dunedin/push-heritage-fund-rise

Love, P., & Bullen, P. (2009). Toward the sustainable adaptation of existing facilities. *Facilities, 27*(9/10), 357-367.

Lucy, W., & Phillips, D. (2000). *Confronting suburban decline: Strategic Planning for Metropolitan Renewal* (Second ed.). Washington, DC: Island Press.

Machi, L. A., & McEvoy, B. T. (2016). *The literature review: Six steps to success*. California: Corwin Press.

Mack, L. (2010). The philosophical underpinnings of educational research. In: Polyglossia.

Mackenzie, N., & Knipe, S. (2006). Research dilemmas: Paradigms, methods and methodology. *Issues in educational research, 16*(2), 193-205.

Maio, R., Ferreira, T. M., & Vicente, R. (2018). A critical discussion on the earthquake risk mitigation of urban cultural heritage assets. *International Journal of Disaster Risk Reduction, 27*, 239-247.

Mallach, A., & Brachman, L. (2013). *Regenerating America's legacy cities*. Cambridge, MA: Lincoln institute of land policy.

Mansfield, J. R. (2002). What's in a name? Complexities in the definition of "refurbishment". *Property Management, 20*(1), 23-30.

Manyena, S. B. (2006). The concept of resilience revisited. *Disasters, 30*(4), 433-450. doi:10.1111/j.0361-3666.2006.00331.x

Manzo, L. C., & Perkins, D. D. (2006). Finding common ground: The importance of place attachment to community participation and planning. *Journal of Planning Literature, 20*(4), 335-350.

Marchais-Roubelat, A., & Roubelat, F. (2016). Dominance, stakeholders' moves and leadership shifts: New directions for transforming futures. *Futures, 80*, 45-53.

Markusen, A. (2003). Fuzzy concepts, scanty evidence, policy distance: the case for rigour and policy relevance in critical regional studies. *Regional studies, 37*(6-7), 701-717.

Marshall, M. N. (1996). The key informant technique. *Family practice, 13*(1), 92-97.

Marshall, R. (2004). *Waterfronts in post-industrial cities*: Taylor & Francis.

Martinez-Fernandez, C., Audirac, I., Fol, S., & Cunningham-Sabot, E. (2012). Shrinking cities: Urban challenges of globalization. *International Journal of Urban and Regional Research, 36*(2), 213-225.

Martinez-Fernandez, C., Weyman, T., Fol, S., Audirac, I., Cunningham-Sabot, E., Wiechmann, T., & Yahagi, H. (2016). Shrinking cities in Australia, Japan, Europe and the USA: From a global process to local policy responses. *Progress in Planning, 105*, 1-48.

Mason, R. (2009). Reclaiming the History of Places. *Local Planning: Contemporary Principles and Practice*, 127-133.

Maxwell, J. A. (2012). *Qualitative research design: An interactive approach: An interactive approach*. London: Sage.

Mayer, I. S., Van Bueren, E. M., Bots, P. W., Van Der Voort, H., & Seijdel, R. (2005). Collaborative decisionmaking for sustainable urban renewal projects: a simulation–gaming approach. *Environment and Planning B: planning and design, 32*(3), 403-423.

MBIE. (2004). *Building Act*. Wellington, New Zealand: Ministry of Business Innovation & Employment Retrieved from http://www.legislation.govt.nz/act/public/2004/0072/latest/DLM306036.html

MBIE. (2016a). *Building (Earthquake-prone Buildings) Amendment Act*. Wellington: Ministry of Business Innovation & Employment Retrieved from http://www.legislation.govt.nz/act/public/2016/0022/22.0/DLM5616102.html

MBIE. (2016b). Building Performance: Managing Earthquake-prone buildings. Retrieved from https://www.building.govt.nz/managing-buildings/managing-earthquake-prone-buildings/resources/

MBIE. (2016c). *Building Regulatory Framework: Building Performance.* Wellington, New Zealand Retrieved from https://www.building.govt.nz/building-code-compliance/how-the-building-code-works/nz-regulatory-framework/

MBIE. (2017). Building Performance. *Seismic hazard risk and deadline.* Retrieved from https://www.building.govt.nz/managing-buildings/managing-earthquake-prone-buildings/how-the-system-works/

MBIE. (2019). Building Performance: Securing unreinforced parapets and facades. Retrieved from https://www.building.govt.nz/managing-buildings/unreinforced-masonry/options-secure-urm-parapets-and-facades/#jumpto-funding-support

McBee, S. (1992). *Downtown Development Handbook* (Second ed.). Washington, DC: Urban Land Institute.

McCleary, R. L. (2005). *Financial incentives for historic preservation: An international view.* (Master of Science in Historic Preservation). University of Pennsylvania, Pennsylvania.

McCormick, B. (2002). Factory Chic: Reusing Wisconsin's Historic Industrial Buildings. *The Wisconsin Magazine of History, 85*(3), 42-55.

McDougall, G., & Marriott, A. (2019). *Invercargill CBD Project Resource Consent Hearing: Seismic assessments*. Retrieved from https://icc.govt.nz/wp-content/uploads/2019/04/3-Graham-McDougall-and-Andrew-Marriott-Sesmic-Assessments.pdf

McGranahan, G., & Satterthwaite, D. (2014). *Urbanisation: Concepts and Trends*: IIED London.

McKenna, R., Bertsch, V., Mainzer, K., & Fichtner, W. (2018). Combining local preferences with multi-criteria decision analysis and linear optimization to develop feasible energy concepts in small communities. *European Journal of Operational Research, 268*(3), 1092-1110.

McSaveney, E. (2006). 'Floods - New Zealand's number one hazard', Te Ara - the Encyclopedia of New Zealand. Retrieved from http://www.TeAra.govt.nz/mi/video/46853/whanganui-flood-1940

McStay, A., & Cawte, H. (2017). *One end of Langlands' Block*. Retrieved from New Zealand Heritage Properties Ltd, Dunedin: https://icc.govt.nz/wp-content/uploads/2018/09/Appendix-05-Initial-Heritage-Assessment-Heritage-Properties-Ltd.pdf

Medway, D., Warnaby, G., Bennison, D., & Alexander, A. (2000). Reasons for retailers' involvement in town centre management. *International Journal of Retail & Distribution Management, 28*(8), 368-378.

Meerow, S., Newell, J. P., & Stults, M. (2016). Defining urban resilience: A review. *Landscape and urban planning, 147*, 38-49.

Mihaylov, N., & Perkins, D. D. (2014). Community place attachment and its role in social capital development. In C. M. Lynne & D.-W. Patrick (Eds.), *Place attachment: Advances in theory, methods and applications*. New York: Routledge.

Miles, M. E., Netherton, L. M., & Schmitz, A. (2015). *Real Estate Development : Principles And Process* (5th Edition ed.). Washington DC: Urban Land Institute.

Miller, E., & Buys, L. (2008). Retrofitting commercial office buildings for sustainability: tenants' perspectives. *Journal of Property Investment & Finance, 26*(6), 552-561.

Mısırlısoy, D., & Günçe, K. (2016a). Adaptive reuse strategies for heritage buildings: a holistic approach. *Sustainable Cities and Society, 26*, 91-98.

Mısırlısoy, D., & Günçe, K. (2016b). A critical look to the adaptive reuse of traditional urban houses in the Walled City of Nicosia. *Journal of Architectural Conservation, 22*(2), 149-166.

Mitchell, J. (2001). Business improvement districts and the "new" revitalization of downtown. *Economic Development Quarterly, 15*(2), 115-123.

Moe, R., & Wilkie, C. (1997). *Changing places: Rebuilding community in the age of sprawl*. New York: Henry Holt.

Moore, N. M. (2016). Valorizing urban heritage? Redevelopment in a changing city. In *Heritage, Memory and the Politics of Identity* (pp. 107-120): Routledge.

Morçöl, G., Hoyt, L., Meek, J. W., & Zimmermann, U. (2017). *Business improvement districts: Research, theories, and controversies*. Florida, USA: Routledge.

Morçöl, G., & Zimmermann, U. (2006). Metropolitan governance and business improvement districts. *Intl Journal of Public Administration, 29*(1-3), 5-29.

Morgan, D. L. (1998). Practical strategies for combining qualitative and quantitative methods: Applications to health research. *Qualitative health research, 8*(3), 362-376.

Morgan, D. L. (2002). Focus group interviewing. *Handbook of interview research: Context and method*, 141-159.

Munda, G. (2004). Social multi-criteria evaluation: Methodological foundations and operational consequences. *European journal of operational research, 158*(3), 662-677.

Murphy, L. (2008). Third-wave gentrification in New Zealand: The case of Auckland. *Urban Studies, 45*(12), 2521-2540.

Murtagh, W. J. (2006). *Keeping time: the history and theory of preservation in America*. New Jersey, United States: John Wiley & Sons.

Muth, R. F. (1969). *Cities and housing; the spatial pattern of urban residential land use* (Second ed.). U.S.A: University of Chicago.

Myers, D., & Wyatt, P. (2004). Rethinking urban capacity: identifying and appraising vacant buildings. *Building Research & Information, 32*(4), 285-292.

Nahkies, B. (1999). Heritage protection and the compensation issue. *Planning Quarterly, 132*, 11-12.

Nasser, N. (2003). Planning for urban heritage places: reconciling conservation, tourism, and sustainable development. *Journal of Planning Literature, 17*(4), 467-479.

National Business Review. (2014). NZ has zombie towns that need to close — economist. Retrieved from https://www.nbr.co.nz/article/nz-has-zombie-towns-need-close-%E2%80%94-economist-ns-159124

Navrud, S., & Ready, R. C. (2002). *Valuing cultural heritage: applying environmental valuation techniques to historic buildings, monuments and artifacts*: Edward Elgar Publishing.

Nel, E. (2015). Recent trends in regional and local demographic and economic inequality in New Zealand and associated regional development implications. *Local Economy, 30*(1), 12-20.

Neuman, L. W. (2014). *Social research methods: Qualitative and quantitative approaches* (Seventh ed.). Essex, England: Pearson Education Limited.

New Zealand Historic Places Trust Pouhere Taonga. (2013). Sustainable Management of Historic Heritage Guidance Series: Incentives for Historic Heritage Toolkit. Retrieved from https://www.heritage.org.nz/resources/sustainable-management-guides

Nguyen, P. T., Wells, S., & Nguyen, N. (2019). A Systemic Indicators Framework for Sustainable Rural Community Development. *Systemic Practice and Action Research, 32*(3), 335-352.

Noor Ul Amin, M., Arif, F., & Hanif, M. (2018). A new scheme using the ranked sets. *Journal of Statistics and Management Systems, 21*(8), 1565-1573.

Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American journal of community psychology, 41*(1-2), 127-150.

NSW & RAIA. (2008). *New uses for heritage places: Guidelines for the adaptation of historic buildings and sites*. Sydney: Joint Publication of the Heritage council of New South Wales and the Royal Australian Institute of Architects

NZSEE. (2017). *The Seismic Assessment of Existing Buildings:Technical Guidelines for Engineering Assessments - Initial Seismic Assessment*. New Zealand Society for Earthquake Engineering. Retrieved from http://www.eq-assess.org.nz/assets/2016_C/Part_B-Initial_Seismic_Assessment.pdf

O'Sullivan, A. (2012). *Urban economics* (8th ed.). London: McGraw-Hill Education.

O'Donnell, C. (2004). Getting serious about green dollars. *Property Australia, 18*(4), 1-2. Retrieved from http://www.propertycouncil.com.au/

Olden, P. C., & Nespoli, J. L. (1998). Well-being revisited: improving the health of a population/practitioner response. *Journal of Healthcare Management, 43*(1), 36.

Onwuegbuzie, A. J., & Frels, R. (2016). *Seven steps to a comprehensive literature review: A multimodal and cultural approach*. London: Sage.

Openshaw, R., Lee, G. D., & Lee, H. F. (1993). *Challenging the myths: Rethinking New Zealand's educational history*: Dunmore Press Palmerston North.

Orbasli, A. (2002). *Tourists in historic towns: Urban conservation and heritage management*: Taylor & Francis.

Oswalt, P. (2006). *Atlas of shrinking cities:... im Rahmen des Projekts Schrumpfende Städte, eines Initiativprojekts der Kulturstiftung des Bundes...[Eine erste Fassung des Atlas wurde gezeigt in der Ausstellung" Schrumpfende Städte: Internationale Untersuchung", KW-Institute for Contemporary Art, Berlin, 4. September-7. November 2004]*: Hatje Cantz.

Pallagst, K. (2008). Shrinking Cities: Planning Challenges from an International Perspective. In S. Rugare & T. Schwarz (Eds.), *Cities Growing Smaller* (pp. 6-16). Cleveland, OH: Cleveland Urban Design Collaborative.

Panuku Development Auckland. (2019). Regenerating Wynyard Quarter. Retrieved from https://www.panuku.co.nz/projects/wynyard-quarter/chapter/regenerating-wynyard-quarter

Paton, D., & Johnston, D. (2017). *Disaster resilience: an integrated approach*: Charles C Thomas Publisher.

Pearce, A. R., DuBose, J. R., & Vanegas, J. A. (2004). *Rehabilitation as a strategy to increase the sustainability of the built environment*. Atlanta: School of Civil and Environmental Engineering, Georgia Institute of Technology,.

Pedersen, A. (2002). *Managing tourism at world heritage sites*. Paris: UNESCO

Peiser, R. B., & Frej, A. B. (2003). *Professional real estate development: the ULI guide to the business*: ULI--the Urban Land Institute.

Pelloi, S. (1983). Urban Design for Profit and Public Worth: The Eaton Centre Development. *Plan Canada, 23*(3), 91-101.

Pendall, R., Foster, K. A., & Cowell, M. (2010). Resilience and regions: building understanding of the metaphor. *Cambridge Journal of Regions, Economy and Society, 3*(1), 71-84.

Perkins, D. D., & Long, D. A. (2002). Neighborhood sense of community and social capital. In *Psychological sense of community* (pp. 291-318): Springer.

Perovic, M., Coffey, V., Kajewski, S. L., & Madan, A. (2015). *The impact of retention of heritage places.* Paper presented at the Australian ICOMOS Conference, 5-8 November, Adelaide, Australia.

Pettifer, D. (1998). Measuring the performance of the corporate centre. *Long Range Planning, 31*(5), 783-785.

Pickett, S. T., Cadenasso, M. L., & Grove, J. M. (2004). Resilient cities: meaning, models, and metaphor for integrating the ecological, socio-economic, and planning realms. *Landscape and urban planning, 69*(4), 369-384.

Plevoets, B., & Van Cleempoel, K. (2011). Adaptive reuse as a strategy towards conservation of cultural heritage: a literature review. *Structural Studies, Repairs and Maintenance of Heritage Architecture XII, 118*, 155-163.

Plevoets, B., & Van Cleempoel, K. (2019). *Adaptive Reuse of the Built Heritage: Concepts and Cases of an Emerging Discipline*: Routledge.

Plunkett, D., Phillips, R., & Ucar Kocaoglu, B. (2018). Place Attachment and Community Development. *Journal of Community Practice, 26*(4), 471-482.

Pool, I. (2013a). *The New Zealand family from 1840: A demographic history*. Auckland: Auckland University Press.

Pool, I. (2013b). *Te Iwi Maori: Population past, present and projected*. Auckland: Auckland University Press.

Poor, P. J., & Smith, J. M. (2004). Travel cost analysis of a cultural heritage site: The case of historic St. Mary's City of Maryland. *Journal of cultural economics, 28*(3), 217-229.

Popper, K. (2005). *The logic of scientific discovery*. London: Routledge.

Porter, M. E. (1995). The competitive advantage of the inner city. *Harvard business review, 73*(3), 55-71.

Potter, S. H., Becker, J. S., Johnston, D. M., & Rossiter, K. P. (2015). An overview of the impacts of the 2010-2011 Canterbury earthquakes. *International Journal of Disaster Risk Reduction, 14*, 6-14.

Powell, K. (1999). *Architecture reborn: the conversion and reconstruction of old buildings*: Laurence King London.

Pretty, G. H., Chipuer, H. M., & Bramston, P. (2003). Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity. *Journal of environmental psychology, 23*(3), 273-287.

QV.co.nz. (2019). The E-valuer. Retrieved from https://www.qv.co.nz/valuations-and-reports/the-evaluer

Raco, M., & Street, E. (2012). Resilience planning, economic change and the politics of post-recession development in London and Hong Kong. *Urban Studies, 49*(5), 1065-1087.

Rapley, T. (2008). *Doing conversation, discourse and document analysis*: Sage.

Realestate.co.nz. (2019). Property Listings. Retrieved from https://www.realestate.co.nz/

Reckien, D., & Martinez-Fernandez, C. (2011). Why do cities shrink? *European Planning Studies, 19*(8), 1375-1397.

Redman, C. (2014). Should sustainability and resilience be combined or remain distinct pursuits? *Ecology and Society, 19*(2).

Ren*, X. (2008). Forward to the past: historical preservation in globalizing Shanghai. *City & Community, 7*(1), 23-43.

Rifkind, C. (1977). *Main Street: the face of urban America*: Harper & Row New York.

Rink, D., Haase, A., Bernt, M., & Mykhnenko, V. (2010). *D7 discussion paper on cross-cutting challenges, research report for the EU 7FP project Shrink Smart—Governance of Shrinkage within a European Context (No. 225193).* . Helmholtz Centre for Environmental Research–UFZ, Leipzig, unpublished.

RMA. (1991). Resource Management Act. Retrieved from http://www.legislation.govt.nz/act/public/1991/0069/232.0/DLM230265.html

RNZ. (2019). Whanganui heritage building saved from demolition. Retrieved from https://www.rnz.co.nz/news/national/364224/whanganui-heritage-building-saved-from-demolition

Robert, M. (2013). *Incentives for Historic Heritage Toolkit - Sustainable Management of Historic Heritage Guidance Series*. Wellington: New Zealand Historic Places Trust Pouhere Taonga (NZHPT)

Roberts, P., & Sykes, H. (2000). *Urban regeneration: a handbook*. London: Sage.

Roberts, P., Sykes, H., & Granger, R. (2016). *Urban regeneration*. London: Sage.

Robertson, K. A. (1993). Pedestrianization strategies for downtown planners: Skywalks versus pedestrian malls. *Journal of the American Planning Association, 59*(3), 361-370.

Robertson, K. A. (1995). Downtown redevelopment strategies in the United States: An end-of-the-century assessment. *Journal of the American Planning Association, 61*(4), 429-437.

Robertson, K. A. (2004). The main street approach to downtown development: An examination of the four-point program. *Journal of Architectural and Planning Research*, 55-73.

Rockefeller Foundation. (2019). "100 Resilient Cities". Retrieved from http://www.100resilientcities.org/

Rodwell, D. (2008). *Conservation and sustainability in historic cities*. Chicester: John Wiley & Sons.

Rohracher, H. (2001). Managing the technological transition to sustainable construction of buildings: a socio-technical perspective. *Technology Analysis & Strategic Management, 13*(1), 137-150.

Rohrmann, B. (1998). The risk notion: Epistemological and empirical considerations. *Integrated risk assessment: Applications and regulations*, 39-46.

Rojas, E. (1999). *Old cities, new assets: preserving Latin America's urban heritage*. Washington, DC: The Johns Hopkins University Press/Inter-American development bank.

Rosentraub, M. S., Swindell, D., Przybylski, M., & Mullins, D. R. (1994). Sport and Downtown Development Strategy If You Build It, Will Jobs Come? *Journal of Urban Affairs, 16*(3), 221-239.

Ross, C. E., & Mirowsky, J. (1999). Disorder and decay the concept and measurement of perceived neighborhood disorder. *Urban Affairs Review, 34*(3), 412-432.

Rouse, B., & McCracken, H. (2014). *Improving the risk management of New Zealand's historic heritage and the role of the heritage engineering community*. Paper presented at the 4th Australasian Engineering Heritage Conference, Lincoln University, Cantrebury, New Zealand.

Rubenstein, H. M. (1992). *Pedestrian malls, streetscapes, and urban spaces*: John Wiley & Sons.

Russell, A. P., & Ingham, J. (2010). Prevalence of New Zealand's unreinforced masonry buildings. *Bulletin of the New Zealand Society for Earthquake Engineering, 43*(3), 182.

Ryberg-Webster, S., & Kinahan, K. L. (2014). Historic preservation and urban revitalization in the twenty-first century. *Journal of Planning Literature, 29*(2), 119-139.

Ryberg-Webster, S., & Kinahan, K. L. (2017). Historic preservation in declining city neighbourhoods: Analysing rehabilitation tax credit investments in six US cities. *Urban Studies, 54*(7), 1673-1691.

Rypkema, D. (2008). Historic Preservation and Sustainable Development. *Lecture given at New Brunswick University, New Brunswick, Canada*.

Rypkema, D., & Wiehagen, K. (2000). Dollars and Sense of Historic Preservation. The Economic Benefits of Preserving Philadelphia's Past. *National Trust for Historic Preservation, Washington DC*.

Saaty, T. L. (2004). Decision making—the analytic hierarchy and network processes (AHP/ANP). *Journal of systems science and systems engineering, 13*(1), 1-35.

Sairinen, R., & Kumpulainen, S. (2006). Assessing social impacts in urban waterfront regeneration. *Environmental impact assessment review, 26*(1), 120-135.

Salesa, J. (2019). Easing the impact of earthquake strengthening for provincial New Zealand. Retrieved from https://www.beehive.govt.nz/release/easing-impact-earthquake-strengthening-provincial-new-zealand

Sassen, S. (2018). *Cities in a world economy*: Sage Publications.

Sawicki, D. S. (1989). The festival marketplace as public policy: Guidelines for future policy decisions. *Journal of the American Planning Association, 55*(3), 347-361.

Schelling, T. C. (1972). A process of residential segregation: neighborhood tipping. *Racial discrimination in economic life, 157*, 174.

Schilling, J. M., & Friedman, N. (2002). The Revitalization of Vacant Properties: Richmond, Virginia Case Study. *Washington, DC: International City/County Management Association, 27*.

Schober, M. F. (2018). The future of face-to-face interviewing. *Quality Assurance in Education*.

Schrader, B. (2016). *The Big Smoke: New Zealand Cities, 1840–1920*: Bridget Williams Books.

Scolobig, A., Thompson, M., & Linnerooth-Bayer, J. (2016). Compromise not consensus: designing a participatory process for landslide risk mitigation. *Natural Hazards, 81*(1), 45-68.

Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English language teaching, 5*(9), 9-16.

Senaldi, I., Magenes, G., & Ingham, J. (2015). Damage assessment of unreinforced stone masonry buildings after the 2010–2011 Canterbury earthquakes. *International Journal of Architectural Heritage, 9*(5), 605-627.

Shane, J. M. (2012). Abandoned Buildings and Lots. *Problem-Specific Guides Series: Problem-Oriented Guides for Police* Retrieved from https://popcenter.asu.edu/content/abandoned-buildings-and-lots-0

Sharifi, A., & Yamagata, Y. (2016). Principles and criteria for assessing urban energy resilience: A literature review. *Renewable and Sustainable Energy Reviews, 60*, 1654-1677.

Shehata, W. T. A., Moustafa, Y., Sherif, L., & Botros, A. (2015). Towards the comprehensive and systematic assessment of the adaptive reuse of Islamic architectural heritage in Cairo: A conceptual framework. *Journal of Cultural Heritage Management and Sustainable Development, 5*(1), 14-29.

Shipley, R., Utz, S., & Parsons, M. (2006). Does adaptive reuse pay? A study of the business of building renovation in Ontario, Canada. *International Journal of Heritage Studies, 12*(6), 505-520.

Sirgy, M. J., Grzeskowiak, S., & Su, C. (2005). Explaining housing preference and choice: The role of self-congruity and functional congruity. *Journal of Housing and the Built Environment, 20*(4), 329-347.

Skelcher, B. (1992). What are the lessons learned from the Main Street Pilot Project, 1977-1980? *Small town (USA)*.

Skogan, W. G. (1992). *Disorder and decline: Crime and the spiral of decay in American neighborhoods*. USA: Univ of California Press.

Smith, N., Brown, C., & Saunders, W. (2016). *Disaster risk management decision-making: review*. Retrieved from Christchurch: https://scholar.google.co.nz/scholar?q=disaster+risk+management+decision+making%3A+review&btnG=&hl=en&as_sdt=0%2C5

Southland Regional Development Strategy. (2016). Action Plan: 2015-2025. Retrieved from http://www.sords.co.nz/site/assets/files/1/sords_action_plan.pdf

Squires, G. D. (2002). *Urban sprawl: Causes, consequences, & policy responses*: The Urban Insitute.

Statistics New Zealand. (2017a). Census QuickStats about national highlights. Retrieved from http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=14203&parent_id=14181&tabname=#14203

Statistics New Zealand. (2017b). Statistical standard for geographic areas 2018. Retrieved from http://archive.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/geographic-areas.aspx#

Statistics New Zealand. (2018a). Business Demography Statistics. Geographic units by industry and statistical area 2000-18. Retrieved from http://nzdotstat.stats.govt.nz/wbos/Index.aspx?_ga=2.133971660.317407011.1547470004-133109085.1543372741#

Statistics New Zealand. (2018b). Population estimates tables. Subnational population estimates (urban rural), by age and sex, at 30 June 1996, 2001, 2006-18 (2018 boundaries). Retrieved from http://nzdotstat.stats.govt.nz/wbos/Index.aspx?_ga=2.133971660.317407011.1547470004-133109085.1543372741#

Stevens, C., & Wheeler, K. (2008). *Implementing earthquake prone building policy under the Building Act 2004: Wellington City's Approach.* Paper presented at the New Zealand Society for Earthquake Engineering: Engineering an Earthquake Resilient New Zealand. NZSEE Conference.

Stevenson, T. (2002). Anticipatory action learning: conversations about the future. *Futures, 34*(5), 417-425.

Stipe, R. E. (2003). *A richer heritage: Historic preservation in the twenty-first century*: Univ of North Carolina Press.

Strauss, A., & Corbin, J. (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (Second ed.). Thousand Oaks, CA: Sage Publications.

Swallow, P. (1997). Managing unoccupied buildings and sites. *Structural Survey, 15*(2), 74-79.

Talen, E., & Jeong, H. (2019). Does the classic American main street still exist? An exploratory look. *Journal of Urban design, 24*(1), 78-98.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education, 2*, 53-55.

Taylor, R. B. (1996). Neighborhood responses to disorder and local attachments: The systemic model of attachment, social disorganization, and neighborhood use value. *Sociological Forum, 11*(1), 41-74.

Theodori, G. L. (2001). Examining the effects of community satisfaction and attachment on individual well-being. *Rural sociology, 66*(4), 618-628.

Thompson, E., Rosenbaum, D., & Schmitz, B. (2011). Property values on the plains: the impact of historic preservation. *The Annals of Regional Science, 47*(2), 477-491.

Thomsen, A., & Van der Flier, C. (2006). *Life cycle of dwellings: a conceptual model based on Dutch practice.* Paper presented at the XXXIV IAHS World Congress Sustainable housing design: Emphasizing urban housing, Naples, September 20-23, 2006.

Thorns, D., & Schrader, B. (2010). 'City history and people', Te Ara - the Encyclopedia of New Zealand. Retrieved from https://teara.govt.nz/en/city-history-and-people

Throsby, D. (2003). Determining the value of cultural goods: How much (or how little) does contingent valuation tell us? *Journal of cultural economics, 27*(3-4), 275-285.

Tonn, B., Scheb, J., Fitzgerald, M., & Stiefel, D. (2012). Future of governance workshop summary. *Futures, 44*(9), 773-777.

Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human resource development review, 4*(3), 356-367.

Travers, T., & Weimar, J. (1996). *Business improvement districts: New York and London.* London School of Economics and Political Science, London, UK.

Triantaphyllou, E. (2013). Multi-criteria decision making methods. In *Multi-criteria decision making methods: A comparative study* (pp. 5-21): Springer.

Tripathi, A. D., Mishra, R., Maurya, K. K., Singh, R. B., & Wilson, D. W. (2019). Estimates for World Population and Global Food Availability for Global Health. In *The Role of Functional Food Security in Global Health* (pp. 3-24): Elsevier.

Trujillo, R. (2011). *Adaptive Reuse: Preservation through Innovation. .* University of Kentucky, Lexington, KY.

Tuler, S. P., Dow, K., Webler, T., & Whitehead, J. (2017). Learning through participatory modeling: Reflections on what it means and how it is measured. In *Environmental Modeling with Stakeholders* (pp. 25-45): Springer.

UN-DESA. (2015). Department of Economic and Social Affairs: World Population Projection. Retrieved from www.un.org/en/development/desa/news/population/2015-report.html

UN-Habitat. (2013). *State of the world's cities 2012/2013: Prosperity of cities*: Routledge.

UNESCO. (2009). Unesco World Heritage Centre – Official Site [online], United Nations. Retrieved from http://whc.unesco.org/en/about/.

Ushchev, P., Sloev, I., & Thisse, J.-F. (2015). Do we go shopping downtown or in the 'burbs? *Journal of Urban Economics, 85*, 1-15.

Vakili-Zad, C., & Hoekstra, J. (2011). High dwelling vacancy rate and high prices of housing in Malta a mediterranean phenomenon. *Journal of Housing and the Built Environment, 26*(4), 441-455.

Van den Berg, L., Drewett, R., Klaasen, L. H., Rossi, A., & Vijverberg, C. H. (1982). *Urban Europe: A study of growth and decline*. Oxford: Pergamon Press.

Van Den Hove, S. (2006). Between consensus and compromise: acknowledging the negotiation dimension in participatory approaches. *Land Use Policy, 23*(1), 10-17.

Van Kamp, I., Leidelmeijer, K., Marsman, G., & De Hollander, A. (2003). Urban environmental quality and human well-being: towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and urban planning, 65*(1), 5-18.

Visser, G., & Kotze, N. (2008). The state and new-build gentrification in central Cape Town, South Africa. *Urban Studies, 45*(12), 2565-2593.

Vitek, W., & Jackson, W. (1996). *Rooted in the land: Essays on community and place*: Yale University Press.

Walker, B., Holling, C. S., Carpenter, S., & Kinzig, A. (2004). Resilience, adaptability and transformability in social–ecological systems. *Ecology and society, 9*(2), 5-13.

Wall Street Journal. (2009). New Zealand's Economy Grows. Retrieved from https://www.wsj.com/articles/SB125366520990632487

Wang, H.-J., & Zeng, Z.-T. (2010). A multi-objective decision-making process for reuse selection of historic buildings. *Expert Systems with Applications, 37*(2), 1241-1249.

Wang, J. (2019). Automobiles: A Unique Perspective on China's Social Development. In *Development of a Society on Wheels* (pp. 1-14): Springer.

Ward, K. (2007). Business improvement districts: policy origins, mobile policies and urban liveability. *Geography Compass, 1*(3), 657-672.

Warnaby, G., Bennison, D., & Davies, B. J. (2005). Marketing town centres: retailing and town centre management. *Local Economy, 20*(2), 183-204.

Webster, N., & McKechnie, J. L. (1996). *Webster's new universal unabridged dictionary*: Dorset & Baber.

Weisel, D. L. (2002). *Burglary of single-family houses*: US Department of Justice, Office of Community Oriented Policing Services Washington, DC.

West, D. M., & Orr, M. (2003). Downtown malls as engines of economic development, community spirit, and political capital. *Economic Development Quarterly, 17*(2), 193-204.

Whanganui Chronicle. (2019a). Heritage Grant Fund work is underway on buildings in Whanganui. *Whanganui Chronicle*. Retrieved from https://www.nzherald.co.nz/wanganui-chronicle/news/article.cfm?c_id=1503426&objectid=12221050

Whanganui Chronicle. (2019b). Resource consent application to demolish Whanganui's Thain's Building to be considered on August 9-10. Retrieved from https://www.nzherald.co.nz/resource-management-act/news/article.cfm?c_id=303&objectid=12103442

Whanganui Chronicle. (2019c). Whanganui's heritage Thain's building can't be saved after devastating fire; council orders demolition. *Whanganui Chronicle*. Retrieved from https://www.nzherald.co.nz/north-island/news/article.cfm?c_id=1503932&objectid=12252436

Whanganui District Council. (2016). *Making Whanganui Visible: Regeneration strategy for the Whanganui town centre.* Auckland: Urbanismplus Ltd Retrieved from https://www.whanganui.govt.nz/files/assets/public/strategies/cur-final-whanganui-tc-strategy-report-161216.pdf

Whanganui District Council. (2019a). Public notice of application concerning resource consent application to demolish the Class B Heritage building at 1 Victoria Avenue, Whanganui. Retrieved from https://www.whanganui.govt.nz/Public-Notices/Regarding-resource-consent-1-Victoria-Avenue?BestBetMatch=1%20victoria%20avenue|a660ea40-8921-4012-bf28-7734c79d2e06|62bd3e67-e49c-4c5d-aff9-a6435e8baa32|en-AU

Whanganui District Council. (2019b). Resource consent granted for demolition of fire-damaged building. Retrieved from https://www.whanganui.govt.nz/Your-Council/News-Events/News/Resource-consent-granted-for-demolition-of-fire-damaged-building?BestBetMatch=resource%20consent%20to%20demolish|a660ea40-8921-4012-bf28-7734c79d2e06|62bd3e67-e49c-4c5d-aff9-a6435e8baa32|en-AU

Whanganui District Council. (2019c). Whanganui Walls to bring colour to town. Retrieved from https://www.whanganui.govt.nz/our-council/news-media/media-releases/Pages/default.aspx?newsItem=9019

Wheeler, B. (2004). *The value of built heritage assets in Whanganui*. Retrieved from https://www.whanganui.govt.nz/our-council/publications/research/Documents/WheelerReport2004.pdf

Whyatt, G. (2004). Town centre management: how theory informs a strategic approach. *International Journal of Retail & Distribution Management, 32*(7), 346-353.

Wiechmann, T. (2006). Types of shrinking cities–Introductive Notes on a Global Issue. *Powerpoint presentation. Retrieved May, 25*, 2007.

Wiechmann, T., & Bontje, M. (2015). Responding to tough times: Policy and planning strategies in shrinking cities. In: Taylor & Francis.

Wiechmann, T., & Pallagst, K. M. (2012). Urban shrinkage in Germany and the USA: A comparison of transformation patterns and local strategies. *International Journal of Urban and Regional Research, 36*(2), 261-280.

Wilkinson, S., James, K., & Reed, R. (2009). Using building adaptation to deliver sustainability in Australia. *Structural Survey, 27*(1), 46-61.

Wilkinson, S., & Osmond, P. (2018). Building Resilience in Urban Settlements. *International journal of building pathology and adaptation, 36*(4), 334-336.

Wilkinson, S., & Remøy, H. (2018). *Building Urban Resilience Through Change of Use*: John Wiley & Sons.

Wilkinson, S., Remøy, H., & Langston, C. (2014). *Sustainable building adaptation: innovations in decision-making*: John Wiley & Sons.

Wilkinson, S., & Remoy, H. T. (2011). *Sustainability and within use office building adaptations: A comparison of Dutch and Australian practices.* Paper presented at the PRRES 2011: Proceedings of the 17th Pacific Rim Real Estate Society Annual Conference.

Wilkinson, S., & Silverman, D. (2004). Focus Group Research. In *Qualitative research: Theory, method and practice* (pp. 177-199).

Wilkinson, S. J., Remøy, H., & Langston, C. (2014). *Sustainable building adaptation: innovations in decision-making*: John Wiley & Sons.

Willson, G. B., & McIntosh, A. J. (2007). Heritage buildings and tourism: An experiential view. *Journal of heritage tourism, 2*(2), 75-93.

Wilson, C. (2010). *Adaptive reuse of industrial buildings in Toronto, Ontario: evaluating criteria for determining building selection.*

Wilson, J. (2005). 'History', Te Ara - the Encyclopedia of New Zealand. Retrieved from https://teara.govt.nz/en/history

Wilson, J. Q., & Kelling, G. L. (1982). Broken windows. *Critical issues in policing: Contemporary readings*, 395-407.

Wilson, K. J. (2016). *Exploring the role of design in sustainable adaptive reuse of built heritage.* (PhD Thesis by publication). Queensland University of Technology, Ql, Australia.

Wing, C. K., Raftery, J., & Walker, A. (1998). The baby and the bathwater: research methods in construction management. *Construction Management & Economics, 16*(1), 99-104.

Winston, N., & Eastaway, M. P. (2008). Sustainable housing in the urban context: international sustainable development indicator sets and housing. *Social Indicators Research, 87*(2), 211-221.

Winston, W. L., & Goldberg, J. B. (2004). *Operations research: applications and algorithms* (Vol. 3): Thomson/Brooks/Cole Belmont^ eCalif Calif.

Witkin, B. R., & Altschuld, J. W. (1995). *Planning and conducting needs assessments: A practical guide*: Sage.

Wolf, J. F. (2006). Urban governance and business improvement districts: the Washington, DC BIDs. *Intl Journal of Public Administration, 29*(1-3), 53-75.

Wong, L. (2017). *Adaptive reuse: extending the lives of buildings*. Basel: Birkhäuser.

Wood, J. (2019). *Growing beyond growth: Rethinking the goals of regional development in New Zealand*. Retrieved from https://maxim.org.nz/wp-content/uploads/2017/02/Paper-Growing-Beyond-Growth.pdf

Woods, D. D., Leveson, N., & Hollnagel, E. (2012). *Resilience Engineering: Concepts and Precepts*. Aldershot: Ashgate Publishing Ltd.

Woods, N., Cropper, D., & Cawte, H. (2019). *Invercargill Central Redevelopment*. Retrieved from New Zealand Heritage Properties Ltd, Dunedin:

https://icc.govt.nz/wp-content/uploads/2019/02/3.2-Invercargill-Central-HIA-Addendum-January-2019.pdf

Wright, G., & Goodwin, P. (2009). *Decision analysis for management judgment*: John Wiley and sons.

Wypych, S., Sipe, N., & Baker, D. (2005). Performance-based planning in Queensland. *Australian Planner, 42*(3), 26-31.

Yakubu, I. E., Egbelakin, T., Dizhur, D., Ingham, J., Sungho Park, K., & Phipps, R. (2017). Why are older inner-city buildings vacant? Implications for town centre regeneration. *Journal of Urban Regeneration & Renewal, 11*(1), 44-59.

Yang, J., & Lee, H. (1997). An AHP decision model for facility location selection. *Facilities, 15*(9/10), 241-254.

Yau, Y., Wing Chau, K., Chi Wing Ho, D., & Kei Wong, S. (2008). An empirical study on the positive externality of building refurbishment. *International journal of housing markets and analysis, 1*(1), 19-32.

Yildirim, M. (2012). Assessment of the decision-making process for re-use of a historical asset: The example of Diyarbakir Hasan Pasha Khan, Turkey. *Journal of cultural heritage, 13*(4), 379-388.

Yin, R. K. (2017). *Case study research and applications: Design and methods*: Sage publications.

Yiu, C., & Leung, A. Y. (2005). A cost-and-benefit evaluation of housing rehabilitation. *Structural Survey, 23*(2), 138-151.

Yuan, H., Shen, L., Hao, J. J., & Lu, W. (2011). A model for cost–benefit analysis of construction and demolition waste management throughout the waste chain. *Resources, conservation and recycling, 55*(6), 604-612.

Yuen, B. (2005). Strengthening urban heritage in Singapore: Building economic competitiveness and civic identity. *Global Urban Development, 1*(1), 1-8.

Yumagulova, L., & Vertinsky, I. (2019). Moving beyond engineering supremacy: Knowledge systems for urban resilience in Canada's Metro Vancouver region. *Journal of Environmental Science and Policy, 100*, 66-73.

Yung, E. H., & Chan, E. H. (2012). Implementation challenges to the adaptive reuse of heritage buildings: Towards the goals of sustainable, low carbon cities. *Habitat International, 36*(3), 352-361.

Yung, E. H., & Chan, E. H. W. (2011). Problem issues of public participation in built-heritage conservation: Two controversial cases in Hong Kong. *Habitat International, 35*(3), 457-466. doi:http://dx.doi.org/10.1016/j.habitatint.2010.12.004

Zhang, L. (2005). Migrant enclaves and impacts of redevelopment policy in Chinese cities. *Restructuring the Chinese city: Changing society, economy and space*, 218-233.

Zhang, Y. (2008). Steering towards growth: Symbolic urban preservation in Beijing, 1990–2005. *Town Planning Review, 79*(2-3), 187-208.

Zhong, X., & Chen, X. (2017). Demolition, rehabilitation, and conservation: heritage in Shanghai's urban regeneration, 1990–2015. *Journal of Architecture and Urbanism, 41*(2), 82-91.

Zhou, H., Wan, J., & Jia, H. (2010). Resilience to natural hazards: a geographic perspective. *Natural Harzards, 53*(1), 21-41.

Appendices

Appendix 1: Interview Schedule 1

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

School of Engineering and Advanced Technology (SEAT)
Massey University
Private Bag 102 904, North Shore 0745
Auckland, New Zealand
Email: I.Aigwi@massey.ac.nz

Interview schedule

Topic: From drag to brag: Role of government grants in enhancing future built heritage protection efforts in New Zealand's provincial communities

Questions

1. Do you think the Building (Earthquake-prone Buildings) Amendment Act 2016 has impacted the heritage buildings in the city-centres of New Zealand's provincial areas?
2. What are the main government grants available to motivate building owners to participate in enhancing built heritage conservation efforts in New Zealand?
3. Do you think these grants are fairly allocated to provincial areas? What are your reasons?
4. What is your recommendation for a fair distribution of these grants to be achieved?

Appendix 2: Interview Schedule 2

School of Engineering and Advanced Technology (SEAT)
Massey University
Private Bag 102 904, North Shore 0745
Auckland, New Zealand
Email: I.Aigwi@massey.ac.nz

Interview schedule

Topic: Urban transformation trajectories of New Zealand's earliest cities undergoing decline: Identifying links to the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016

Questions

1. Do you think the Building (Earthquake-prone Buildings) Amendment Act 2016 has put historical buildings on the spotlight for demolition?
2. How do you think this new legislation has impacted owners of commercial earthquake-prone historical buildings?
3. Do you think the impact is the same for all New Zealand's cities?
4. If different, how can these impact be reduced?

Appendix 3: Interview Schedule 3

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

School of Engineering and Advanced Technology (SEAT)
Massey University
Private Bag 102 904, North Shore 0745
Auckland, New Zealand
Email: I.Aigwi@massey.ac.nz

Interview schedule

Topic: Why are older inner-city buildings vacant? Implications for town centre regeneration

Questions

1. Do you have a connection with any of the historical building(s) in Whanganui's city centre and if so, which building(s) and what is your association with it?
2. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with the buildings ability to meet sanitary requirements?
3. What are your concerns and how do you think this impacts its occupancy?
4. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with the buildings ability to meet earthquake requirements?
5. What are your concerns and how do you think this impacts its occupancy?
6. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with the buildings ability to meet fire safety requirements?
7. What are your concerns and how do you think this impacts its occupancy?
8. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with the buildings ability to provide adequate protection to users from injury?
9. What are your concerns and how do you think this impacts its occupancy?
10. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with the buildings ability to meet disability access requirements?
11. What are your concerns and how do you think this impacts its occupancy?
12. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with disability parking availability in the building's proximity?
13. What are your concerns and how do you think this impacts its occupancy?
14. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with the street lighting in the building's proximity?
15. What are your concerns and how do you think this impacts its occupancy?
16. On a scale of 1 (not concerned at all) to 10 (extremely concerned), how concerned are you with crime in the area around the building?
17. What are your concerns and how do you think this impacts its occupancy?
18. Why is the building empty?
19. What are the economic implications of the building being empty?
20. What is your perception of the demand for the building?
21. Why do you think this is and what are the implications?
22. What would you recommend to increase the demand for the building?

Appendix 4: Closed-ended questionnaire from focus group workshop

QuakeCoRE

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Whanganui Focus Group Workshop

Topic: Building Resilient Urban Areas through Adaptive Reuse
Venue: The Pioneer Room, War Memorial Function & Events Centre, Watt Street (Queens Park), Whanganui
Date: Tuesday, 8th August 2017
Time: 9:00am – 12.30pm

CASE STUDY BUILDINGS

Building A: 1-3 Victoria Avenue	**Building B:** 47-53 Ridgeway Street (Corner of Victoria Avenue)
	

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

ACTIVITY 1

Objective: To examine the adaptive reuse approach and its potentials for selected case study buildings towards building a resilient urban area

Section A: Participant Information
1. Gender: ◯ Male ◯ Female
2. How many years have you lived in Whanganui? ◯ 0-3 ◯ 3-7 ◯ 7-12 ◯ 12-20 ◯ 21+
3. Which of these adaptive reuse stakeholder groups do you represent? ◯ **Investors** (Private heritage building Owners, property developers, government) ◯ **Producers** (Building professionals such as architects, engineers, heritage restoration experts, quantity surveyors, estate valuers, property managers, facilities managers, etc.) ◯ **Regulators** (Heritage advocates, asset planners, health and safety reps, planning and zoning reps, seismic safety reps, etc.) ◯ **Users** (Tenants and lease holders of heritage buildings, public) ◯ **Others**
4. What is your professional background? ....
5. How many years have you worked within your profession? ◯ 0-1 ◯ 1-5 ◯ 6-10 ◯ 11-15 ◯ 16-20 ◯ 21+
6. Which of these levels best describes your position within your professional organisation? ◯ Director ◯ Senior management ◯ Middle management ◯ Supervisor/team leader ◯ Staff
7. How many years have you worked with your current organisation? ◯ 0-1 ◯ 1-5 ◯ 6-10 ◯ 11-15 ◯ 16-20 ◯ 21+
8. What is your level of familiarity with the case study buildings? ◯ High ◯ Medium ◯ Low
9. What is your level of familiarity with the adaptive reuse concept? ◯ High ◯ Medium ◯ Low

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

SECTION B: Adaptive reuse strategy development

The building discussed in this section has been identified as a heritage building with potentials for reuse.
Please answer the questions in this section in relation to each building.

Kindly indicate the reference building below:

◯ **Building A** ◯ **Building B**

1. What interventions would you suggest for this building? Please choose ONLY one option

◯ Do nothing
◯ Minor renovation
◯ Demolish and rebuild
◯ Sell the building
◯ Conversion for new functions
◯ Unsure

2. Which of the following do you consider as the best new use for this building? Please choose **ONLY one** option

◯ Residential dwellings
◯ Commercial (retail, offices, cinema, hotel, cafés and restaurants, public)
◯ Mixed use (residential & commercial)
◯ Cultural (Arts centre)
◯ Institutional (library, educational facility, etc.)
◯ Religious
◯ Industrial (manufacturing or warehouse)
◯ Public toilet
◯ Government
◯ Police station
◯ Hospital/ clinic
◯ Fire station
◯ Civil defence
◯ Rest home
◯ Parking
◯ Unsure
◯ Others (Please specify) ....

3. Who are the target market groups for the specified function(s) above? Please choose **ONLY one** option

◯ First home buyers
◯ Commercial (Retailers, offices, cinema, hotel, cafés and restaurants)
◯ Cultural groups
◯ Educational institutions
◯ Religious groups
◯ Manufacturers
◯ Government
◯ Health sector
◯ Students
◯ Baby boomers (Senior citizens: 1940s – 1960s)
◯ Generation X (1960s – 1980s)
◯ Generation Y (early 1980s – early 2000s)
◯ Others (Please specify) ....

4. What type of tenure do you think will **MOST** likely suit the above future building use and target group? Please choose ONLY one option

◯ Rental ◯ Purchase ◯ Unsure

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

5. To what extent do you think the following factors will drive the preservation and change of use of this building

Prospects and obstacles	To a large extent	To some extent	Unsure	To small extent	Not at all
Enhanced property market from strategic location					
Technical innovation					
Increased inner-city population density					
High demand for redeveloped historical buildings					
Increased economic opportunities					
Seismic regulatory requirements					
Heritage regulatory requirements					
Health and safety regulatory requirements					
Feasibility of reusing building materials					
Impact on aesthetic fabric					
Availability and cost of materials to match existing fittings, elements, and fixtures					
Procedure for planning approval					
Non-strategic building location and marketability					
structural integrity after redevelopment					

SECTION C – Assessment of adaptive reuse priority aspects

Please answer the questions in this section in relation to the benefits of changing the use of each building.

1. To what extent do you think the suggested building use would influence the following economic factors

Economic Viability	To a large extent	To some extent	Unsure	To small extent	Not at all
Increased local commercial activities					
Increase in property and land values					
Increased revenue from tourism					

2. To what extent do you agree that changing the use of this building would influence the following socio-cultural factors?

Socio-cultural sustainability	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Sustain a common cultural identity of place					
Maintain a cultural significance of place					
Increase sense of belonging and attachment to place					
Increase the life-cycle of historical buildings					

3. To what extent do you think changing the use of this building would contribute to enhancing the following built heritage conservation factors?

Built heritage conservation	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Sustenance of the architectural history of Whanganui's main streetscape					
Retention of the visual heritage features of Whanganui's main streetscape					
Conservation of history and narration of town's existence					
Preservation of past memories of the historical buildings					

Appendix 5: Participant information sheet

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

Date: 16 March 2017

Dear Itohan Yakubu

Re: Ethics Notification - **4000017402 - Economics of Strengthening and Redeveloping Buildings for Adaptive Reuse Purposes**

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please go to http://rims.massey.ac.nz and register the changes in order that they be assessed as safe to proceed.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:
"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director - Ethics, telephone 06 3569099 ext 86015, email humanethics@massey.ac.nz. "

Please note, if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to complete the application form again, answering "yes" to the publication question to provide more information for one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

Research Ethics Office, Research and Enterprise
Massey University, Private Bag 11 222, Palmerston North, 4442, New Zealand **T** 06 350 5573; 06 350 5575 **F** 06 355 7973
E humanethics@massey.ac.nz **W** http://humanethics.massey.ac.nz

Human Ethics Low Risk notification

Dr Brian Finch
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Appendix 6: Participant information sheet

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

School of Engineering and Advanced Technology (SEAT)
Massey University
Private Bag 102 904, North Shore 0745
Auckland, New Zealand
Email: I.Aigwi@massey.ac.nz

PARTICIPANT INFORMATION SHEET (PIS)

Building Resilient Urban Areas through Adaptive Reuse

Purpose of the Participant Information Sheet (PIS)

You have been invited to participate in this focus group meeting on the above project as an important stakeholder in Whanganui who can provide assistance with relevant information because of your interest, or knowledge and experience regarding the research topic. As a potential research participant, you have been provided with this Participant Information Sheet (PIS) to ensure that you are fully aware of the details of this research. This workshop will last for about three to four hours.

Research Summary

With the aim of enhancing community resilience through innovative research approaches, this study titled: ***Building resilient urban areas through Adaptive Reuse,*** focuses on balancing the diverse interests of relevant adaptive reuse stakeholders, using a multi-criteria decision assessment framework developed to prioritise underutilised heritage buildings for adaptive reuse interventions.

Data Collection

A focus group workshop is conducted to engage relevant stakeholder in Auckland with significant knowledge and experience regarding the preservation of heritage buildings, earthquake resilience or sustainable urban development, to contribute knowledgeable viewpoints for the workshop. Heritage building owners, users, and other members of the public that are associated with heritage buildings in any way are also part of the workshop participants.

Outcome

The research outcome would lead to the development of an adaptive reuse strategy for:

Owners/ Investors; Producers; Regulators; and Users

- To identify factors that would promote successful adaptive reuse process
- To select best investment option for adaptive reuse intervention
- To prioritise historical buildings worthy of preservation from district list of heritage buildings for adaptive reuse intervention

Participant's rights:

You are under no obligation to participate in this meeting. However, if you decide to participate, you have the right to:

- ask any questions about the research at any time of the discussions;
- withdraw your participation by not answering any particular question at any time during the discussion;
- leave the workshop venue at any time without having to provide a reason;
- request the audio-recording device to be turned off at any time of the discussion sessions; and
- request a summary of the research findings if necessary

Data Management:

The research participants' written consents are required for the discussions of this workshop to be audio-recorded. All discussion sessions will be transcribed and securely stored electronically in a password-protected folder which will be accessible to only the researcher.

Ethics Notification:

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director - Ethics, telephone 06 3569099 ext 86015, email humanethics@massey.ac.nz.

For further Enquiries about this research, please contact:

Researcher's Name and Contact Details
Esther Aigwi Department of Construction Management School of Engineering & Advanced Technology Massey University, Auckland Email: I.Aigwi@massey.ac.nz

Appendix 7: Consent form

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

School of Engineering and Advanced Technology (SEAT)
Massey University
Private Bag 102 904, North Shore 0745
Auckland, New Zealand
Email: I.Aigwi@massey.ac.nz

CONSENT FORM

Building Resilient Urban Areas through Adaptive Reuse

I have read the Participant Information Sheet (PIS) and have understood the details of this research. I understand that I may ask further questions at any time, and that the reporting of information from this workshop will be conducted in a manner that will not be traceable to the information source.

Please circle either 'agree' or 'do not agree below.

- I agree / do not agree to participate in this research.
- I agree / do not agree that the discussion sessions I participate in, shall be audio-recorded and transcribed
- I wish/do not wish to receive a summary of research findings

Name of Participant: …………………………………… Organisation: ………………………………

Signature: ……………………………… ……………….Date: ……..

CONFIDENTIALITY AGREEMENT

I, **Esther Aigwi,** agree to keep all information regarding the project confidential. I will not retain or copy any information involving the project for any other use other than the purpose of this research.

Signature: ……………………………… ……………….Date: ……..

Appendix 8: Priority aspects for performance-based framework

Priority	Description
Economic sustainability (P₁)	The new use of a successfully adapted historical building should be able to promote economic sustainability for its host community. Moreover, it is usually expected that the new use should be capable of generating profit for its future maintenance and refurbishment. Just like a ripple effect (Cook and Thomas, 2003), the property values of other neighbouring historical buildings should be increased after a successful adaptation process on a historical building (Mısırlısoy and Günçe, 2016a). This chain reaction could also boost revenue from cultural tourism in the area, as visitors would be attracted to the area because of its attractive streetscape, and collection of revitalised historical buildings. Accordingly, the indicators for measuring the economic benefits of adaptive reuse projects should include: the numbers of newly established businesses and employment prospects for the local workforce, increased value of surrounding properties, and increased revenue from tourism for local businesses (Engelhardt et al., 2007).
Built heritage conservation (P_2)	A majority of historical buildings provide physical links and the progression of cultural evidence to the past (Goodwin et al., 2009). In a fast-growing urbanising world, these heritage values viewed as public goods (Navrud and Ready, 2002), could aid the significance of a town's cultural heritage and unique competitiveness (Yuen, 2005). Heritage conservation charters, mandate that when historical buildings with heritage values are being redeveloped, their architectural and heritage character should be maintained and conserved for sustainability (ICOMOS, 2010). Accordingly, this mandate on heritage conservation has led to the scheduling of several heritage buildings into district plans, thereby protecting them from unsympathetic alterations or demolition through regulations. Built heritage conservation through adaptive reuse could, therefore, be considered to promote the sustainable historical and cultural development of urban areas (Nasser, 2003).
Socio-cultural aspects (P_3)	Socio-cultural factors usually incorporate the impacts of a historical building's new use to its local area through the quality of life within the community, and other socio-cultural associated activities (Langston et al., 2007). A successfully adapted historical building will help to link residents to their roots by serving as collective memory, with which they can all reflect on their personal and cultural identities (Butina-Watson and Bentley, 2007). Although socio-cultural aspects are often less prioritised for adaptive reuse projects possibly because they are difficult to measure, to achieve successful adaptive reuse projects, repurposed historical buildings should be socio-culturally justifiable (Mısırlısoy and Günçe, 2016b). The new use of the repurposed historical buildings should be able to attend to the immediate needs of the local community, while, contributing socio-cultural benefits to its users by proposing new activities for them (Engelhardt et al., 2007). Also, a most suitable new use would enhance the quality of lifestyle and exposure of residents by promoting a sustainable communal life and improving the cultural diversity and significance of place (Mısırlısoy and Günçe, 2016a).
Building usability (P_4)	The constant shifting demand for old historic buildings in the general property market could be due to the impacts of the ineffectiveness, and the natural decay of the systems and fabrics of historical EPBs (Petersdorff et al., 2006). Most owners of old historical buildings may, however, decide to upgrade their buildings through adaptive reuse on an economic basis, as a response to the declining usability of these buildings (Pearce et al., 2004). A reduction in the vacancy rate and obsolescence levels experienced by old historical buildings could potentially lead to an increase in their demand. Consequently, an increase in the demand for upgraded historical buildings will optimise the value of the buildings by acknowledging their residual usability towards sustainable urban regeneration (Ellison et al., 2007).
Seismic Resilience (P_5)	The purpose of seismic resilience is to recover or maintain functionality and create adjustments that would accommodate thriving and learning while reducing the adverse effects of future earthquake occurrences (Smith et al., 2016). A community could be considered as seismic-resilient if it possesses the capacity to absorb and minimise the disruptive and adverse effects of an earthquake and efficiently respond to the earthquake event (Bruneau et al., 2003). According to (Mileti and Peek, 2002), a seismic-resilient community could be described as an area that can withstand an extreme seismic event with a tolerable degree of losses and can consistently handle mitigation actions through achieving a tolerable degree of protection. The seismic resilience concept is important because New Zealand is in an active seismic region of the world. Accordingly, a sustainable town centre can be gained through the seismic strengthening and redevelopment of historical buildings, since a majority of redevelopment projects cannot be done without triggering seismic regulations of strengthening earthquake-prone buildings to greater than 67% NBS rating in New Zealand's high seismic hazard areas (MBIE, 2017).

Appendix 9: MCDA weighting and scoring

Performance Matrix						Unweighted Rating		Weighted Rating	
Priority aspects	**Weight**		**Criteria**	**Point Allocation**	**Actual Weight**	***A1***	***A2***	***A1***	***A2***
Economic Sustainability (P1)	35	1.1	The building would finance itself via the commercially viable new use	25	8.75	0	10	0	87.5
		1.2	Increase Job creation from new building function	25	8.75	0	10	0	87.5
		1.3	Increase local commercial activities	20	7	0	10	0	70
		1.4	Increase revenue from tourism	10	3.5	0	10	0	35
		1.5	Increase land value	20	7	10	0	70	0
			Total Priority Score			**10**	**40**	**70**	**280**
			Highest Possible		***350***				
Built Heritage Preservation (P2)	20	2.1	Retain the visual heritage features of the CBD streetscape	25	5	0	10	0	50
		2.2	Preserve the history and narration of town's existence	25	5	10	0	50	0
		2.3	Maintain sense of place	25	5	0	10	0	50
		2.4	Sustain the architectural history of town's CBD streetscape	25	5	0	10	0	50
			Total Priority Score			**10**	**30**	**50**	**150**
			Highest Possible		***200***				
Socio-Cultural Aspects (P3)	10	3.1	Promote a feeling of belonging and attachment to the place	30	3	0	10	0	30
		3.2	Create a common cultural identity	30	3	10	0	30	0
		3.3	Ensure the continuity of building's life, that contributes to the cultural significance of the place.	40	4	0	10	0	40
			Total Priority Score			**10**	**20**	**30**	**70**
			Highest Possible		***100***				
Building Usability (P4)	20	4.1	Interventions for Buildings: Do nothing	1	0.2	0	10	0	2
		4.2	Interventions for Buildings: Sell the building	5	1	10	0	10	0
		4.3	Interventions for Buildings: Minor renovations	5	1	0	10	0	10
		4.4	Interventions for Buildings: Change of use and refurbishment	12	2.4	10	0	24	0
		4.5	Interventions for Buildings: Demolish and rebuild	1	0.2	0	10	0	2
		4.6	Optimal use for building: Residential (apartments)	5	1	10	0	10	0
		4.7	Optimal use for building: Commercial (retail and offices)	5	1	10	0	10	0
		4.8	Optimal use for building: Mixed use (residential and commercial)	15	3	0	10	0	30
		4.9	Optimal use for building: Cultural	0	0	0	10	0	0
		4.10	Optimal use for building: Institutional (Library, educational facility)	1	0.2	0	10	0	2
		4.11	Optimal target market group: Students	5	1	10	0	10	0
		4.12	Optimal target market group: First home buyers	5	1	10	0	10	0
		4.13	Optimal target market group: Retail	10	2	0	10	0	20
		4.14	Optimal target market group: Art gallery	8	1.6	0	10	0	16
		4.15	Optimal target market group: offices	5	1	10	0	10	0
		4.16	Optimal target market group: senior citizens	8	1.6	0	10	0	16
		4.17	Optimal target market group: Generation X (1980s - 2000)	1	0.2	10	0	2	0
		4.18	Optimal target market group: Generation Y - Millennial	8	1.6	10	0	16	0
			Total Priority Score			**90**	**90**	**102**	**98**
			Highest Possible		***200***				
Seismic Resilience (P5)	15	5.1	Minimise Injury or death	70	10.5	0	10	0	105
		5.2	Minimise damage to property	20	3	0	10	0	30
		5.3	Minimise business interruption	10	1.5	0	10	0	15
			Total Priority Score			**0**	**30**	**0**	**150**
			Highest Possible		***150***				
								252	**748**

Performance Matrix						Unweighted Rating			Weighted Rating
Priority aspects	**Weight**		**Criteria**	**Point Allocation**	**Actual Weight**	***A1***	***A2***	***A1***	***A2***
Economic Sustainability (P1)	30	1.1	The building would finance itself via the commercially viable new use	60	18	10	0	180	0
		1.2	Increase Job creation from new building function	10	3	0	10	0	30
		1.3	Increase local commercial activities	10	3	0	10	0	30
		1.4	Increase revenue from tourism	10	3	0	10	0	30
		1.5	Increase land value	10	3	10	0	30	0
			Total Priority Score			**20**	**30**	**210**	**90**
			Highest Possible		***300***				
Built Heritage Preservation (P2)	30	2.1	Retain the visual heritage features of the CBD streetscape	25	7.5	0	10	0	75
		2.2	Preserve the history and narration of town's existence	25	7.5	0	10	0	75
		2.3	Maintain sense of place	25	7.5	10	0	75	0
		2.4	Sustain the architectural history of town's CBD streetscape	25	7.5	0	10	0	75
			Total Priority Score			**10**	**30**	**75**	**225**
			Highest Possible		***300***				
Socio-Cultural Aspects (P3)	20	3.1	Promote a feeling of belonging and attachment to the place	30	6	0	10	0	60
		3.2	Create a common cultural identity	30	6	0	10	0	60
		3.3	Ensure the continuity of building's life, that contributes to the cultural significance of the place.	40	8	0	10	0	80
			Total Priority Score			**0**	**30**	**0**	**200**
			Highest Possible		***200***				
Building Usability (P4)	10	4.1	Interventions for Buildings: Do nothing	0	0	3	10	0	0
		4.2	Interventions for Buildings: Sell the building	5	0.5	10	0	5	0
		4.3	Interventions for Buildings: Minor renovations	5	0.5	10	0	5	0
		4.4	Interventions for Buildings: Change of use and refurbishment	48	4.8	10	0	48	0
		4.5	Interventions for Buildings: Demolish and rebuild	0	0	0	10	0	0
		4.6	Optimal use for building: Residential (apartments)	5	0.5	10	0	5	0
		4.7	Optimal use for building: Commercial (retail and offices)	3	0.3	0	10	0	3
		4.8	Optimal use for building: Mixed use (residential and commercial)	10	1	0	10	0	10
		4.9	Optimal use for building: Cultural	3	0.3	0	10	0	3
		4.10	Optimal use for building: Institutional (Library, educational facility)	3	0.3	0	10	0	3
		4.11	Optimal target market group: Students	4	0.4	0	10	0	4
		4.12	Optimal target market group: First home buyers	0	0	10	0	0	0
		4.13	Optimal target market group: Retail	2	0.2	10	0	2	0
		4.14	Optimal target market group: Art gallery	2	0.2	0	10	0	2
		4.15	Optimal target market group: offices	2	0.2	0	10	0	2
		4.16	Optimal target market group: senior citizens	8	0.8	0	10	0	8
		4.17	Optimal target market group: Generation X (1980s - 2000)	0	0	0	10	0	0
		4.18	Optimal target market group: Generation Y - Millennial	0	0	0	10	0	0
			Total Priority Score			**63**	**120**	**65**	**35**
			Highest Possible		***100***				
Seismic Resilience (P5)	10	5.1	Minimise Injury or death	50	5	0	10	0	50
		5.2	Minimise damage to property	10	1	10	0	10	0
		5.3	Minimise business interruption	40	4	10	0	40	0
			Total Priority Score			**20**	**10**	**50**	**50**
			Highest Possible		***100***				
								400	**600**

			Performance Matrix			Unweighted Rating			Weighted Rating
Priority aspects	**Weight**		**Criteria**	**Point Allocation**	**Actual Weight**	***A1***	***A2***	***A1***	***A2***
Economic Sustainability (P1)	30	1.1	The building would finance itself via the commercially viable new use	50	15	0	10	0	150
		1.2	Increase Job creation from new building function	10	3	0	10	0	30
		1.3	Increase local commercial activities	15	4.5	0	10	0	45
		1.4	Increase revenue from tourism	15	4.5	10	0	45	0
		1.5	Increase land value	10	3	10	0	30	0
			Total Priority Score			**20**	**30**	**75**	**225**
			Highest Possible		***300***				
Built Heritage Preservation (P2)	25	2.1	Retain the visual heritage features of the CBD streetscape	30	7.5	10	0	75	0
		2.2	Preserve the history and narration of town's existence	20	5	10	0	50	0
		2.3	Maintain sense of place	20	5	0	10	0	50
		2.4	Sustain the architectural history of town's CBD streetscape	30	7.5	10	0	75	0
			Total Priority Score			**30**	**10**	**200**	**50**
			Highest Possible		***250***				
Socio-Cultural Aspects (P3)	10	3.1	Promote a feeling of belonging and attachment to the place	40	4	0	10	0	40
		3.2	Create a common cultural identity	20	2	0	10	0	20
		3.3	Ensure the continuity of building's life, that contributes to the cultural significance of the place.	40	4	0	10	0	40
			Total Priority Score			**0**	**30**	**0**	**100**
			Highest Possible		***100***				
Building Usability (P4)	30	4.1	Interventions for Buildings: Do nothing	0	0	0	10	0	0
		4.2	Interventions for Buildings: Sell the building	0	0	10	0	0	0
		4.3	Interventions for Buildings: Minor renovations	8	2.4	0	10	0	24
		4.4	Interventions for Buildings: Change of use and refurbishment	12	3.6	10	0	36	0
		4.5	Interventions for Buildings: Demolish and rebuild	0	0	10	0	0	0
		4.6	Optimal use for building: Residential (apartments)	5	1.5	10	0	15	0
		4.7	Optimal use for building: Commercial (retail and offices)	10	3	0	10	0	30
		4.8	Optimal use for building: Mixed use (residential and commercial)	15	4.5	10	0	45	0
		4.9	Optimal use for building: Cultural	5	1.5	0	10	0	15
		4.10	Optimal use for building: Institutional (Library, educational facility)	10	3	0	10	0	30
		4.11	Optimal target market group: Students	2	0.6	0	10	0	6
		4.12	Optimal target market group: First home buyers	5	1.5	10	0	15	0
		4.13	Optimal target market group: Retail	8	2.4	0	10	0	24
		4.14	Optimal target market group: Art gallery	2	0.6	10	0	6	0
		4.15	Optimal target market group: offices	6	1.8	0	10	0	18
		4.16	Optimal target market group: senior citizens	0	0	0	10	0	0
		4.17	Optimal target market group: Generation X (1980s - 2000)	5	1.5	10	0	15	0
		4.18	Optimal target market group: Generation Y - Millennial	7	2.1	0	10	0	21
			Total Priority Score			**80**	**100**	**132**	**168**
			Highest Possible		***300***				
Seismic Resilience (P5)	5	5.1	Minimise Injury or death	40	2	0	10	0	20
		5.2	Minimise damage to property	35	1.75	10	0	17.5	0
		5.3	Minimise business interruption	25	1.25	0	10	0	12.5
			Total Priority Score			**10**	**20**	**17.5**	**32.5**
			Highest Possible		***50***				
								424.5	**575.5**

Performance Matrix						Unweighted Rating		Weighted Rating	
Priority aspects	Weight		Criteria	Point Allocation	Actual Weight	*A1*	*A2*	*A1*	*A2*
Economic Sustainability (P1)	40	1.1	The building would finance itself via the commercially viable new use	30	12	0	10	0	120
		1.2	Increase Job creation from new building function	0	0	10	0	0	0
		1.3	Increase local commercial activities	30	12	0	10	0	120
		1.4	Increase revenue from tourism	0	0	0	10	0	0
		1.5	Increase land value	40	16	0	10	0	160
			Total Priority Score			**10**	**40**	**0**	**400**
			Highest Possible		***400***				
Built Heritage Preservation (P2)	10	2.1	Retain the visual heritage features of the CBD streetscape	0	0	0	10	0	0
		2.2	Preserve the history and narration of town's existence	0	0	0	10	0	0
		2.3	Maintain sense of place	0	0	0	10	0	0
		2.4	Sustain the architectural history of town's CBD streetscape	100	10	0	10	0	100
			Total Priority Score			**0**	**40**	**0**	**100**
			Highest Possible		***100***				
Socio-Cultural Aspects (P3)	10	3.1	Promote a feeling of belonging and attachment to the place	0	0	0	10	0	0
		3.2	Create a common cultural identity	0	0	0	10	0	0
		3.3	Ensure the continuity of building's life, that contributes to the cultural significance of the place.	100	10	0	10	0	100
			Total Priority Score			**0**	**30**	**0**	**100**
			Highest Possible		***100***				
Building Usability (P4)	25	4.1	Interventions for Buildings: Do nothing	0	0	0	10	0	0
		4.2	Interventions for Buildings: Sell the building	0	0	0	10	0	0
		4.3	Interventions for Buildings: Minor renovations	0	0	0	10	0	0
		4.4	Interventions for Buildings: Change of use and refurbishment	38	9.5	0	10	0	95
		4.5	Interventions for Buildings: Demolish and rebuild	0	0	10	0	0	0
		4.6	Optimal use for building: Residential (apartments)	5	1.25	0	10	0	12.5
		4.7	Optimal use for building: Commercial (retail and offices)	10	2.5	0	10	0	25
		4.8	Optimal use for building: Mixed use (residential and commercial)	15	3.75	10	0	37.5	0
		4.9	Optimal use for building: Cultural	0	0	0	10	0	0
		4.10	Optimal use for building: Institutional (Library, educational facility)	0	0	0	10	0	0
		4.11	Optimal target market group: Students	0	0	0	10	0	0
		4.12	Optimal target market group: First home buyers	0	0	0	10	0	0
		4.13	Optimal target market group: Retail	10	2.5	0	10	0	25
		4.14	Optimal target market group: Art gallery	0	0	10	0	0	0
		4.15	Optimal target market group: offices	10	2.5	0	10	0	25
		4.16	Optimal target market group: senior citizens	12	3	0	10	0	30
		4.17	Optimal target market group: Generation X (1980s - 2000)	0	0	0	10	0	0
		4.18	Optimal target market group: Generation Y - Millennial	0	0	0	10	0	0
			Total Priority Score			**30**	**150**	**37.5**	**212.5**
			Highest Possible		***250***				
Seismic Resilience (P5)	15	5.1	Minimise Injury or death	20	3	10	0	30	0
		5.2	Minimise damage to property	40	6	10	0	60	0
		5.3	Minimise business interruption	40	6	0	10	0	60
			Total Priority Score			**20**	**10**	**90**	**60**
			Highest Possible		***150***				
								127.5	**872.5**
Overall Priority								**301**	**699**

Appendix 10: Statement of contribution to publications

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
Urban transformation trajectories of New Zealand's earliest cities undergoing decline: Identifying links to the newly enforced Building (Earthquake-prone Buildings) Amendment Act 2016. AUBEA 2019 Conference, 6 – 8 November 2019 RACV Noosa R	
In which Chapter is the Manuscript /Published work:	Chapter 2
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
Published in the AUBEA 2019 Conference proceedings	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:44:58 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:45:34 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
Why are older inner-city buildings vacant? Implications for town-centre regeneration. Journal of Urban Regeneration & Renewal, 11(1), 1-16	
In which Chapter is the Manuscript /Published work:	Chapter 3
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
Published in the Journal of Urban Regeneration and Renewal	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:50:09 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:49:50 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
Unintended consequences of the earthquake-prone building legislation: An evaluation of two city centre regeneration strategies in New Zealand's provincial areas. International Journal of Disaster Risk Reduction	
In which Chapter is the Manuscript /Published work:	Chapter 4
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
Published in the International Journal of Disaster Risk Reduction	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:47:44 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:47:24 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
From drag to brag: Role of government grants in enhancing the built heritage protection efforts in New Zealand's provincial regions	
In which Chapter is the Manuscript /Published work:	Chapter 5
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
submitted to the Journal of Rural Studies	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:48:47 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:49:04 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
Identifying parameters for an AdaptSELECT framework: towards prioritising underutilised historical buildings for adaptive reuse in New Zealand. Cities Journal	
In which Chapter is the Manuscript /Published work:	Chapter 6
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
Published in Cities Journal	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:54:34 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:51:46 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
A performance-based framework to prioritise underutilised historical buildings for adaptive reuse interventions in New Zealand. Sustainable Cities and Society, 48(1), 101547. DOI: https://doi.org/10.1016/j.scs.2019.101547	
In which Chapter is the Manuscript /Published work:	Chapter 7
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
Published in Sustainable Cities and Society Journal	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:56:22 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:52:17 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
Characterisation of adaptive reuse stakeholders and the effectiveness of collaborative rationality towards building resilient urban areas. Journal of Group Decision and Negotiation	
In which Chapter is the Manuscript /Published work:	Chapter 8
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
Published in the Journal of Systemic Practice and Action Research	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:52:40 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:51:10 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)

DRC 16

MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION
DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Itohan Esther Aigwi
Name/title of Primary Supervisor:	Professor Robyn Phipps
Name of Research Output and full reference:	
Efficacy of adaptive reuse for the redevelopment of underutilised historical buildings: Towards the regeneration of New Zealand's provincial town centres. International Journal of Building Pathology and Adaptation. DOI:10.1108/IJBPA-01-2018-0007	
In which Chapter is the Manuscript /Published work:	Chapter 9
Please indicate:	
• The percentage of the manuscript/Published Work that was contributed by the candidate:	85%
and	
• Describe the contribution that the candidate has made to the Manuscript/Published Work:	
Participated in the formulation and research of the proposed solution. Conducted literature search, data collection and analysis, and wrote manuscript first draft.	
For manuscripts intended for publication please indicate target journal:	
Published in the International Journal of Building Pathology and Adaptation	
Candidate's Signature:	Itohan Esther Aigwi Digitally signed by Itohan Esther Aigwi Date: 2019.10.16 01:51:36 +13'00'
Date:	16/10/2019
Primary Supervisor's Signature:	Phipps, Robyn Digitally signed by Phipps, Robyn Date: 2019.10.16 14:50:33 +13'00'
Date:	16/10/2019

(This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis)