

***Regenerative Development in the New Zealand Built Environment: Achieving
Multi-capital Outcomes Through Improved Public Investment Decisions***

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Three quotes that have inspired my journey so far:

نہیں تیرا نشیمن قصرِ سلطانی کے گنبد پر
تُو شاہین ہے بسیرا کر پہاڑوں کی چٹانوں پر

Nahin Tera Nasheman Qasr-e-Sultani Ke Gunbad Par
Tu Shaheen Hai, Basera Kar Paharon Ki Chatanon Mein

Translation:

“Thy abode is not on the dome of a royal palace;
You are an eagle and should live on the rocks of mountains.”

- Alama Iqbal

“Hesitating to act because the whole vision might not be achieved, or because others do not yet share it, is an attitude that only hinders progress.”

- Mahatma Gandhi

“Not everything that counts can be counted
And Not everything that's counted truly counts.”

- Albert Einstein

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This thesis is for all the current and future generations of this world, a tiny blip attempting to find answers to two of my personal guiding questions:

1. How can we leave a place better than we found it?
2. How do we make good decisions for us and our children?

This study would have been incomplete without the contribution of various participants from the New Zealand built environment decision-making system. These participants, over 50 in number, generously shared their time, knowledge, experience, and sometimes frustrations as we discussed the regenerative development concept, sometimes in their office, sometimes over a coffee in a café, or sometimes adapting to the virtual video conferencing platforms in the midst of COVID-19. It is here that their contributions are significantly magnified, given that their personal and professional lives were adapting to a new normal. I thank you and immensely appreciate everything you have shared over the course of this study. Also special thanks to the regenerative development and design community of Aotearoa New Zealand, Australia (Dr Dominique Hes), and United States of America (Bill Reed, Ben Haggard, and Pamela Mang) for always making time for catch-ups and answering my questions patiently.

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learning for myself from this journey. Your quantitative approach presented a new perspective to my findings, which I think is a unique feature of this study thanks to you.

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ABSTRACT

This thesis presents perceived definitions, benefits, barriers and proposed solutions for the contextualisation and application of the regenerative development concept in New Zealand built environment public-spend projects. Regenerative development is the approach and process of achieving positive, broader social, natural, financial and human outcomes collectively through built environment investment decisions. Due to the novelty of the emerging field, the effects of regenerative development and design in New Zealand are unresearched and undocumented. There is a requirement for further understanding of what the application may look like and what would it mean to the built environment industry across the public-spend system.

The research design was based on a qualitative, critical interpretivist approach using systems theory with Rasmussen's Socio-Technical Model and Diffusion of Innovation Model to develop the boundaries for the study, and Bronfenbrenner's Ecological System Model to present the findings for reported barriers and proposed solutions for the application of regenerative development in New Zealand built environment projects. These were then used to develop the conceptual frameworks for pre-feasibility decision-making for regenerative projects. The study employed phased data collection in the form of archival data and pilot interviews (Phase One), semi-structured interviews (Phase Two), and Focus Group Discussions (Phase Three). These drew together 50 system-wide participants from politicians, central and local government officials, industry professionals, researchers, and community and Mana Whenua representatives. Various themes resulted from the findings of Phases One and Two which were then prioritised to three main themes in Phase Three. These themes are funding and finance, skills and capability, and New Zealand built environment system elements of project owner buy-in, trust, and diverse representation.

The thesis concludes by presenting the overall conclusions. The key conclusion is that the regenerative development concept requires a fresh approach to how decisions are made and funded. It requires current system-wide decision-making and funding structures, processes, and capability, and a system-wide will to collaborate (together as one for New Zealand) and collectively enable multiple-capital outcomes through public investment.

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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ETHICS APPROVAL

Draft: This research was approved by the Auckland University of Technology Ethics Committee AUTEC on:

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter presents a high-level introduction to the study which informed the structure of the thesis. Additionally, the chapter presents the significance of the study and brief introduction and purpose of using Diffusion of Innovation Model, Rasmussen's Risk Management Model, and Bronfenbrenner's Ecological System Model. Lastly, the study presents available literature understanding of multi-capitals (social, economic, cultural, natural, and political). A brief roadmap of the thesis is presented in Appendix I: Study and Thesis Roadmap.

Definitions of key terms are as follows:

Pre-feasibility decision-making: *"is a comprehensive study of a range of options for the technical and economic (commercial) viability of a project. It includes a financial analysis based on reasonable assumptions on the project factors, assumptions, risks, resources, and the evaluation of any other relevant factors which are sufficient to determine if all or part of the project will be funded and delivered"* (New Zealand Petroleum and Minerals, 2017)

Regenerative development:

Public-spend: *"the money that the government pays for projects relating to education, health care, defence, corrections, social and environmental development, etc."* (Macmillan, 2022)

1.1.1 Research Problem Statement

Regenerative development in the New Zealand built environment: to achieve multiple-capital outcomes through public investment decisions.

1.1.2 Purpose Statement

Using a systems framework to design the research and present the findings, this study looks specifically at the system-wide reported barriers and proposed solutions for the regenerative development concept to be adopted by New Zealand built environment public-spend decision makers, especially in the pre-feasibility stage.

1.1.3 Research Question and Sub-Questions

The main research question is: How does public-spend development need to change to deliver regenerative development projects?

Sub-questions:

1. What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential barriers to regenerative development in the New Zealand context?
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

1.2 The Significance of the Research

The purpose of this study is to explore the understanding and application of regenerative development in New Zealand. Due to the novelty of the emerging field, the effects of regenerative development and design in New Zealand are unresearched and undocumented except for initial studies undertaken by Pedersen Zari (2009, 2012). There is a requirement for further understanding of what the application may look like and what would it mean to the built environment industry across the public-spend system. Through the initial literature review undertaken by the researcher, this study aims to investigate current strategic public-spend decision-making in the pre-feasibility stage through a systems approach to gain an understanding of the barriers to and proposed solutions for application.

The motivation for this study arises from the current international socio-enviro-economic-political issues. There has been a growing concern about global climate change because of

increasing greenhouse gas (GHG) emissions (Bon-Gang, 2018). As one of the largest sources of GHG emissions, the building and construction industry is facing increasing pressure to reduce them (Bon-Gang, 2018). The World Green Building Council (WGBC, 2013) reported that buildings are responsible for one-third of GHG emissions in the world. Moreover, previous studies have shown that the building and construction industry is a big energy consumer that has consumed 40% – 50% of global energy and 40% of global raw materials, and released 40% of the waste disposed of in landfills (United Nations Environment Programme (UNEP), 2011). However, this indicates that the building sector has the greatest potential for delivering significant cuts in GHG emissions at low or no cost, or, indeed, at net savings to economies through more mature project management (Macgregor, Dowdell, Jaques, Bint & Berg, 2018).

Furthermore, in New Zealand, the impact of climate change on the built environment has been summarised by Zari (2012). These problems go beyond policy problems as they are all-encompassing. Hall (2019) has suggested that in trying to resolve these inter-related issues, human beings should be wary of creating new ones, specifically in the socio-political domain. Job losses, pay inequality, opportunity loss and general discontent and anxiety will have to be considered, Hall suggests

The legislative barriers include the lack of a zero-carbon footprint during the entire development and construction phase in the Building Code and the fragmented interaction between central and local governments, especially with the planning areas to adapt and mitigate the effects of climate change. Internationally, British Columbia in Canada has introduced the “Energy Step Code” in the building code which provides a scale and maximum allowable measures for carbon footprint during construction (Energy Step Code, 2019). Further, the policies and policymakers to address challenges singularly do not facilitate or encourage trans-disciplinary collaboration which has been deemed necessary to resolve these complex challenges (New Zealand Treasury, 2018; United Nations, 2017). Boston and Hall (2019) have proposed policy principles to ensure a just transition from low carbon emissions including collective responsibility to act, sharing the burden of transition, pollution fines, protecting the least advantaged, pre-emption of arising new challenges, anticipatory focus, fiscal responsibility and collaboration, partnership and recognition – all of which will

be required in the built environment from a systems approach to resolving the complex inter-related barriers.

The cultural barriers reported, include a lack of innovation and conservatism in the construction industry. Macgregor, Dowell, Jacques, Bint, and Berg (2018), suggest that there is a need to embed a culture within which the fear of giving ideas away is removed. Furthermore, for well-being to be achieved within the built environment, a contextual understanding must be achieved between the different cultural worldviews inhabiting the different ecosystems of New Zealand.

Studies, notably Frieling (2018), have also indicated that lack of community engagement and support within the built environment is linked to other issues impacting potential regenerative development aspirations. These include disenfranchisement, distrust and poor cooperation, income inequality, lack of education, support and inclusion of diverse population groups and ethnicities, low work-life balance, poor child development and family wellbeing. Macgregor et al. (2018) further highlight a need for strategies fit for addressing the various barriers as changes are needed to behaviours, attitudes, practices, and policies, especially relating to encouraging information and knowledge flows between the various disciplines.

In other words, a systemic approach is required to effectively identify and address these challenges (Rasmussen, 1997; Qureshi, 2008), an introduction of Systems Approach and explanation for the use of relevant system models are presented in the following section.

1.3 Systems Approach

This study primarily adopts a systems perspective that “pays explicit attention to the social, institutional, and cultural contexts of people-environment relations” (McLaren & Hawe, 2005, p.12). A system is defined as a bounded structure “consisting of interrelated or interdependent elements” (McLaren & Hawe, 2005, p.13). Through the lens of this perspective, the environment is not seen simply as the setting for work but is understood as a key determinant that also needs modification (Barclay, 2015). Emphasis is placed on the

relationship between different elements within the environment, and it is acknowledged that it cannot be decomposed without losing an understanding of the whole system (McLaren & Hawe, 2005). The two systems frameworks that underpin this research/study/thesis, are Rasmussen's (1997) sociotechnical Risk Management Framework, and Ecological System Model.

This study employed a systems approach to identify the system-wide understanding of regenerative development, perceived definitions, barriers, and proposed solutions for change. The study further aims to identify improvement in strategic decision-making for regenerative projects which require system-wide considerations of participants, perceptions and needs. The systems approach aligns with the researcher's view that no one viewpoint is sufficient when seeking information, particularly when the intended outcome of the study is to provoke system wide change. In turn, it is the intention of this research to include those who have a reason to make changes in this field but also those for whom the change is vital.

The two systems approaches used are:

1. Rasmussen's Risk Management Framework: to set the boundaries for participant selection during data collection in the form of interviews and focus groups. This framework further enabled the researcher to identify the system map as the interviews progressed and present their version of system interaction.
2. Ecological System Theory: to present the findings for research sub-questions 3 and 4, and present the system-wide cross-cutting ownership of reported barriers, and proposed solutions for the application of regenerative development in the New Zealand built environment.

Lastly, it was found through this research that an overlap of both systems is necessary to identify key intervention points in the system for change accompanied by the support of appropriate system relationships, skills, and capability for change.

1.3.1 Rasmussen's Risk Management Framework

In modern complex systems, humans interact with technology and deliver outcomes because of their collaboration; such outcomes cannot be attained by either the humans or technology functioning in isolation. Such systems, composed of human agents and technical artefacts, are often embedded within complex social structures such as the organisational goals, policies, and cultural, economic, legal, political, and environmental elements (Rasmussen, 1997). Human agents and social institutions are integral parts of the technical systems and the attainment of organisational objectives is not met by the optimisation of the technical system, but by the joint optimisation of the technical and social aspects (Qureshi, 2008).

Rasmussen's Socio Technical System Framework (Figure 1) was used as a conceptual framework ensuring the research considered the interconnected nature of contextual factors and all relevant system levels. Creating a system that functions safely requires that decisions made among the top levels are reflected in the activities and actions of those at the lower levels. Equally, information from the lower levels should transfer upward to inform the decisions made at the top (Rasmussen, 1997).

Further, the researcher utilised the Socio Technical Risk Management Framework in mapping the sample of participants for the data collection activities in this study. It was thought that the Socio Technical Risk Management Framework, when combined with a modified Ecological System Model, as explained in the following section, may help to present an improved picture of the built environment system with its contextual factors and the direct and indirect views of participants to shed light on the perceived definitions of and barriers to implementing regenerative development thinking in public-spend decision-making.

Other authors such as Stowell (2020), and Jackson (1984, 2009) have used an organisational systems approach, similar to that of Rasmussen's, and adapted the Socio-Technical Model to explain complex interactions within a specific industry or to address a particular problem. For the purpose of this research, Rasmussen's Socio-Technical Risk Management Framework was most suitable due to recognition of the regulators and government layer and acknowledgement of environmental stressors (both external and internal).

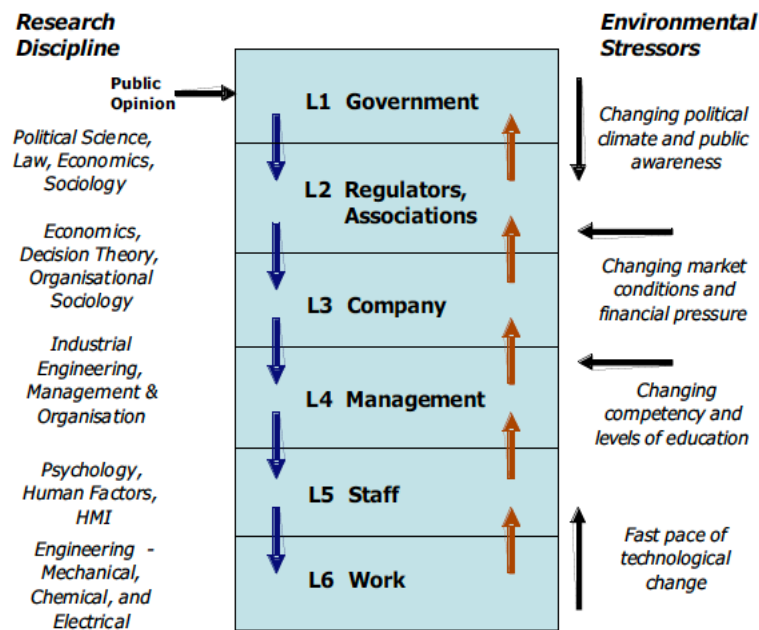


Figure 1 Cabinet Office Circular CO 19(6)

1.3.2 Ecological Systems Theory

Along with the identification of the strategic decision-making flow using the Socio Technical Risk Management Framework explained in the previous section, it was deemed important to collect data from the individuals that make up the system, to gather their perceptions of the definitions and barriers, and in some way map their proposed solutions for improved decision-making.

For this reason, and in combination with the sociotechnical approach outlined above, the researcher saw a need for the addition of an ecological inclusion. The researcher chose Bronfenbrenner's Ecological System Theory (EST) to represent the views of the various system participants and visually display where they sat within the system to better answer research sub-questions 3 and 4. Authors in this field have used a systems approach, similar to that of Bronfenbrenner's, to explain complex interactions within a specific industry or to address a particular problem. Although each have contributed to the systems thinking, their versions of the approach emerged from situations different to the one in focus for this study. These

include adaptations by Charles Perrow (1984), Erik Hollnagel (2015), James Reason (1998), John Wilson (2014), and George (2018).

The ecological approach adopted to map the perceived definitions and barriers is based on the work of Urie Bronfenbrenner (1979, 1994). The EST places individual human experiences within the context and considers behaviours mostly as responses to other contextual elements. The framework, often depicted as concentric circles as per Figure 2, further explains the bi-directional nature of interactions within the system (Newbury, 2011) and helps to identify “contextual predictors or points of intervention that lie beyond the individual” (Watling Neal & Neal, 2013, p.723).

The EST has four key elements: the microsystem, mesosystem, exosystem, and macrosystem (Bronfenbrenner, 1994). A fifth element was added to later versions and was called the Chronosystem, which depicted patterns of events over time (Rosa & Tudge, 2013). This model has been adapted to represent the findings for the study regarding research sub-question 3 (potential barriers) and sub-question 4 (proposed solutions). Figure 2 below is a visual depiction of Bronfenbrenner’s Ecological System model showing the levels of the system that were used for his work on child development and the education system.

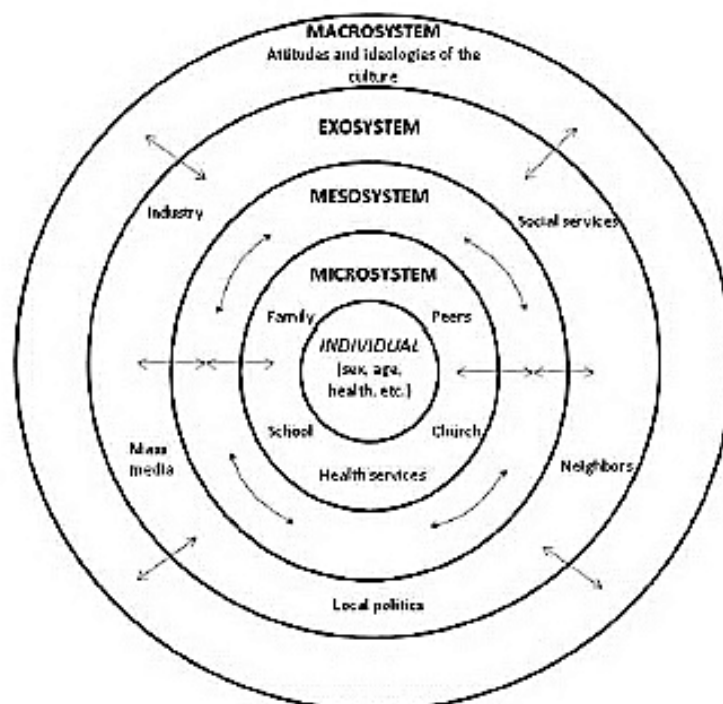


Figure 2 Ecological System Model: Initially created in response to psychologists, sociologists, educators, and other's research who, at the time, studied child development from a narrower perspective (Newbury, 2011).

One of the challenges reported when adopting the EST approach was creating appropriate boundaries around the system, for example, which elements to include and which to exclude. John Wilson, a key author in this area suggests that there are no real rules for creating the boundaries other than being clear and practical when acknowledging that efforts “must produce something useful” (Wilson, 2014, p.3863). Consideration, therefore, he argues, must be given to the uniqueness of each study, and the nature of the problem should be taken into consideration. For example, the New Zealand built environment industry is not the same as an education institution (as was the focus for much of Bronfenbrenner’s work). This study will have elements and interactions that the EST did not have to accommodate.

1.4 Diffusion of Innovations Model

As per Everett (2003), *“diffusion is a kind of social change, defined as the process by which alteration occurs in the structure and function of a social system. When new ideas are invented, diffused, and adopted or rejected, leading to certain consequences, social change occurs.”*

Further, Everett (2003) proposed that the people adopt concepts and new ideas based on them being in one of the five categories – (1) innovators, (2) early adopters, (3) early majority, (4) later majority, and (5) laggards – along with their indicated degrees of separation as per Figure 3. Rogers (2003) further elaborates that in order to bring diffuse innovation beyond early adopters, the critical percentage of 13.5% has to be exceeded and the point at which this happens is called the tipping point or critical mass point.

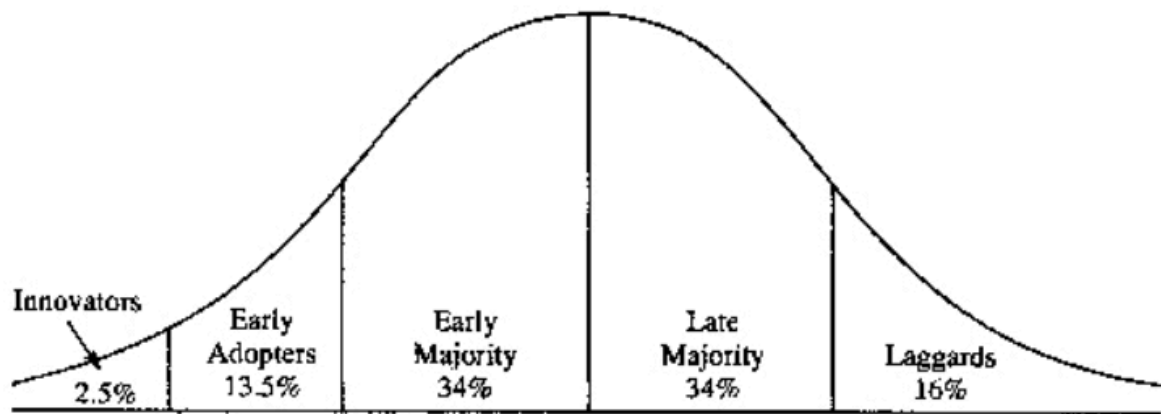


Figure 3 Diffusion of Innovations Model (Rogers, 2003)

Rogers (2003) further adds that the perceived newness of the idea for the individual determines their reaction to it. Someone may have known about an innovation for some time but not yet developed a favourable or unfavourable attitude toward it, nor have adopted or rejected it. “Newness” of an innovation may be expressed in terms of knowledge, persuasion, or a decision to adopt.

Further, It should not be assumed that the diffusion and adoption of all innovations are necessarily desirable. Some harmful and uneconomical innovations are not desirable for either an individual or the social system. Further, the same innovation may be desirable for one adopter in one situation but undesirable for another potential adopter whose situation differs.

For the purpose of this study, the Diffusion of Innovations Model (DoI) is used to contextualise the “newness” of the idea of the regenerative development concept in New Zealand, which is mainly in its early adoption stage. In this study DoI applies to the uptake of the idea or principles of regenerative development, not the uptake of application and principles of regenerative development itself expressed in project commitment or completion. Further, it informed the data collection sample criteria and participant selection, especially in Phases Two and Three as explained in Chapters Four and Five.

1.5 Multiple Capitals: Social, Human, Natural, Cultural, Financial and Political

The acknowledgement, understanding, identification, and subsequent action for delivery on multiple capitals, usually inter-twined within nested systems in the concept of regenerative development is a fundamental principle (Regenesis, 2016).

As a definition, capital is defined as ‘accumulated labour’ (Bourdieu & Grenfell, 2010) that can be invested in strategies to accumulate capital of a similar form or in conversion strategies where one form of capital derives advantages from another. Genuine wealth is grown from the simultaneous development of multiple forms of capital, which work together as a dynamic system (Mang, Haggard & Regenesis, 2016). The creation of genuine wealth depends upon the balanced development of all five forms of capital. Financial capital contributes to increasing community wealth when it is invested to grow human, social, natural, or built capital, as well as new financial capital to reinvest in these purposes (Mang, Haggard & Regenesis, 2016).

Economic theorist Goodwin (2019) has articulated her vision of this system as a set of five capitals:

1. Social capital- the capacities to foster cooperation, trust, and mutual benefit among people and groups whose interdependent efforts are needed to achieve common goals.
2. Natural capital- the web of living systems that generate, provide sustenance for, and enable the evolution of life.
3. Produced capital- assets, such as buildings, tools, and infrastructure, that enable the flow of goods or services.
4. Human capital- the health and capacity of individuals, which can be grown through education, training, development, and experience.
5. Financial capital- money invested to provide goods and services or to produce other forms of assets for capital return.

The OECD recognises four capitals in its Wellbeing framework: social, natural, human, and economic. The New Zealand Wellbeing Budget (2019) is based on the Living Standards Framework (LSF) which is based on the capitals used and defined by the OECD wellbeing framework. The LSF acknowledges the inclusion of cultural capital within social capital and does not individually identify cultural capital. Dalziel, Saunders, and Savage (2019), in their discussion paper for the New Zealand Treasury, argue that policy advice should recognise that humans can have different lifestyles informed and shaped by their backgrounds, upbringing, and community.

Other work in New Zealand has also gone beyond the simple four-capital LSF model. An adaptive governance study based in the Waipu Catchment (ref) on the East Cape of the North Island utilised the Sustainable Livelihoods Approach (SLA) with the Community Capitals Framework (CCF). This proposes two additional forms of capital within any community (Gutierrez-Montez, Emery, & Fernandez-Baca, 2009; Serrat, 2008). In addition to the four capitals mentioned in the LSF, it adds cultural and political (Edwards, Sharma-Wallace, Barnard, Velarde, Warmenhoven, Fitzgerald, Harrison, Garrett, Porou & Pohatu, 2019). The Waipu Catchment research team argued that accounting for cultural and political capitals results in a more accurate understanding of the importance of power, local knowledge and practices in community livelihoods (Edwards et al., 2019).

A similar approach concerning multiple capitals to that utilised by Edwards et al. (2019) has been adopted for this study given both New Zealand's contextual diversity and the centrality of power and culture in system changes at the scale required to adopt a regenerative development approach at the national level.

As stated by Clegg (2012), the challenge for researchers is to consider whether, and to what extent, it is feasible to apply the regenerative approach in different scales and contexts. The objectives of this study include identifying the benefits and barriers of applying regenerative development at the largest scale. It also tackles an extremely complex context – shifting to a value-basis involving six capitals that must be integrated at the strategic decision-making stage.

1.6 Thesis Overview

A complete overview of the thesis is presented in Appendix I: Thesis Overview.

The purpose of this qualitative, critical interpretive study was to discover the definitions, barriers, and contextual factors for regenerative development regarding public-spend decision-making in the New Zealand built environment.

This was achieved by using a systems approach, and included two specific frameworks: the Socio Technical Risk Management framework to aid in system definition and develop sampling criteria, and a modified Ecological System Model to present the findings.

The main research question pursued in this research investigation is: How does public-spend development need to change to deliver regenerative projects?

Sub-questions:

1. What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential barriers to regenerative development in the New Zealand context?
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

What follows is how the upcoming chapters inform and answer the research questions outlined in this study. Each chapter throughout this thesis features a conclusion that can be read first to gain an overview of the entire study.

Chapter Two: *Introduction to the System*

This chapter establishes the setting for the New Zealand built environment public-spend decision-making. The baseline of the public-spend built environment decision-making

landscape is presented as per Cabinet Office Circular (CO 19(6)) published by New Zealand Treasury in 2019 as the system foundation for this study and associated New Zealand Government public-spend decision-making guidance that current decision makers use to inform the approach to deciding on the development, design, and maintenance of the built environment in the face of these challenges and mitigate the risk of disintegration of our societies, cultures, relationships, and nature while trying to address these challenges. CO 19(6) is the fundamental document that explains the investment framework, system overview, participants and associated responsibilities relating to public investment. This document is used as the basis to understand the system and inform the data collection sample criteria and study boundaries.

Chapter Three: *Literature Review*

This chapter presents a literature review undertaken on the concept of regenerative development drawing on global and New Zealand sources. It covers the background, context, various perceptions/definitions, benefits, challenges, barriers, drivers and the landscape of regenerative development mainly through international developments contextualized to New Zealand's built environment.

Additionally, due to the limited academic, peer-reviewed literature available on the concept of regenerative development, the literature review extends to green building literature to include specific and relevant barriers in the pre-feasibility decision-making stage for public-spend decision-making. The chapter concludes by presenting a summary of the degree to which the research sub-questions were answered by the literature review.

Chapter Four: *Research Design*

This chapter outlines the research design and methodology for this study. An overview of the components that make up the methodology and methods – theoretical paradigm, research design, participant selection, and data collection and analysis – are discussed in relation to the purpose statement and research questions below.

The chapter also facilitates the collection of multiple perspectives on a problem from those considered experts, which is in line with the ontological and epistemological views of the researcher.

The use of interviews, in line with the qualitative approach, allowed the researcher to explore the multiple perspectives of the interview participants as a proponent of the system.

This chapter outlines how those interviewees were selected for data collection and analysis to ensure the research questions and objectives of this study were met.

The research design outlined in this chapter facilitated the findings presented in the following chapter which are categorised into the three phases of data collection.

Chapter Five: *Findings (Phase One, Two and Three)*

This chapter describes and presents the findings from the three phases of data collection. Data collection was sequential with each phase informing the next.

Phase One provided the researcher with an understanding of the regenerative landscape in the built environment industry of New Zealand through interviews with early adopters of the concept, and is informed by Rasmussen's Socio-Technical Framework and Diffusion of Innovations Model (Rogers, 1962).

The researcher supplemented his understanding of the landscape from Phase One Interviews, with archival data from published literature on regenerative development concepts. These included relevant applied examples in New Zealand, which were limited in number. Predictably, given the varied perceptions on what regenerative development is, or is not, the projects selected were based on the target principles of integrated design, multiple capitals approach, and system-wide impact, but may not have referred to themselves as RD.

This helped familiarise the researcher with the concept and uptake in the New Zealand built environment industry and informed the interview questions for Phase Two participants.

Phase Two was informed by the questions that were completely and partially answered in Phase One, with the purpose to further refine and identify the barriers to change decision-making and for the researcher to interview and capture the perspectives from the wider system.

The data collection method and sampling criteria for Phase Two, were built on the structure of Phase One but included other proponents of the system (early and late majority as per the Diffusion of Innovations Model) who were part of the New Zealand built environment public-spend decision-making.

The Phase Two sample size is larger when compared to Phase One for two reasons. Firstly, to seek greater saturation of emerging themes, and secondly, to accommodate a higher proportion of the hidden actors of the built environment system.

The purpose of the Phase Three Focus Group Discussions was twofold:

1. To share, reflect collectively and collect participant insights in the Phases One and Two findings.
2. To discuss the barriers, and identify the top three barriers to be addressed, along with proposed solutions to bring the late majority into early majority, as per the Diffusion of Innovations Model (Section 1.5). This resulted in conceptual frameworks for project owners or public-spend decision makers and the New Zealand built environment industry.

The chapter concludes by presenting the findings, using a modified Ecological System Model combined with the lens of system participant connection adapted from the Socio-Technical Risk Management Framework.

The chapter also presents a summary of the degree to which the research sub-questions were answered by the data collection phases One, Two and Three.

Chapter Six: *Discussion*

The views of the participants and the findings from the literature, hosted in the previous chapters, are the backbone of this Discussion Chapter which is structured mainly in the form of a table.

The use of this structure enabled the researcher to clearly tell the story of how successfully the research sub-questions were answered including the gaps, consequences of the gaps and inferences from a systems approach. This structure enabled the researcher to present the dense findings in a more concise and articulate fashion and highlight the unique contributions of knowledge from the findings and research design perspectives. Being a table, the presence of white space also represents a finding that may otherwise remain an unknown. Lastly, the Discussion Table also aims to help the reader in navigating the story by presenting it in a concise format.

In the Discussion Table, key findings are explored and discussed in detail regarding the research sub-questions. These themes, briefly summarised are defining regenerative development in the New Zealand built environment context, addressing reported barriers of funding and finance, skills and capability, and decision-making in the New Zealand built environment public-spend by nurturing project owner buy-in, trust and diverse representation of capabilities.

The chapter concludes by presenting useful conceptual frameworks, to assist project owners in supporting applications of the regenerative development concept. This is done through identifying early the natural, social, cultural, human and financial outcomes to be delivered by the project, sourcing the appropriate skills and capabilities, identifying budget needs, building business cases to suit and address the funding and financing structures, and building measurement and reporting systems to track success.

Chapter Seven: *Conclusions*

The concluding chapter provides an overview of each chapter to tell the full story of this thesis. The main contributions to theory and knowledge are described, including identified gaps in the literature, methodological contributions, and key findings. The primary strengths and limitations of the study are then discussed, and the main body of the thesis concludes with observations on the implications of this study for industry and practice. This chapter concludes with a final reflection on the research process.

1.7 Chapter One Conclusion

Chapter One presents the research problem which is to improve the strategic decision-making processes necessary for the effective design and governance of regenerative development projects.

The chapter presents the questions and identifies the significance of the research, which is based in larger contextual challenges such as biodiversity loss, climate change and social inequity.

The chapter further outlines definitions and research foundations for the concept of multiple capitals (social, cultural, human, natural, financial and political) which form the holistic approach to this study.

The study aims to develop an improved framework for the strategic decision-making process in the pre-feasibility stages of projects through a systems perspective using the lens of multiple capitals – social, financial, human, natural, cultural and political. The relevance of regenerative projects regarding New Zealand has been studied through the perspective of public-spend projects as they have increased public participation where the taxpaying population is involved in decision-making for future generations and in some cases, involved in the maintenance of the built environment.

In Chapters Two and Three, the researcher presents the literature review for theory and applications for this chapter which are regenerative development and the built environment system of New Zealand, respectively.

CHAPTER TWO: The New Zealand Built Environment Public-Spend Decision-Making System: the baseline

2.1 Introduction

2.1.1 Researcher's assumptions about the system at the beginning of the study

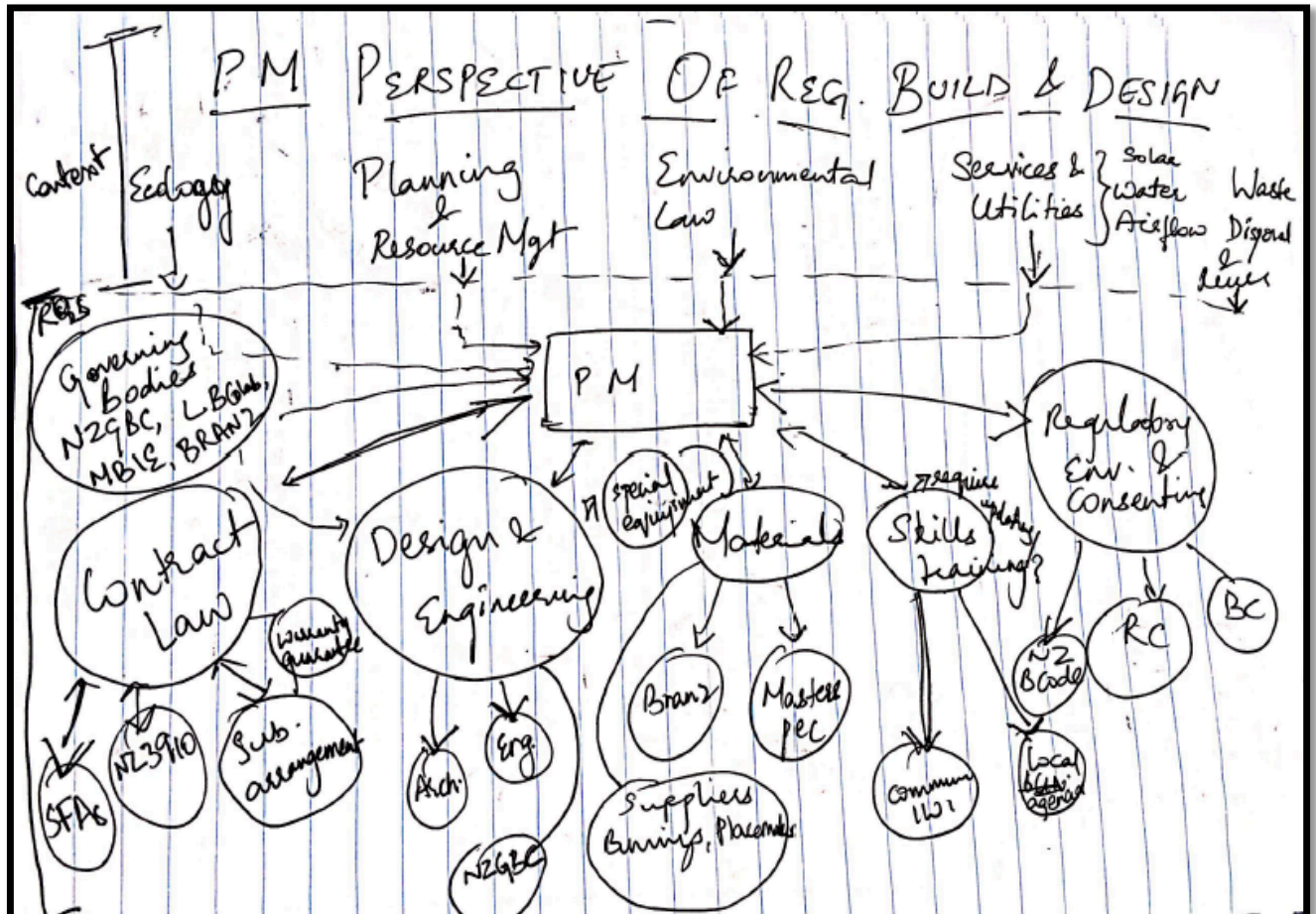


Figure 4 Researcher's assumptions on the system map, at the beginning of the study

Figure 4 above presents the researcher's view of the system, from a project management (PM) perspective, during the first year of the study. It is noticeable here that the perspective is limited to the project environment and associated stakeholders and does not include other system-wide participants, notably central government, local government, policy, Treasury, procurement, and funding or finance. This early system map is included to demonstrate the gap in the mental model held by a motivated construction professional, with a pre-existing interest in RD. It serves as a rough example of how far off even the more informed in the system may currently sit and the major gaps to fill.

2.1.2 Ecology and Levels of Work

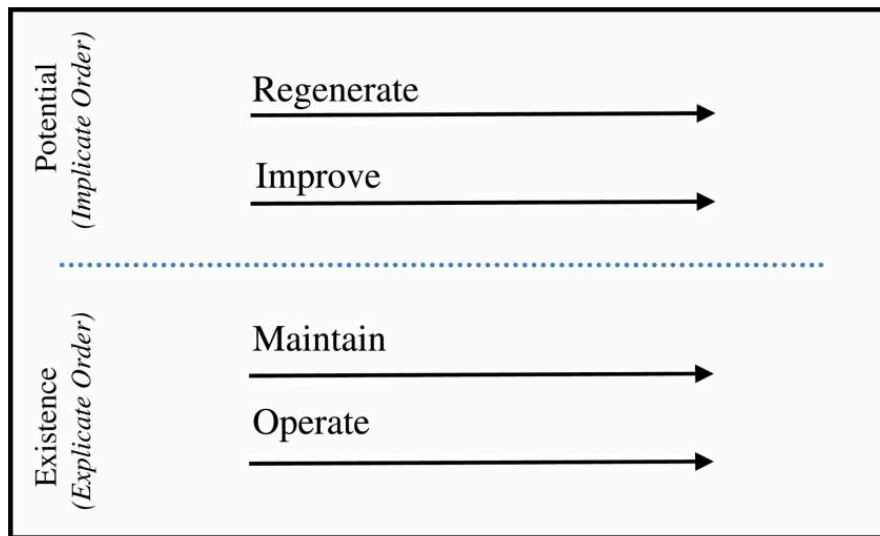
The researcher's viewpoint and frame of perception on regenerative development and how it fits within the built environment project management process, began from the perceptions of researchers in the regenerative development field (du Plessis, 2012; Mang & Reed, 2015), although the core thinking is not new.

According to these authors, the definition of regeneration, in this context, reflects the ecological perspective and is perhaps best understood in the context of a systemic framework known as the Levels of Work based on living systems theory developed by Charles Krone, in the 1970s (Krone, 1992).

As shown in Figure 5, it depicts four levels of work in which every living system or entity must continually engage if it is to be sustainable in a world that is nested, dynamic, complex, interdependent and evolving. The levels form a hierarchy, with the bottom two focused on working on existence (what is already manifested) or 'below-the-line work', and the top two involving work on potential (what exists but is not yet manifested), 'above-the-line work'. The framework suggests that to continually evolve the value-generating capacity of a system, its potential is in relationship to larger systems, as per Figure 4 below. It was also the researcher's assumption that most system participants functioned between the Maintain and Improve spaces in the system given the nature of the short-term, quick wins tactically pragmatic approach witnessed by the researcher during the time spent in the construction industry.

This framework is explained here as the current public investment system mainly functions in the operate and maintain space (NZ Treasury, 2019) and informs the thinking and subsequent action points (as explained in Chapters Six and Seven) to achieve the paradigm or contextual shift to improve and regenerate.

Further, the underlying levels of work and broader systems theory body of knowledge underpin the regenerative development concept. This thesis draws on key aspects, while maintaining a tighter focus on the specific research area.



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Figure 5 *Levels of Work (Cooper, 2015)*

2.1.3 The Baseline for Public Spend Decision-Making: Investment Management and Asset Performance in the State Services of New Zealand Treasury

This section presents an overview of the New Zealand built environment by system participants, as mentioned by the Cabinet Office Circular CO 19(6): Investment Management and Asset Performance in the State Services of New Zealand Treasury. The purpose of presenting this section is to support the literature review for research sub-question 4: What does the contextualisation of a regenerative approach for New Zealand look like?

For the purpose of this study, it was crucial to establish a baseline image of the New Zealand built environment landscape from the public-spend perspective; from which to identify how contextualisation of a regenerative approach could potentially present. Further, the researcher has considered only upstream decision-making, mainly regarding business cases and procurement. Decision-making related to financing, project design, delivery, and disputes is considered out of scope of this study.

2.1.3.1 Cabinet Office Circular CO 19(6)

The researcher used the Cabinet Office Circular CO 19(6) for the purpose of this study as a starting point to seek alignment in system representation and terminology. It was critical to identify the system participants as per the New Zealand Government public-spend allocation process. Further, this enabled the researcher to identify gaps in system representation during

data collection and analysis, as described in Chapter Five. It is acknowledged here that this document only presents the system as perceived by the public investment decision makers whereas the wider system involved in regenerative development potentially extends beyond those highlighted here, notably building material manufacturers, transport and logistics, probity, social enterprises, non-government organisations, community groups, and iwi (confederation of Māori tribes or a single tribe).

2.1.3.2 The objective of the system

Cabinet Office Circular CO 19(6) states that the primary objective of the investment management system is to optimise value from new and existing investments and assets for current and future generations of New Zealanders.

Accordingly, the system must:

- 1. enable Cabinet and agencies to prioritise and coordinate significant investments according to government and State services long term priorities*
- 2. establish, disclose, and then deliver the agreed value from particular investments*
- 3. promote good stewardship of Crown resources*
- 4. enable all parties to exercise their required roles flexibly and efficiently*
- 5. and make systematic use of performance information in government and agency investment management and decision-making processes*

2.1.3.3 System expectations

The Cabinet Office Circular CO 19(6) of New Zealand Treasury states that as each agency or party performs its roles in the system it should meet the following expectations:

- 1. recognise and respect statutory and administrative roles, functions and authorities*
- 2. work across government to develop, assess, and implement investments that improve wellbeing for New Zealanders*
- 3. consider the needs of present and future generations of New Zealanders*
- 4. operate management practices that meet the system objective, recognise and reduce investment risks, and improve Ministerial confidence in agency performance*

5. *share information on past, current and projected investment performance to inform all-of-government management and decision-making processes*
6. *build capability and minimise compliance costs by employing fit-for-purpose tools, methods, practices, and policies*

The above list does not mention the need for the agencies and industry participants to understand the effectiveness and importance of early investigation or pre-feasibility of projects, and collecting information on project specifications and processes, both operational and built environment development related.

2.1.3.4 System investment management process

The Cabinet Office Circular CO 19(6) of New Zealand Treasury states that the investment life cycle comprises four recognisable phases, as shown in Figure 6:

Thinking, planning, doing, and reviewing. These can be phased but there is also an ongoing dynamic as ideas are tested, refined, and adopted or discarded within an agency, across government, and with a wide range of stakeholders. Each phase has different implications for agencies and decision makers.



Strategy 	Plans for delivery of the vision, mission, long-term goals and portfolio
Programmes 	Framework for delivery of policies and strategic outcomes through projects
Projects	Vehicles for delivery of individual spending proposals and outputs (eg building, IT system)

Figure 6 System investment management process (New Zealand Treasury, 2021)

2.1.3.5 System interactions involved in decision-making

The New Zealand public-spend procurement process (New Zealand Treasury, 2015) describes in detail the process for allocation of funds during pre-feasibility planning of built environment projects. This enabled the researcher to identify the system interaction, participants, and associated criteria for decision-making regarding funding allocation by using a combination of the system presented by New Zealand Treasury (2015, 2021) as shown in Figure 7 below, and in Rasmussen's Risk Management Framework (as per Section 1.3). Further, this informed the drawing of the system boundaries and sampling criteria, as explained in Chapter Four: Research Design.

The whole of life approach to public-spend procurement inherently results in a greater up-front investment of time and resources (New Zealand Treasury, 2015). It is therefore critical that procuring entities and private sector parties resource their respective project teams adequately. The following explanation is from the COC (page xx) and outlines the Cabinet's intention *"to make the best investment choices for current and future generations, ensure there is active stewardship of government resources, and maintain a strong alignment between individual investments and the government's long-term priorities."*

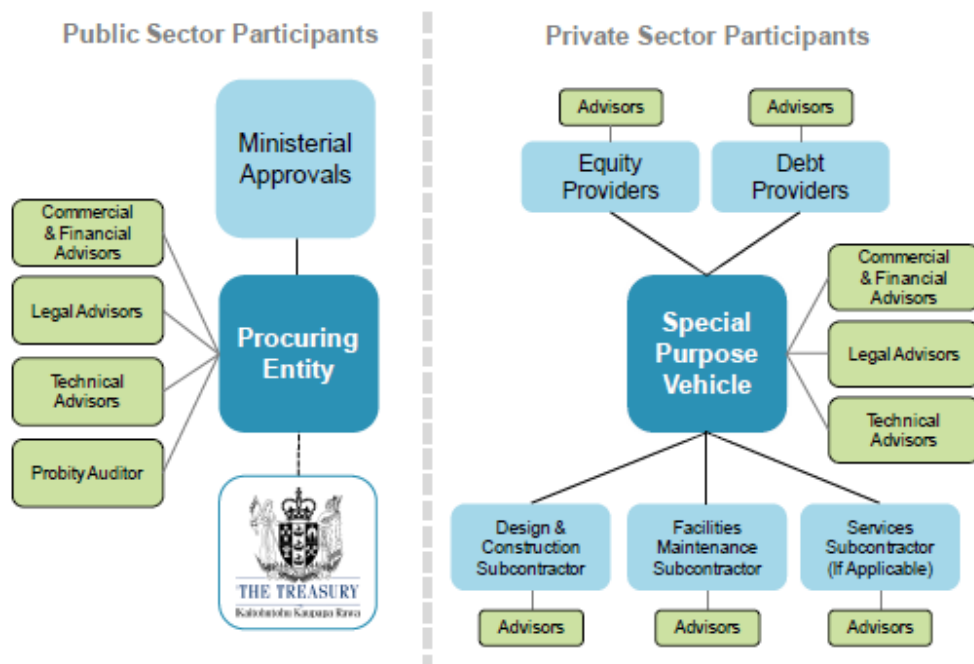


Figure 7 Participants in the PPP Procurement Process (New Zealand Treasury, 2015, 2019)

The roles and responsibilities of the system participants shown in Figure 7 are explained in detail in the Cabinet Office Circular CO (19) 6 document and summarised in Table 1.

2.1.3.6 System participants

Government Agencies, Crown Entities, and Ministries	<ul style="list-style-type: none"> • Lead at a national level • Co-ordinate policies and actions across the whole of government • Develop appropriate legislation and policy guidance • Set appropriate national standards and policy statements • Support local government • Work with education institutes to improve urban design education
Regulatory Agencies	<ul style="list-style-type: none"> • Ensure procurement practices are complied with • Ensure standards, rules and regulations are implemented and complied with • Continuous vigilance of industry practices
Local Government	<ul style="list-style-type: none"> • Lead at a regional/local level • Demonstrate quality decision-making, regulatory and procurement practices • Develop appropriate statutory policies, rules, and guidance • Work collaboratively with the private sector
Private Sector: Professionals and Contractors	<p>Professionals:</p> <ul style="list-style-type: none"> • Champion quality decision-making, design and delivery • Participate in local decision-making and design advisory processes • Develop and promote 'best practice' approaches and tools • Contribute to Professional Bodies to facilitate subject matter consultation, development of guidance, and coordination of information flow between Central Government, Local Government, Regulatory Bodies, and Industry. <p>Education and Research:</p> <ul style="list-style-type: none"> • Lead research • Work collaboratively with the public and private sectors • Participate in local decision-making and design advisory processes
Community Groups	<ul style="list-style-type: none"> • Recognize the stewardship roles and responsibilities with urban environments • Demand quality decision-making, design and delivery • Develop community action projects • Participate in community engagement forums • Lead proactive neighbourhood projects
Iwi and Mana Whenua	<ul style="list-style-type: none"> • Recognize the kaitiaki (guardian) roles and responsibilities with natural and built environments • Advocate for quality decision-making, design and delivery • Develop community action projects • Participate in community engagement forums

Table 1 Sample criteria for system participants

It can be observed from the above-mentioned responsibilities that there are gaps regarding:

1. Who or which system-level or agency is accountable for the early, pre-feasibility decision-making of public-spend built environment projects?
2. Who is responsible for informing the early, pre-feasibility decision-making? What are the decisions based on?
3. Who or which system-level or agency is responsible for measurement and reporting of outcomes delivered? What does this look like from a multiple capitals perspective?
4. How are the regulatory decisions made and how are they informed?
5. What do the above questions collectively mean for delivering regenerative development projects in New Zealand?

These questions and the fundamental system organisation have been considered in the development of the research question, sub-questions, and research design – which are explained in Chapter Four: Research Design.

2.1.4 System Barriers

There is limited literature available on barriers to the application of lesser-known concepts such as regenerative development regarding New Zealand public-spend decision-making. To begin to build understanding of the potential contextual barriers for regenerative development and associated challenges, literature has been tentatively borrowed from the larger sustainable development discussions that are more available, including green building and social procurement in local and global contexts.

2.1.4.1 Public-Spend Pre-Feasibility Planning

The approach to projects in the construction industry has for decades been based upon operational issues and project output as explained in this section. The success criteria commonly accepted reflect this concern and the operational goals have used measurements connected to time, cost, and quality. Accomplishing such goals amounts to what Cooke-Davies (2000) calls project management success.

The business aspect of the project, i.e., what effect the project is intended to create, has not, however, been given adequate attention according to Shenhar (2012). Müller and Jugdev (2012) comment that for project management to have strategic value, a clear connection must be made between how efficiently and effectively a project is executed, and how the project's outcomes provide wider value; otherwise, project management is perceived as providing tactical (operational) value only.

The lack of occupancy evaluation of projects by independent specialists not associated with the design or operation has been a recognized limitation on our understanding for decades (Preiser & Nasar, 2008). In summary, despite academic progress, there is still a need for project management in the built environment industry to define success and measure it from a much wider perspective (Hjelmbrekke, Klakegg & Lohne, 2017).

According to Fewings and Henjeweale (2019), it is in the strategic definition stage where the business case is created, and the means and ends to achieve the project aspirations are linked. Means include methods, actions, and reasons justifying the decision, which could be influenced by both clients' internal factors and external PESTLE (Political, Economic, Social, Technological, Legal and Environmental) factors.

Further, as drawn together by UK researchers, Temidayo et al. (2020) in their systematic review of barriers for social procurement in UK public-spend procurement, the key decision influencing factors for public-spend decision makers include:

- *A risk-averse culture amongst procurement staff, influenced by perceptions of governmental propriety and transparency.*
- *Administrative compliance burdens for procurement officers and short-term contractual arrangements limit their ability to develop more collaborative supply relationships.*
- *Lack of ownership of strategic procurement objectives amongst senior staff.*
- *High turnover of procurement staff and very little investment in training staff.*

- *Restrictive procurement procedures and limited coordination between government departments in strategic, value-based decision-making (low tactical versus strategic understanding and alignment).*
- *Lack of communication between public sector and suppliers focused on broader outcomes.*
- *Low understanding of how social, cultural, natural and economic outcomes can be defined and included in service delivery contracts and how they can be evaluated within tender evaluations.*

It is suggested by Fewings and Henjewe (2019), that the criteria set for project success in the pre-feasibility stage, decide the viability of the project although, this needs to be tested for the New Zealand context. As the built examples of regenerative projects are limited, the literature in this section has borrowed challenges from the larger sustainable development discussion available, including green building.

Lastly, research conducted by Hjelmbrække et al. (2017), identified that well-defined strategic decision-making in the pre-feasibility stage for the projects is key for the development of a well-organised governance structure to manage risks during later stages of the project (Group & Reed, 2009). As these barriers are within the sustainable development paradigm, they can be extrapolated to regenerative design and development projects, as regenerative development is in early adoption phases as per Diffusion of Innovations (Rogers, 2003) and provides an opportunity to address these issues in the initial project's strategic definition and governance stages by the development of relevant frameworks to ensure the project and its delivery can be well-understood, contextualised and realised to its full potential.

2.2 Chapter Two Conclusion

Various literature sources have been shown to highlight the importance of a clear and well-defined strategic definition for projects which informs all the subsequent stages including governance and procurement.

Additionally, it is evident from the summary of public-spend built environment decision-making as per CO 19(6) and associated New Zealand Government public-spend decision-making guidance that decision makers need to think about the approach to how we develop, design, and maintain the built environment in the face of these challenges and mitigate the risk of disintegration of our societies, cultures, relationships, and nature trying to address these challenges. The built environment needs further understanding on the need to design and develop with approaches acknowledging the existence of the multiple capitals, their inter-relatedness, indivisibility, and benefits and challenges in doing so.

The strategic defining factors for the projects concerning these capitals need to be identified in the pre-feasibility strategic definition stage which can further inform the governance, business case, and procurement strategies, failure of which in most cases has been linked to the failure of projects as per the available green building literature.

CHAPTER THREE: LITERATURE REVIEW: REGENERATIVE DEVELOPMENT

3.1 Introduction

This chapter presents the literature review undertaken on the concept of regenerative development drawing on global and New Zealand sources. Further, it presents reported challenges, barriers, and benefits for undertaking regenerative development in New Zealand from the built environment and public-spend perspective.

The aims of the literature review were to establish the extent to which the research questions set out in Chapter One had already been addressed and reported, and to identify potentially useful research approaches and methods.

3.2 Literature Search Methods

Given the wide range of potential contextual factors relevant to this study and emergent field, information has been collected from multiple sources extending beyond recent peer-reviewed English language sources including government reports, industry websites, academic and industry technical seminars and reports.

From an initial literature search, electronic database searches, the reference lists of key authors' publications, the AUT library search function, and the researcher's resources, a list of key search terms was formulated. These are shown in Table 2 below.

Topic	Primary Search in peer-reviewed sources			
Regenerative development	Challenges and Barriers in New Zealand Sustainable and Green Development	Wider Context	Exclusions	Limited To
<ul style="list-style-type: none"> • Regenerative Design • 3Regeneration • Restoration • Restorative • Sustainability • Sustainable Development • Sustainable Architecture • Green Development • Green Architecture • Green Building • Green Development • Business-as-Usual • Ecology • Environment • Regenerative Projects New Zealand • Regenerative Projects Australia • Regenerative Projects USA • Regenerative Projects British Columbia • Living Building Challenge New Zealand • Living Building Challenge Australia • Living Building Challenge USA (ILFI) • New Zealand Green Building Council • Passivehaus • BC Energy Step Code 	<ul style="list-style-type: none"> • Project Governance • Project Mandate • Project Business Case • Key Results Management • Broader Outcomes Measurement • Accountability • Transparency • Symmetry • Procurement • Request for Proposals • Request for Tender • Expression of Interest • Project Management • Design • Architecture • Construction • Supply Chain • Delivery • Key Performance Indicators (KPIs) • Measurement • Reporting • Communication • Information Management • Social Outcomes • Natural Outcomes • Human Outcomes • Financial Outcomes • Political Outcomes • Building Inspections • Whole-of-life Carbon Assessment 	<ul style="list-style-type: none"> • Wellbeing Budget • Living Standards Framework • LSF Social, Cultural, Natural, Financial, Human and Indigenous Discussion Papers • Circular Economy • Doughnut Economy • Equity • Social Justice • JUST Transition • Climate Change • Zero Carbon Emissions • Climate Change Response (Zero Carbon) Amendment Act 2019 • Local Government Act 2002 • Public Finance Act 1989 • Resource Management Act 1991 • New Zealand Procurement- Broader Outcomes • New Zealand Treasury- Better Business Cases and Investment Strategy CO 19 (6) 	Targeted technical calculations, Building Materials, Legal, Commercial and Financial technicalities.	English Peer-Reviewed Academic Journals Date Restricted (2007 to 2021)

Table 2 Literature selection criteria

For an article to be included in the review, mention of certain topics was necessary as mentioned in Table 2. Those studies that linked such issues as the above to wider contextual factors were then considered separately so the researcher could better understand how many studies approached regenerative development and positive, broader outcomes from a wider perspective.

The search terms, as listed above, were used in specific arrangements; some were used separately, (e.g., “Construction Industry”) and others together (e.g., “built environment” AND “regenerative development”).

Where the keyword was present in the result, the researcher considered it for inclusion. If necessary, the results were refined by either searching for the keyword in the abstract or the title to narrow the results. Two main searches were conducted, one in March/April of 2013 and the other in May of 2017. Articles pre-2007 were only included if:

- No more recent data was available on the subject, and
- They met all other criteria for inclusion

Throughout this study, further articles were obtained to assist, often as a result of collegial conversations or conference attendance.

Search engines examined chiefly were:

- Business Source Premier
- ABI/Inform (ProQuest)
- SCOPUS
- Web of Science
- Emerald
- AUT library Search Engine
- EBSCO
- Google Scholar

3.2.1 Additional steps

To gain a further understanding of the benefits, challenges, barriers, and gaps, the researcher employed two additional steps: interviewing regenerative development leaders informally and attending regenerative development-related events, and secondly attending a course for regenerative development practitioners to build a stronger network. These were undertaken simultaneously with the literature review with the purpose of gaining intuitive familiarity with the subject matter, to seek out new sources (literature and practitioners), and to further refine key search terms. In combination, the immersive exercises built an intuitive familiarity with the regenerative development movement in New Zealand. The two exercises are described below:

3.2.1.1 Informal Interviews with leaders in regenerative development

1. Informal Interviews and discussions (Kabir, 2016) with early adopters of regenerative development in New Zealand:
 - i. Identified the leading international best-practice organisations in the regenerative landscape and undertook discussions with three leading practitioners.
 - ii. Identified New Zealand best practice design and project delivery organisations in the regenerative landscape and undertook discussions with seven leading practitioners.
 - iii. Identified New Zealand-based developers of regenerative projects and undertook discussions with six participants of four such projects. In the sample, three out of five participants were ethnic community leaders.
 - iv. Identified the nationally recognised advocacy agency for green building and attended their organized events in Auckland, to obtain an understanding of the direction of green building and change-making advocacy.
 - v. Identified the leading building industry conference organised as an expo of trades, professionals, developers, leading change-making advocates, and ministers to build understanding of the current state of business-as-usual and the desired future state.

- vi. Identified the New Zealand built environment industry events for leading graduate innovators held in collaboration with tertiary education providers. Undertook discussions with five upcoming graduate leaders to obtain an understanding of the future direction provided by the built environment industry to young practitioners.
- vii. Lastly, the researcher used audio-visual documented resources on the Internet compiled by global leading innovators in the regenerative development landscape. Obtain a further sense of holistic understanding on business-as-usual and the desired future state for the New Zealand built environment.

3.2.1.2 The Regenerative Practitioner Course 2019

- 2. Further, the researcher undertook enrolment in the Regenerative Practitioner Course 2019 delivered by the Regenesi Group, USA. The cohort for this course consisted of both international and local students. International students participated in Australia and Chile. Local students comprised of locations across the North and South Island of New Zealand. The course consisted of eleven sessions, with ten online sessions and a one-weekend workshop, all delivered by Pamela Mang, Ben Haggard, Nicholas Mang, and Bill Reed from the Regenesi Group. It is acknowledged here that the researcher personally funded his enrolment on this course.

The combined purpose of the above methods was to:

- a. Meet the early adopters and leaders in global and local built environment and academia concerning regenerative development
- b. Further, identify international and local academic literature
- c. Develop early research relationships and identify potential participants for Interviews in Phases One and Two and Focus Groups in Phase Three (Chapter Four: Research Design).
- d. Establish boundaries for the study such as focus on the New Zealand built environment public-spend pre-feasibility decision-making system, as discussed in Chapter Four: Research Design

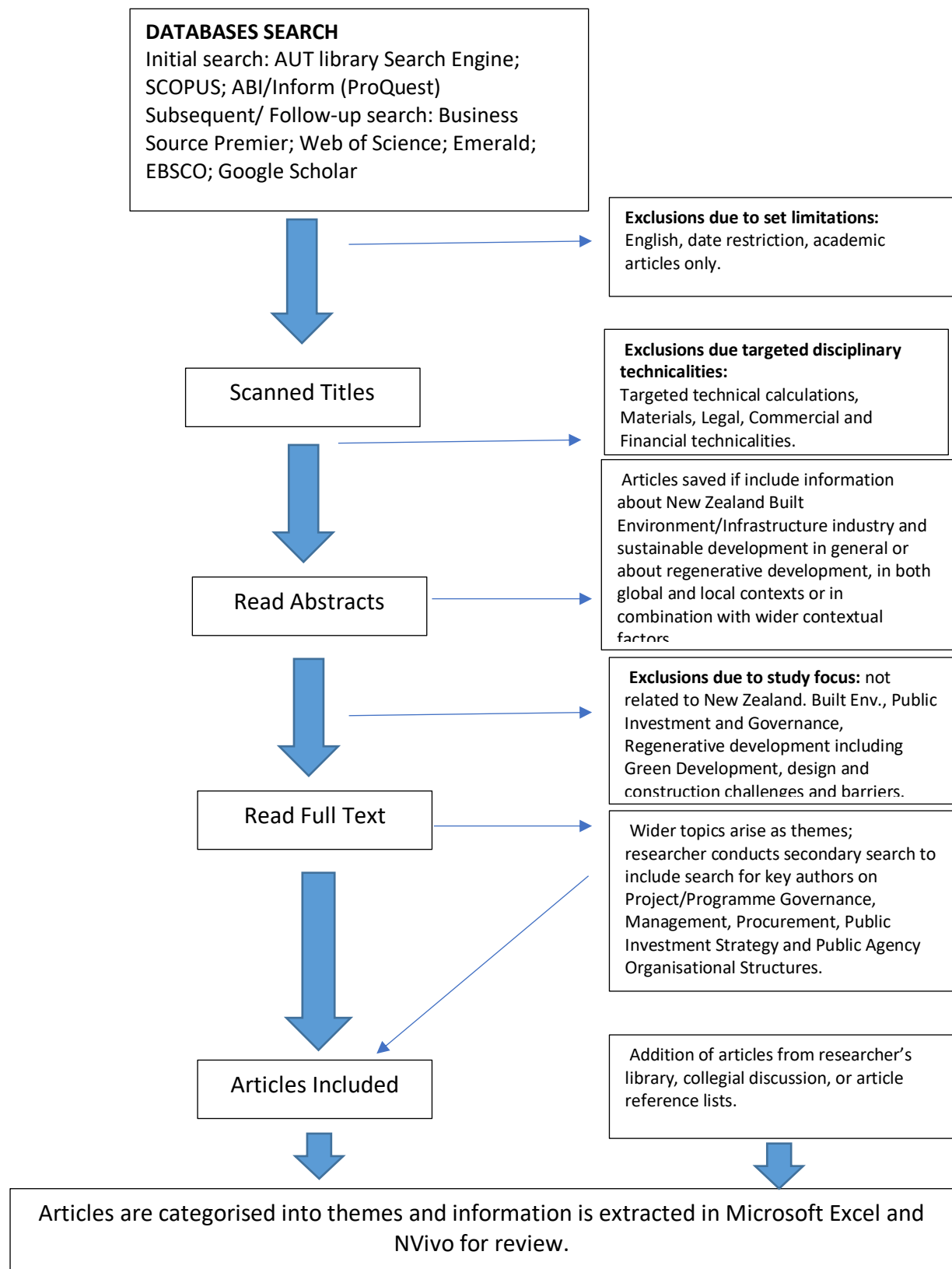


Table 3 Literature Search Process: Based on Table in Barclay (2015)

3.2.2 Characteristics of Included Studies

3.2.2.1 Regenerative development

Table 4 below shows the key academic peer-reviewed literature sources reviewed to understand the context and definitions regarding the concept of regenerative development. They also provided data informing the research sub-questions as below:

RQ1. What is the perceived definition of regenerative development in New Zealand?

RQ2. What are the potential New Zealand benefits of regenerative development?

RQ4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

Year	Authors	Relevant content included in the papers
2007	Mang et al.	<ul style="list-style-type: none"> • Early conceptual frameworks and definitions for regenerative development • Living systems approach, systems-design thinking
2009	Zari	<ul style="list-style-type: none"> • Report for Ministry for Environment regenerative development as a way towards sustainable future • Benefits and challenges in the New Zealand context
2012	Hoxie et al.	<ul style="list-style-type: none"> • Stimulating regenerative development through community dialogue
	Cole; Cooper; Plaut et al.; Zari	<ul style="list-style-type: none"> • Transitioning from green to regenerative design • Review of conceptual regenerative frameworks – LENSES, REGEN, Perkin+Will, and Regenesys • The shift in thinking from reductionist to systems based
	Tainter	<ul style="list-style-type: none"> • What ecological systems do designers want? • Who decides the ultimate ecological outcomes? • By what criteria are such decisions made? • What if there is disagreement on design goals?
2013	Cole et al.	<ul style="list-style-type: none"> • Co-evolutionary partnered relationship between sociocultural and ecological systems – explicit engagement with implications and consequences of future decisions

2015	Robinson & Cole	<ul style="list-style-type: none"> • Theoretical underpinnings, concepts, and definitions relating to RD • Difference between regenerative development and regenerative sustainability
2016	Mang et al.	<ul style="list-style-type: none"> • RD + D – Framework for evolving sustainability
2017 - 2021	Brown et al.	<ul style="list-style-type: none"> • EURAC Research - Exploration in progressing a paradigm shift in built environment thinking, from sustainability to restorative sustainability and on to regenerative sustainability
2018,	Hes	<ul style="list-style-type: none"> • Application and analysis of Regenesi frameworks in the Australian context
2019	Zari	<ul style="list-style-type: none"> • Regenerative Urban Design and Ecosystem Biomimicry

Table 4 *Key literature sources for regenerative development*

3.2.2.2 Challenges and Barriers in New Zealand Sustainable and Green Development

Table 5 below shows the various academic peer-reviewed literature sources reviewed to understand the challenges and barriers for regenerative development. This table is relevant as it provides information regarding the following research sub-questions:

RQ3. What are the potential barriers for regenerative development in the New Zealand context?

RQ4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

Year	Authors	Supporting Literature
2007	Shenhar & Dvir	A significant share of projects fail to produce either the intended social and environmental effects, or the expected business results.
2009	7Group & Reed	Various factors influence increased delivery times for green construction project management <ul style="list-style-type: none"> • lack of expertise and skills • poor early identification of budgets and costs • poor and sometimes absent communication between project teams • unclear interpretation of the intended aspirations of the stakeholders
2014	Müller et al.	<ul style="list-style-type: none"> • Available traditional project management tools are not adequate to assure (RD) project success. • Contemporary understanding of project success is "in the eyes of the beholder." Not objective enough for an emerging approach like RD
2015-2016	Hjelmbrekke et al. Avery; Reeves & Zombori; Nagar	<ul style="list-style-type: none"> • Industry lack of expertise in non-technical issues such as understanding the business needs of the client and identifying innovative techniques or approaches to achieve them. • Architects and engineering firms need to create and deliver value re the client's business objectives and to understand the causality between design and the client benefits. • Focus on the preparatory project management practices – a strategic approach to project success.
2017	Hjelmbrekke et al.	<ul style="list-style-type: none"> • Project governance and strategic definition are key in the formation of a well-organised governance model. • The skills, capability, and resources offered by the (RD?) design teams were enough to satisfy the project requirements, but did not offer a value proposition to the project or the client.
2018	Bon-Gang; Mang; Haggard; Regnesis	RFPs and RFTs need to indicate- <ul style="list-style-type: none"> • Strategic aspiration of the project • Expected skills and communication requirements • KPIs linking milestones and strategic definitions achieved • Need for the best possible solution in the interest of the project's aspirations

Table 5 Key literature sources for challenges and barriers in New Zealand built environment

3.3 Literature Review on regenerative development

3.3.1 Regenerative development

Since the early 1990s, the notion of ‘regeneration’ and a ‘regenerative approach’ has been garnering momentum in the built environment design and development practices. Mang and Reed (2012) and Plessis (2012) propose the key attributes of regenerative development and design in their peer-reviewed academic literature.

They suggest that, in contrast to conventional ‘green’ building practices, these promote a co-evolutionary, partnered relationship between sociocultural and ecological systems, rather than a managerial one. Additionally, they suggest a relationship that builds, rather than diminishes, social and natural capitals. The act of building and inhabiting a system consisting of the building, its inhabitants, and the biophysical and socio-cultural context is regenerative and provides a catalyst for positive change within the unique ‘place’ it is situated (Mang & Reed, 2012).

The ambition is that, through time, built form and infrastructure systems begin to generate positive environmental and social outcomes. Further, they state that regenerative design and development, built projects, stakeholder processes, and inhabitation are collectively focused on enhancing life in all its manifestations – human, other species, and ecological systems – through an enduring responsibility of stewardship (Mang & Reed, 2012).

Furthermore, Robinson and Cole (2015), based on their research, add that it is not the building that is ‘regenerated’ in the same sense as the self-healing and self-organizing attributes of a living system; it is about the ways that the act of building can be a catalyst for positive change within and add value to the unique ‘place’ in which it is situated.

They also suggest that regenerative development is a departure from the idea that the best buildings can be is ‘neutral’ concerning the living world and imply that built environments can be designed to produce more energy and resource than they consume and to transform and filter waste into health-giving resources (Jenkin & Pedersen Zari, 2009). Reed (2007) describes this approach to design as building capacity, not things. Pedersen Zari (2009) agrees that

regenerative development aims to restore or create the capacity of ecosystems and naturally occurring biological, geological, and chemical cycles – to function optimally without constant human intervention.

It can be further added to the wider definition, that regenerative design and development incorporates the values and principles of the place and its inhabitants. In other words, the social, cultural, human, natural, and financial values collectively inform the design and development process (Mang & Reed, 2012; Regenesys, 2016).

3.3.1.1 Business as usual vs regenerative approach

For the purposes of this research, ‘business-as-usual’ in the New Zealand built environment includes conventional design and green or high-performance building design using established rating schemes. Based on the conventional demand-supply economic model with only economic benefits, collaboration and innovation in the business-as-usual zone are not sufficiently achieved (Herazo & Lizarralde, 2015).

In terms of relationship with nature, human beings are in a dominant ‘ego’ role. The regenerative paradigm, in contrast, is described as a non-conformist, positive contribution zone, interested in holistic performance at the community, urban and regional levels (Herazo & Lizarralde, 2015; Regenesys, 2016).

However, a growing number of new buildings are now designed to be more sustainable, driven in part by increased market demand, and this is rapidly changing business-as-usual in New Zealand.

The green building rating tools, developed by the New Zealand Green Building Council (New Zealand GBC), are also contributing to the change. NZGBC Green Star considers a variety of different assessment criteria for building performance. These reflect current trends in sustainable building, which tend to focus on individual building performance including reducing energy, water use, pollution or damaging emissions, improving indoor air quality,

increasing the use of renewable or sustainable materials, taking transport issues into account, and considering sustainable land use (Pedersen Zari, 2009).

The main shortcoming is that the green rating tools allow one to “pick and choose” or “cherry-pick” categories to achieve the desired rating (Ade, 2019), thereby taking away from the design of the system as a whole. This allows developers and owners to pick items to deliver, and creates myopia during defining success and decision-making of key performance indicators. However, as indicated in Figures 8 and 9, it is still necessary to continue with the green and sustainable building practices to decelerate the damage and also give the built environment industry sufficient time to develop the expertise and realize the benefits of regenerative design and development approaches (Pedersen Zari, 2012; Reed, 2007).

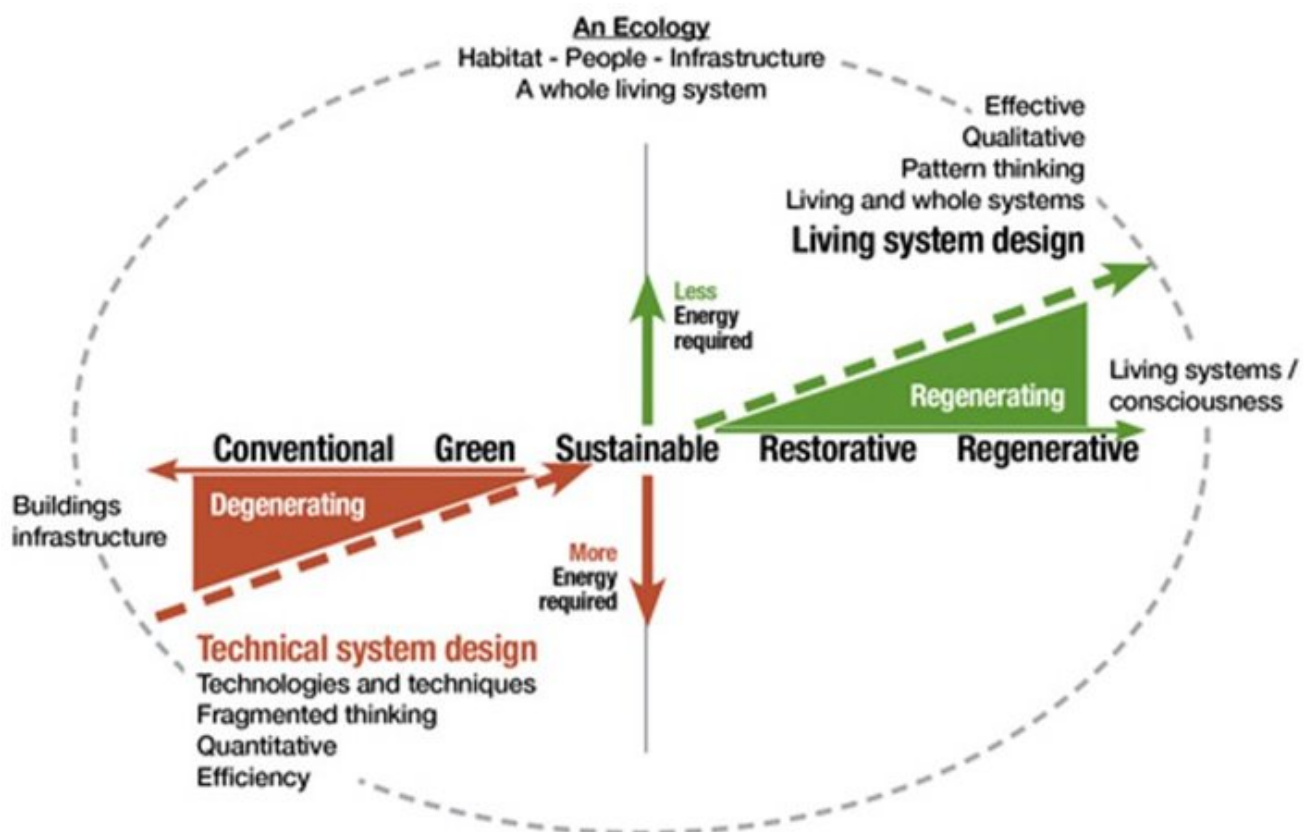


Figure 8 Trajectory of Ecological Design (Regenesi, 2016)

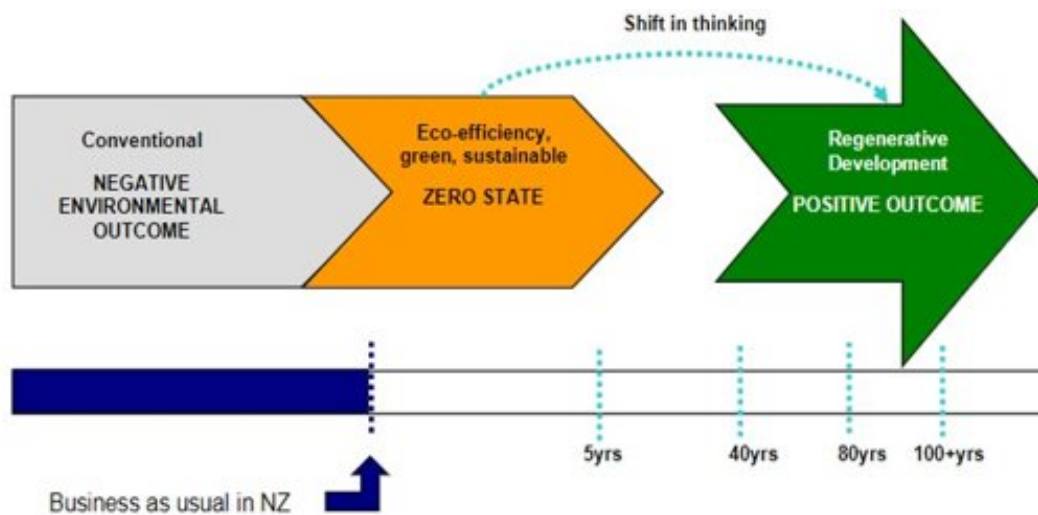


Figure 9 Shift in thinking in design approaches (Pedersen Zari, 2012)

In contrast, a regenerative development approach questions how humans can participate in ecosystems through development to create optimum health. It sees humans, human developments, social structures, and cultural concerns as an inherent part of ecosystems. Regenerative development seeks to create or restore the capacity of ecosystems and bio-geological cycles to function without human management. It understands the diversity and uniqueness of each place (socially, culturally, and environmentally) is crucial to the design leading thinking of the place as a human being rather than an object. This changes the questions asked for the place development such as “Who is this place?” instead of “What is this place?”. It sees the design process as ongoing and indefinite (Cole, Charest & Schroeder, 2006; Reed, 2007; Zari, 2009).

3.3.1.2 Living systems approach and integrated design

Pedersen Zari (2009) adds that a systems-based approach is crucial to regenerative design and development. Buildings are not considered as individual objects but instead are designed as parts of larger systems allowing complex and mutually beneficial interactions between the built environment, the living world, and human inhabitants. This ensures that a constantly dynamic and responsive built environment evolves.

A common underpinning across regenerative design and development is the use of Integrated Design Processes (IDP) (Mang, Haggard & Regenes, 2016). Broadly, this means to engage everyone early, explore and establish common values, set goals to define success, establish relationships and scope, select a business model and contract structure, plan the roadmap (timeline), follow through with the delivery, and measure success (7Group & Reed, 2009; Zari, 2009).

Zari (2009) suggests that conventional business methods are less integrated, single-issue focused, and resource intensive. The built environment is not viewed as one integrated system comprising of buildings, infrastructure, transport, and urban design.

3.3.1.3 Frameworks for the application of RD

Various frameworks have been used for the implementation of regenerative projects. Regenes Group (2019) has developed its own set of frameworks to realize a project's place-based potential and reconcile stakeholder and project teams' conflicts to achieve a state of "harmony" for the projects.

Hes (2019) and Plaut, Dunbar, Wackerman, and Hodgins (2012) have outlined the application of LENSES (Living Environments in Natural, Social and Economic Systems) to build natural and social capital through charrettes and workshops in built environment development. Human-Centered Design (HCD) is another framework that has been used in the design of hospitals, shelter homes, and retirement centres. HCD mainly focuses on the human, social and economic capitals, although maintaining a human-dominant position concerning the place and surrounding ecology allowing for human-based thinking rather than place-based thinking (Boehnert, 2018; Mang & Reed, 2007).

These frameworks, although flexible, user-friendly, and contextually applicable, need to be applied and critically assessed for suitability in the pre-feasibility context of New Zealand public works. At this stage, it is up to the will, knowledge, and intent of the various project teams to apply the frameworks at various downstream stages, making it a resource-expensive exercise.

For example, if such frameworks were applied in the middle of a project, they could potentially result in a complete or partial revision of the strategic definition, which may prove to be a costly and time-consuming exercise. If applied incorrectly and/or without competence, they can potentially drain the resources allocated to the project. Further, the frameworks do not provide clarity on the flow of decisions through to other stages of the project and on monitoring the benefits for inter-generational projects and maintaining accountability for the realization of continued benefits.

Data from the participant observation work carried out in parallel with the literature review generated a number of specific practical issues from current or aspiring regenerative development practitioners:

- it is unclear how professional liability and indemnity are accounted for due to the novelty of the field.
- There is a need to understand application of frameworks concerning existing governance and procurement structures, so they can be implemented without reinventing the current procedures.
- A regenerative approach framework clearly defining the contextual strategic decision-making process, with recommendations for improved governance and procurement requirements, is a gap within the existing academic and industry literature.

3.3.1.4 Benefits

Zari (2009) suggests some of the benefits of regenerative design approaches, as shown in Figure 9. Zari further adds that as the real case examples and literature for regenerative development are relatively small and limited literature from related areas of sustainability, including restoration, has commonly been used instead as regenerative development evidence.

It is important to note that every positive outcome represented by a particular benefit is predicted to arise in every instance the approach is applied. Lastly, some of the benefits are

aspirational, as they have not yet been measured by experimentation. As a new concept to New Zealand, the successes are also predominantly in other countries, and so how generalisable the cost/benefit fruits might be is yet to be proven.

Regeneration	Benefits of Regenerative Design Approach	Environmental	Economic	Social	Cultural
	1. Works within current mode of thinking.		*		
	2. Reduced environmental impact.	***	***	***	**
	3. Increased human physical health.	***	***	***	**
	4. Increased psychological well-being.	*	***	***	**
	5. Reduced economic costs (over life cycle).	**	***		
	6. Increased economic value of project.		**	*	
	7. Increased innovation in projects.			*	*
	8. Positive environmental impact.	***	***	***	**
	9. Building/development becomes a potential source of income.		*	*	
	10. Changing relationship to nature. 'Deeper and more enduring'.	*		**	*
	11. Manageable and meaningful approach to global issues through a place-based approach.	*		*	*
	12. More integrated and therefore accurate knowledge of place.	*	*	*	*
	13. Mutually beneficial relationships are created between people and place.	***		***	**
	14. Increased robustness, flexibility and adaptability in the face of climate change.	*	*	*	*
	15. Creates stronger, more equitable communities.	*	*	*	*
	16. Increased creation and celebration of rituals of place.	*		*	**

*** indicates conclusive evidence

** indicates strong evidence

* indicates suggestive evidence

Figure 10 *Benefits of regenerative development (Zari, 2009)*

Reed (2007) and Zari (2009) add that regenerative development provides the following potential benefits:

1. Improved and integrated decision-making, including coordination of physical design and policy across different sectors, to create holistic benefits.
2. Improved feedback mechanisms and lines of communication due to a systems-based approach.
3. Creation of more equitable communities and relationships through participation and a local place-based approach resulting in enhanced political efficacy, well-being, democratic processes, and an increased sense of ownership and belonging.

4. An increased emphasis on local traditions and place-based indigeneity – this could be particularly significant in New Zealand given existing traditions and knowledge related to specific places.
5. An improved economic benefit due to the development of place-based indigeneity resulting in the creation of a 'unique selling point' for the development.
6. An improved understanding, appreciation, and celebration of the place through design and project planning elements that further celebrate the personal and cultural expression of the place.
7. Improved use of resources and waste prevention.
8. Development of positive outcomes for human society and culture which are less present in conventional, green, and restorative approaches (Reed, 2007). The built environment is not responsible for all factors that contribute to healthy communities, but a regenerative approach does potentially positively affect aspects of this, such as cultural identity, personal satisfaction, and psychological health. Because a regenerative approach includes more than just a small design team in the design processes and decision-making, this may contribute to the recognition of the indivisibility of environmental, economic, social, and cultural health (Mang et al., 2009).

3.3.1.5 Barriers

One of the most significant challenges discussed anecdotally in New Zealand is simply the life cycle of the existing natural and built environment. Both are long-term resources. Regarding the built environment, the typical design life for infrastructure in New Zealand is 100 years. For buildings, it is 80 years (MBIE, 2019). If progress towards a fully sustainable built environment follows a conventional, business-as-usual approach only, significant opportunities to influence the built environment may be missed for many decades to come. A key consideration is how to build on progress to date. To make the required shift to regenerative development in a way which addresses the barriers and subsequent challenges.

Research undertaken by the COST Action Programme by Brown, Haselsteiner, Apro, Kopeva, Luca, Pulkkinen, and Rizvanolli (2018), identified six barriers to developing a more sustainable approach to the built environment, as summarised below:

1. Sustainability requires a holistic approach across sectors and environmental, economic, political, and social factors. This is different from the 'silo' approach of working within well-defined disciplines, which is the traditional way of constructing and maintaining the built environment. It can be further improved to include cultural and human factors.
2. There are poor links between systemwide decision makers. And although designers are often aware of sustainability issues, these are not often included at high-level decision-making which prohibits their implementation and inclusion in practice. In other words, design for sustainability is often appreciated by designers and there is an increasing number of buildings that demonstrate sustainable design, but it is rarely a priority for both private and public high-level decision makers.
3. There are tools available to assist with incorporating sustainability into design, but they are often theoretically based and do not take adequate account of the needs of the practice. Furthermore, there is a lack of knowledge and skills relating to what tools to use and how to use them, and what indicators and benchmarks relate to specific projects.
4. Most projects are driven by capital costs. There is a lack of reliable data or intelligence relating to whole-life cost-benefits. Consequently, sustainability always appears as an additional capital cost, whereas on a whole-life cost basis it can result in large cost savings.
5. There is a lack of knowledge transfer from one project to another, both in terms of the positive benefits and the lessons learnt from any unsuccessful measures. There is a tendency to 'greenwash' projects and not make public any failures that occur. This has sometimes resulted in a cynical attitude to sustainability, with rumours of failure discouraging others. There is little hard evidence of success because designers and developers are afraid of exposing failure.
6. Many projects are fast-tracked, and sustainability does not feature strongly, if at all, in many of the day-to-day decision-making procedures. Even if a sustainable approach

is adopted in the early concept stages of a project design, it is often ill-defined and lost when it comes to the real-time cost pressures of the project programme. It is most often the 'last line item' that is traded-off for increased floor space.

3.3.1.6 Limitations

Cole (2012), Zari (2012), and Clegg (2012) in their papers identify limited theoretical and applied literature as limitations to regenerative development. Some of the academic literature contains what are labelled as 'case studies', but these are typically short vignettes performed by practitioners, often with vested interests.

In these, the difference that adopting a regenerative approach makes – for instance, to the conduct and outcomes of stakeholder engagement. There is also low independent commentary on these projects, especially from the research and academic community.

Cole (2012) points out that the project examples in existing literature are almost exclusively non-urban, set within relatively coherent community contexts, and with greater access to natural amenities. Cole adds that it remains unclear at this stage how the notion of 'place' and the regenerative approach might accommodate densely urban settings with more complex and diversified communities and obliterated natural amenities. Furthermore, the "cherry-picking" option provided by the currently available green and regenerative design certification tools may cause the living systems approach to not be fully realised to its potential (Ade, 2017).

Further, there is a need to understand ecosystem services at a larger scale (city, region, or ecosystem boundary) when devising goals and targets for individual buildings or small developments. Careful thought needs to be put into whether it is more appropriate to use human-defined urban boundaries or those related to ecosystems themselves, such as, for example, habitat-type demarcations, or water catchment zones when using ecosystem services analysis (Zari, 2012).

Regarding presenting a critical view, Clegg (2012) argues that:

- The daunting complexity of systems thinking is a key consideration. Increasing complexity, in an already complex decision-making process that accompanies most architectural and urban design projects, could reduce the capacity for change. The unexpected negative outcome is to impede the flow of design ideas that eventually produce a building. Added complexity in the design process does not ensure a better building.
- Some of the systems that are beginning to develop around the idea of regenerative design hold the potential to stultify innovation and cause stagnation in decision-making. There is a danger in complete reliance on the idea that building design needs to emerge from a very broad-based all-encompassing consensus of stakeholders.
- Consultation and empowerment have to be part of the design process, but that process needs to be skilfully facilitated, and often leaps of the individual imagination are needed to derive from a shared holistic understanding of regenerative design principles. Defining a system (particularly a complicated one) and engaging stakeholders in a process is not a guarantee of high-quality sustainable design.
- There is a need to evaluate the existing building stock carefully and devise ways of working with it. The old attitude of 'demolish and re-build' is inappropriate as the building stock is a neglected resource. In future thinking, this needs to be brought more into the design equation, and 'regeneration' as we used to know it will become synonymous with a newly defined regenerative design process.
- Current funding, policy and legal decision-making structures may not allow inclusion of social, cultural, natural, and economic benefits together. However, the trade-offs between capitals and benefits must be identified, and the transfer of risk or externality to funding and other capitals must also be recognised. It is beneficial to ask the questions: "Who will bear the consequences of these decisions?" and, "If not included in this project, where is this risk transferred to?"

3.4 Chapter Three Conclusion

The purpose of the study is to understand how to achieve multiple-capital outcomes through public investment decisions through the concept of regenerative development in the New Zealand built environment:

The aim of the literature review was to establish the extent to which the research questions set out in Chapter One had already been addressed and identify any potentially helpful approaches and methods. Chapter Three presented the background, context, various definitions, benefits, challenges, barriers, drivers and landscape of regenerative design mainly through international developments and contextualized them to New Zealand's built environment.

Further, this chapter presented the academic, peer-reviewed literature answers for the research sub-questions:

1. What are the perceived definitions of regenerative development?
2. What are the potential New Zealand benefits?
3. What are the potential barriers in the New Zealand context?
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

The extent to which all sub-questions were addressed by the literature, is shown in Table 6.

These findings from the literature review on regenerative development illustrate the complexity of identifying performance indicators and success measures for social and other broader outcomes in business cases and procurement processes generally. Applying the lens of regenerative development, this process becomes more complex as it brings together the challenges and barriers of including social, cultural, natural and economic outcomes confounded by the fragmentation of system-wide processes and the limited availability of applied case examples.

Relevant questions emerging from this literature review include:

1. What might processes look like for projects of several decades duration with outcomes based on intergenerational benefits?
2. Are processes that aim only for sustainability enough for a species that generally wants more and/or better for its subsequent generations?
3. What are the trade-offs and externalities to be considered for the outcomes collectively, in pre-feasibility decision-making?

Based on the literature review findings, it is considered that the regenerative development concept in more intensively developed urban contexts would need to demonstrate efficacy through evidence, increased numbers of case examples with methodology and process explanations, and decision-making focused on the complexities associated with the wider political, cultural, social, and economic systems, including trade-offs and externalities.

Sub-questions:	Observations/Comments on gaps
1.What is the perceived definition of regenerative development in the New Zealand built environment?	The literature review provided answers on the meaning of regeneration, regenerative development, and regenerative design from a conceptual perspective. However, there was no information available on what regenerative development means from practical and New Zealand perspectives.
2. What are the potential benefits of regenerative development in New Zealand?	The literature review provided answers on the potential benefits from a conceptual perspective. Given that this is a relatively new concept with few practical examples and that built environment projects take between 2 and 5 years to demonstrate benefits, the demonstrated benefits are few in number and not enough to build a consensus. The researcher has used the benefits from other green development concepts to develop a picture of potential benefits for regenerative development. Also, there was no information available on what the potential benefits are from New Zealand and applied long-term perspectives.
3. What are the potential barriers to regenerative development in the New Zealand context?	The literature review provided answers on the reported barriers from a conceptual perspective. The researcher has used the barriers from other green development concepts and from within the New Zealand public spend built environment system relating to upstream decision-making (strategy, procurement, and project management) to develop a picture of potential barriers for regenerative development. Also, there was no information available on what the potential barriers are from New Zealand and applied long-term perspectives. The researcher has referenced barriers reported from the wider New Zealand public spend procurement system

	(due to its system-wide impacts) to develop a picture of potential barriers for regenerative development.
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?	The literature review did not provide any answers on this question. The researcher has referenced case examples of one Living Building Challenge in New Zealand and international examples of regenerative projects in Australia and British Colombia Canada.

Table 6 *Chapter Three Conclusions*

CHAPTER FOUR: RESEARCH DESIGN

4.1 Introduction

This chapter outlines the research design and methodology for this study. An overview of the components that make up the methodology and methods – theoretical paradigm, research design, participant selection, and data collection and analysis – are discussed in relation to the purpose statement and research questions below.

4.2 Purpose Statement

The purpose of this qualitative, critical interpretive study was to discover the definitions, barriers, and contextual factors for regenerative development regarding public-spend decision-making in the New Zealand built environment. This study looked specifically at the interaction of the contextual factors to explain what has been observed in the industry and public-spend agencies.

This was achieved using a systems approach, and included two specific frameworks: the Socio Technical Risk Management framework, to aid in system definition and develop sampling criteria, and the modified Ecological System Model to present the findings. The data collection phases consisted of:

Phase One: Archival Data Content and Exploratory Interviews

Phase Two: Detailed Interviews

Phase Three: Focus Group Discussions

An iterative data review to refine interview questions and thematic content analysis was used to identify the emerging themes which informed the discussion and conclusions for the study.

4.2.1 Research Question and Sub-Questions

The main research question pursued in this research investigation is: How does public-spend development need to change to deliver regenerative projects?

Sub-questions:

1. What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential barriers for regenerative development in the New Zealand context?
4. How may a regenerative approach for the built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

4.3 Theoretical Paradigm

4.3.1 Introduction

A paradigm is “the net that contains the researcher’s epistemological, ontological, and methodological premises” (Denzin & Lincoln, 2005, p.22). An explanation of these three elements clarifies the paradigmatic view of the researcher, helps to layout assumptions of the researcher, and outlines what has shaped the research. The desire to elaborate at this level is an ethical stance regarded by most constructivist, interpretive, and critical researchers as necessary for any piece of research (Lincoln & Guba, 2013). The choice to include this information supports the paradigmatic choice made by this researcher.

Table 7 presents the Research Design for this study and the following sections explain this in detail.

Research Design	Ontology <i>Nature of reality?</i>	Epistemology <i>What is knowledge? What it means to know and how we know it (knowledge)?</i>	Research Approach <i>How will gaps in knowledge be found and validated?</i>	Research Methods <i>What type of data do we need to address the gaps?</i>	Data Collection Methods <i>What tools will data collection employ?</i>	Data Collection Tools <i>How will the tools be used?</i>
Applicable to the study	Subjective and relative but with objective support sought via the research method structure	Critical and objective support for evidence-based approach Interpretivist Paradigm	Abductive Systems-based	Qualitative Ontologically and epistemologically aligned to the realities of the population placed to use the results of this research (key public investment decision-makers)	Archival data Semi-structured Interviews Limited Observer-participant immersion with regenerative development community	Archival data mining Interviews- Interpretivist Focus Group Discussions

Table 7 *Research Design*

4.3.2 Interpretivist Paradigm

The ecological nature of the systems approach aligned to the realities of the key public investment decision makers, along with the epistemological and ontological views, directed the researcher towards a more interpretive and qualitative research design. Interpretivism was fashioned in response to the perceived gaps of positivism. Rather than measuring the facts as a positivist might do, an interpretivist proposes multiple interpretations of reality (ontology), withholding a 'right' or 'wrong' judgement of those interpretations. The knowledge acquired is constructed and co-constructed by the study's participants and the researcher (epistemology) (Lincoln & Guba, 2013). For this reason, an interpretive researcher must become aware of which values and beliefs constitute their stance (Smith, 1999). Gadamer (1975) reinforces this point suggesting, *"...trying to eliminate one's concepts in interpretations is not only impossible but manifestly absurd. To interpret means precisely to use one's preconceptions"* (p.358).

This study adopts an interpretive approach to capture the reality of the built environment system-level participants and how it is unique to their position in the system. This is informed by their role, responsibility, and understanding of the system and its levels in decision-making (Rasmussen, 1997). This informs their perception of the system and the development of processes and metrics they perceive necessary to assess system performance.

From the researcher's perspective the rationale to have an interpretivist paradigm was that a work like this study had to have evidence or practical validity with those who have the power to make the changes. For example, the researcher's decision to immerse in the regenerative development community at the start of the study allowed the researcher to understand the significance of the concept to early adopters. This provided first-hand experience to the researcher which was then used to identify the perspectives of early and late majority system participants. This validity requires that the work reflects the values, assumptions, fears, prejudices and vocabulary of the target audience. The study had to speak from the perspective of where the public investment decision makers are in the system. It provided insights about the system that allowed the researcher to obtain additional data, and improved the ability to interpret data during the analysis phase.

4.3.3 Qualitative Design

The proposed study employs an iterative, phased, qualitative design that provides opportunities for reflective input across phases, and also collective reflection. This section begins by briefly outlining the ontological and epistemological perspectives that have shaped the study and the interpretivist paradigm and qualitative approach chosen to meet the aims of this study. Appendix I: Story-Telling Flowchart shows the phased research design.

This study is based on the notion that reality for human beings is created by economic, environmental, political, social, and cultural factors (Crotty, 1998; Grant & Giddings, 2002). Furthermore, it is acknowledged that under these constructs, researcher objectivity is difficult to achieve (Grant & Giddings, 2002). When speaking with various participants involved with the development and use of the built environment, it is acknowledged that the responses they give are based on their experience of the system and interpreted through the researcher to produce the findings provided in this thesis.

It is acknowledged that the researcher was driven to begin the study by a passion to contribute meaningfully to addressing the recognised problems facing current and future generations. They were intrigued by the claims of potential benefits from regenerative development but also critical, as greenwash and forms of 'capture' by groups with vested interest are acknowledged barriers to genuine progress.

The researcher therefore entered the process committed to building knowledge in a specific area, but not wedded to regenerative development (as presently understood) as a means. The researcher identified areas of potential bias such as that public investment needs to yield more than economic returns in the face of current and future socio-geo-enviro-political challenges and undertake a structured approach to analyse the standing of regenerative development as one of the solutions to deliver this. To demonstrate this, the researcher placed objective checkpoints in the research method design and data collection method to ensure the method and findings were repeatable and objective.

Due to their experiences and knowledge as developers, designers, and construction professionals, the participants were considered subject matter experts and end-users of any built environment design system changes. One of the key underpinnings of the regenerative design approach is that project solutions cannot be generalised and must be designed based on the contextual social, natural, human, economic, political, and cultural factors. The critical interpretivist paradigm fit this approach as the researcher sought to understand the diverse perspectives of people for their built environment through multiple capitals lenses. Using a critical interpretivist paradigm allowed the researcher to be critical about the current state of strategic decision-making and governance of projects by understanding them in social, cultural, and human contexts. It allowed the researcher to investigate and prompt factors not easily observed, and the researcher could probe an interviewee to get a deeper understanding of current strategic decision-making and governance from their perspective.

It was therefore necessary for the researcher to have one-on-one detailed interviews and collective discussions with the system participants to uncover their perception of the built environment investment decision-making and contextualisation of regenerative development. This is not possible through quantitative methods such as surveys.

A qualitative approach (Creswell, 2014) facilitated by planned one-on-one and collective dialogues allowed the researcher to assess the contextualisation of regenerative development and associated public investment decision-making in New Zealand.

Lincoln and Guba (2013) suggest there is no generic superiority of paradigms in comparison to each other. This is a particularly useful starting point for research in the legally bi-cultural New Zealand context, with the Western, Māori (and other) worldviews. Furthermore, these following principles will be included when approaching the participants and the built environment for observation and participation (Cram, 2009): Aroha ki te tangata: A respect for people, allow people to define their own space and meet on their terms; He kanohi kitea: It is important to meet people face-to-face (adapted to online face-to-face meetings due to COVID-19); Kaua e takahia te mana o te tangata: Do not trample on the mana or dignity of a person; Kia mahaki: Be humble, do not flaunt your knowledge and find ways of sharing it.

4.4 Research Strategies

4.4.1 Introduction

Described below are two strategies (abstraction and abduction) that the researcher employed to assist in the data collection and analysis, while using a systems approach.

Abduction allowed the researcher to step back from the modified Bronfenbrenner (1994) Ecological System Theory model to consider all the elements the participants were discussing and then return to it once more to provide structure. The abstraction and abductive approaches worked in unison to maximise the quantity and quality of data within the resource limitations of one PhD study. This further allowed the researcher to modify the EST model to suit the needs of this study.

The level of abstraction was important to consider, given that the modified EST model gave scope to include many different elements. The abstraction process further aided the researcher in drawing boundaries around the study; what was included and what was excluded.

Global markets, for example, were outside the scope of this study, given the unit of focus was strategic decision-making for the built environment industry in a single doctoral study. Global influences were relevant to consider initially given the literature around globalisation, however, once interviews commenced, the participants concentrated on local industrial issues. Further, the economic climate, weather and environmental conditions, supply-chain interactions, other logistic modalities, and the conversation around resource management, electrification, building materials, and technologies were deemed outside the scope of this study.

4.4.2 Abstraction

“Describing society is difficult, not simply because it is amazing, mysterious and complex, but because it requires abstraction” (McDonnell, 2016, p.8). Abstraction involves the creation of boundaries across space and time for the focus of the study in question, which is particularly useful and necessary when adopting a systems approach.

McDonnell (2016) suggests that:

- Abstraction offers a way of viewing the problem by suggesting a unit of focus, which is sufficiently small to be understood, and large enough to make connections and show the processes.
- Abstracting is not always a simple task; it involves the creation of a picture of a social system in which “the parts that one seeks to study appear”. The challenge, consistent with a systems approach, is to see each part as a network of relationships, actions, and interactions and each part can only be understood as they appear concerning one another. By way of organisation, these levels categorise thoughts of complex interactions that bring about a level of generalisation sufficient to conclude.

According to a key author in systems thinking, John Wilson (2014), there are no real rules for how to draw the boundaries around the system other than being practical when acknowledging that efforts must produce something useful and be appropriate for the study in question. He further acknowledges that given the complexity of any system, the boundary for one may be different from another.

4.5 Methods

4.5.1 Introduction

The data collection for this research was undertaken in three phases with analysis of the data collected included in each phase as shown below.

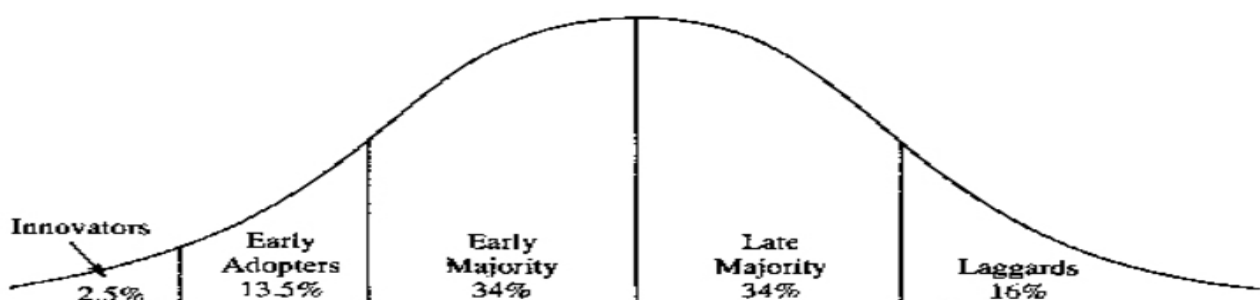
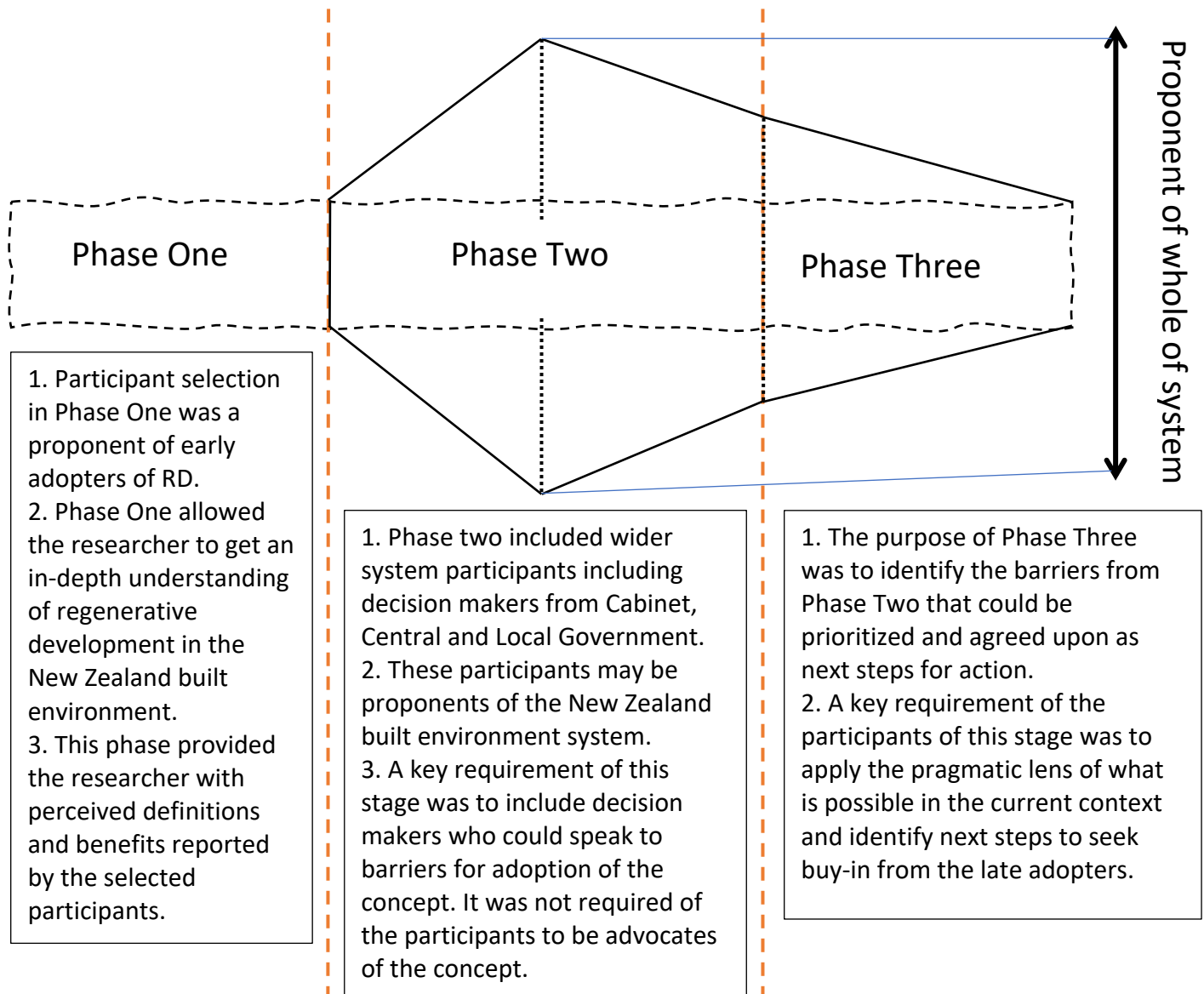


Figure 11: Data collection phases informed by Diffusion of Innovations Model (Rogers, 2003)

4.5.2 Participant Section

4.5.2.1 *Phase One: Exploratory Interviews*

Phase One attempted to answer the following sub-questions mainly derived from the literature review and based on the research method's requirement to understand the context of regenerative development in New Zealand prior to seeking wider system responses in Phase Two.

1. What does regeneration mean in the New Zealand built environment context?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential challenges in the New Zealand context for regenerative development?
4. What are the potential barriers for regenerative development in New Zealand?

Phase One was designed to consist of two elements:

1. Archival data
2. Exploratory interviews

The participants for Phase One were selected through purposive sampling (Neuman, 2000). To begin, the researcher used Rasmussen's Risk Management Framework to set the boundaries for the built environment public investment system and identify the participant criteria as explained in the following sections. It was expected that in the early stages of the research, the information sourced from archival data would need further contextualisation, clarification and detail added from industry subject matter experts.

For this purpose, detailed interviews, were conducted to ensure the researcher had clarity on the emerging themes from a sample of system participants. The interview participants were chosen based on their experience with regenerative design and development and occupied various stakeholder groups as per the sampling criteria outlined in the following section. Additionally, it was noted that the participants in Phase One represented the innovators and early adopters as per the Diffusion of Innovations Model (DoI) as this enabled the researcher to understand the practical challenges and barriers.

The sampling criteria employed for the selection of participants in this phase are shown in the following Table 8.

Participant Systemic areas	Invitation Criteria
Government departments responsible for public-spend decisions	<ol style="list-style-type: none"> 1. Involved in the decision and policy making of New Zealand's built environment AND 2. Striving to find innovative and better ways to fund the development of New Zealand's built environment AND 3. Encouraging development of best practice for decision-making on public-spend.
Policy makers and local councils informing the public-spend decisions	<ol style="list-style-type: none"> 1. Involved in the decision and policy making of New Zealand's built environment AND 2. Striving to implement best practice through international consultation and education AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Invited internationally to provide policy making expertise AND 5. Professionally collaborated with international built environment innovators.
Sector Bodies informing policymakers and local councils	<ol style="list-style-type: none"> 1. Involved in the decision and policy making of New Zealand's built environment AND 2. Striving to implement best practice through international consultation and education AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Invited internationally to provide professional expertise AND 5. Professionally collaborated with international built environment innovators.
Individual Organizations undertaking built environment projects	<ol style="list-style-type: none"> 1. Involved in the decision-making process of New Zealand's built environment AND 2. Striving to implement best practice through international consultation and education AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Invited internationally to provide professional expertise AND 5. Professionally collaborated with international built environment innovators.
Community Organizations informing sector bodies, policymakers and individual organisations	<ol style="list-style-type: none"> 1. Involved in inter-generational decision-making for the public-funded built environment AND 2. Representing the minor population through an organized governance system AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Participants involved in the maintenance and upkeep of the built environment.
End Users including Facility Management	<ol style="list-style-type: none"> 1. Involved in inter-generational decision-making for the public-funded built environment AND 2. Representing the minor population through an organized governance system AND 3. Participants spend 6-8 hours/day interacting with the same built environment AND 4. Participants involved in the maintenance and upkeep of the built environment.

Table 8 Participant sample criteria for Phase One

4.5.2.2 Phase Two Detailed Interviews

The purpose of Phase Two was to further refine the findings of Phase One and explore the concept of regenerative levels across the public investment decision-making system for the New Zealand built environment.

This phase comprised of the following sub-questions:

1. What is the meaning of regeneration in the New Zealand built environment system including benefits if any?
2. What are the potential system barriers for the uptake of regenerative development in New Zealand?
3. What would be specifically needed from the public-spend built environment system for the adoption of regenerative development to deliver integrated, multiple capitals, broader outcomes change?

For Phase Two, the researcher designed the process to capture the early majority and late majority part of the Diffusion of Innovation (DoI) model.

It was expected that subsequent interviews in Phase Two would lead to the identification of hidden system actors who influence high-level decision-making and this was indeed encountered by the researcher in practice. 50 people were contacted, out of which 39 were willing to participate. It is important to note at this point that there was keen interest exhibited by the people who responded, and they were forthcoming in their participation and interaction during the interviews.

The sampling criteria employed for the selection of participants in this phase are shown in the following Table 9.

Participant System areas	Invitation Criteria
Government departments responsible for public-spend decisions	<ol style="list-style-type: none"> 1. Involved in the decision and policy making of New Zealand's built environment AND 2. Striving to find innovative and better ways to fund the development of New Zealand's built environment AND 3. Encouraging development of best practice for decision-making on public-spend AND 4. Not necessarily a part of sustainability initiatives
Policy makers and local councils informing the public-spend decisions	<ol style="list-style-type: none"> 1. Involved in the decision and policy making of New Zealand's built environment AND 2. Striving to implement best practice through international consultation and education AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Invited internationally to provide policy making expertise AND 5. Professionally collaborated with international built environment innovators AND 6. Not necessarily a part of sustainability initiatives
Sector Bodies informing policymakers and local councils	<ol style="list-style-type: none"> 1. Involved in the decision and policy making of New Zealand's built environment AND 2. Striving to implement best practice through international consultation and education AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Invited internationally to provide professional expertise AND 5. Professionally collaborated with international built environment innovators AND 6. Not necessarily a part of sustainability initiatives
Individual Organizations undertaking built environment projects	<ol style="list-style-type: none"> 1. Involved in the decision-making process of New Zealand's built environment AND 2. Striving to implement best practice through international consultation and education AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Invited internationally to provide professional expertise AND 5. Professionally collaborated with international built environment innovators AND 6. Not necessarily a part of sustainability initiatives
Community Organizations informing sector bodies, policymakers and individual organisations	<ol style="list-style-type: none"> 1. Involved in inter-generational decision-making for the public-funded built environment AND 2. Representing the minor population through an organized governance system AND 3. Invited to be part of project decision-making in the pre-feasibility stage. (Or) Invited to be part of change-making decisions (or) employed in a change-making role AND 4. Participants involved in the maintenance and upkeep of the built environment AND 5. Not necessarily a part of sustainability initiatives
End Users including Facility Management	<ol style="list-style-type: none"> 1. Involved in inter-generational decision-making for the public-funded built environment AND 2. Representing the minor population through an organized governance system AND 3. Participants spend 6-8 hours/day interacting with the same built environment AND 4. Participants involved in the maintenance and upkeep of the built environment AND 5. Not necessarily a part of sustainability initiatives

Table 9 Participant sample criteria for Phase Two

4.5.3 Data Collection: Phases One and Two

There are several types of interviews including the unstructured and interactive interview, semi-structured interviews, and structured interviews (Creswell, 2014). In this study, the participants were interviewed using semi-structured interviews to give sufficient time and space to answer the questions. The researcher wanted to avoid any assumptions and prevent leading the participants towards answers so a semi-structured approach to interviews was preferred. To understand the context of the participants efficiently and to be informed on current happenings in the industry, the researcher spent time at built environment industry and construction sector gatherings and attended industry transformation agency meetings prior to and during the interview periods.

The interview questions for Phase One were developed using the literature review and initial conversations with industry informants. The analysis of Phase One findings informed Phase Two Interview questions. The data for the Phase One Exploratory Interviews was collected between March and April 2020.

The data for the Phase Two Detailed Interviews was collected between June and September 2020. At this point that majority of the interviews were conducted online to adhere to the COVID-19 Ministry of Health Restrictions and AUT Ethics Committee Instructions for Research during COVID-19. The interview protocols and data collection techniques remained the same across Phases One and Two.

Data collection for the Phase Three Focus Group Discussions is explained separately in Section 4.5.4. The approach of past, present, and future, borrowed from the Future Search method was used to set the frame for the Focus Group Discussions. It brings together the findings of Phases One and Two for discussion with the participants from both phases.

4.5.3.1 Interview Protocol

At the start of each face-to-face interview, the researcher provided the participant with the AUTECH-approved Information Sheet, and Consent Form to sign (see Appendix #), before starting the interview. The interview length ranged from 30 to 60 minutes and was held in the participant's office space, either physically face-to-face or via internet platforms such as Skype or Zoom.

Using a semi-structured interview plan, if the participant appeared rushed or did not want to elaborate, the researcher had the security of questions to ask. Other participants wanted to talk more freely, and so in these instances, the researcher was not required to use as many prompts. In such cases, the nature of the interview structure allowed the participants to share their knowledge and experience without constraint from the researcher.

4.5.3.2 Recording the Interviews

The interviews were recorded using an Apple iPhone Voice Recorder or the video record option available in Zoom. As a backup to the audio recordings the researcher also, when appropriate, took hand-written notes. This allowed the researcher to write down follow-up questions or points to query and in some instances, it gave the researcher time to pause and take a minute to think about what needed to be asked at that point. It also allowed the interviewee to collect their thoughts.

4.5.3.3 Transcribing the Interviews

After each interview, the digital recording was transcribed by the researcher using the digital transcribing app Temi. The transcribed notes from Temi were then read by the researcher in conjunction with the audio or video recordings to rectify errors. Grammar was retained as spoken. The digital recording files were saved to the researcher's study computer hard disk and digital file storage platform OneDrive under the researcher's university account. When the name of a person or the name of a company was mentioned, it was replaced with [Name] or [Company Name] as explained in the findings section of this thesis.

4.5.4 Data Collection: Phase Three Focus Group Discussions

The purpose of the Phase Three Focus Group Discussions was:

1. To share with the group the findings from Phases One and Two
2. To identify priority barriers to be addressed and associated proposed solutions
3. To identify next steps for research beyond the study

4.5.4.1 Introduction to Focus Groups using parts of the Future Search method

In Phase Three, the focus groups consisted of Phase One and Two participants as proponents of a whole-of-system perspective, considered within the scope of a single doctoral study and did not include participants from the wider system. For this study, there were two groups comprising of participants from Phases One and Two.

Traditionally, there is low technology use in a Focus Group Discussion. However, in the constrained context of COVID-19, social distancing, travel restrictions, limited research budget, and managing long-distance logistics issues, it was deemed that the Focus Group Discussions would be conducted through the internet using the Zoom video conferencing platform with audio-video recording (Nehls, 2015). This was the option that enabled the highest proportion of desired participants to attend.

The recordings of the Focus Group Discussions were useful in the analysis of the data collected and ensured the completeness of the data captured by the researcher (Nehls, 2015). The researcher acknowledges that this is a substitute for physical in-person Focus Group Discussions and used this to inform the planning to get the best possible discussion outcomes from the participants. This did not inform any changes to the sampling criteria.

Most Focus Group Discussions have similar formats (Weisbord & Janoff, 2010). Variation arises because of the nature of the matter being investigated, the nature of the group that will be involved, and the time available for the workshop. The Focus Group Discussions were designed for participants to move from an examination of the past, the present, and the future concerning the topic. Participants worked in stakeholder groups for some exercises

and mixed groups for others, allowing them to test ideas with their peers and at other times representing their stakeholder voice with representatives from other stakeholder groups. Some exercises were done as a plenary group so that the whole room could hear the different views.

The approach of past, present, and future, borrowed from the Future Search method was used to set the frame for the Focus Group Discussions and the application in Phase Three is explained below.

1. The past

In industry-level or research-oriented Future Search workshops, the past is typically addressed through the question, *“What do we know about the topic already?”* This is particularly important in the research context because an extensive literature review will be part of the research project and will inform decisions and recommendations.

It is mentioned by Blewett and Shaw (2013) that this presented review to ‘the whole system’ can be a ‘reality check’; an opportunity to dispel some myths and establish a baseline for discussion.

2. The present

In industry-level or research-oriented Future Search workshops, the participants gain an understanding of the present and work in stakeholder groups to identify what works now and what doesn’t work now concerning the topic of the workshop. Common themes can be readily seen by this stage from members of traditionally opposed groups such as, *“I didn’t know you held the same view as us...”* (Blewett & Shaw, 2013).

3. The future

Having heard and discussed the past and examined the present with the participants, the discussion turns to the future state and proposed solutions.

Here, the questions that were asked were:

1. What must the future of regenerative development look like in New Zealand?
2. What would be needed from the existing systems to remove the barriers to change?
3. What must be the three next strategic action points as interventions for change?

4.5.4.2 Participant Selection: Phase Three

The researcher conducted two Focus Group Discussions in Phase Three. The researcher aimed for the group to be from across the built environment systems, a mix of participants from Wellington and Auckland. The researcher did not include other parts of New Zealand due to the time and budget limitations of the study.

It is acknowledged here that the researcher did not invite politicians who contributed to the Phase Two Interviews to participate in the Phase Three Focus Group Discussion for the following reasons:

1. The researcher wanted to maintain a balanced discussion without the politicians potentially tilting the discussion in the direction of their political ideology. It is acknowledged this is an assumption of the researcher informed by the Phase Two interview observations. The researcher observed that the politicians mainly spoke to their political party's ideology and concluded that their participation in the Phase Three Group Discussion could be a counter-productive measure, especially when identifying, "What does the future look like and what are the next three action steps for whole-of-system?" However, their views from Phase Two Interviews are presented in the Chapter Five: Findings and Discussion.
2. Phase Three due to COVID-19 was limited to online sessions. It was decided to exclude politicians as not all political parties could be accommodated and having representatives from only a few parties could skew the discussions to their political views.
3. The Phase Two interviews were conducted before the New Zealand General Elections 2020 and the politicians interviewed who did not make it back to the decision-making

Cabinet had their portfolios representing as spokespersons changed after the election which indicated that the politicians could no longer speak to the questions posed. However, the participants of Phase Three included public service members who worked and continue to work closely with politicians, and it is expected that their insights will be informed by their interactions with the politicians.

4. This further posed the following questions to the researcher:
 - a. What role does the politician play in the public-spend decision-making if outside the Cabinet?
 - b. Where do the politicians sit in the pre-feasibility design decision-making and what do they contribute to the process?

Due to the study being affected by COVID-19, time delays were anticipated by the primary researcher in recruiting and completing Phase Three.

4.5.4.3 Phase Three: Discussion Protocol for the focus groups

Details of Phase Three: Method of Administration is described below. Participants were contacted by email four months prior to the discussion date and upon their confirmation to participate. They were sent a placeholder calendar invite which included the AUTECH Information Report and Consent Form, which the participants were asked to sign and email back to the researcher. The Phase Two Findings Report, and Presentation for the Discussion sessions were sent by email to the participants one week prior to the Focus Group Discussion.

Given the nature and scale of the Group Discussions, the participants were not provided with the option to recommend their preferred date. The researcher informed the participants four months in advance to book their calendars for early March 2021, informed by the experience gained through Phase Two Interviews about the participants' roles and availability, especially considering the Group Discussions were to happen at the start of 2021 where professional commitments begin to pick up for the participants.

After the conclusion, the researcher noted that the participants had been well prepared for the Discussion and honoured the commitment to participate, given the context of COVID-19 and that Auckland had just moved to Alert Level 3 Lockdown and Wellington had moved to Level 2. This had caused immense professional disruption for the participants and their participation showed well the perceived value and purposefulness of the study.

4.5.4.4 Focus Group Discussion Runsheet

Indicative Run Sheet with Indicative Questions for the Focus Group Discussion:

Facilitator: Jas Qadir

Co-facilitator(s): TBC

Tech-support: AUT ALTLab

Number of participants per focus group – 6-8 (representing various sub-systems)

Location: Online or In-Person (TBC January 2021)

Time: either 8-9am or 4-5pm

Expected Timeframe: 3rd week of February to 4th week of March 2021

Session	Duration
Login and tech set-up	10 min
Participant Introduction	5 min
Introduction and housekeeping	5 min
Present Findings 1: Definitions	3 min
Discussion Based on the findings and on reflection since the Phase Two Interview with you: a) Do you find the findings to be accurate and complete? b) Do you think anything else needs to be added or deleted? c) Are you surprised by anything in the findings?	5 min
Present Findings 2: Barriers and System Map	5 min
Discussion Based on the findings and on reflection since the Phase Two Interview with you: a) Do you find the findings to be accurate and complete? b) Do you think anything else needs to be added or deleted? c) Are you surprised by anything in the findings?	15 min
Present Findings 3: Proposed Solutions	3 min
Discussion Based on the findings and on reflection since the Phase Two Interview with you: a) Do you find the findings to be accurate and complete? b) Do you think anything else needs to be added or deleted? c) Are you surprised by anything in the findings?	15 min
Next Steps + Final Comments	5 min
Karakia and Closeout	2 min
TOTAL	Approx. 75 min

Table 10 Phase Three Focus Group Discussion data collection plan

4.5.5 Data Analysis: Phases One, Two, and Three

“Data analysis is not off-the-shelf” (Creswell, 1998, p.142) instead it is often custom-built to the study, revised along the way. Critics of qualitative research comment that it is mostly intuitive, and the results depend on the interpretations of the researcher. This is not denied by the researcher, but instead embraced in line with the methodology outlined above. Analytic procedures have been followed to give the researcher guidance on how to deal with the volume of data – in line with well-supported interpretive research practices (Braun & Clarke, 2008).

4.5.5.1 Phase One Exploratory Interviews

Phase One archival data mining encompassed the following sources: government websites; local community and territorial authority websites; industry transformation organisation websites; project business cases and personal reflection journals facilitated by the participants; and built environment industry transformation related webinars and podcasts. The relevant data collected from webinars and podcasts was transcribed as hand-written notes by the researcher.

Phase One Interview data was analysed using a thematic content method using Microsoft Excel and NVivo (Vaismoradi et al., 2013). Thematic content analysis is the most used technique to characterise and compare documents and is recommended for evoking themes from many published documents (Vaismoradi et al., 2013; Creswell, 2014). It is also the tool most typically used in qualitative descriptions as it allows summarising of the content. Furthermore, narrative analysis and thematic coding was employed to analyse the interview data.

For this purpose, an open coding system was employed to break down, examine, compare, conceptualise, and categorise the data (Braun & Clarke, 2008). This type of analysis was favoured for this data as the desired outcome was to have a category of emerging contexts, themes, barriers, and drivers that could further be grouped to create a common understanding of needs and wants for the built environment and subsequently develop the direction for interview questions.

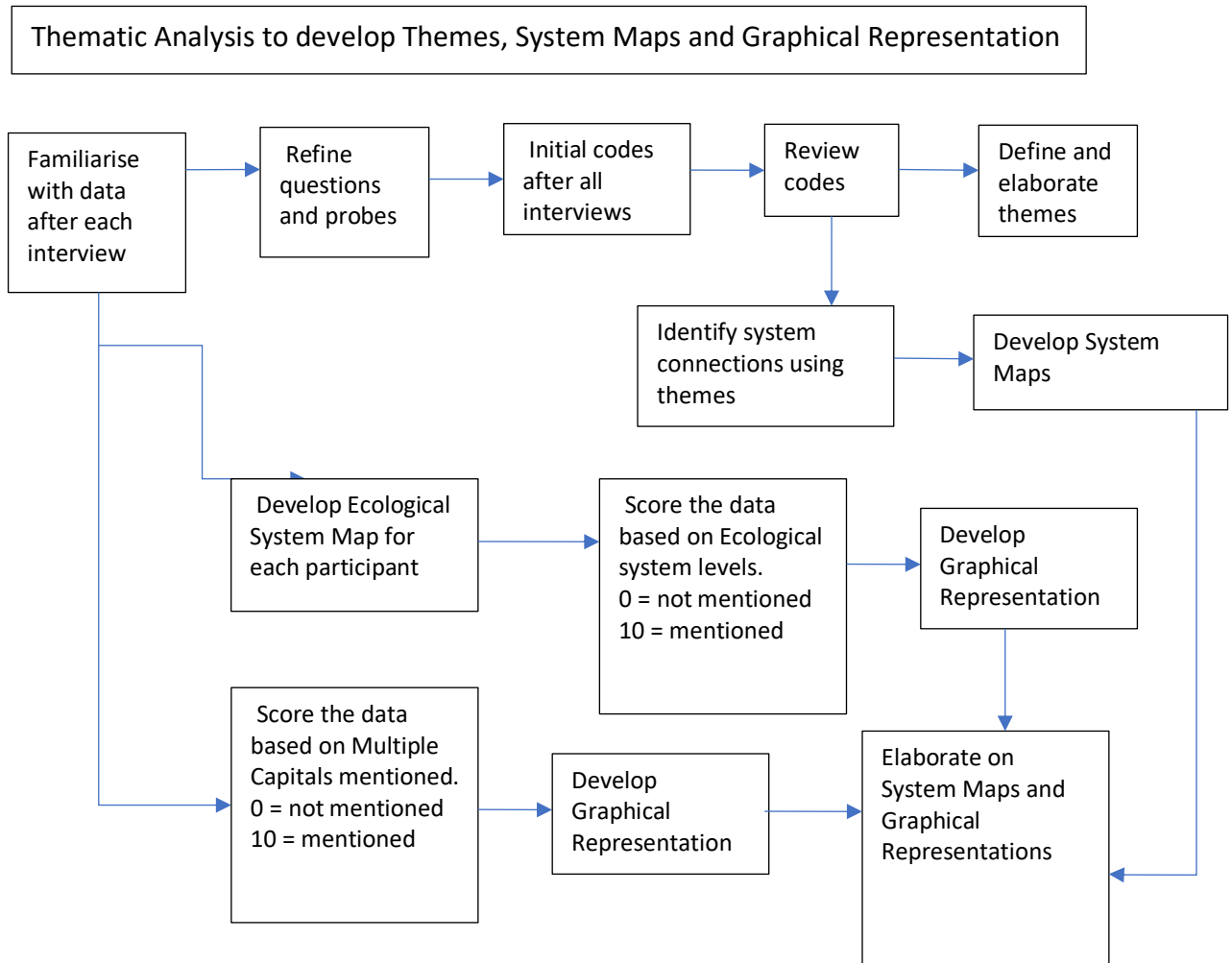


Figure 11 *Process of thematic analysis modified from Braun and Clarke (2006) and Vaismoradi et al. (2013)*

4.5.5.2 Phase Two Detailed Interviews

Phase Two interview data were analysed using a similar approach to that of Phase One, as shown in Figure 11. However, due to the greater participant numbers compared to Phase One and to meet the need to have improved precision of questioning with each interview, the researcher analysed the data after every interview to develop sharper questions and identify probes for the following interview (Creswell, 2014). Each interview informed the precision of the questions for the next interview. This was specifically required to identify the proposed solutions for the application of regeneration development in New Zealand, research sub-question 4.

Further, this allowed the researcher to deliberately use what was learned from each interview to present as a package of 'ideas so far' to the next participant who reflected on them and gave their thoughts on the intervention idea, critiquing what the others had said, suggesting potential unintended consequences previously not raised, and adding their own novel intervention ideas (if they had any). In this approach, data is not aggregated, instead the researcher arrived at one iteratively refined set of thought-through interventions which was the requirement for the proposed solution, sub-question 4.

When all interviews were completed based on saturation of responses, the researcher reviewed the transcripts to generate initial codes and identify emerging themes which are discussed in Chapter Five: Findings.

4.5.5.3 Phase Three Focus Group Discussions

The session's transcripts, feedback forms, and session artefacts were analysed using inductive thematic analysis techniques. This approach involved simultaneous data collection and analysis, coding, constant comparison of codes, identification of emergent themes, memo-writing about category and theme development, and iterative analysis (Weisbord & Janoff, 2010). The intent of the analysis was to identify common themes and the three immediate action points generated by the participants.

4.6 Chapter Four Conclusion

Chapter Four described the research methodology for the systems approach, data collection, and analysis. It outlined how the research was designed to answer the research questions which are repeated below.

The main research question pursued in this research investigation is: How does public-spend development need to change to deliver regenerative projects?

Sub-questions:

1. What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential barriers to regenerative development in the New Zealand context?
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

The research was designed using a qualitative, critical interpretive approach to discover the definitions, barriers, and contextual factors for regenerative development regarding public-spend decision-making in the New Zealand built environment. Using the system frameworks, the research design ensured the focus was on contextual factors that were present throughout the regenerative design system. Further, the system frameworks aided in drawing boundaries around the study and provided guidance on the sampling criteria. In line with the methodological views of the researcher, the frameworks ensured the collection of data from multiple perspectives from those considered experts. Exploring these perspectives was enhanced through a semi-structured qualitative interview format and resulted in the findings presented in the following chapter. These findings are divided into three phases of the research.

CHAPTER FIVE: FINDINGS

5.1 Introduction: Findings and Discussion Table

The purpose of this chapter is to present the findings from Phases One, Two and Three of the study, and demonstrate the methodical approach to data collection, analysis and the ways that each phase was informed by the previous one.

The findings identify the answers to the main research questions: How does public-spend development need to change to deliver regenerative projects?

Sub-questions:

1. What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential barriers to regenerative development in the New Zealand context?
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

The following sections describe the findings in each phase of data collection and explain the data analysis undertaken to arrive at the common themes which are discussed in the following chapter.

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
<p>Sub-questions:</p> <p>1. What are the perceived definitions of regenerative development in the NZ built environment?</p>	<ul style="list-style-type: none"> Definitions and associated literature on regenerative development are relatively new, mainly from 2009 onwards. <i>Cole, 2012 mentions that "Regenerative design and development emphasize a co-evolutionary, partnered relationship between humans and the natural environment, rather than a managerial one, that builds rather than diminishes social and natural capital."</i> <i>Robinson & Cole, 2015 mention that "While regenerative design builds the regenerative, self-renewing capacities of designed and natural systems (the designed interventions), regenerative development creates the conditions</i> 	<p>There is currently no New Zealand applied and/or contextualised definition for the concept of regenerative development.</p>	<ul style="list-style-type: none"> Definitions of terms of reference vary between practitioners, general public and ethnic groups, depending on the system level and cultural background. RD uses a community-based problem-solving approach for positive impacts. Two-way communication with top-down and bottom-up information flow. Facilitates overall systemic collaboration. Functions as an enabler/driver rather than a barrier. Strengthens connections to land and natural resources. Community reassurance, increased buy-in and participation from end users. Will have follow-on effects from the industry to improve quality and standards of development, 	<ul style="list-style-type: none"> "It is a community-based problem-solving approach with a two-way communication and information flow facilitating overall system collaboration. It develops and utilizes methods of accelerating decision-making but without abandoning evidence-based calculations, strategic integrity or holistic embrace." "Achieving positive, broader social, natural, financial and human outcomes through built environment investment decisions". 	<ul style="list-style-type: none"> From the various perspectives collected, the focus group participants resonated most with two definitions: the first from key elements collected in the interviews and the second, from the researcher's experience during the interviews and subsequent analysis.

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
	<p><i>necessary for its sustained, positive evolution. regenerative development and design, they suggest, 'does not end with the delivery of the final drawings and approvals, or even with construction of a project' but design responsibilities include: 'putting in place, during the design and development process, which is required to ensure that the ongoing regenerative capacity of the project, and the people who inhabit and manage it, is sustained through time'. This form of active and reflective stewardship builds the capacities of people to design, create, operate and evolve regenerative socio ecological systems in their place."</i></p> <ul style="list-style-type: none"> • Mang & Reed, 2012 "It is possible to 		<p>design, delivery, and measurement.</p> <ul style="list-style-type: none"> • Integrated, fluid, and synergistic processes and results. High quality early-stage planning. Early understanding of performance indicators. • High levels of trust and collaboration. Opportunity to combine soft and hard science to advance community-based development plans and changes to education, health policy. • Innovation in measurement thinking, approach and techniques. 		

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
	<i>characterize the work of regenerative development as having two interdependent aspects: (1) it determines the right phenomena to work on, or to give form to, in order to inform and provide direction for design solutions that can realize the greatest potential for evolving a system; and (2) it builds the capability and the field of commitment and caring in which stakeholders step forward as co-designers and ongoing stewards of those solutions.”</i>				
2. What are the potential benefits of regenerative development in NZ?	<ul style="list-style-type: none"> • Mang & Reed, 2012 and Plessis, 2007 mention that regenerative development derives much of its creative power from a fundamental shift of focus, a flipping of paradigms. Rather than seeing a site, or a 	<ul style="list-style-type: none"> • There are no reported benefits of regenerative development captured in the New Zealand context mainly due to the lack of applied examples. The examples of 	<ul style="list-style-type: none"> • Improved intergenerational wellbeing – contributing positively to social, cultural, financial, human, natural and political capitals. • Uses a community-based problem-solving approach for positive impacts. 	This question was not specifically asked in Phase Two as: <ul style="list-style-type: none"> • the answers for this question had reached saturation in Phase One. • Based on the Diffusion of Innovations model, the participant selection for Phases Two and Three included participants from early and late majority who had to be introduced to the concept and potential benefits of regenerative development, rather than seek the answers on it from them. 	

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
	<p>development project, as a collection of things (slopes, drainages, roads, buildings, etc.), a regenerative designer cultivates the ability to see them as energy systems, webs of interconnected dynamic processes that are continually structuring and restructuring a site.</p> <ul style="list-style-type: none"> • Improved and integrated decision-making. • Improved feedback mechanisms and lines of communication. • Improved equity resulting in enhanced political efficacy, well-being, democratic processes, and an increased sense of ownership and belonging. • Improved emphasis on local traditions and place-based indigeneity. • Improved place-based economic benefit. 	<p>application in Australia are yet to realise their benefits and current statements on reported benefits are limited to international literature, mainly in British Columbia and the USA.</p>	<ul style="list-style-type: none"> • Two-way communication with top-down and bottom-up information flow. • Facilitates overall systemic collaboration. Functions as an enabler/driver rather than a barrier. • Strengthening connections to land and natural resources. • Community reassurance, increased buy-in and participation from end users. • Will have follow-on effects from the industry to improve quality and standards of development, design, delivery, and measurement. • Integrated, fluid, and synergistic processes and results. • High quality early-stage planning. • Early understanding of performance indicators. • High levels of trust and collaboration. 		

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
	<ul style="list-style-type: none"> Improved use of resources and waste prevention. Generation of positive economic, social, cultural, and natural outcomes. Sustainability requires an holistic approach across sectors and across environmental, economic, political and social factors different from the 'silo' approach of working within well-defined disciplines, which is the traditional way of constructing and maintaining the built environment. 		<ul style="list-style-type: none"> Opportunity to combine soft and hard science to advance community-based development plans and changes to education, health policy. Innovation in measurement thinking, approach and techniques. 		
3. What are the potential barriers in the NZ context for regenerative development?	<ul style="list-style-type: none"> There is a poor link between high and low-level decision makers and although designers are often aware of sustainability issues, such issues are not often included at high level decision-making and this prohibits their implementation and inclusion in practice. 	Strategic Planning and Governance: <ul style="list-style-type: none"> Focus on operational issues and project output (relatively little attention has been given to understanding project success from a strategic perspective). 	<ul style="list-style-type: none"> Lack of innovative problem solving by system participants Traditional consultancy approach: "every hour must be billed." Varying definitions and degrees of understanding of Regeneration across system levels. Lack of actual understanding of varying 	<ul style="list-style-type: none"> Lack of Trust across the system. No unified positive, broader outcomes-based vision. Outcomes not captured in project mandate and embedded in business case, funding, procurement, reporting measurement processes. Bi-cultural nature of NZ: varying worldviews. 	<ul style="list-style-type: none"> Barriers as themes: <ul style="list-style-type: none"> Funding and financing structures Skills and capability Lack of place-based, value-centered strategic decision-making leading to: <ul style="list-style-type: none"> Lack of Trust Functioning in Silos

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
	<ul style="list-style-type: none"> There are tools available to assist with incorporating sustainability into design, but they are often theoretically based and do not take adequate account of the needs of practice. There is a lack of information relating to whole-life cost-benefits. Consequently, sustainability appears as an additional capital cost, whereas on a whole-life cost basis it can result in large cost savings. There is a lack of knowledge transfer from one project to another. Many projects are fast tracked, and sustainability does not feature strongly, if at all, in many of the day-to-day decision-making procedures. Even if a sustainable approach is 	<ul style="list-style-type: none"> Lack of identification of key performance indicators from a strategic perspective: what does good look like? Poor early, long-term planning in the pre-feasibility stage. <p>Procurement:</p> <ul style="list-style-type: none"> A risk-averse culture amongst procurement staff, influenced by perceptions of governmental propriety and transparency Administrative compliance burdens for procurement officers and short-term contractual arrangements limit their ability to develop more 	<p>worldviews and cultural practices</p> <ul style="list-style-type: none"> Lack of empathy by system participants, key decision makers. This could also be a perception of pragmatic decision-making. Varying cultural worldviews may have varying ways to retaining and sharing confidential information. 'Above my paygrade' thinking. Lack of broader outcomes (social, cultural, human, natural) focus in projects. Projects are almost wholly finance and time-driven, rather than value-based performance. Varying definitions of subjective terms in KPIs. KPIs captured in the detailed design stage, often too late as the KPIs have not informed the design. KPIs often used as simply marketing tools. Lack of management or governance experience 	<ul style="list-style-type: none"> Poor relationship and understanding between Central and Local Government Legislative and regulatory barriers. Financial and Legal Structures Functioning as Barriers rather than as Enablers. Skills and competence: governance, management, and procurement. Lack of understanding of place-based broader outcomes. Project Board Governance and Management Structures. Project Board Selection. Organisational Hierarchy and Reporting Structures. Lack of understanding of Financial, Legal, Legislative and Regulatory Structures and requirements by place-based communities. Chronological Incoherence between Election Cycles and Project Whole of Lifecycle. 	<ul style="list-style-type: none"> Poor relationship between Central and Local Government <p>Participants also noted that:</p> <ul style="list-style-type: none"> There is an absolute disconnect between Cabinet of decision makers (in terms of broader outcomes) versus where those procurement decisions are made. It is complex and difficult to identify, define, measure and report on social, cultural, natural and human outcomes. Procurement criteria do not have the required Key Performance Indicators or measures on non-financial attributes that need to be delivered. There is a perception that it does not matter what

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
	<p>adopted in the early concept stages of a project design, it is often ill- defined and lost when it comes to the real time and cost pressures of the project programme. It is most often the 'last line item' that is traded-off for increased floor space or cosmetic reasons. (Fewings & Henjewe, 2019; Hjelmbrekke, Klakegg & Lohne, 2017)</p>	<p>collaborative supply relationships</p> <ul style="list-style-type: none"> • Lack of ownership of strategic procurement objectives amongst senior staff • The narrow role and influence of procurement staff constrain their potential to build supply relations • High turnover of procurement staff and very little investment in training staff • Restrictive procurement procedures and limited coordination between government departments in strategic, value- 	<p>among top-tier management staff in public agencies responsible for project governance and procurement of services.</p> <ul style="list-style-type: none"> • Perception that policy is designed to penalise information transparency. • Attitude: "People are aware about climate change and its devastating consequences, but not many are ready to do something about it." • "Ribbon-cutting" approach informing Ministerial decision-making. • 'Silo' Approach • Poor link between system-wide decision makers. • Lack of practical application of tools. • Lack of skills and capability to support application of tools. • Disproportionate focus on capital costs compared to whole-of-life costs. • Lack of knowledge transfer, cynical attitudes 	<ul style="list-style-type: none"> • Lack of Will for positive, broader outcomes. • Functioning in 'Silos': Lack of whole-of-system collaboration. • Loss of data and information, especially regarding "what's important to the place" as it travels upstream. 	<p>the evaluation criteria or weighting is, often these outcomes can be manipulated by the procurement process to be pricing-based rather than value-based.</p> <ul style="list-style-type: none"> • People responsible for strategic decision-making cannot be focused on individual benefits and short-term gains (or quick wins) and need to embrace a holistic, long-term, and collective approach.

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
		<p>based decision-making</p> <ul style="list-style-type: none"> • Lack of communication between public sector and suppliers focused on broader outcomes • Lack of clear definitions of social, cultural, natural, and economic value, and transparent processes for assessing such value • Low understanding of how broader outcomes can be incorporated in procurement processes and tendering activities <p>Project Management and Key Performance Indicators:</p>	<p>to sustainability, and fear of failure.</p> <ul style="list-style-type: none"> • Sustainability measures which include the concept of regenerative development is perceived as the 'last line item' or 'secondary set of benefits'. Often first to be dropped. 		

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
		<ul style="list-style-type: none"> Increased scrutiny and criticism from civil society and social interest groups, public resistance and protests against construction projects, and government regulations. Highly context-dependent and value-laden, different intervention points for different outcomes makes it difficult to plan, prioritise and allocate KPIs at pre-feasibility stage. Fragmented research and literature on definition of social, natural, cultural, and 			

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
		<p>economic outcomes and processes, both integrated and separate, required to achieve them.</p> <ul style="list-style-type: none"> • Will have follow-on effects from the industry to improve quality and standards of development, design, delivery, and measurement. • Integrated, fluid, and synergistic processes and results. High quality early-stage planning. Early understanding of performance indicators. • High levels of trust and collaboration. 			

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
		<ul style="list-style-type: none"> Opportunity to combine soft and hard science to advance community-based development plans and changes to education, health policy. Innovation in measurement thinking, approach and techniques. 			
4. How does a regenerative approach for built environment development, fit within the strategic pre-feasibility decision-making process of public-spend projects in NZ?	<ul style="list-style-type: none"> There is no literature available in the New Zealand context to answer this question. This gap informed the use of this question as a topic to explore with interview participants in Phases Two and Three of data collection. 	<ul style="list-style-type: none"> There is no literature available in the New Zealand context to answer this question. This gap informed the use of this question as a topic to explore with interview participants in Phases Two and Three of data collection. 	<p>The findings for proposed solutions were limited as these were not the focus of Phase One interviews and the question was carried into Phases Two and Three for detailed discussion. Few points mentioned by the participants include:</p> <ul style="list-style-type: none"> Strengthening connections to land and natural resources. Community reassurance. Increasing buy-in and participation from end users. 	<ul style="list-style-type: none"> The participants mentioned the following themes which are explained in detail in the following section. Clarity of terms of reference and definitions Strategic decision-making, place-based and value centred outcomes Effective partnerships established via trust. Trust needs to be built-into systems and processes Systems-based thinking, practice and solutions Context, process, and timeframes 	<ul style="list-style-type: none"> Proposed solutions as themes: <ul style="list-style-type: none"> Political will and/or owner buy-in Skills and capability Strategic decision-making aligned with value-based outcomes leading to: <ol style="list-style-type: none"> All-of-government approach to problem solving Systems based practice and solutions

RESEARCH QUESTIONS	LITERATURE	FINDINGS			
	<i>Global and local literature</i>	Phase One Findings <i>Archival Data</i>	Phase One Findings <i>Exploratory Interviews</i>	Phase Two Findings <i>Detailed Interviews</i>	Phase Three Findings <i>Focus Groups</i>
				<ul style="list-style-type: none"> • Skills and capability: review across public sector - who is fit for the job and why? • Are they enabling cross-system collaboration and partnership? • Political will/owner buy-in • A reform of ministries or a separate, new, revised, strategic ministry of works. • Just transition 	<ul style="list-style-type: none"> c. Effective partnerships via trust d. Development projects aligning with the needs of Tangata Whenua and Te Tiriti O Waitangi • Most participants also mentioned that increased, diverse representation, in terms of more indigenous people, and women in strategic decision-making along with improved guidance (education), long-term (programme based) and non-partisan approach to investment decisions are key in unlocking the solutions for these reported barriers.

Table 11 Findings of literature review, and data collection Phases One, Two, and Three

5.2 Phase One: Early Landscape and Contextual Understanding of the New Zealand Built Environment regarding Regenerative Development

5.2.1 Introduction

This section presents the findings of the Phase One Pilot which had two elements:

3. Archival data
4. Exploratory interviews

The section then presents the analysis of Phase One and concludes with the discussion of the findings which inform the research questions of Phase Two.

5.2.2 Phase One Archival Data- Findings

Archival data here refers to peer reviewed literature and other documentation, not sourced during the formal literature review, but shared by the interview participants to provide context to certain projects and/or processes. Google Search tool and Auckland University of Technology's Library Tool were supplementary data search tools.

Table 11 (below) lists the primary set of archival material collected, and briefly records the specific relevance of the work to this study, plus the form(s) of capital covered.

Document	Source	Relevance	Capitals
Living Standards Framework (LSF) Background	New Zealand Treasury, 2018	Strategic alignment for projects with Government's direction	Social, Natural, Human and Financial
Treasury Approach to LSF	New Zealand Treasury, 2018	Strategic alignment for projects with Government's direction	Social, Natural, Human and Financial
Culture, Wellbeing and the Living Standards Framework: A Perspective	New Zealand Treasury, 2019	Addresses the absence of Cultural Capital in LSF and its value in strategic planning and investment strategies.	Social, Cultural and Human
An Indigenous Approach to LSF	New Zealand Treasury, 2019	Indigenous Approach to Wellbeing, benefits, strategic planning and investment strategies.	Social, Cultural and Human
Resilience and Wellbeing	New Zealand Treasury, 2019	Wellbeing, strategic planning and resilience	Social, Natural, Human and Financial
The Start of a Conversation on the Value of New Zealand's Financial/Physical Capital	New Zealand Treasury, 2018	Introduction to NZ Physical and Financial Capital Landscape and what wellbeing means in this space: strategic planning, Key Performance Indicators, and investment strategies.	Financial
The Start of a Conversation on the Value of New Zealand's Human Capital	New Zealand Treasury, 2018	Introduction to NZ Physical and Human Landscape and what wellbeing means in this space: strategic planning, Key Performance Indicators, and investment strategies.	Human
The Start of a Conversation on the Value of New Zealand's Social Capital	New Zealand Treasury, 2018	Introduction to NZ Physical and Social Landscape and what wellbeing means in this space: strategic planning, Key Performance Indicators, and investment strategies.	Social
The Start of a Conversation on the Value of New Zealand's Natural Capital	New Zealand Treasury, 2018	Introduction to NZ Physical and Natural Landscape and what wellbeing means in this space: strategic planning, Key Performance Indicators, and investment strategies.	Natural

CO 19 (6): Investment Management and Asset Performance in the State Services	New Zealand Treasury, 2019	Cabinet Office Paper Outlining Investment Management and Asset Performance requirements for various stakeholders, roles and responsibilities including strategy and decision-making framework of Think – Plan – Do – Review.	
Eastern Porirua Regeneration Business Case	The Urban Advisory, 2020	Outlines and explains the regenerative development Vision, Outcomes, Framework, Strategic Planning and Delivery OF Built Environment for Eastern Porirua.	Social, Natural, Human, Financial, Political
Te Kura Whare, the living building	Tuhoe, 2018 Tuhoe, 2019	Outlines and explains the regenerative development Vision, Outcomes, Framework, Strategic Planning and Delivery of Built Environment for the iwi and hapu of Tuhoe.	Social, Natural, Human, Financial, Political
Annual and Financial Reports	Ministry of Housing and Urban Development (2019)	Outlines the Annual and Long-Term Strategic Plans of MHUD from 2019-2022.	Social, Natural, Human, Financial, Political
Advisian: An examination of issues associated with the use of NZS Conditions of Contract	Advisian Worley Group, NZ Procurement, 2019	Outlines the key challenges and barriers for commercial procurement and delivery of project outcomes.	Social, Human and Financial

Table 12 *Phase One archival data sources*

5.2.3 Phase One Interviews - Findings

The aim of the exploratory Phase One interview set was to provide initial questions for the researcher to understand the regenerative development landscape in New Zealand. It was expected that these research questions would increase or decrease in number when progressing to the Phase Two interviews. Due to a small participant number (ten) of early adopters of the regenerative development concept and AUT's ethics rules, the professional description of the participants is not disclosed for Phase One. This is mainly to protect the identity of the participants as the regenerative development group of early adopters in New

Zealand is small. However, the researcher has mentioned the high-level professional description in Phase Two which had a larger participant group of 39 people which included the early and late majority for the concept of the built environment system.

The sub-questions for the Phase One Exploratory Interviews were:

5. What does regeneration mean in the New Zealand built environment context?
6. What are the potential benefits of regenerative development in New Zealand?
7. What are the potential challenges in the New Zealand context for regenerative development?
8. What are the potential barriers to regenerative development in New Zealand?

5.2.3.1 Q1: What does Regeneration Mean in the New Zealand Built Environment Context?

Phase One Pilot Interviewees were asked to define regenerative development from their perspective.

It is acknowledged the participants offered interlinked combinations of elements relating to definitions, challenges, and barriers. Due to these elements heavily overlapping and to avoid repetition, the researcher combined these elements into coherent sentences during the analysis post interviews as a way to faithfully demonstrate the interlinked nature of the reported elements in the original data, rather than reducing them to single elements and tabling them.

The most stated definition elements by the participants can be summarised as, *“RD is a community-based problem-solving approach with a two-way communication and information flow facilitating overall system collaboration. It develops and utilizes methods of accelerating decision-making – but without abandoning evidence-based calculations, strategic integrity or holistic embrace.”* (Major contributors being PI1, PI2, PI3, PI4, PI5, PI7, PI9, PI10)

The second most commonly expressed definition can be summarised as, *“RD is a long-term gains approach extending to intergenerational and life cycles longer than human; contributing positively to social, cultural, financial, human, natural and political capitals. It focuses on the*

timing of system changes where big impact long term decisions can be easily delayed satisfying short-term minor needs.” (PI1, PI2, PI3, PI4, PI5, PI6, PI7, PI9) This definition further bears similarity to two other definitions which define regenerative development as *“An Integrated, Living Systems Place-Based, Value-Centred Development Approach”* (PI1, PI2, PI6, PI7, PI9, PI10); and as, *“seeking the highest based standard, rather than minimum compliance-based for development of built environment.”* (PI2, PI3, PI4, PI6, PI7, PI9, PI10)

Table 12 shows the above-mentioned definitions and frequency of occurrence of key definition themes.

Elements of Definition of RD	Count	PI1	PI2	PI3	PI4	PI5	PI6	PI7	PI8	PI9	PI 10
Long term gains approach extending to intergenerational and life cycles longer than human. Intergenerational wellbeing – contributing positively to social, cultural, financial, human, natural and political capitals. Focuses on timing of system changes where big impact long term decisions can be easily delayed satisfying short term minor needs.	9										
Uses community-based problem-solving approach. Conscious, strategic community participation in early-stage project decision-making. Develops and utilizes methods of accelerating decision-making – but without abandoning evidence-based calculations, strategic integrity or holistic embrace.	8										
Seeks the highest achievable standard rather than minimum compliance based.	8										
Integrated, Living Systems Approach and place-based, value-centred development	7										
Innovative business models incorporating more than simply supply and demand – rather are wellbeing based, factoring people spend, consumption, leisure and livelihoods.	5										
Anticipatory, adaptable nature of policy and governance	5										

Table 13 *Phase One perceived definitions*

5.2.3.2 Q2: What are the Potential Benefits of Regenerative Development in New Zealand?

Phase One Interview participants were asked to list the potential benefits they thought could result from the application of regenerative development. It is acknowledged here that it was given that the participants assumed the researcher was aware of some of the benefits of regenerative development, as a motivator for the study. Further, out of the ten participants, three were Regenerative Practitioners having graduated from the same cohort as the researcher. This further informed the assumptions of the participants.

The most commonly mentioned benefits by the participants were *“improved intergenerational wellbeing; contributing positively to social, cultural, financial, human, natural and political capitals with wider impacts than just financial revenue”* (PI1, PI2, PI3, PI4, PI5, PI6, PI7, PI9) and *“Uses community-based problem-solving approach for positive impacts. Two-way communication with top-down and bottom-up information flow. Facilitates overall systemic collaboration. Functions as an enabler/driver rather than barrier”*. (PI1, PI2, PI3, PI4, PI5, PI7, PI9, PI10)

These benefits were closely followed by *“strengthening connections to land and natural resources”* (PI1, PI2, PI4, PI6, PI7, PI9) and *“Integrated, fluid and synergistic processes and results; high quality early-stage planning; early understanding of performance indicators and high levels of trust and collaboration.”* (PI1, PI2, PI4, PI7)

Table 13 shows the reported potential benefits and frequency of occurrence. It was identified that due to the novelty of the regenerative field and time taken to plan, build and measure benefits, there are as yet very few New Zealand examples demonstrating benefits. Benefits reported in the literature are mainly drawn from archival records relating to project planning and delivery documents shared by certain participants.

Reported Potential Benefits (clustered by theme)	Total	PI1	PI2	PI3	PI4	PI5	PI6	PI7	PI8	PI9	PI 10
Improved intergenerational wellbeing – contributing positively to social, cultural, financial, human, natural and political capitals.	9										
Uses community-based problem-solving approach for positive impacts. Two-way communication with top-down and bottom-up information flow. Facilitates overall systemic collaboration. Functions as an enabler/driver rather than barrier.	8										
Strengthening connections to land and natural resources. Community reassurance, Increased buy-in and participation from end users.	8										
Will have follow-on effects from the industry to improve quality and standards of development, design, delivery, and measurement.	8										
Integrated, fluid, and synergistic processes and results. High quality early-stage planning. Early understanding of performance indicators.	7										
High levels of trust and collaboration. Opportunity to combine soft and hard science to advance community-based development plans and changes to education, health policy.	6										
Innovation in measurement thinking, approach and techniques.	6										

Table 14 *Phase One reported potential benefits*

5.2.3.3 Q3: What are the Potential Challenges with the New Zealand Built Environment Context?

Phase One interview participants were asked to list the potential barriers they deemed were inhibiting the adoption of regenerative development in the New Zealand built environment.

The most mentioned challenges stated by eight out of the eleven participants were regarding the lack of innovative, value-adding solutions across the system in the New Zealand built environment. These were mentioned as follows (PI1, PI2, PI3, PI4, PI6, PI7, PI9, PI10):

“Lack of value-adding, innovative problem-solving intent throughout the system level actors with traditional consultancy ‘every hour must be billed’ approach.”

When probed for factors resulting in this challenge, the following factors were mentioned (PI1, PI2, PI3, PI4, PI6, PI7, PI9, PI10) as summarised below:

- *“No incentives, rewards, or appreciation from the Government for professionals pushing the standards higher.*
- *Lack of regenerative development specific risk-sharing contract models to balance time spent on project vs limited budget.*
- *‘Cookie-cutter’ strategies – ‘one size fits all’ and similar approach to measurement methods.*
- *Reductionist approach coupled with only supply-demand based economic model to problem solve for communities.”*

The second most mentioned set of challenges by seven out of the eleven participants were:

“Varying degrees of definitions and perception of ‘regeneration’ across system levels.” (PI1, PI2, PI3, PI4, PI7, PI9, PI10)

“Brings conflicts over differing worldviews to the surface. This could be due to lack of actual understanding and respect for varying worldviews and cultural practices, thereby indicating a lack of empathy. It is especially important be conscious of the varying worldviews during the strategic planning and delivery of projects as varying cultural worldviews may have varying

ways of retaining and sharing general and confidential information.” (PI2, PI3, PI4, PI6, PI7, PI9, PI10)

“Hierarchical and bureaucratic ways of working and reporting within public and private organisations causing low trust levels among employees. This could be a result of mostly ‘siloed’ portfolios within public and private organisations, slowing the chances of career progression through innovative, collaborative strategies implemented in project planning, design and delivery.” (PI1, PI2, PI3, PI4, PI5, PI9, PI10)

And lastly,

“Change is resisted and mostly, voicing the need for change has career-devastating consequences, enabled by ‘above my paygrade’ thinking.” (PI2, PI3, PI4, PI6, PI7, PI8, PI10)

Reported Challenges	Total	PI1	PI2	PI3	PI4	PI5	PI6	PI7	PI8	PI9	PI 10
Lack of innovative problem solving from professionals and value-adding professional services. Traditional consultancy approach: “every hour must be billed.” Lack of regenerative development specific risk-sharing contract models to balance time spent on project vs limited budget. Lack of systems-focused design thinking.	8										
Varying degrees of definitions and perception of ‘regeneration’ across system levels.	8										
Lack of actual understanding and respect for varying worldviews and cultural practices Lack of empathy. Varying cultural worldviews may have varying ways to retaining and sharing confidential information.	8										
Change is resisted and mostly, voicing the need for change has career-devastating consequences. ‘Above my paygrade’ thinking.	7										
Lack of broader outcomes (social, cultural, human, natural) focus in projects. Projects are almost wholly finance and time-driven, rather than value-based performance. Varying definitions of subjective terms in KPIs. KPIs captured in the detailed design stage, often too late as the KPIs have not informed the design. KPIs often used as simply marketing tools.	7										
Lack of management or governance experience among top-tier management staff in public agencies responsible for project governance and procurement of services.	5										
Perception that policy is designed to penalise information transparency.	3										
Attitude: “People are aware about climate change and its devastating consequences, but not many are ready to do something about it.”	3										
“Ribbon-cutting” approach informing Ministerial decision-making.	3										

Table 15 Phase One reported challenges

5.2.3.4 Q4: What are the Potential Barriers within the New Zealand Built Environment Context?

Phase One interview participants were asked to list the potential perceived barriers they deemed were stopping the adoption of regenerative development in the New Zealand built environment.

The most mentioned barrier, by ten out of the eleven participants was, *“Lack of diversity and inclusion in decision-making and partnership.”* (PI1, PI2, PI3, PI4, PI5, PI6, PI7, PI8, PI9, PI10)

The next most mentioned barriers were, *“Assumptions of cost, time, scope and risks. Example, best practice is expensive is an assumption in this case.”* (PI1, PI2, PI3, PI4, PI6, PI7, PI8, PI9, PI10)

“Organisations, both public and private do not completely understand, respect and action partnership on projects due to operating from a ‘dominant’ ego space.” (PI1, PI2, PI3, PI4, PI5, PI6, PI8, PI9, PI10)

“Lack of life-centred approach in policy making and analysis.” (PI1, PI2, PI3, PI4, PI6, PI7, PI9, PI10)

“Lack of cultural understanding and application of democracy and information transparency. And definitions of terms of reference vary between practitioners, public and ethnic groups, depending on the system level and cultural background.” (PI2, PI3, PI4, PI6, PI7, PI9)

Although proposed solutions for change were not a specific question to be asked in Phase One, given the exploratory nature of the interviews, some participants shared ideas for change. The following insights were provided by three out of ten participants.

One participant mentioned the need for sustained political savvy and commitment over time, if regenerative development-scale changes are to be realised. Timing is also crucial as ‘an unusual alignment of the stars’ might be needed.

“Depends on how people process change in themselves.... To me, change is really helping people to understand that process and helping people to recognize that when we talk about change, we have a certain response. And being able to feel that response and embrace it and not being afraid of it and not being afraid to talk about it too much... Change comes about, I've found the most effective way is to do it is to build relationships politically.

So, I've tried to bring about change internally and to build consensus with people that works some of the time, but often when we get to certain levels and certain parts of the organization, they are the level of resistance that you cannot influence any further, which needs political, it almost needs a political interference. So, this stresses systems from different parts. If you look at the GMs, have a high level of autonomy and ability to make decisions on things. So, it sort of comes down to individual GMs and individual managers of those departments to make decisions on things at times.

So, it comes down often comes down to the individual and challenging that becomes very difficult when it becomes career limiting, for the individual trying to bring about the change. It just doesn't happen. So, my personal approach is to build relationships and consensus and build a political ‘will’ around these things and finding champions who will get behind the cause and behind the movement. To sort of help with those conversations, then you get higher up in organizations, sometimes you just need the short circuit of the political intervention.

I do find that there are times when perceived political risk will influence the speed or scale at which we might address a problem or an issue. It can be to do with the time that we're in the political cycle. How much political capital does someone have at a point in time? Can they afford to take a bit of a bump and then build it back up at a certain point in time?

Unfortunately, I think that's the reality of our short-term political cycles. What I do see is that we have right now within council, a number of very progressive elected members have a great sense of altruism. And a real fundamental drive and need to do good to make positive change in the world. That really supports us in the work that we're doing for trying to bring change about the communities because that is what we need is that political will and that political championing the right time to be out there in the communities and saying we need to move forward in this direction.” (PI4)

Participants also pointed to the importance of organised and required collaboration between public bodies, research entities and other parties; and how New Zealand may lag in this aspect.

“It takes a long time, particularly in New Zealand think it takes a long time for the public sector to respond to new knowledge. But partly that's because the, there was no particular pressure on governments to respond more quickly. Now with climate change, there is pressure, if you look at what's been happening in Australia this summer (bush fires). The pressure for action in Australia now is immense. So, I would expect the government respond much more quickly now than they were even six months ago. There's no single leverage point that will achieve change. We have created these procedures by which we test knowledge to distil what we think is best. But then on top of that, we have to communicate two ways. So that means listening to what policy makers and industry are saying about what are the real problems that are preventing progress. So that helps inform our research, but also addressing them and language that is understood about what we know. And at the moment in New Zealand, I think the civil service is not very receptive dialogue. And I think this is some of the low hanging fruit that we could do a New Zealand that would improve things. You know, we don't have the tradition, all of independent think tanks, exchanges between academics and civil servants that other countries have.” (PI7)

“And so, we need to be able to have those conversations up front and have them integrated with a range of other discussions in those early stages. And articulated it in a way that is modern. It has a modern feel to it while still having a nuisance the environment and people at its core.” (PI10)

The above verbatims provided the researcher with an initial idea of what is required for change, which developed into a specific sub-question for the Phase Two detailed interviews.

Reported Barriers	Total	PI1	PI2	PI3	PI4	PI5	PI6	PI7	PI8	PI9	PI 10
Lack of diversity and inclusion in decision-making and partnership.	10										
Assumptions of cost, time, scope, and risks. Example, best practice is expensive is an assumption in this case.	9										
Organisations, both public and private do not completely understand, respect and action partnership on projects. Hierarchical and bureaucratic ways of working and reporting – organizational structure issues. ‘Siloed’ portfolios within public and private organisations.	9										
Lack of cultural understanding and application of democracy and information transparency. Definitions of terms of reference vary between practitioners, the general public and ethnic groups, depending on the system level and cultural background.	6										
Status-quo and business-as-usual approach to built environment development projects. Business planning and models in public sector not set up to accommodate regenerative development based performance outcomes.	6										
Vested interests, short-term gains approach, personal ambition, political affiliation. Personal ambition of growth – ‘bigger car, bigger office at the cost of jobs and employee/team wellbeing’.	5										
Low levels of trust and collaboration in the way current systems are set up in a capitalistic society. Colonial and hyper-capitalistic way of operation.	5										
Most public agencies have career civil servants and few with industry practical technical experience offering holistic perspective and vice versa.	3										
Government relies on the industry for advice instead of leading/pushing the industry for best practice.	3										

Table 16 *Phase One reported barriers*

5.2.4 Phase One Conclusions

5.2.4.1 Have the Research Questions been Satisfactorily Answered?

Sub-questions	Observations/Comments on gaps in analysis
Q1: What does regeneration mean in the New Zealand built environment context?	Lacks clarity on top-tier decision makers' (Ministry bodies, Treasury and Project Governance Groups) perspectives on the meaning of regeneration and a complete system definition. The following questions arose most regularly in relation to this part of the analysis but largely remain unanswered and will form the focus for Phase Two and Three of the study: 1. What is the Te Ao Māori perspective regarding connection to land and how does this influence the definition for regenerative development? 2. What is the perception of regenerative development by top-tier industry executives and politicians making strategic decisions for the complete industry?
Q2: What are the potential benefits?	Due to the novelty of the regenerative field and time taken to plan, build and measure benefits, there are very few New Zealand examples demonstrating benefits. Benefits can mainly be stated from the archival project planning data of these projects.
Q3: What are the potential system challenges in the New Zealand context?	Lacks clarity on and confirmation from top-tier decision makers (Ministerial bodies, Treasury and Project Governance Groups) on perceived potential challenges and ideas on addressing the challenges.
Q4: What are the potential barriers in the New Zealand context?	Lacks clarity on and confirmation from top-tier decision makers (Ministerial bodies, Treasury and Project Governance Groups) on perceived potential challenges and ideas on addressing the challenges. Lacks understanding of how current systems and processes can facilitate regenerative development. How can change happen: needs further work and elaboration in Phase Two.

Table 17 Phase One conclusions

To draw boundaries for this study, the researcher revisited the research question and aim which is “to improve strategic decision-making for effective governance and procurement of regenerative projects”. Combining this with the analysis of Phase One, the researcher was able to draw the boundaries for the area of deeper study to explore through semi-structured interviews leading to the following questions for Phase Two.

5.3 Phase Two: Detailed Analysis of the Public-Spend Approach to Strategy, Procurement, and Project Governance

5.3.1 Introduction

The main research question pursued in this research investigation was: How does public-spend development need to change to deliver regenerative projects?

With sub-questions:

4. What is meaning of regeneration in the New Zealand built environment system including benefits if any?
5. What are the potential system barriers to the uptake of regenerative development in New Zealand?
6. What would be specifically needed from the public-spend built environment system for the adoption of regenerative development to deliver integrated, multiple capitals, broader outcomes change?

The researcher segmented the participants with the following codes as below (List 1) to align with the Ecological System Theory levels with the purpose of providing an indication of where the participants are in the system.

Modified EST Level	Code	Description
Level 4 Macrosystem - Central Government	L4A	Politician
	L4B	Politician
	L4C	Politician
	L4D	Politician
	L4E	Asset Management and Planning Official, Public-spend agency
	L4F	Senior Climate Change Leader
	L4G	Government agency procurement
	L4H	CEO, Public-spend agency
	L4I	Ministry, Building for Climate Change
	L4J	Regulatory - Senior Leader Health and Technical Services
	L4K	Regulatory and Research Official
	L4L	CEO, Public-spend agency
	L3A	Councillor

Level 3 Exosystem - Local Government	L3B	Councillor
	L3C	Councillor
	L3D	Project Manager, Private-Public Partnership project
	L3E	Senior Leader, Local Government
	L3F	Local Government Building Inspector
Level 2 - Mesosystem - NZ Built Environment Industry	L2A	Asset and Facilities Manager, large corporate
	L2B	Industry body representative and lobby group
	L2C	Industry body representative and sub-contractor
	L2D	Industry body representative, ex-public service official
	L2E	Union Body Rep and decision-maker
	L2F	Industry body representative
	L2G	Property Industry body representative
	L2H	CEO Health and Safety
	L2I	Project Manager for projects 500mil+
	L2J	Green Building Manager
	L2K	Green Building Manager
	L2L	Engineering Industry Expert
	L2M	Leading Property Developer
	L2N	Probity
	L2O	Researcher, built environment- materials
	L2P	Industry Body Representative and Researcher
	L2Q	Procurement researcher
	L2R	Researcher, built environment and eco-design
Level 1 Microsystem - Community and iwi groups	L1A	Social enterprise, community group
	L1B	Social enterprise, community representative
	L1C	Mana whenua representative

List 1 Phase Two Participant Description

5.3.2 Phase Two Interviews Findings

5.3.2.1 Q1: *What is Meaning of Regeneration in the New Zealand Built Environment System?*

The researcher interviewed 39 people, out of which 15 had never previously heard of regeneration, or its variants regenerative development, regenerative design, or regenerative agriculture.

As detailed in Chapter Four, the researcher introduced regenerative development at each interview, using an explanation built from the common definition elements captured up to the end of Phase One:

Regenerative development is a community-based problem-solving approach with a two-way communication and information flow facilitating overall system collaboration. It develops and utilizes methods of accelerating decision-making but without abandoning evidence-based calculations, strategic integrity or holistic embrace.

By the end of the Phase Two interviews, this had evolved to, *regenerative development is about achieving positive, broader social, natural, financial and human outcomes through built environment investment decisions* This definition, developed iteratively, had the highest overall acceptability and comprehension.

5.3.2.2 Q2: What are the Potential System Barriers to the Adoption of Regenerative Development in New Zealand?

To understand how the change to achieving positive, broader outcomes can be implemented, it is important to identify and understand the barriers stopping change for positive, broader outcomes. The findings are presented by clusters, sorted according to the barriers to change established in Phase One.

The reported barriers shown in Figure 12 below show the various barriers reported by the number of participants in the Phase Two interviews. It can be noticed that most of the barriers reported were commonly stated by other participants as well. Further Appendix V shows the various participants that reported on the below themes.

Figures 12 and 13 could potentially be perceived as the participants having remarkable inter-consistency in their answers. However, these themes were identified, and participants answers were sorted in these themes after the Phase Two interviews, as per the researcher's interpretation. The themes shown in Figures 12 and 13 are collapsed for presentation and discussion purposes, and associated sub-themes are shown in Section 5.1, Table 11 and Appendix IV.

For clarification, the researcher did not attempt to influence the responses by offering a predetermined list of barriers to the participants and asking if they agreed. Further, it is noted from the findings that the inconsistencies in answers occur deeper in the participants' answers and are mainly regarding the mentioned capitals and system levels by the participants.

The themes in Figures 12 and 13 are actually more of an aggregation of participant comments and have captured outlier themes such as S8: Ministry of Works and S9: Just Transition in Figure 13.

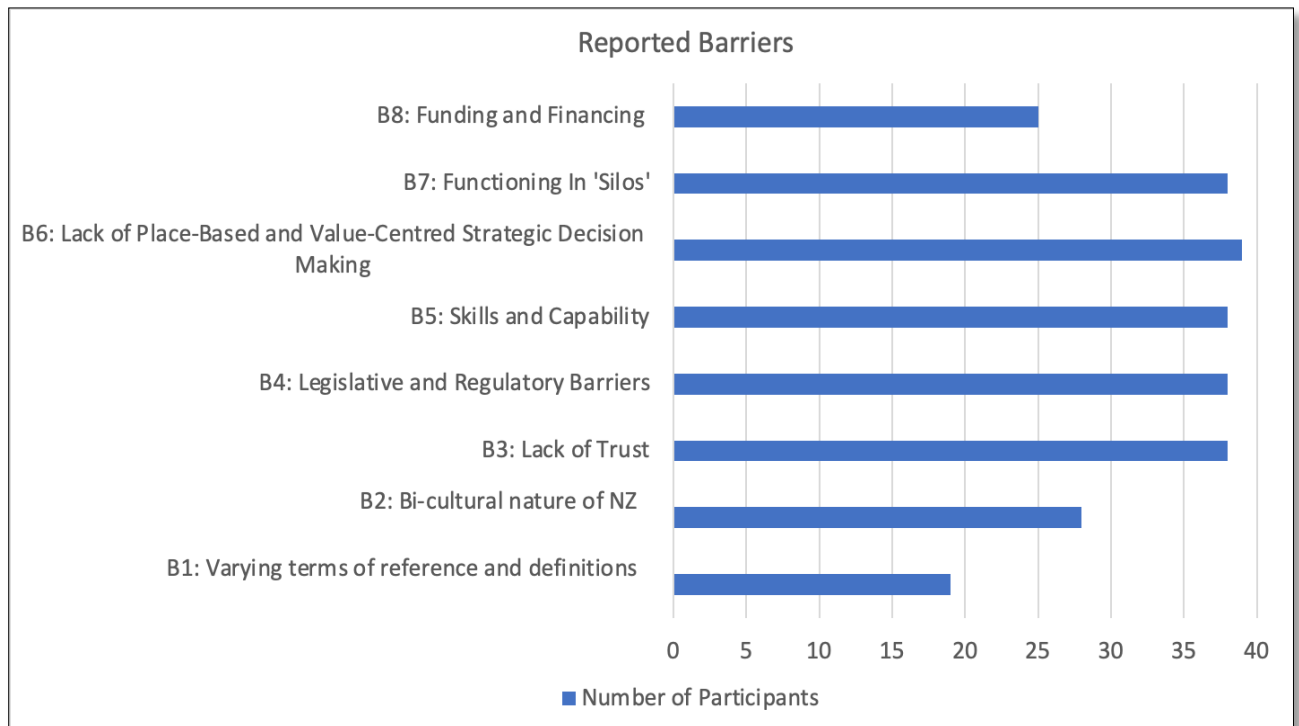


Figure 12 Reported barriers and count of participants in Phase Two

B1: Clarity on Definitions and Terms of Reference

The participants indicated towards noting what exactly was being regenerated, and ensuring the definition captured the process and complexity of delivering a regenerative project. As reported below, particularly well expressed by one participant.

Code	Participant Description	Reported finding
L2J	Green Building Manager	<i>"What is being regenerated - needs to be specific and clearly tangible for change-making. (The) word regenerative is inspiring to certain architects. Regenerative does not mean green development is doing "less bad" - which is usually incorporated in the definition of regeneration. Aims of regenerative design is to positively improve the positive impacts of green development.</i>

		<i>Word regenerative is not well defined - feels aspirational and marketing-y. Regenerative - useful in master planning and programme level work. Cultural barrier in New Zealand - with how we spend and what we choose to spend on - and whether its affordable for lower-income communities and New Zealanders."</i>
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B2: Bi-Cultural Nature of New Zealand Varying Worldviews

The participants noted that bi-cultural worldviews and varying understanding of partnership, ownership and collaboration were perceived as barriers to bringing parties together to collaborate on public-spend projects. Further, it was mentioned that lack of clear processes, role descriptions, and consultation with the place-based community on key performance indicators, and lack of clarity on expectations from involved participants, contributed to the barriers. This is explained by an interview participant as below.

Code	Participant Description	Reported finding
L2I	Engineering Industry Expert	<i>"The relationship has to change from a stakeholder to a partnership. Māori and community groups need to be at the table from the very beginning. Thinking around procurement needs to happen in the pre-feasibility stage - who do we need on this project? If the thinking on procurement is holistic and brought forward in the project in the pre-feasibility stage, it can change a lot of decision-making and save resources. Staged thinking and decision-making are not particularly helpful. Community and iwi need to have inputs to design, tender, procurement and what gets built." (DI6)</i>

B3: Lack of Trust

a. Between Central and Local Government

The participants noted that the relationship between the Central and Local Government lacked clarity and understanding on delivery and funding expectations.

The participants noted that the Local Government has less powers and autonomy to influence change, especially when combined with limited funding being made available. In the context of inter-generational wellbeing, the Central and Local Government funding mechanisms may need to be revisited, to ensure that the Local Governments are being empowered to deliver to the expectations set by Central Government and ratepayers.

The lack of trust could also be due to ideological differences between Central and Local Government. As reported below, particularly well expressed by a few participants.

Code	Participant Description	Reported finding
L2Q	Procurement Researcher	<i>“Local Government has minimal powers and functions and is dependent on the Central Government for most of its funding. It tries to think spatially but its ability to achieve those multiple outcomes is really tricky. Disadvantage is that it is difficult for Local Government to think spatially and deliver spatially. Our structures don’t lend us naturally to deliver programme level, broader outcomes type large scale projects. In Australia, the states have much more powers and responsibilities to deliver broader outcomes.”</i>
L3B, L3C	Councillors	<i>“Council relationship with Central Government is difficult due to budget allocations, decisions needing to be aligned all the time with Central Government and lack of engagement by elected MP (Member of Parliament) and Central Government with the local councillors. More collaboration from the Central Government. Public servants should engage more and enquire</i>

		<p><i>with the Councils what their plans are. A more honest and mature conversation with underprivileged societies can take us towards change making. Sometimes ideological differences between Councillors and MPs can create friction and may not be conducive to change."</i></p>
L3A	Councillor	<p>Further, one participant noted the following trust-related barriers to change regarding engagement of rate and taxpayers with elected Central and Local Government candidates as reported below:</p> <p><i>"Barriers to change:</i></p> <ul style="list-style-type: none"> <i>a. It is difficult for a common person to navigate the bureaucracy and the expert and career public servants whose main job seems to maintain the status quo and "squash" down any change or reform.</i> <i>b. Career politicians do not want change as they perceive their constituencies do not need it. These are generally older, white male representatives who cater to a certain demographic and everything for them is about maintaining the status quo.</i> <i>c. Elected MPs do not engage after election with their constituencies and local Councils - thus breaking away the connection and creating lack of engagement and partnership.</i> <i>d. Lack of representation regarding Te Tiriti o Waitangi, women, younger population, minorities, LGBTQI+, and other priority groups.</i> <i>e. Skills and Capability: New Zealand itself is not very progressive or academic compared to Europe. People being reported to in public service roles are often senior, hierarchical people who are not open to change or uncertainty.</i>

		<i>f. The problems we have today are the manifestation of the system that has been created years ago and many times, it is simply how things are - status quo."</i>
L2M	Leading Property Developer	Additionally, one of the participants indicated a perceived risk-averse nature of Central and Local Government, and resultingly didn't trust the agencies to do what was needed to achieve beneficial change. <i>"Most Government bodies want to manage risk, not deal with it."</i>
L2O L2P	Researcher (materials), Industry Body Representative and Researcher	Further, two participants stressed specifically that the focus on lowest price, rather than overall and long-term value delivered causing loss of trust in contractual parties. <i>"Public-spend agencies need to work on achieving the balance between aspirations and lowest cost. Early Contractor Engagement will help sort out a lot of planning and risk related issues. Project planning and conceptual design meetings can use this model. This will help address the estimate cost vs real budget issues. Public agencies have a financial reality to meet - but need to realise it's okay to make money in the process. Public agencies need to get rid of lowest price mentality."</i>

b. Between Various Stakeholders

The participants reported there were culture problems in the construction industry which are contributing to the lack of wellbeing, lower productivity and growing distrust between project stakeholders.

The elements of this distrust between various stakeholders were well-explained particularly by two participants.

Code	Participant Description	Reported finding
L2C	Industry body representative, ex-public service official	<p><i>“Problem(s) with culture in construction sector:</i></p> <ul style="list-style-type: none"> <i>a. Massive distrust across industry – (need to) address it</i> <i>b. Designers and builders not making adequate margins.</i> <i>c. Loss of jobs and high employee turnover</i> <i>d. Fiercely competitive so that people are not enjoying the work anymore</i> <i>e. Client’s distrust with contractors, and legal structures further driving the distrust.</i> <i>f. Need to build the skill of storytelling to engage and take people on the journey.”</i>
L2F	Industry body representative	<p>Further, the participants reported that the lack of long-term programme-based vision and planning from the public-spend agencies was causing lack of clarity regarding workflow and industry professionals to anticipate upcoming work programme. Lastly, the lack of clarity on value provision, associated long-term system wide costs, and varying expectations of stakeholders contributes to growing distrust and communication gap between stakeholders.</p> <p><i>“There is no way to measure extra value provision, and public-spend agencies are risk and conflict averse on extra value provision. The public-spend agencies, as clients, fail to explore all the opportunities due to various constraints and this is a huge shortcoming for the industries and communities. Public-spend procurement mentality of ‘if we don't play hardball, we'll get taken advantage of.’ Various suppliers and contractors are willing to work with the communities to figure out how to achieve their broader aspirations - however the Government and public agencies fail here.”</i></p>

B4: Legislative and Regulatory Barriers

The participants reported that legislative and regulatory systems, especially the Public Finance Act 1989, and Resource Management System (including the Resource Management Act 1991), were causing a significant barrier to all-of-system collaboration, increased bureaucracy, and low productivity. These were explained well by two participants mainly representing industry bodies, at the intersection of Central and Local Government, and the built environment industry.

Code	Participant Description	Reported finding
L2C	Industry body representative and sub-contractor	<p><i>"The industry needs a forward-looking vision that is not politicised.</i></p> <p><i>Challenges for the industry:</i></p> <p><i>a. Bottom price always wins the tender rather than one exploring options to provide broader outcomes.</i></p> <p><i>b. These decisions result in huge lifecycle costs as in the case of leaky homes, infra(structure) not performing, Government's huge asset maintenance costs, and lower lifespan of assets. Not enough benefits through the investment made.</i></p> <p><i>b. The industry does not have a steady pipeline of work and projects that are envisaged to go-ahead get scrapped at concept or design stage if there is a change in Government.</i></p> <p><i>c. Resource Management Act 1991 (RMA) regulations and Political decision-making are huge barriers in maintaining a steady flow of work - which will then enable Tier 1 companies to research and innovate. The contractors and designers must upscale and downscale unnecessarily. Flip-flop decision-making is a huge barrier to productivity.</i></p> <p><i>d. Question to be asked: RMA is a huge barrier and is that barrier created by the RMA official's viewpoint or is it in accordance with the community's needs and viewpoint?"</i></p>

L2F	Industry body representative	<p>This was also mentioned by another participant, as reported below:</p> <p><i>“Partnerships are simply not easy with public agencies, due to a lot of barriers which were supposed to function as enablers, such as the Public Finance Act, Resource Management System, etc.”</i></p>
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B5: Skills and Capability: Governance, Management, and Procurement

The participants reported a system-wide lack of skills and capability in delivering inter-generational value through public-spend investments. This was especially in governance, management, and procurement of public-spend projects, causing increasing lack of long-term, programme-based delivery, and acknowledgement of the need of robust measuring and reporting technologies. The barrier relating to skills and capability was seen as a cross-cutting barrier, in that addressing this one deficiency would also address other barriers collectively. These were well-explained by the following participants.

Code	Participant Description	Reported finding
L2F	Industry body representative	<p><i>“Procurement guidelines haven't been conducive to enable achievement of broader outcomes.</i></p> <p><i>Public-spend Procurement challenges (include):</i></p> <ul style="list-style-type: none"> <i>• Massive lack of trust between parties, conflict and risk averse, and lowest price mentality. They fail to look at projects more than short-term technical problem solving.</i> <i>• ...the public-spend agencies, as clients fail to explore all the opportunities due to various constraints and this is a huge shortcoming for the industries and communities.</i> <i>• ...Various suppliers and contractors are willing to work with the communities to figure out how to achieve their broader</i>

		<i>aspirations - however the Government and public agencies fail here.” (DI10)</i>
L4C	Politician	<p>Additionally, it was reported that there is lack of skills and capability to assess long term cost-and-benefit aspects of public investment in political parties. As a result, it was perceived that commonly political parties do not adequately understand the long-term intended and unintended consequences, as mentioned below:</p> <p><i>“Unlikely (that) the political party will ever evaluate the success for a project – it does not have skills or interest due to the short-term nature of a political cycle. The aim of the political party is to deliver policies, not evaluate success. Political parties do not have the skills and capabilities. Cannot trust a political party to know what a good infrastructure or investment decision is - simply because it is not their area of expertise and there is no way of checking within the political system.”</i></p>
L4D	Politician	<p><i>“1. "Shoulder-tapping" of people without due diligence or evidence-based engagement.</i></p> <p><i>2. Oversimplification of complex issues.</i></p> <p><i>3. Senior management structures are not perfect - being a good professional and leader are two different things. Good leaders can draw out from their people a level of depth.</i></p> <p><i>4. Public Agencies can be disconnected from the needs of the people on the ground.</i></p> <p><i>Not everyone in politics is experienced to handle the portfolios they are assigned and often issues can be "dulled" or "dumbed" down. These decision makers can be defensive and ask the bureaucrats to dull-down the issues. Again, these decision makers are not asked for the best - how are we assessing their</i></p>

		<p><i>capability and maintain accountability? Leaders and policy makers need to know more (to) have "empathy" for the issues they are trying to resolve.</i></p> <p><i>5. Central and local governmentt need better partnership to resolve climate change and place-based development programmes.</i></p> <p><i>6. Leadership has to be "porous" and needs to absorb and give a lot of knowledge and inspiration.</i></p> <p><i>7. Leadership needs to know what the issues on the ground are as well as how to get the best out of people."</i></p> <p><i>8. Outcomes and objectives-based thinking in leadership is not done enough.</i></p> <p><i>9. Although Governance is technically responsible to plan and lead the direction for the project, it is often disconnected by the people or the processes to engage with how it is being delivered.</i></p> <p><i>10. Projects can be totems or ego-boosting exercises that look good, promise big but do not achieve the outcomes." Bricks and mortar projects will be prioritised but can often cripple the resources. It is not necessary to be attractive and does not need to end up being a burden on the taxpayers."</i></p>
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B6: Lack of Place-Based and Value-Centered Strategic Decision-making: Governance, Management and Procurement

The participants noted that the lack of engagement with local communities, iwi and mana whenua during public-spend projects to capture stakeholder expectations by both ministerial agencies and Industry professionals, showed lack of strategic decision-making in governance, management and procurement of public-spend projects, particularly well-mentioned by three participants.

Code	Participant Description	Reported finding
L4D	Politician	<i>"Ask the communities what they need, and they will tell you what needs to be done - your job as the leader is to integrate various requirements, mobilize and deliver them."</i>
L4E	Asset Management and Planning Official, Public-spend agency	<i>"...let's be frank, the, the health maintenance takes place in the home and in the community. And so, there was this interesting interplay between the desire and need to, to spend money building stuff in the community to improve health or simply on physical hospital sites. And primary care is not part of the crown balance sheet. There are all these parameters in place, which limit the ministry of health and district health boards as asset owners from effectively tracking how the capital investments have an overall health impact."</i>
DI6	Engineering Industry Expert	<i>"The relationship has to change from a stakeholder to a partnership. Māori and community groups need to be at the table from the very beginning. Thinking around procurement needs to happen in the pre-feasibility stage - who do we need on this project? If the thinking on procurement is holistic and brought forward in the project in the pre-feasibility stage, it can change a lot of decision-making and save resources. Fragmented, short-term thinking is not helpful in the long run. Community groups need to have inputs to design, tender, procurement and what gets built."</i>

B7: Functioning In 'Silos' and Organizational Hierarchical Structures

The participants reported that the lack of collaboration across ministerial agencies, industry professionals and community stakeholders in the pursuit of short-term gains, causes project administrative work double-ups, duplication of projects, low knowledge sharing, and low value proposition for inter-generational benefits, as mentioned by two participants.

Code	Participant Description	Reported finding
L4F	Senior Climate Change Leader	<i>"Regulation needs to work collectively and not in silos - silos have been set up intentionally and are a pragmatic response to work individually - lack of collaboration, hyper competition and short-term wins vs long term gains."</i>
L2Q	Procurement researcher	<i>"Public sector is risk averse and operates in "silos". Must bring in Local and Central Government together along with private sector and social agencies. The relationship is not great between central and local governments."</i>

B8: Funding and Finance

The participants reported that the public funding and investment mechanisms to support Central and Local Government investment are barriers, especially in the case of the Public Finance Act 1989.

Additionally, the participants, especially from Local Government mentioned that the funding structure and considerations by Central Government were disproportionate when compared with regional population growth and expected infrastructure, as mentioned below:

Code	Participant Description	Reported finding
L2C	Industry body representative and sub-contractor	<i>"The Central-Local Government relationship doesn't support the creation of quality infrastructure. And the biggest picture piece here is that New Zealand is one of the most centralized systems of government of the world in terms of the, one of the core things, which is that who has got the power. So, the power in New Zealand is that central government, 90% of total tax rates take country and local government has got 10%. Right."</i>

		<p><i>But that 10% revenue share funds, 40% of New Zealand's infrastructure. Yeah. And so, what happens is the productivity commission comes down and it says, well, look, rates are effective way or efficient way I should say of collecting income. But the bigger question is that if local government is tasked with delivering wellbeing to its citizens, you know, broad wellbeing. Yeah. But it's only got 10 cents on the dollar and it's got all of this legislation coming in from central government and it's set up to basically take no risk.</i></p>
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5.3.2.3 Q3: What Would be Specifically Needed from the Public-Spend Built Environment System for the Adoption of Regenerative Development to Deliver Integrated, Multiple Capitals, Broader Outcomes Change?

This section presents the verbatim data categorised into themes as per Figure 13 and Appendix VI.

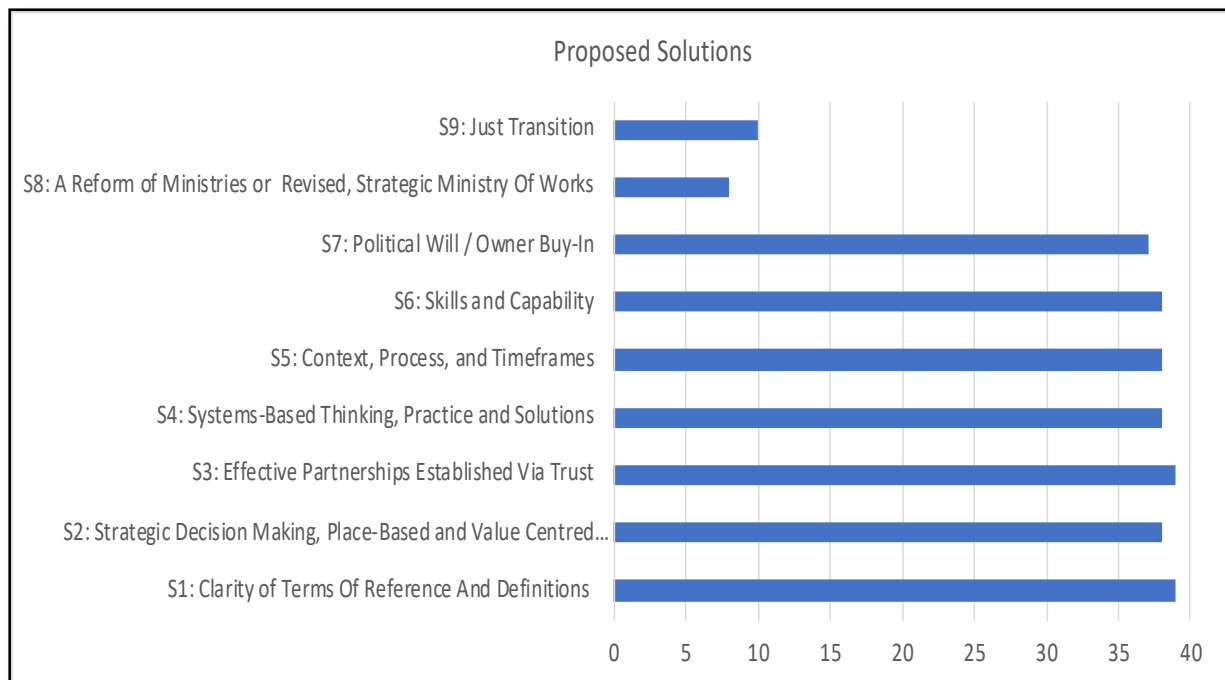


Figure 13 Reported solutions and count of participants in Phase Two

S1: Clarity of Terms of Reference and Definitions

The participants reported the need for clarity in terms of reference and definitions, especially while outlining the key performance indicators and baseline measures for positive, broader outcomes.

Code	Participant Description	Reported finding
L2Q	Procurement Researcher	<i>"Term not well understand in New Zealand. There is "perceived" interest in regenerative development due to social housing and lack of affordable housing. We can learn and contextualise work happening overseas."</i>
L2R	Researcher, built environment and eco-design	<i>"Do not get caught up in terms - use the simplest language like positive development, broader outcomes to get the message across."</i>

S2: Strategic Decision-making, Place-Based and Value Centred Outcomes

The participants reported that there is a need for the following to improve upstream decision-making regarding achieving positive, broader outcomes:

- Clear understanding of place and value based broader outcomes by board of directors for projects and subsequently outcomes embedded in board structures, contracts, reporting and business KPIs.
- Strategic decision-making to begin at place and value-based outcomes with a vision and link it to procurement, supply chain, design, KPIs, contracts and measurement.
- Align development plans with needs of Mana Whenua and Te Tiriti O Waitangi.

Code	Participant Description	Reported finding
L2I	Project Manager for projects 500mil+	<p><i>“Company/business mandate is crucial in initial planning and setting project objectives. Ask:</i></p> <p><i>a. What does success look like?</i></p> <p><i>b. What are the critical success factors?</i></p> <p><i>c. Who needs to be around the table and what skills do they bring?</i></p> <p><i>d. Consult with all stakeholders and aim to establish partnerships and trust.</i></p> <p><i>e. How do we maintain accountability and transparency?”</i></p> <p><i>(DI2)</i></p> <p><i>“Values must be explored from an all-parties perspective and included in the project mandate.</i></p> <p><i>The difference between Governance Board and Management of projects should be separate and there should be clear set objectives. Good governance boards understand the difference between independent over-sight and being involved in day-to-day delivery. Governance needs to be independent of the project teams.</i></p> <p><i>Project Governance is not done very well in New Zealand - both public and private.</i></p> <p><i>Contract risks and limitations need to be shared between the client and contractor; else the private agencies will stop doing work.</i></p> <p><i>You need a focused governing group to ensure the delivery teams are being held accountable to the project success principles - are these project values?”</i></p>
L2R	Researcher, built environment	<p><i>“Agree we need broader, inter-generational outcomes. But, for that we need to define</i></p> <p><i>a. Vision: what does a new model look like?</i></p>

	and eco-design	<p><i>b. Who are the key partners and how can we engage them early?</i></p> <p><i>c. How can we develop partnership and risk sharing between Council Controlled Organisation as the client, designer, contractors, and equipment suppliers?</i></p> <p><i>d. What does value mean?</i></p> <p><i>e. How can the partners help drive and provide value?</i></p> <p><i>f. What toolkits can we develop with the partners for them to deliver the value?</i></p> <p><i>g. Attributes of partnership: seen as equals, open, honest, truly believe in the vision</i></p> <p><i>h. Incentivise the partners.</i></p> <p><i>i. If there is value to invest in the partner's business to deliver long-term intergenerational value, it should be treated as a business decision and RoI (Return on Investment) should be independent of other partnership agreements."</i></p>
L2C	Industry body representative and sub-contractor	<p><i>"Thinking that should drive the forward vision:</i></p> <p><i>a. Contractors should be involved early, early, early.</i></p> <p><i>b. Procurement needs to move up the chain of decision-making. Apply thinking around procurement early.</i></p> <p><i>c. Any strategic decision-making needs to guarantee a steady pipeline of work, else there will be no economies of scale.</i></p> <p><i>d. Most jobs are cost-driven, the focus needs to be productivity and broader outcomes driven and this should flow from the top tier decision makers.</i></p> <p><i>e. Early-stage planning needs to be detailed, not simply on Gantt charts.</i></p> <p><i>f. Government needs to partner, trust and work with the private sector and create jobs.</i></p> <p><i>g. Deploy more projects in residential and vertical space which will employ more people."</i></p>

L2F	Industry body representative	<ul style="list-style-type: none"> • <i>“Culture and economic problems within the construction industry - need to address in terms of health and safety (mental [toxic masculinity, "bro-culture", bullying], emotional, physical) as well as business planning models.</i> • <i>Need a long-term programme view on projects.</i> • <i>Need to establish long-term partnerships:</i> <ul style="list-style-type: none"> ○ <i>Risk-sharing</i> ○ <i>Understand where each partner is coming from, what success means to them, find commonality and align.</i> ○ <i>Need a well-informed client who does not look at the partnership as a "master-servant" relationship.</i> • <i>What are the aspirational values of the community the project/programme is based in?</i> • <i>Need contractors who can add value and pick up some extra work to build relationships while respecting and valuing the native context of the place.”</i>
L2B	Industry body representative and lobby group	<p><i>“Number one: Strategic plan- we need to have a long-term vision for New Zealand- A vision for what we want New Zealand to be. That's then expressed in a very long - say, 30-year strategic plan. So that's the first thing is strategic plan at the other end, which is the enablers to getting stuff done.</i></p> <p><i>Number two: Funding, finance, and governance systems need to improve for long-term approaches.</i></p> <p><i>Number three: We need legislative settings that enable possibilities with careful consideration of risk.</i></p> <p><i>We can have all these immaculate plans of governance, great at producing an immaculate plan, but you've got to have all of these conditions around it to make it work cause a plan without the money or plan without the leadership or a plan without the governance or plan out the report.</i></p>

L3D	Project Manager, Private-Public Partnership project	<p><i>“Key challenges/barriers/learnings:</i></p> <ol style="list-style-type: none"> <i>1. Take an outcome-based approach to project planning and agreement structures.</i> <i>2. Give the delivery agency autonomy to deliver.</i> <i>3. Provide clarity in terms of outcomes and embed them in all systems and processes.</i> <i>4. Ask the question: What is the project about? Is it about people or is it about engineering?”</i>
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S3: Effective Partnerships Established Via Trust: Built-Into Systems and Processes

The participants as per Figure 13 reported that effective partnerships, resulting from trust by building transparency and reporting in systems and processes, could be a proposed solution to implementing regenerative projects. The most important elements of trust, as reported by the participants were:

Code	Participant Description	Reported finding
L2Q	Procurement Researcher	<p><i>“Attributes of partnership:</i></p> <ol style="list-style-type: none"> <i>a. mana/mutual respect</i> <i>b. co-design</i> <i>c. co-management</i> <i>d. build trust</i> <p><i>evidence-based, outcome-based thinking</i></p> <p><i>e. effectively engages the community iwi, hapu and marae”</i></p>
L2R	Researcher, built environment and eco-design	<p><i>“Procurement methodologies do not build trust and drive for change and to build trust with contractors needs to come from the client.</i></p> <p><i>Risk-sharing:</i></p> <ol style="list-style-type: none"> <i>a. build trust, contracts last resort</i>

		<p><i>b. Evidence based: are you ready to invest in pilot tests to develop projects for broader outcomes and measure performance?</i></p> <p><i>c. share results from case examples</i></p> <p><i>d. Question to ask: What Is the Cost of Not Doing This?</i></p> <p><i>e. How can we establish a baseline of quality and what works and what does not?</i></p> <p><i>f. What are the baseline social, financial, natural and human costs?"</i></p>
L2M	Leading Property Developer	<p><i>"Most Government bodies want to manage risk, not deal with it.</i></p> <p><i>Attributes of a partnership:</i></p> <p><i>openness</i></p> <p><i>honesty</i></p> <p><i>high integrity</i></p> <p><i>trust</i></p> <p><i>Government is operating in a silo with all ministries in their silos.</i></p> <p><i>We don't know what good looks like."</i></p>
L2G	Property industry body representative	<p><i>"Need long-term partnerships to achieve strategic change making.</i></p> <p><i>Attributes of effective partnerships:</i></p> <p><i>long-term vision</i></p> <p><i>long-term principles</i></p> <p><i>long-term work to bind partners to work together</i></p> <p><i>long-term successful models of partnerships and projects</i></p> <p><i>depoliticised structures and processes - no decision-making influence from Politicians</i></p> <p><i>complete model should build trust."</i></p>
L4B	Politician	<p><i>"Partnerships:</i></p> <p><i>Accessibility - of language and knowledge</i></p> <p><i>Transparency</i></p> <p><i>Accountability</i></p>

		<p><i>Ability and environment to flag early warning signs</i></p> <p><i>Should have the ability to share info that may not necessarily be palatable.</i></p> <p><i>No "Yes Minister" people or culture."</i></p>
L4F	Senior Climate Change Leader	<p><i>"Attributes of partnership:</i></p> <ol style="list-style-type: none"> <i>1. Collectivise action to individual's self-interest: what is in it for the individual to contribute? - incentivise, reward, and provide benefits collective and individual action. - motivation</i> <i>2. Remove regulated and institutional silos - which incentivise lack of collaboration and reward individual or atomistic behaviour. Do not assume silos exist because it's stupid, they are rational in their response to the regulatory environment and landscape the silos operate in.</i> <i>3. Regulation needs to work collectively and not in silos - silos have been set up intentionally and are a pragmatic response to work individually - lack of collaboration, hyper competition, and short-term wins vs long term gains.</i> <i>4. Stop optimising and perfectionism - get started and build and innovate along the way. Set the system up to work and move on from there - optimisation hinders progress and change making."</i>
L2Q	Procurement Researcher	<p><i>"Attributes of a partnership founded in trust:</i></p> <ol style="list-style-type: none"> <i>1. Best for project outcomes - Target outcomes list decides the cost, skills, competency, risk sharing, negotiations and ultimately some of the trade-offs between outcomes.</i> <i>2. Engage early, identify risks, and decide what level of risk sharing will take place.</i> <i>3. Regen(erative develeopment) needs to be multi-year programme and have multiple contracts with long-standing relationships: so, engage early and identify partners early - both for building and social outcomes.</i>

		<i>4. Usually the public agency would do the work of identifying the broader outcomes for a region and engaging with them early in the process will be key."</i>
L3A	Councillor	<p><i>"How can change happen?</i></p> <p><i>a. Constitutional transformation embedded with Te Tiriti o Waitangi.</i></p> <p><i>b. Increased representation and equity.</i></p> <p><i>c. Working in partnership with Central Government, Local Government, and Mana Whenua. This need(s) more work and parties need to see each other as partners and truly understand the meaning of partnership and reflect it in their actions and decision-making.</i></p> <p><i>d. Leadership and public servants/agents need to be comfortable making difficult decisions which may not be popular at that particular time but good and supported by evidence for the future.</i></p> <p><i>e. Leadership needs to take risks and get comfortable with the uncertainty. Develop the skills to do so."</i></p>

S4: Systems-Based Thinking, Practice and Solutions

The participants as per Figure 13, mentioned the need for systems-based thinking, practice and solutions to influence change-making and adoption of concepts with principles of system-wide integration and multiple capitals benefits.

Code	Participant Description	Reported finding
L2G	Property industry body representative	<p><i>"Government needs to be asking the following questions from a system level:</i></p> <p><i>How do we get everybody to work together?</i></p> <p><i>How do we develop a framework that is independent of political influence and change?</i></p>

		<p><i>Who is leading the portfolios and projects and what is their associated expertise and experience?</i></p> <p><i>Ministers should set clear principles and guidelines and then keep out of the planning and delivery of projects.</i></p> <p><i>Councillors - provide buy-in and agreement to mandate.</i></p> <p><i>Public + private entities need clarity on project objectives - there needs to be a total alignment of interests.</i></p> <p><i>Difference in language and preferences in modes of comms need to be acknowledged.</i></p> <p><i>Government is made of policy people - who have very little to no industry experience. Real lack of people who understand both the strategic and technical needs of projects."</i></p>
L4F	Senior Climate Change Leader	<p><i>"There is no "silver bullet" or single solution to this.</i></p> <p><i>1. Stop making "dumb" investment decisions - stop using taxpayer and ratepayer money to buy things we want less of. Stop subsidising such investments.</i></p> <p><i>2. Use the climate change lens on investments - in the future price of admission will be higher for products/materials and services harming environment. - Use the intergenerational lens, ask if I will have a social license to operate this business and asset in 10-15 yrs. time.</i></p> <p><i>3. Do things in partnership - as no one can do this alone and we are all in this together. Figure out how to build system wide change and break down silos.</i></p> <p><i>New Zealand has the capacity to do systems scale thinking and action as it is a small country with small population.</i></p> <p><i>4. Research and education should be focused on future research - develop it to future challenges such as climate change. Stop investing in research for fossil fuels and combustion engines.</i></p>

		<p><i>5. Increase prices for things that contribute carbon and reduce prices on things with lesser carbon footprint.</i></p> <p><i>6. We need to measure things that matter - and manage them - measure growth, prosperity, and social development."</i></p>
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S5: Context, Process and Timeframes

The participants, as per Figure 13, reported that considerations regarding context, processes and timeframes would be key in implementing proposed solutions.

Code	Participant Description	Reported finding
L2I	Project Manager for projects 500mil+	<p><i>"Public agencies are risk averse and approach any partnership with private agencies as 'what are the risks and how can we avoid being in this partnership?'"</i></p> <p><i>Public agencies are malleable, and their mandate, objectives and tactical plans are heavily influenced by voting population and "what looks sexy" from an election perspective."</i></p>
L3E	Senior Leader, Local Government	<p><i>"Where can the Government support your work?"</i></p> <p><i>Government needs to move away from a project-view to a programme view.</i></p> <p><i>Ministries and politicians are risk averse - this is a barrier to change and transformation.</i></p> <p><i>We cannot handcuff people and then ask them to drive the business or industry towards change."</i></p>
L2D	Union body representative	<p><i>"Strategic Programme-view to procurement rather than project-based - so there is guarantee of pipeline of work. the industry needs to address the disproportionate number of independent contractors which have cropped up due to the project-based nature of procurement."</i></p>

L2G	Property industry body representative	<p><i>"There is need to depoliticise housing and urban development as election items. Politicians cannot play "football" or "passing the hot potato" with housing and urban development.</i></p> <p><i>Politicians do not understand the strategic requirements. This has improved over time but there is a long way to go. Real lack of strategy, cost, and work planning from the Government.</i></p> <p><i>The is a lack of a clear decision-making framework with clear KPIs and mandate for projects. LSF outcomes need to be balanced out. There is a massive lack of expertise in strategy in high-level governance of projects and programmes."</i></p>
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S6: Skills and Capability

The participants reported that skills and adequate competency of professionals across the system will be critical in implementing solutions for positive, broader outcomes.

Code	Participant Description	Reported finding
L2I	Project Manager for projects 500mil+	<p><i>"Skills shortage in new areas, writing reports, delivering overall messages through writing, skills showcasing combining strategies such as adapting to climate change with better homes and communities, carrying out and communicating sustainability at massive scale, creating community engagement and place-making, systems and economic modelling..."</i></p>

S7: Political Will and Owner Buy-In

The participants reported that project owners (public-spend agencies for this study) of projects buying into the strategy, planning and delivery of positive, broader outcomes will be critical to the success of these projects. Further, this includes the need for political will to accumulate momentum and implement change.

Code	Participant Description	Reported finding
L2K	Green Building Manager	<p><i>"Change making strategy:</i></p> <ul style="list-style-type: none"> <i>a. Need political will</i> <i>b. Align mandate from public and Government - like align with Zero Carbon Act</i> <i>c. Strategically choose change making champions for board and governance roles- must be intentional.</i> <p><i>Need to be specific about change making. Holistic approach I stood but without specifics, no change is happening.</i></p> <ul style="list-style-type: none"> <i>a. Measure results, KPIs.</i> <i>b. Develop a roadmap for change.</i> <i>c. Breakdown how to get communities behind the change?</i> <i>d. Senior and middle ranking officials in organisations need to grasp that their goals are being achieved through the change making initiatives.</i> <i>e. Get people to start and slowly take them on the journey.</i> <i>f. Get volume of projects to demonstrate change.</i> <p><i>Frankly, Government is not interested in sustainability - but is interested in Health as that is the public mandate - so align the change making to health:</i></p> <p><i>such as healthy homes, healthy families</i></p> <p><i>It is important to get the will of banks and funders behind the change.</i></p> <p><i>Change is slow because it means (or indicates) that disruption is coming to people's lives and they must be slowly warmed up to it."</i></p>
L2J	Green Building Manager	<p><i>"Companies that show climate leadership should, of course, be applauded but don't ever think their efforts will be enough. To get the laggards to respond to the climate emergency requires laws. We need to change governments, not lightbulbs."</i></p>

L2A	Large Corporate Asset and Facilities Manager - corporate made of several shareholders	<p><i>"1. Government needs to lead with policy, regulation, and tight constraints. The funding for sustainability needs to be a must and not enough to be discretionary spend.</i></p> <p><i>2. Corporate leadership - shareholders, execs and managers need to believe in and drive change for sustainability - Leadership and Board Mandate.</i></p> <p><i>For shareholders to go on the sustainability journey, they need to be okay with reduced dividends and profit turnovers. Execs and management need to be bold, courageous, and evidence-driven to implement change.</i></p> <p><i>3. Sustainability needs to stop being a second-tier problem and needs to become number 1 item to address. How:</i></p> <p><i>a. Invest in future-facing technology and innovation.</i></p> <p><i>b. Use the carbon footprint constraints to inform early decisions for built environment development.</i></p> <p><i>c. Asset build and operations must be informed and regulated by tight carbon and sustainability constraints."</i></p>
L2R	Researcher, built environment and eco-design	<p><i>"Political will and support is crucial for change-making. This is not just from politicians but from Public Agencies leadership and staff responsible to lead these projects. Skills and competencies play a huge rule in this. Government, policy and career public agents need to understand there are different and better ways to do things and need to engage with the industry to understand how we can do better goal setting and develop long-term plans. Rebates on fees, subsidise businesses and incentivise to help change-making initiatives.</i></p> <p><i>Need inspirational education across the board."</i></p>
L4I	Ministry, Building for Climate Change	<p><i>"Political will for change-making:</i></p> <p><i>Significant decisions always have a political element to it. And short 3-year political cycles only help in making those decisions - not implement them. The work to implement and measure needs</i></p>

		<p><i>to be carried out by the Ministry and is not conducive to long-term, high-risk projects which may require wide political consensus.</i></p> <p><i>A built env. structure sits around a wider system and you have to ensure it all lines up so it can be built - including financial, banking, legal and legislative structures.</i></p> <p><i>Silos vs All-of-Government (AoG) Approach:</i></p> <ol style="list-style-type: none"> <i>1. AoG Approach is always difficult, and they (Government Agencies) were set up for a specific function. Working in silos is important for people to deliver their work, and then takes a lot of effort and energy to step back and look at the big approach.</i> <i>2. Need a top-down approach: Whole-of-Government Political willingness and Social License to implement change.</i> <i>3. Social License needs to unify, uncontroversial target to work towards and get consensus from everyone to work towards it.</i> <i>4. Identify costs and benefits but also identify what are the trade-offs.</i> <p><i>We have a social licence for climate change but people do not acknowledge that they do not have a social licence for the cost the change incurs - buying EV, upfront consultant costs, taxes, etc.”</i></p>
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S8: A Reform of Ministries or Separate, New, Revised, Strategic Ministry of Capital Works

Some participants reported that the practice of Ministerial Agencies working in isolation was damaging, and considered that a reform of Public Agencies was needed to ensure that there was sufficient collaboration and exchange of ideas and processes - eliminating duplication of effort and low productivity.

Code	Participant Description	Reported finding
L2D	Industry body representative, ex-public service official	<p><i>"Politicians are not experienced for their portfolios. Existing systems and structures need a fundamental restructuring. Infrastructure can be established as a separate portfolio with built env. projects from education, health, and other portfolios where 'built environment' is not the primary theme of the portfolio. Maybe a Ministry of Built Environment modelled on the consultancy structure handling infrastructure portfolios of multiple ministries."</i></p>
L4H	CEO, Public-spend agency	<p><i>"Hypothetical Ministry of Public Works (Strategic and All-of-Government): you spoke about drawing clear boundaries. What would that set up look like and what would those boundaries be?</i></p> <p><i>If it was me designing it, I would start with the most significant projects. So, your big capital complicated projects, I would have a look at departmental capability. So, I'm pretty confident as I said earlier that the ministry of education and as an, a really positive space in terms of their construction works at the moment and procurement kind of skills, if they're doing fine, I think you can leave them alone. So, something that says you know, takes a view on how they're performing in their situation worsens. Then you can sweep that back to this hypothetical, well, this under this new ministry at that point I would be, you know, it depends on how big you want to pay, because if it turned out to be all construction works or construction related works, you're talking about you know, an agency that's several thousand people and you know, really is doing an amount of work across the country that brings a lot of benefit, but it also has some drawbacks."</i></p>

S9: JUST Transition

Lastly, few participants, as per Figure 13, mentioned that the wellbeing of people or human capital cannot be compromised in the pursuit of positive, broader outcomes. It was commonly mentioned that many issues are complex, systemic, and may require inter-generational effort to resolve from the lens of equity to ensure no one's wellbeing is left behind in the transition. For example, ensuring the economic and social wellbeing of people is maintained when transitioning from high-carbon producing to low-carbon producing sectors. During this period, it is necessary that everyone is taken on the journey and no individual community is left behind regarding financial, social, natural, and human outcomes, as reported below:

Code	Participant Description	Reported finding
L2E	Union Body Rep and decision-maker	<p><i>"What does job security look like? - Human capital</i></p> <p><i>Permanence</i></p> <p><i>better pay</i></p> <p><i>income security - even while up-skilling/re-skilling</i></p> <p><i>employment arrangement is such that it gets help with loan or mortgage - without compromise to work pay</i></p> <p><i>huge need to amend H&S in the industry - physical, mental, and emotional. The significant mental health challenges are due to the temporary/contracting nature and short pipeline of work.</i></p> <p><i>Address toxic masculinity and bullying culture in the industry.</i></p> <p><i>Increase diversity so everyone can learn from each other's perspective and develop empathy.</i></p> <p><i>Address exploitation of migrant workforce.</i></p> <p><i>CEOs of large and medium companies are aware of the issues but need to take leadership and action to address them.</i></p> <p><i>Procurement is certainly one of the tools to be used to address these challenges. Project and company-based value-set needs to be built in to the RFT/RFP process - weightage for value-based procurement.</i></p>

		<i>Need to get shift from "lowest cost" to "values-based" procurement process."</i> (D19)
L4B	Politician	<p>Further, as reported by another participant, the elements of JUST transition include the following:</p> <p><i>"How can a JUST transition happen? - change making create employment security</i></p> <p><i>Reskill people with pay guarantee.</i></p> <p><i>Identify the work hours and compensate workers accordingly.</i></p> <p><i>Employers or Government need to invest in up-skilling.</i></p> <p><i>Government and clients need to guarantee a steady workflow - it cannot be a "boom-bust" approach.</i></p> <p><i>The basics must be set right for the industry before any transformation."</i></p>

5.3.3 Phase Two Conclusion

Sub-questions:	Comments on gaps in analysis
Q1: What does regeneration mean in the New Zealand built environment context?	Q1 answered satisfactorily to saturation. Various perceived differences in understanding of regenerative development require a Focus Group Discussion with participants to find a common understanding of the definition.
Q2: What are the potential system barriers to the adoption of regenerative development in New Zealand?	Q2 answered satisfactorily to saturation. Various perceived barriers need a Focus Group Discussion with participants to identify the urgent barriers to address.
Q3: What would be specifically needed from the public-spend built environment system for the adoption of regenerative development to deliver integrated, multiple capitals, broader outcomes change?	Q3 answered satisfactorily to saturation. Various proposed solutions need a Focus Group Discussion with participants to identify the urgent solutions to implement.

The sub-questions for reported barriers and proposed solutions require Focus Group Discussion with key system participants from Phases One and two to identify the top three barriers to be addressed and prioritise the next steps for action.

5.4 Phase Three: Focus Group Discussions

The purpose of Focus Group Discussions was as follows:

1. For participants to meet and share insights with other participants, representing a proponent of the New Zealand built environment high-level system decision-maker population.
2. Discuss top three future steps for action for the public and private sector.
3. Comment on the completeness of the findings.
4. Critique the findings as required.

Two Focus Group Discussion sessions were conducted with a total of 30 participants invited, of which 18 responded with interest to attend, and 12 finally attended the sessions. Of the 18 participants, six could not attend mainly due to lack of availability due to busy working schedules factoring in COVID-19 implications. The researcher had ensured two participants from each system level were invited and the 12 participants who attended ensured a system-wide coverage which was a key objective for the Focus Group Discussions.

5.4.1 Finding 1: Definitions

At the start of the discussion, the participants were offered, and agreed to work with, a definition of regenerative development developed by combining reported elements for a definition captured in Phases One and Two.

Two participants found the definition difficult to grasp initially, but agreed it captured the complexity and process description required to deliver regenerative projects. This definition was as follows:

Regenerative development is a community-based problem-solving approach with a two-way communication and information flow facilitating overall system collaboration. It develops and utilizes methods of accelerating decision-making but without abandoning evidence-based calculations, strategic integrity or holistic embrace.

Most participants by the end of the discussion agreed that the simplified definition arising from the researcher's iterative process experience during the phases was less complex, punchier, and purposeful; connecting the intent of regenerative development across the system participants.

This definition is as follows:

Regenerative development is the approach and process of achieving positive, broader social, natural, financial, and human outcomes through built environment investment decisions.

5.4.2 Finding 2: Reported Barriers

As mentioned in Section 4.5.3.7, Method of Administration, the researcher presented the findings and themes to participants. Following this, the researcher asked the participants to identify their top three themes and facilitated the conversation allowing the participants to discuss the themes and allow for the discussion to reach a broad enough consensus. It was important to discuss and prioritise steps for action as discussed in the following Section 5.4.3.

Although the participants reached consensus, there were a few points mentioned by the attendees which were additional to the shared findings and have been reported below for completeness. A similar approach was also applied for the following section.

The participants of both Focus Group Discussions agreed that the top three reported barriers to address are as below. Given the nature of the discussion, the participants also agreed that action on these barriers would have to be simultaneous rather than sequential.

1. Funding and Financing Structures
2. Skills and Capability
3. Lack of place-based, value-centered strategic decision-making leading to:
 - a. Lack of Trust
 - b. Functioning in Silos
 - c. Poor relationship between Central and Local Government

Participants also noted that:

1. There is a disconnect in the government Cabinet of Ministers' perceptions of broader outcomes and requirements to operationalize the outcomes.
2. It is complex and difficult to identify, define, measure and report on social, cultural, natural, and human outcomes, as there is an overall lack of system understanding and working in collaboration, which is not supported by the current fragmented system and organisational structures.
3. Success criteria do not consist of required key performance indicators or measures on non-financial attributes, which is usually where the key performance indicators, weighting criteria, and associated considerations are captured in business cases and procurement plans.
4. It is critical that people working on the business cases, procurement plans, and associated evaluation are experienced in the planning and delivery of broader outcomes, so they are not viewed and treated as only a check-list item.
5. There is a requirement for a paradigm shift in thinking, approach and practice to move away from short-term, quick wins to long-term, sustained benefits.

5.4.3 Finding 3: Proposed Solutions

As mentioned in the previous section, the researcher sought consensus on the action steps on the barriers in the form of proposed solutions. A consensus was important as an agreed set of actions could potentially be shared with the larger built environment system including upstream decision makers.

Further, a consensus will potentially inform the subsequent studies in this field and will support the researchers in developing meaningful research questions, some of which are outlined in Section 7.5 Next Steps.

The participants of both Focus Group Discussions agreed that the top three proposed solutions for early implementation are:

1. Political will and/or owner buy-in
2. Skills and capability

3. Strategic decision-making aligned with value-based outcomes leading to:
 - a. An all-of-Government approach to problem solving
 - b. A systems based practice and solutions
 - c. Effective partnerships via trust
 - d. Development projects aligning with the needs of Tanagata Whenua and Te Tiriti O Waitangi

More than half of the participants also mentioned that the key to unlocking the solutions for these reported barriers are increased diverse representation, in terms of more indigenous people and women in strategic decision-making; along with improved guidance (education), long-term (programme based) and non-partisan approach to investment decisions.

Three participants also noted that reform of the ministries or a Ministry of Works was not worth the effort and would simply result in enormous political and bureaucratic challenges. There was strong disagreement among participants on this particular proposed solution as there were strong challenges with the previous Ministry of Economic Development which was dissolved in July 2012. The participants from the Central and Local Government levels indicated that there was negligible appetite for a new ministry mainly focused on delivering built environment works.

5.4.4 Phase Three Findings Conclusion

Phase Three concluded positively, with the participants arriving at a consensus on the definitions, reported barriers and proposed solutions.

The participants also arrived at a consensus on the next steps of action, as follows:

Step 1: Define what success looks like at the beginning of the project. Ensure appropriate representation and diversity specific to the project stakeholders at this stage. Undertake place-based, value-centered stakeholder engagement to identify success measures.

Step 2: Identify and procure the skills and capability.

Step 3: Budgets, funding and finance must clearly articulate and properly price positive, broader outcomes within the objectives of price, time and quality.

Step 4: Build business cases around the existing barriers of financing and funding structures clearly articulating the value-based critical success factors of the project, required skills and competency and needing to achieve broader outcomes.

Step 5: Build appropriate measurement and reporting criteria for identified place-based, value-centered economic, natural, social, cultural and human outcomes. This should happen prior to the commencement of design or procurement decision-making, so the measures inform the decision-making for progressive steps in the project or programme.

5.5 Chapter Five Conclusion

The purpose of this chapter was to present the findings from Phases One, Two and Three of the study while demonstrating a methodical approach to data collection and refinement of sub-questions in each phase.

The findings across the three phases built understanding solidly regarding the main research questions:

1. What is the perceived definition of regenerative development?
2. What are the potential New Zealand benefits?
3. What are the potential barriers in the New Zealand context?
4. How does a regenerative development approach for positive, broader outcomes fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

The findings from Phase One clearly identified the definition and benefits of regenerative development. The questions not clearly answered, relating to awareness of regenerative development and its definition, barriers and solutions were carried into Phase two where these questions were answered satisfactorily. The selection criteria of the participants were defined along with the analysis techniques used. Finally, in Phase Three the researcher sought to confirm the completeness of the findings and identify the next steps for Central Government, Local Government, industry and community organisation stakeholders which further led to the identification of theoretical frameworks for public-spend agencies and industry providers to generate positive, broader outcomes for regenerative projects.

The following chapter identifies the common themes from the findings of Phases One, Two and Three and further elaborates on them demonstrating that the findings usefully inform the main research question.

CHAPTER SIX: DISCUSSION

6.1 Introduction

Main Research Question: How does public-spend development need to change to deliver regenerative projects?

Sub-questions:

1. What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential barriers to regenerative development in the New Zealand context?
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?

6.1.1 System Maps and Representations

6.1.1.1 Public-Spend Built Environment System Map

Figure 14 maps the connections between various system participants, mainly the proponents of the system interviewed in this study. It shows the system and represents the information flow connections between the system levels. In application, this model when used in early strategic decision-making situations can usefully represent the different stakeholders who need to be engaged early and can further enable a partnership structure for the achievement of positive, broader outcomes.

The dotted lines around the system map in Figure 14 identify the adjoining industries and sectors that directly engage with the New Zealand built environment for capital projects or indirectly to influence decision-making and change. This model of representation is based on the “three lines of work” (Regenesis, 2016) and Whole Systems Economic Development Approach (Ungard & Haggard, 2020; Mang & Reed, 2012).

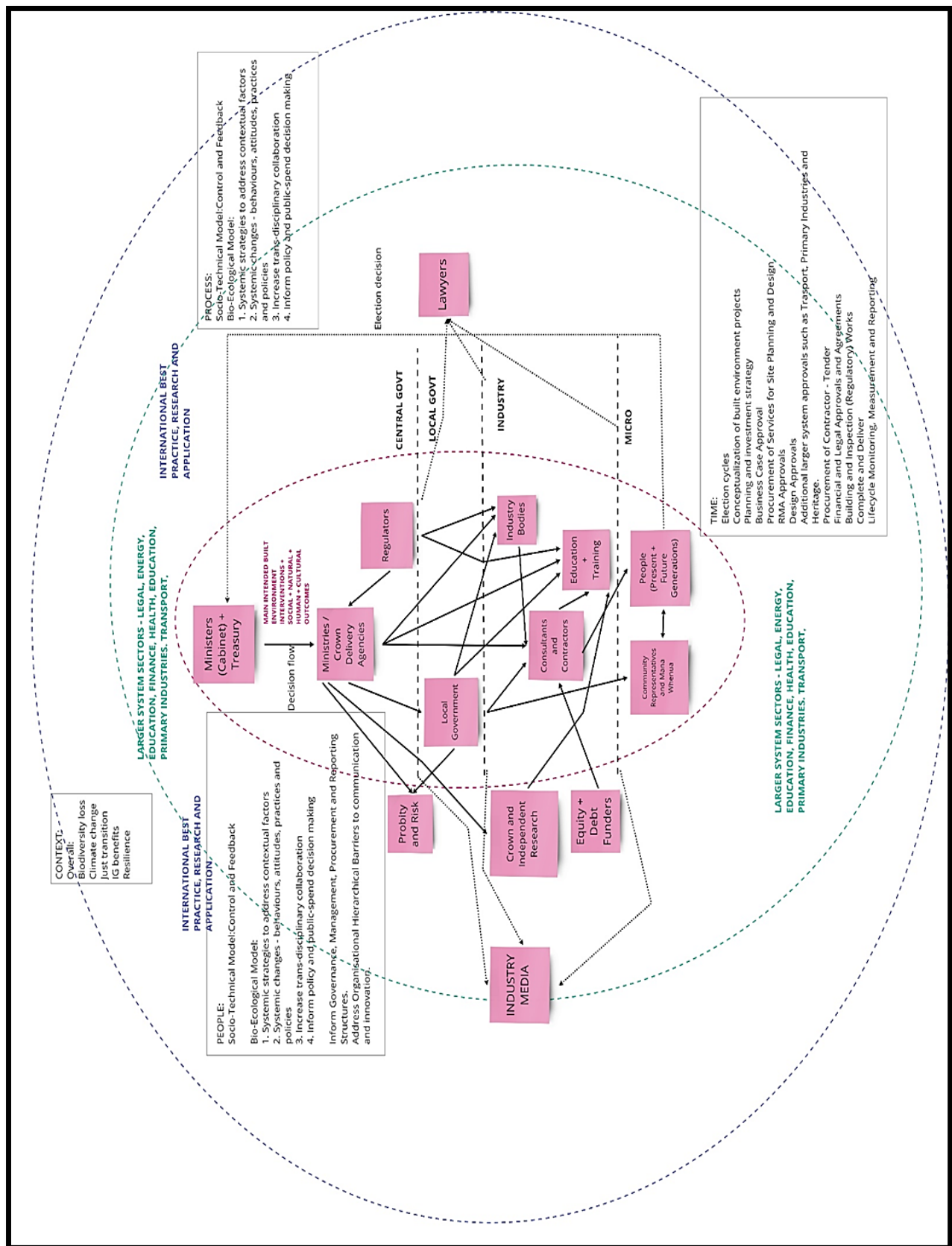


Figure 14 System Map and interactions as per researcher's interpretation of the system through interviews in Phases One and Two

6.1.1.2 Ecological System Model Presenting Reported Barriers

A modified Ecological System Model adapted from Bronfenbrenner's Ecological System Models (1994) as shown in Figure 13 below identifies the contextual factors acting as barriers determined as findings from the Phases One and Two Interviews. These contextual factors are further explained in the following section Phase Two discussion.

The purpose of using a modified Ecological System Model is to represent various reported barriers and proposed solutions across system levels and visually represent the layout of system levels, as per the proponents of the system interviewed in this study and as per research sub-questions 3 and 4. The following adapted EST presents cross-cutting and co-dependent themes, along with the contextual factors and considerations for time, process, and people.

BARRIERS: WHATS STOPPING US?

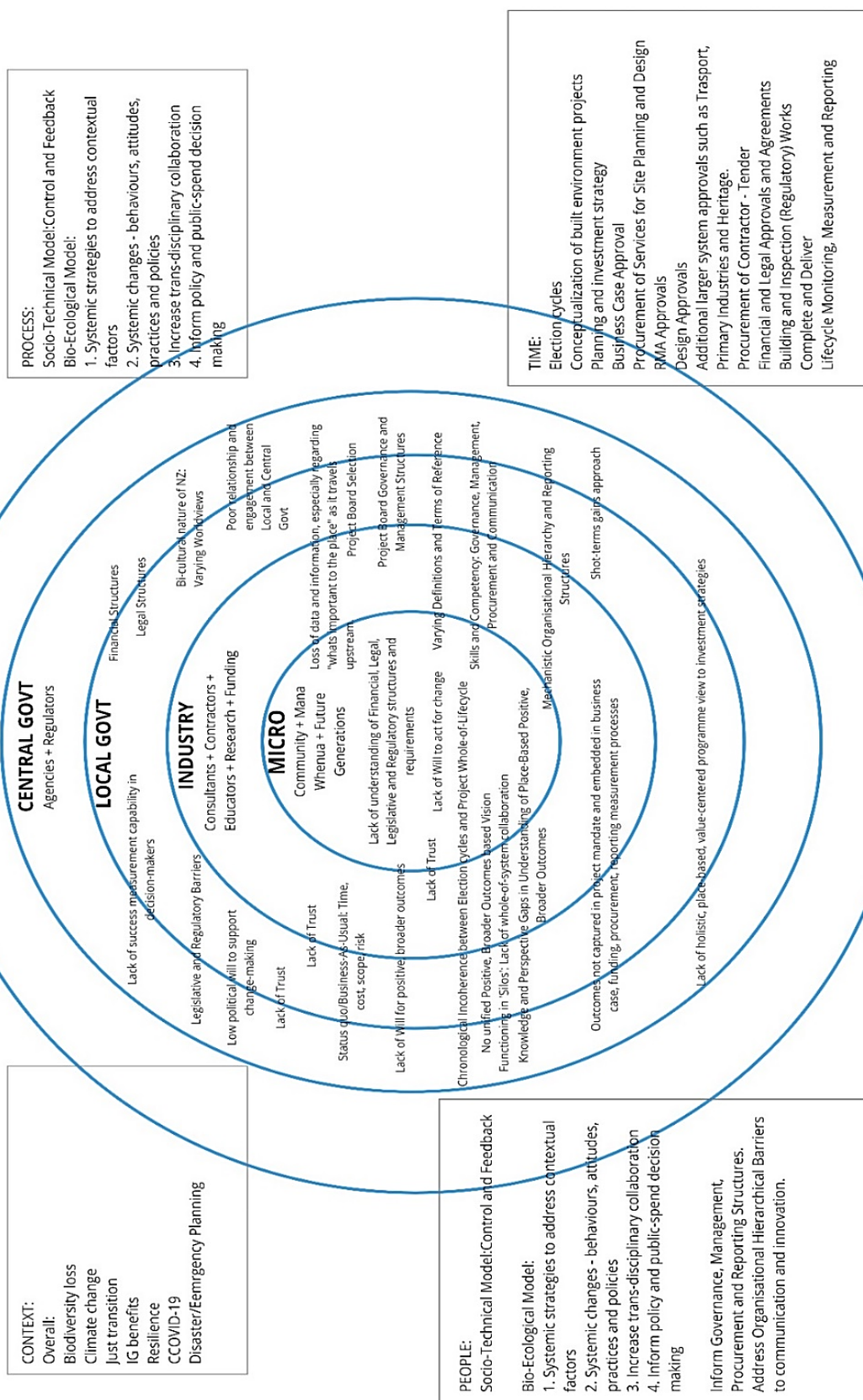


Figure 15 Ecological System Model presenting the findings regarding reported barriers

6.1.1.3 Reported Ecological System Levels for Barriers Reported. Graphical Representation

Figure 16 below shows the raw count of participants from Phase Two who included specific ecological system levels in their responses regarding barriers to successful public-spend RD. The researcher has mapped this only for Phase Two as this was the stage that included participants from the built environment system, both introduced and unintroduced to the concept of regenerative development.

Scoring Criteria:

Score 0 for No:

- Participant did not mention the ecological sub-system and/or
- Did not contextualise through a scenario or example and/or
- Did not talk about the system's processes and/or time and/or people

Score 1 for Yes:

- Participant mentioned the ecological sub-system and/or
- Contextualised through a scenario or example and/or
- Mentioned the system's processes and/or time and/or people.

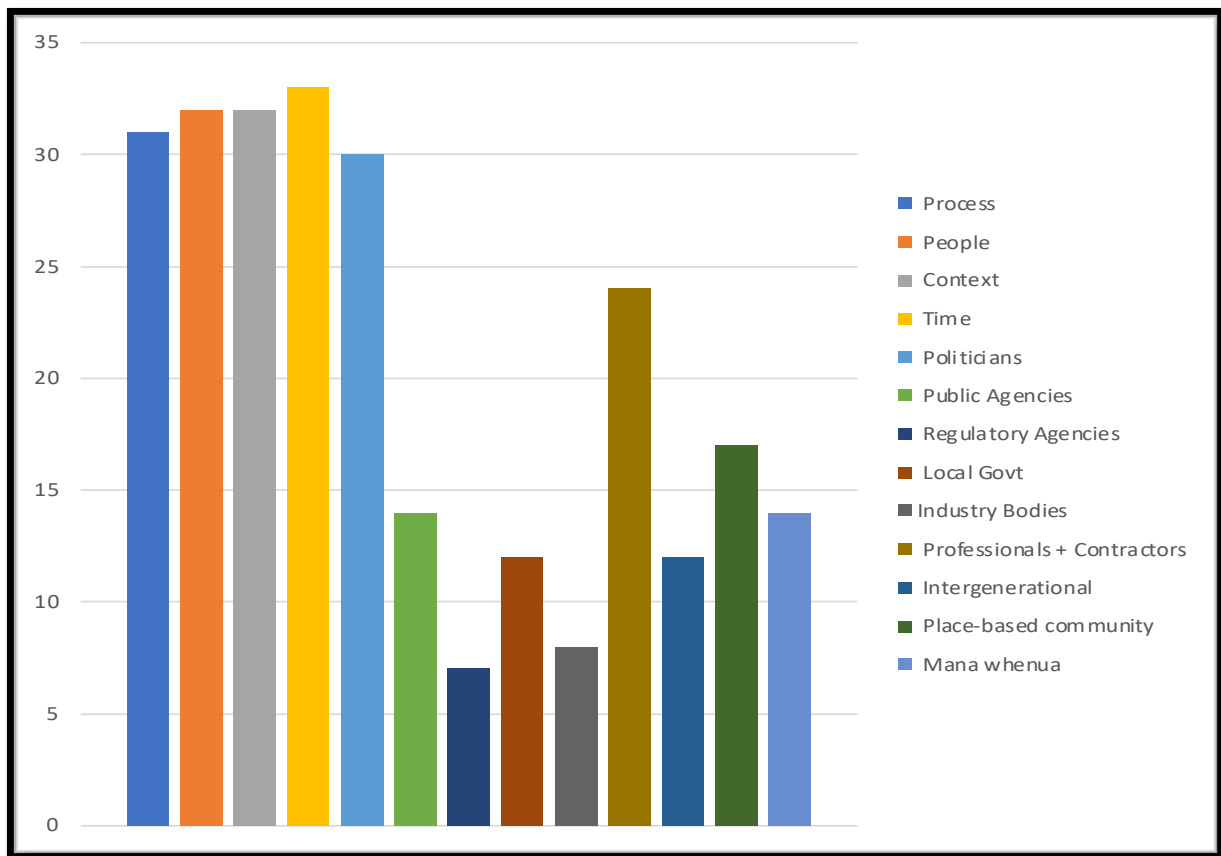


Figure 16 Count of system levels as per Ecological System Model mentioned by the participants in Phase Two

From the graph shown in Figure 16, it can be observed that the participants often mentioned context, process, people, time and Central Government in their answers, indicating a “front of mind” focus towards these system elements. It can further be noticed that regulatory bodies, Local Government and industry bodies were the least mentioned or least “front of mind” system elements.

This could point to mental model inconsistencies and practical intervention ideas with questions such as:

Do government agencies really overestimate their importance in achieving public spend outcomes?

Or, does the private sector just not realise how much happens in government agencies that shapes their practices?

Or, is there something else again going on – such as the regenerative development community wanting to see the momentum come from them, and not being ‘owned’ by big industry or government agencies?

A similar approach was further adopted for scoring the multiple capitals mentioned and not mentioned by the participants.

Multiple Capitals: Scoring Criteria:

Score 0 for No

Score 1 for Yes

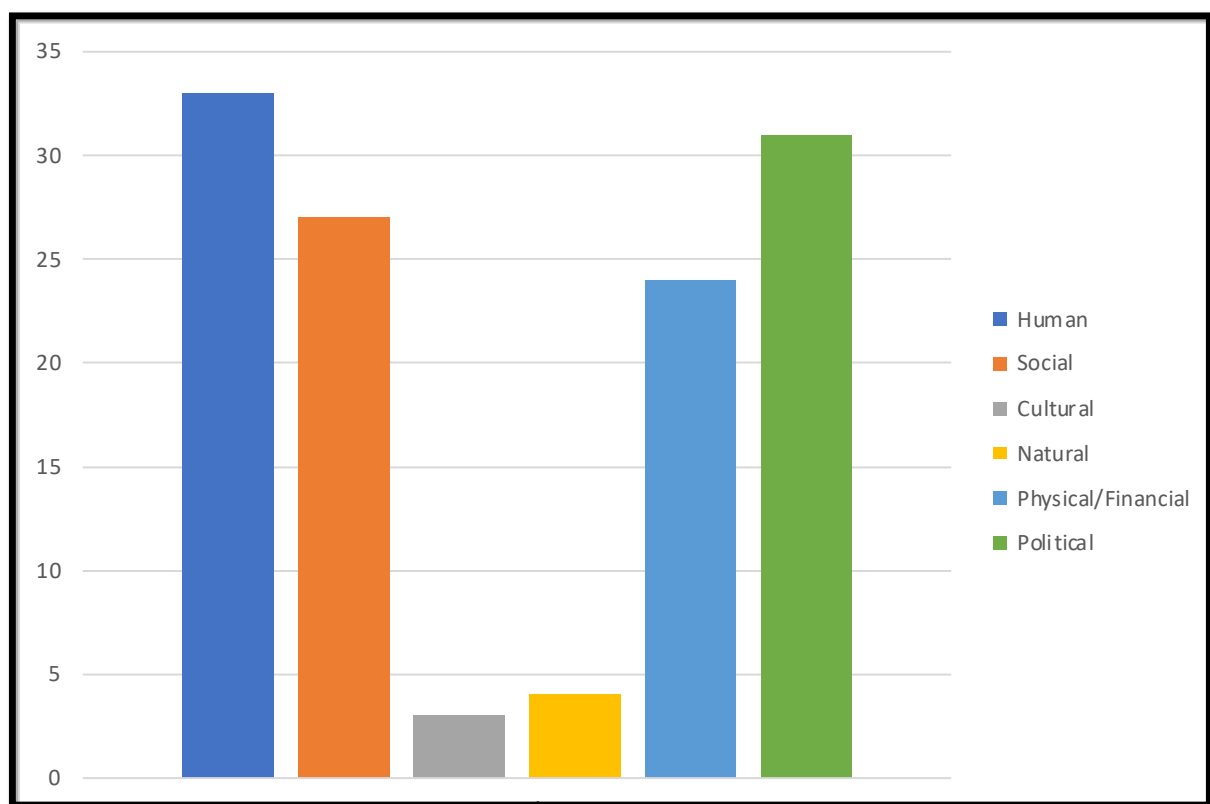


Figure 17 Count of capitals mentioned by the participants in Phase Two

Figure 17 represents how modified Ecological System Model levels mentioned or spoke to various multiple capitals. A noted observation is that cultural and natural capitals were the least mentioned. This is an important observation as most of the international regenerative development is “rooted” in regenerating the natural capital of a place, however, in New Zealand, social, human and financial capitals are the most relevant as per this study. Detailed

discussion on these findings regarding Ecological System Model Levels and Multiple Capitals are presented in the Discussion Table, Section 6.2.

6.1.1.4 System Map Discussion

The data collected from the participants elucidated understanding of regenerative development, barriers to application, proposed solutions from throughout the system and how the system elements interacted. The interactions are summarised below.

From the perspective of Rasmussen's Risk Management Framework, it was observed that there are outer-system elements such as legal and business professionals informing the key decision-making for project funding and financing. The findings further showed the reliance of key decision makers on their advice and recommendations. It was found that subject matter experts are at a considerable distance in the decision-making process and there is a need for collaborative, diverse decision-making and two-way flow of information and trust thereby developing trust and collective ownership of decision-making in the system.

Further, it was found that the common users of the projects such as the local community and Mana Whenua are further away from the decision-making process, with little to no visibility of the context, process or people and need to be brought into the decision-making process by innovative approaches.

From a modified Ecological System Model perspective, the barriers and proposed solutions mentioned by the participants were found to be cross-cutting across the micro-meso-exo-macro levels, thereby demonstrating that each system has a role to play in the decision-making and should be represented in the process.

The findings also demonstrate that the Chrono level of context-process-people-time is perceived as the primary point of access, as a majority of participants spoke to these elements, contextualising their experiences and what is important to this layer. Further, it was found that speaking to context-process-people-time was the most impactful way for the researcher to connect and establish connections with the participants. This happened

through case examples and the participants found it simpler to speak to these case examples and were comparatively more motivated.

6.2 The Discussion Table

Please refer Section 5.1 (Findings Table) for findings as per data collection phases.

Please refer Appendix IV for elements of reported barriers (RQ3) and proposed solutions (RQ4) presented with an Ecological Systems Perspective. This is further supported by Section 5.3.

Research sub-questions	Gaps	Consequences	Observations from a Systems Approach Perspective
1. What is the perceived definition of regenerative development in the New Zealand built environment?	<ul style="list-style-type: none"> Having a system-wide agreed upon definition clarifies what does success look like and sets expectations for measurement and reporting. How does this definition sit within the landscape of the Socio Technical Risk Management Framework? How does this definition translate to policy and legal terms? 	<ul style="list-style-type: none"> There is a lack of one single definition which is agreed upon by the entire system. Each participant understands regenerative development is mostly influenced by where they are in the system and their level of work and influence within that sub-system. As a result, this can potentially create confusion and misunderstanding of key terms and concepts between various system participants, thereby sometimes adversely affecting the project. The consequences of not having a consistent policy and legal definition are that the term can mean different things to different stakeholders. The definition may need to further be communicated across the system and incorporated to suit in built environment projects so that the complexities and benefits of this work are not lost in translation. 	<ul style="list-style-type: none"> RQ1 was met with saturation in Phase Two, continuing the saturation achieved with the sample selection in Phase One. Although the question was not specifically asked in Phase Two, the initial conversation in most interviews in Phase Two included the researcher identifying the participant's awareness of regenerative development concept, which included providing them with a high-level description if they were unfamiliar or loosely familiar with the concept. This resulted in the researcher identifying definition elements from Phase One that resonated or aligned with the participants' view in Phase Two. The most agreed upon definition by the participants in Phase Three was, <i>"It is a community-based problem-solving approach with a two-way communication and information flow facilitating overall system collaboration. It develops and utilizes methods of accelerating decision-making but without abandoning evidence-based calculations, strategic integrity or holistic embrace."</i> During data collection, this was refined to, <i>"achieving positive, broader social, natural, financial and human outcomes through built environment investment decisions"</i>.
2. What are the potential benefits of regenerative development for the New Zealand built environment?	<ul style="list-style-type: none"> The reported benefits are mainly conceptual and/or from international examples and require contextualisation to New Zealand. Increased application of concept-regenerative development is still in its innovation phase in New Zealand, as per the Diffusion of Innovation theory. It will require significant effort and will to shift the system beyond the tipping point and towards early and late majority. Public-spend agencies with an affinity for stability and risk-averse culture lie mainly within the late majority and laggard space regarding adoption of innovation. What does measurement and reporting look like for 	<ul style="list-style-type: none"> Most of the reviewed papers are long on theory and short on practical exemplars. The exemplars quoted tend to refer to the planning of more idealistic new communities rather than dealing with the complexity of existing urban contexts where most projects reside (Clegg, 2012). Given the reported barrier that public-spend agencies are risk-averse and prefer stability, the application of this concept will require evidence of success from scope, time, cost, and risk perspective so it can be appropriately captured in business cases, which can then flow into procurement, design, delivery and reporting. From a practical perspective, most funding exercises apply decision-making frameworks such as SWOT to identify options for development. regenerative development will have to demonstrate success from previous New Zealand examples and fit within the context of decision-making for public-spend, which is mainly set-up around policy, legal, funding, stakeholder engagement and operational support including digital platforms to support reporting and measurement. 	<ul style="list-style-type: none"> RQ1 was met with saturation in Phase Two, continuing the saturation achieved with the sample selection in Phase One. Although the question was not specifically asked in Phase Two, the initial part of most interviews in Phase Two included the researcher identifying the participants' awareness of the regenerative development concept, which included providing them with a high-level description if they were unfamiliar or loosely familiar with the concept. This resulted in the researcher identifying definition elements from Phase One that resonated or aligned with the participants' views in Phase Two.

Research sub-questions	Gaps	Consequences	Observations from a Systems Approach Perspective
	<p>regenerative projects, especially in the context of intergenerational benefits?</p> <ul style="list-style-type: none"> • How will these benefits be captured in business cases for funding? • How will the benefits be identified, quantified, measured, reported? • This will require considerable support from an evidence-based success demonstration. 		
3. What are the potential barriers of regenerative development in the New Zealand context?	<p>Funding and Finance:</p> <ul style="list-style-type: none"> • How do you demonstrate rigour in terms of managing and measuring the outcomes against the investment provided? • How can the Return on Investment (RoI) be demonstrated? How do you maximise 'bang for buck'? • What is the purpose of the investment and who is financially accountable for the undertaking? • How do the frameworks from varying worldviews translate to RoI in a Western worldview? • What consents and approvals are required? • What are the additional cost constraints? • How will the workforce be sourced? • How will we create the delivery conditions with the contractors? • How do we contribute to the economic growth of the company? • Where do we get plant and equipment operators from? • Ask the regional shareholders and conduct surveys/research to 'scan' what the regional shareholders 	<ul style="list-style-type: none"> • Given the reported barrier that public-spend agencies are risk-averse and prefer stability, the application of this concept may require evidence of success from a scope, time, cost, and risk perspective so it can be appropriately captured in businesses cases, which can then flow into procurement, design, delivery, and reporting. • From a practical perspective, most funding exercises apply decision-making frameworks such as SWOT to identify options for development. regenerative development will have to demonstrate success from previous New Zealand examples and fit within the context of decision-making for public-spend, which is mainly set-up around policy, legal, funding, stakeholder engagement and operational support including digital platforms to support reporting and measurement. • Funding, financing, legal, and other upstream decision-making processes, tools, and technology are incompatible with system-wide application and working collaboratively across various stakeholders rather than in 'silos'. Traditional and/or conventional systems and people in these systems may struggle to grapple with the inter-connectedness of the system, and associated processes, tools, technology, contextual factors, and all-of-capitals benefits which may affect or hinder regenerative development from reaching full potential. • Complexity of system thinking and whole-of-system engagement – “taking everyone on the journey” can prove to be a significantly extensive undertaking. Extensive engagement could potentially stagnate or stop design ideas and lead to engagement fatigue of those undertaking the design and engagement – how to control scale and thought jumping? • Regenerative development as a concept packs in it other complex to approach and apply concepts such as integrated design, systems thinking, whole-of-life approach, and levels of work to name a few. These concepts are inter-related and have organisational and system-wide impacts which make them vastly challenging to apply together. This is another complexity posed by regenerative 	<ul style="list-style-type: none"> • RQ3 was met with saturation in the Phase Two data collection. • Sections 5.2.4 and 5.3.3 present: <ul style="list-style-type: none"> a. system-wide connections as experienced by the researcher during data collection in Phases One and Two. These models present a picture of the full system from the researcher's perspective. b. Ecological System Maps for barriers and proposed solutions reported during Phase One and Phase Two. These barriers and proposed solutions were part of a systems-focused conversation with participants and therefore, presented in a cross-cutting fashion across system layers. c. Brief discussions on Tables #, # presenting the extent to which the research sub-questions were answered by the participants. • Success for regenerative projects from reported literature requires system-wide collaboration (regarding an all-of-capitals approach), and consistent stakeholder engagement, <i>taking everyone on the journey</i>. It also requires challenging the status quo and asking for information and visibility beyond their job-level on influencing factors for decision-making in order for risks, trade-offs and externalities. From an operational perspective, it is important to consider the effects on operations-focused employees and allocate appropriate resources necessary to support them in the shift to regenerative approaches while continuing on-going operations. • Section 5.3.5 further presents the perception of various capitals and their reference in interviews by system participants indicating towards the participant's view of the capitals and whether they are front-of-mind for the participants. • These themes can be briefly summarised as clarity on the definition of regenerative development in the New Zealand

Research sub-questions	Gaps	Consequences	Observations from a Systems Approach Perspective
	<p>need and how the development can contribute to it.</p> <ul style="list-style-type: none"> How can funding from Central Government be more equitable to meet Local Government's needs to deliver outcomes? What digital strategies, platforms and tools are required for regenerative development? What do these look like from an operational, and especially from a measurement and reporting perspective for intergenerational benefits? <p>Capability:</p> <ul style="list-style-type: none"> What skills and capabilities are required from governance, senior management, middle management and subject matter experts to drive regenerative projects? What are the leadership principles and key performance indicators for public-spend agency employees in the context of regenerative projects? How do you build capability in the system to identify, capture, measure and report intergenerational benefits? <p>New Zealand Built Environment System:</p> <p>a. Project owner buy-in b. Lack of trust c. Diverse representation and varying worldviews</p> <p>Although there is discussion in academic literature about project owner buy-in and even fewer applied examples of</p>	<p>development and practitioners and receivers of this concept will have to grapple with layers of other complex concepts, which can be difficult for people whose everyday functioning is in a reductionist or 'silo-ed' worldview. This adds a significant challenge to a public-spend system that thrives on stability and risk-aversion.</p> <ul style="list-style-type: none"> From the perspective of participants in management roles, it is traditional practice to engage with external consultants to address capability and knowledge-gap challenges in public-spend agencies. However, in the context of regenerative development, this cannot be addressed by external consultants only, as it requires everyone in the system to grow their capability and knowledge to understand the concept, benefits, and barriers of regenerative development for them to then successfully apply it within their capability areas and ensure decision-making processes and tools are then effectively put in place to deliver the projects for success. Otherwise, public-spend agencies will continue to operate in their 'comfort zones' and transfer the risk of change and delivery for success to external consultants. Further, it becomes a challenge for public-spend agencies to empathise with place-based intergenerational needs and develop processes and tools to address them accordingly. It also requires them to challenge their own short-term and vested interests. In short, it requires the complete system to build the will to grow their capabilities and address change. Success for regenerative projects from reported literature requires system-wide collaboration (regarding an all-of-capitals approach), and consistent stakeholder engagement, <i>taking everyone on the journey</i>. It also requires challenging the status quo and asking for information and visibility beyond their job-level on influencing factors for decision-making in order to counter risks, trade-offs and externalities. <p>New Zealand Built Environment System:</p> <p>a. Project owner buy-in b. Lack of trust c. Diverse representation and varying worldviews</p> <ul style="list-style-type: none"> Upstream buy-in is reported to result in increased system-wide will and support in applying and delivering regenerative projects. The consequence of lack of project owner buy-in will potentially result in lack of system-wide collaboration, coordination, and could result in only subject matter experts advocating for the benefits of application of regenerative development. Lack of upstream buy-in and support could stultify the required testing of the concept. This could result in lower and slower uptake of the concept which will 	<p>built environment context, addressing reported barriers of funding and finance, skills and capability, and decision-making in the New Zealand built environment public-spend by nurturing project owner buy-in, trust and diverse representation of capabilities.</p> <ul style="list-style-type: none"> As mentioned by the interview participants, system-wide perception of silos involved: <ul style="list-style-type: none"> a. Perceptions of dis-connectedness among various system layers. b. Perceptions of disconnectedness among various organisational departments in the system layers. c. Perceptions of dis-connectedness between various organisation management layers as per the Rasmussen's Risk Management Framework Risk Management Framework. d. Perceptions that decision makers, processes and tools are separated and do not communicate and/or collaborate with each other. e. Perceptions that Cabinet and mechanisms for policy are fragmented. f. Perceptions that various system mandates, organisations and managements are expected to 'stay within their lanes' to avoid 'stepping on others' toes' and causing unnecessary or unintended disruption. g. Perceptions that bureaucracy creates and maintains the fragmentation and disconnectedness. h. Traditional definitions and structures for governance and management, where governance is expected to 'maintain distance' from management and delivery of projects to maintain a 'birds eye view' and provide objective direction and high-level decision-making. i. In the industry, 'silos' refer to professionals keeping to their expertise, skillsets, 'project billing areas', and client accounts which does not encourage collaboration, purposeful communication, and support in application of new concepts due to competition and expectation to bill every hour. This can result in additional hours spent in research, knowledge growth and training which cannot be billed to the client., and if the project is not commissioned, then it is not a commercially successful endeavour for the professional. The built environment industry is currently addressing this challenge of how to bridge the gap between research required for new concepts and keeping it commercially sustainable. j. From the place-based community perspective, 'silos' mean the separation created due to regional development resource allocation and working with local governments to identify

Research sub-questions	Gaps	Consequences	Observations from a Systems Approach Perspective
	<p>regenerative development, there are limited examples on how to seek this buy-in.</p> <ul style="list-style-type: none"> What evidence is required to result in project owner's support for application of regenerative development? In a public-spend landscape of three-year election cycles, shifting ministerial priorities, and short-term, 'quick wins' thinking, what is required from upstream decision makers and the processes that they work within to seek their buy-in and support for regenerative projects? How can assurance of success be provided to them, especially in the case of projects with intergenerational benefits? What frameworks and tools are required to support the decision-making, so they are not met with criticism impacting the confidence of decision makers? What decision-making, reporting, and assurance frameworks and toolkits, and tools are required to build trust for and through the regenerative development concept? What do these look like from an intergenerational perspective? 	<p>not support the yield of evidence required to influence decision-making on subsequent projects.</p> <ul style="list-style-type: none"> The consequence could potentially be experienced by the subject matter experts as they will have to undertake constant lateral and longitudinal stakeholder engagement which could potentially result in loss of interest, fatigue and eventual burn-out. This is important to note as it could result in the collapse of interest, negatively affecting its uptake, thereby losing the opportunity and capable people to apply and test the concept. This could result in the concept not maturing practically and experiencing an eventual 'fizzle-out'. Further consequences include lack of system-wide trust for and through the concept, and thereby, low level of system-wide participation from diverse backgrounds and worldviews necessary to contribute to identification of natural, social, cultural, and economic outcomes. The consequences of lack of diverse representation are widely written about in academic literature. However, in the context of New Zealand, it means that Te Ao Maori and Western worldviews will need to be considered together during the development of business cases, identification of outcomes, and development of subsequent processes and tools. Again, it is about <i>taking everyone on the journey</i> and ensuring that it improves place-based equity and resilience through the planning and delivery of outcomes. Although the current New Zealand built environment public-spend decision-making concept maybe new to the concept of regenerative development, the concept can potentially find alignment with decision makers when advocated from the underpinning principles of integrated design, long-term planning, multiple capitals approach to public value, and intergenerational benefit. The consequences of comparatively lower mention of transformation related to natural capital, as per Figures 16 and 17 are that the benefits and interventions related to natural outcomes can potentially be compromised or prioritised lower. Further, it can be perceived that driving transformation from the natural capital space for industry, community groups, and Iwi and Mana Whenua can be challenging compared to driving change from other capital spaces such as human or social. Lastly, it signifies the importance of taking a multiple capitals approach to transformation as the benefits and impacts can be widely mapped and potentially do not include the challenges of driving change from a singular capitals space. 	<p>avenues for policy and funding support, navigating the complex central-local government relationship to address place-based social, natural, cultural, and economic challenges.</p> <p>In summary, the system-wide perception of the system participants and levels functioning in silos, creating lack of clarity of roles, responsibilities, regulations, processes, tools, and overall contextual factors informing decision-making is a negative perception and is perceived as a barrier.</p> <ul style="list-style-type: none"> Observations from Ecological System Model Levels and Multiple Capitals: <ul style="list-style-type: none"> From the graph shown in Figure 16, it can be observed that the participants often mentioned context, process, people, time, and Central Government in their answers, indicating a "front of mind" focus towards these system elements. It can further be noticed that Regulatory Bodies, Local Government and Industry Bodies were the least mentioned or least "front of mind" system elements. Further, this indicates that transformational change has to be based on the context and supporting processes and people to deliver transformation in certain timeframes. For upstream decision makers, these are the crucial contextual factors for consideration. Figure 17 represents how a modified Ecological System Model levels mentioned or spoke to various multiple capitals. Noted observation is that cultural and natural capitals were the least mentioned. This is an important observation as most of the international regenerative development is "rooted" in regenerating the natural capital of a place, however in New Zealand social, human and financial capitals are the most relevant as per this study. It can further be noticed that human capital is the most mentioned capital by the participants. This is a strong indication that most decision makers have strong underpinnings of driving human outcomes, either directly or indirectly. Further, this indicates that natural capital is the least important capital in decision-making for positive outcomes and also points towards the commonly reported barrier of sustainability being the last checklist item which is the first one to be 'dropped' to allow for design changes accommodating for higher Return on

Research sub-questions	Gaps	Consequences	Observations from a Systems Approach Perspective
			<p>Investment or adapt to budget or time overshoots. Further, it demonstrates that the social and cultural capitals are ‘front of mind’ for decision makers when compared to the natural capital. This means that these capitals have increased strategic importance and projects aiming to achieve value-centred, place-based outcomes could use this insight as a way to navigate the strategic intention and ‘pitch’ of the project.</p> <ul style="list-style-type: none"> ○ It can be further observed that political capital which is rarely acknowledged in literature as an important capital is the most mentioned capital by most participants. Most participants reported that political capital is crucial to decision-making related to achieving positive, broader outcomes. The consequences of this are that there can be sub-conscious bias towards driving a particular decision maker’s agenda without consideration for collective system-wide transformation.
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?	<ul style="list-style-type: none"> • Regenerative development, as a concept packs in it other complex to approach and apply concepts such as integrated design, systems thinking, whole-of-life approach, and levels of work to name a few. • These concepts are inter-related and have organisational and system-wide impacts which make them vastly challenging to apply together. This is another complexity posed by regenerative development and practitioners and receivers of this concept will have to grapple with layers of other complex concepts, which can be difficult for people whose everyday functioning is in a reductionist or ‘silo-ed’ worldview. • What are the decision-making frameworks and toolkits 	<ul style="list-style-type: none"> • Achieving a system-wide transformation (evolution rather than revolution) may take a long time. This is due to the duration taken to evidence success through application of concept, which in the built environment can be a decade or more, and several decades in the case of intergenerational projects. • With comparatively short-term election cycles and shifting public priorities, it can be expected that long-term intergenerational issues continue to be compromised in the political realm for short-term economic gains. It can also be expected that these priorities will have remained the same from previous several decades without the exploration and application of system-wide solutions. • Regenerative development as a concept supports other complex approaches and concepts such as integrated design, systems thinking, whole-of-life approach, and levels of work to name a few. These concepts are inter-related and have organisational and system-wide impacts which make them potentially challenging to apply together. This is another complexity posed by regenerative development and practitioners and receivers of this concept will have to grapple with layers of other complex concepts, which can be difficult for people whose everyday functioning is in a reductionist or ‘silo-ed’ worldview. • Application of a regenerative concept in the current context will require considerable levels of stakeholder engagement and continued demonstration of results to build trust, which given the long-term nature of regenerative projects could be perceived as a barrier. 	<ul style="list-style-type: none"> • RQ4 was met with saturation in Phase Two data collection (proposed solutions). Detailed explanation of elements of proposed solutions are provided in Chapter Five and Appendix IV. These themes were further prioritised for action and next steps with a selection of system participants in Phase Three. • These themes can be briefly summarised as clarity on the definition of regenerative development in the New Zealand built environment context, addressing reported barriers of funding and finance, skills and capability, and decision-making in the New Zealand built environment public-spend by nurturing project owner buy-in, trust and diverse representation of capabilities. • From a systems perspective through the data collection phases it was found that awareness and application of regenerative development using both Rasmussen’s Risk Management Framework and Ecological System Model can support system-wide collaboration, improve project owner buy-in due to wide consultation, and support the identification of required skills and capability to successfully deliver regenerative projects. This enables long-term integrated planning, delivery, measurement and reporting which supports development of trust across the system. • A summary of the frameworks is to identify early the natural, social, cultural, human and financial outcomes to be delivered by the project, source the appropriate skills and capabilities, identify budget needs, build business cases to suit and address

Research sub-questions	Gaps	Consequences	Observations from a Systems Approach Perspective
	<p>required to apply regenerative development?</p> <ul style="list-style-type: none"> • What supporting concepts and associated frameworks are required to support and enable regenerative projects? • How do these frameworks look like for industry and place-based communities? • How can these frameworks and toolkits drive accountability and transparency, especially for long-term intergenerational projects? 	<ul style="list-style-type: none"> • As the funding and financing mechanisms rely heavily on demonstration of evidence of success or results, it may be a challenge to seek continued funding from public-spend agencies. • Another consequence of the long-term nature of regenerative projects is that it may take considerable effort and prioritisation from the system-wide decision-making team which may be perceived as a barrier in allocation of time from the decision makers. • The unknowns of future challenges may make it considerably challenging for the decision makers and funders to allocate long-term funding to regenerative built environment projects from a finite pool of resources, especially if there are short-term challenges to be addressed with quick measures and wins such as addressing equity in education, public health, homelessness, and national security to name a few. • The public-spend decision makers, who mainly function on pragmatism may be challenged by questions such as: <ul style="list-style-type: none"> ○ <i>“Why fix something that this not broken, from a built environment funding perspective?”</i> ○ <i>Can we use existing measures and add these initiatives or approaches there, such as broader outcomes?</i> ○ <i>Is this the correct time and context to apply this concept?”</i> 	<p>the funding and financing structures, and build measurement and reporting to track success.</p> <ul style="list-style-type: none"> • Sections 5.2.4 and 5.3.3 explain the observations of findings from a systems approach. The sections present: <ul style="list-style-type: none"> a. system-wide connections as experienced by the researcher during data collection Phases One and Two. These models present a picture of the full system from the researcher’s perspective. b. Ecological System Maps for barriers and proposed solutions reported during Phase One and Phase Two. These barriers and proposed solutions were part of a systems-focused conversation with participants and therefore presented in a cross-cutting fashion across system layers. • Section 5.3.5 further presents the perception of various capitals and their reference in interviews by system participants indicating the participants’ views of the capitals and whether they are front-of-mind for the participants. • The gaps and consequences for RQ4 can be addressed potentially by applying the pre-feasibility decision-making framework in Section 6.5.

Table 18 Discussion table presenting gaps, consequences, and observations from a systems approach as per research questions

6.3 Past: Where are we now and how did we get here?

Research sub-question RQ1 is discussed in this section regarding the concept of regenerative development.

RQ1: What was the perceived definition of regenerative development?

6.3.1 Definition

The background and history of regenerative development has been previously explained and elaborated on by various authors including Mang and Reed (2012,) and Robinson and Cole (2015). This is discussed in Chapter Two.

It is acknowledged the participants offered interlinked combinations of elements relating to definitions, challenges, and barriers. Due to these elements heavily overlapping and to avoid repetition, the researcher combined these elements into coherent sentences as a way to faithfully demonstrate the interlinked nature of the reported elements in the original data, rather than reducing them to single elements and tabling them.

The most stated definition elements by the participants can be summarised as, *“It is a community-based problem-solving approach with a two-way communication and information flow facilitating overall system collaboration. It develops and utilizes methods of accelerating decision-making – but without abandoning evidence-based calculations, strategic integrity or holistic embrace.”* (PI1, PI2, PI3, PI4, PI5, PI7, PI9, PI10)

This was iteratively refined during the three Phases to finally read as, *achieving positive, broader social, natural, financial and human outcomes through built environment investment decisions”*.

These definitions suggest alignment to the definitions of regenerative development mentioned in the literature review where Mang and Reed (2012), Plessis (2012) and Robinson and Cole (2015) present the key attributes of RD. They state that it is not the building that is ‘regenerated’ (or regenerative) in the same sense as the self-healing and self-organizing

attributes of a living system; it is about the ways that the act of building can be a catalyst for positive change within and add value to the unique place in which it is situated. It acknowledges the diversity and ecological uniqueness of each place is crucial to the design thinking of the place as a human being rather than an object.

It was noted by the researcher that the archival data documenting community and Māori Iwi-led regenerative projects reflected the definitions mentioned by the participants and captured in the academic literature. It was commonly agreed by the participants that this approach is still not a familiar concept such as sustainability.

Additionally, interview participants in Phases One and Two mentioned that although the term 'regeneration' is used in various urban development projects, a deeper study in the delivery strategy of these projects indicates that it is not regenerative in accordance with the prior-mentioned definitions and simply a marketing term like 'green' and 'sustainable'.

The archival data published by the territorial authority mentioned that 'increased housing' or 'increased public spaces' or 'extension of walkways to decrease vehicle traffic and increase foot and cycle traffic' were termed as regeneration efforts. These efforts are not in corroboration with the definitions mentioned by the participants and literature sources. The key missing elements were evidence of community consultation facilitating a place-based and value-centred strategic decision-making process. This raises the question as to what regeneration means to the top-tier system decision makers across the system which is discussed in the following sections.

The definition for regenerative development will need system-wide agreement, especially from policy, legal and finance decision makers as most built environment development projects begin here with a baseline understanding of "What are we trying to achieve and what does this mean?".

The definition will further need to be communicated across the system and incorporated to suit built environment projects. This is necessary so that the complexities and benefits of this

work are not lost in translation. It is also necessary to apply and understand the contextualisation of the definition to various disciplines.

Further, the findings indicate that there is a lack of a single definition which is agreed upon by the entire system. Although the interview participants agreed to the definitions mentioned above, it is yet to be ascertained if this will be agreed upon by other system participants not captured in this study. It was identified that each stakeholder understood that their definition of regenerative development was influenced by their own position in the system and their level of work and influence within any sub-system. This indicates influences from the siloed, and often hierarchical structuring of organisations and project teams, which seem to limit the participants' visibility on wider contexts, both organisational and system-wide in decision-making. Here, when the Rasmussen's Risk Management Framework Model of organisational structure is layered over the Ecological Systems Model, it shows that the wider contextual information is limited for the system participant and limits the system-wide perception of impacts of decision-making.

As a result, this can create confusion and misunderstanding of key terms and concepts between various project stakeholders, thereby sometimes adversely affecting the project. The creation of a specific built environment definition may bring clarity, trust, and ownership among various stakeholders, both public and private. It may further eliminate the possibility of anecdotes being used as a public-relations exercise which can result from the lack of a single built environment definition and applied evidence of success.

Lastly, the definition will require further alignment with international structures and standards which may require tweaking or bringing together so they are functioning in silos.

6.4 Present: Where are we going?

Research sub-questions:

RQ2: What are the potential New Zealand benefits?

RQ3: What are the potential barriers in the New Zealand context?

- a. Definition (RQ1)
- b. Funding and Finance
- c. Skills and Capability
- d. Political Will/Owner Buy-In
- e. The System (to be mapped)

6.4.1 RQ2: What are the potential New Zealand benefits?

This section presents the discussion on research sub-question 2: What are the potential New Zealand benefits of regenerative development?

The most mentioned benefits by the participants were “improved intergenerational wellbeing; contributing positively to social, cultural, financial, human, natural and political capitals with wider impacts than just financial revenue” (PI1, PI2, PI3, PI4, PI5, PI6, PI7, PI9) and “Uses community-based problem-solving approach for positive impacts. Two-way communication with top-down and bottom-up information flow. Facilitates overall systemic collaboration. Functions as an enabler/driver rather than barrier”. (PI1, PI2, PI3, PI4, PI5, PI7, PI9, PI10)

The benefits stated by the participants closely resonate with the benefits mentioned in the literature, especially as stated by Reed (2007) and Zari (2012). The benefits mentioned by the participants further resemble those witnessed by the limited community and Māori Iwi led regenerative projects, as documented in the archival data sources. Due to the novelty of the regenerative field and time taken to plan, build and measure benefits, there are very few New Zealand examples demonstrating benefits. Benefits can mainly be stated from the archival project planning data of these projects.

6.4.2 RQ3: What are the Potential Barriers in the New Zealand context?

6.4.2.1 Funding and Finance

It has been suggested by the findings of this research that funding and finance structures may have to look beyond the concept of traditional growth, debt and Return on Investment as mentioned in Section 6.3 because the planning and delivery for regenerative projects happens on a system-wide level. Funding and financing structures will potentially have to support this system-wide delivery.

It was further mentioned that when adding non-financial outcomes to projects in pre-feasibility planning, it becomes a lot harder to assess, measure, manage and understand whether the investment potentially will achieve the intended outcomes. Thus, fit-for-purpose finance structures potentially will be required to enable the uptake and unlock success for regenerative projects.

The barriers to responsible sourcing as a final common social procurement strategy mainly relate to the lack of certification and responsible sourcing frameworks that allow socially responsible businesses to be reliably identified. Further, this results in a lack of clarity of expectations from agencies and the best possible way for social enterprises to deliver them. This also results in a lack of necessary strategic questions, “What does good look like?” and “What does success look like and how do we measure it?” which further facilitate the development of tender expectations, evaluation criteria, recognition of skills and capability required for evaluation and reporting tools.

The participants reported that the public funding and investment mechanisms to support Central and Local Government investment is a barrier, especially in the case of the 1989 Public Finance Act. The Act’s vague but real demand that officials keep public debt low is slowing system-wide development of infrastructure such as housing and does not account for the fast population growth that has happened in the last 20 years. As per the interview participants, The Public Finance Act, 1989 is not fit for purpose anymore, or at the very least could be reinterpreted by the officials and politicians observing it.

There is some room for interpretation in that it says the government must monitor net worth and when running fiscal policy “have regard to its likely impact on present and future generations.”

A useful measure of net worth would include the future liabilities and the lost opportunity benefits of investing (or not investing) in housing and climate infrastructure that either embeds or removes carbon emissions (and the credits required to keep them) that potentially will need to be bought on international markets in the future, along with the hospital, justice system, education and productivity costs of not achieving affordable housing. There is no indication that the Treasury is calculating this net worth correctly and advising the government of future costs or lost opportunities of investing in infrastructure, both social and physical.

The government and councils believe they can change things through Unitary Plans and Spatial Plans by an edit of the National Policy Statement for Urban Development. But without a change in the Public Finance Act or its interpretation, any change potentially will be limited.

6.4.2.2 Skills and Capability

The data indicates that there is an overall systems knowledge gap in how to collectively gather the existing knowledge, skills and experience to realize these projects.

The upfront costs of pre-feasibility discussion and conceptualization of projects may be a major challenge initially due to the novelty and lack of long-term case study examples (Cole, 2012; Clegg, 2012; Regenesys, 2012). It is important to acknowledge these upfront costs in early project planning and use the existing set-up of systems to integrate the delivery (NZGP, 2019). Some of the processes that can be plugged-in together system-wide include the Living Standards Framework and Better Business Cases Tools by New Zealand Treasury (Advisian Worley Group, 2019) and Rule 16: Broader Outcomes by New Zealand Government Procurement (NZGP, 2019). It is important that the upfront costs are addressed as early as possible in the planning, so the costs are not borne by future generations and lessens the burden of spend on the current and future generations of taxpayers.

The lack of mainstream professional energy in this field could further reflect the fact that as experienced people gain understanding they notice the conceptual and practical loopholes and move on due to the lack of on-going projects and case-study examples (Construction Sector Accord, 2019). Further, the data indicates that there is an overall systems knowledge gap on how to collectively gather the existing knowledge, skills, and experience to realize these projects. There appears to be a difference in the understanding of method versus result.

The industry has an affinity with the result in the form of finished buildings, certifications, awards and branding and public agencies are more inclined towards method. Projects perceived as 'gloss' factor are often rejected by public-spend organisations factoring it towards expensive and unjustifiable spend of taxpayer funds compared to other commercial options. As reported by the participants, there is a system-wide need to build capacity and capability beyond the current needs of the job.

Soft skills such as facilitation, both professional and cross-cultural, overall system engagement and encouragement of innovative initiatives are required. Within the Governance, Management and Procurement teams of the projects, there is an increased need for early planning, early system integration in pre-feasibility stages of the project and to integrate the outcomes in key performance indicators, design and build decisions and reporting and measuring of outcomes.

One Phase Two Participant suggested:

- “1. Take an outcome-based approach to project planning and agreement structures.*
- 2. Give the delivery agency autonomy to deliver.*
- 3. Provide clarity in terms of outcomes and embed them in all systems and processes.*
- 4. Ask the question: What is the project about? Is it about people or is it about tools and processes?”*

Further, as stated by another participant, skills and capabilities were mentioned as a key barrier to change-making:

“Ask the communities what they need, and they will tell you what needs to be done - your job as the built environment professional is to integrate various requirements, mobilize and deliver them.”

At the Central and Local Government level, skills and competency varied across administration, subject matter experts, management and senior leadership. It is necessary that these functions build their skills and competencies to address not only the current but future, intergenerational challenges. This involves opening up of the existing silos, trusting each other, especially regarding Ministerial agencies, and moving beyond short-term, vested-interest gains to achieve positive, broader outcomes. These further require public service employees to continuously train themselves, engage with All-of-Government initiatives, and deliver projects of intergenerational value.

Further, it was reported that upstream decision makers should avoid oversimplification of complex, inter-twined issues especially as they travel upstream. For this reason, it is critical to build relevant skills and capabilities internally in public-spend agencies so the intensity and depth of place-based issues can be appropriately captured and communicated for development of appropriate solutions.

At the Industry level, skills are required to not only fill the current needs but also future demands. A space to be recognised is here for those skills that play an important role to identify and understand the needs of intergenerational projects. These roles enable industry, Central and Local Government to plan for future projects, anticipate future needs and wants and deliver projects accordingly to yield positive, broader outcomes. Further, this ties in with the education sector and the need to develop courses and training modules that can meet the needs of application of regenerative development in future to achieve inter-generational outcomes.

At the community level, there is a continuous need for skills in the social enterprise space to enable and help governments and industry bridge capability, awareness, and resource challenges.

Further, the findings highlighted the various negative short and medium-term consequences of built environment developments focused solely on short-term economic gains. These consequences reportedly include disharmony among stakeholders, a loss of trust and/or unrealistic expectations regarding time, cost, and scope (Advisian Worley Group, 2019).

The evidence also points towards certain long-term consequences. These are mostly experienced by the occupants and others interacting with the completed project. Practical issues occur in tandem with an increased sense of disconnection with the culture of the place, and its values in future generations – as mentioned by a community leader participant.

Fundamentally, the findings underline differences in the Te Ao Māori and Western world views making integration complicated by historical events. It is critical therefore, that meaningful consultation be successfully undertaken during the early strategic decision-making stages of a project in New Zealand to incorporate the values of all concerned to ensure the project reflects these in the Key Performance Indicators (KPIs).

The findings from this thesis indicate that regenerative projects can break into the policy landscape due to the systemic functioning of the project. This provides the opportunity to review existing policy and legislation to accommodate the needs of the projects within multiple capital-related outcomes. In New Zealand, the Treasury has adopted the Living Standards Framework (LSF) to incorporate the delivery of multiple value-based outcomes, however there is a gap in the alignment of the LSF's objectives and current strategic decision-making and procurement practices. Further, there is a disconnect between the Treasury's tracking of LSF capitals-related outcomes and how these are identified and captured in the businesses cases as mentioned in the CO 19 (6), and Investment Management and Asset Performance guidance.

Further, this indicates the need for innovation in project strategic decision-making and governance structures. The cost of doing it later in the project or doing it wrongly may be unnecessarily expensive than doing it well as early as possible in the project, preferably in the pre-feasibility stages. This further indicates that the decision-making and governance structures potentially will need to be flexible and accommodating of various stakeholders' expectations.

The analysis of the findings points towards the importance of purposeful and increased democracy in the form of inclusion and participation of stakeholders in early strategic decision-making. It is acknowledged that this may not occur without its own associated challenges, however multiple aspirations, attitudes, and behaviours potentially will need to be managed and harmonized through value-based communication.

The upfront costs of pre-feasibility discussion and conceptualization of projects potentially will be a challenge initially due to the novelty and lack of long-term case study examples. It is important to acknowledge these upfront costs in early project planning and use the existing set-up of systems to integrate the delivery. Some of the processes that can be plugged-in together system-wide include the Living Standards Framework and Better Business Cases Tools by the New Zealand Treasury and Rule 16: Broader Outcomes by New Zealand Government Procurement.

Another theme to arise from the analysis of the findings is the need to capture the place-based, value-centred performance indicators related to the outcomes early in the project's decision-making, preferably in the pre-feasibility stage. These performance indicators define all the subsequent key strategic and tactical decision-making, and project outcomes.

The cost of not allowing for place-based, value-centred KPIs could result in singular, focused decision-making, mainly to facilitate financial gains and thereby, losing the opportunity presented by incorporating the social, cultural, human, political, and natural capitals. Not all projects support or require multiple capital outcomes, however by broadening the scope, the project-specific and place-based values can be assessed, rationalised and subsequently

delivered and measured for value-based performance over its lifecycle as stated by most of the participants.

The professionals developing the procurement criteria, evaluation, and tender documents potentially will need to have sufficient experience and capability to demonstrate the expertise to evaluate projects associated with positive, broader outcomes. Public-spend agencies potentially will further need to look into an all-of-government evaluation panel for such projects where skills, experience and capability can be shared to set the best procurement conditions and evaluate them accordingly.

The projects potentially will have strategic subject matter expertise and diverse representation in decision-making, taking an evidence based, collaborative and system-wide application. The skills and capability potentially will have to consider long-term gains and allow for innovation and technology in Information and Communication Systems to contribute to visibility and reporting of delivered outcomes.

The skills and capability potential will have to reduce barriers regarding hierarchy and allow for subject matter experts to be part of the evidence-based decision-making. Traditional project and team management approaches potentially will not be compatible and team leaders potentially will have to consider a two-way communication model, allowing for complex data to be communicated and understood without simplification to avoid data 'loss in translation'. Leadership and management potentially will have to demonstrate high political potential will in the conceptualisation, planning and delivery of place-based, value-centered regenerative outcomes. They should enable system-wide engagement, high transparency, and trust. Bureaucracy and middle management potentially will have a limited or low role to play, removing the barriers caused by them.

As stated by a Phase Two Participant and repeated by others,

“Regulation needs to work collectively and not in silos. These have been set up intentionally and are a pragmatic response to work individually- lack of collaboration, hyper competition and short-term wins vs long-term gains.”

6.4.2.3 The New Zealand Built Environment System

a. Project Owner buy-in

This section discusses the role and potential will of the project owner to support and drive the application of regenerative projects. This buy-in is a result of being connected to ground realities, application of systems-thinking to current and future problems, and the motivation to address these issues to yield intergenerational benefits.

As per the academic peer-reviewed literature presented in Chapters Two and Three, and findings of Phases One and Two presented in Sections 5.2 and 5.3, the contextual factors affecting the political potential will and/or project owner buy-in are:

- Vested Interests of decision makers and short-term gains. Increased reliance on ‘quick wins’. Lack of long-term thinking and planning.
- Intense voter and/or project financier pressure focused on short-term economic growth, usually in conjunction with election cycles.
- Lack of evidence-based decision-making and alignment with the needs of current and future generations.
- Hyper-capitalistic environment and the reductions nature of decision-making.
- Risk averse attitude and lack of rewards for change-making. The system is quick to punish for low performance or mistakes but slow to reward impact and change-making.
- ‘Out-dated’ middle management skills no longer meet the decision-making requirements of future generations. Heavy reliance on short-term, low benefit efficiency rather than long-term approach to building strategy, objectives, and tools to deliver these objectives.

Currently, the evidence of projects undertaken indicates that regenerative development works for people with resources to wait a while, either in the form of finances, time, skills, or capability. The literature review in Chapter Three further states that both capacity and capability need to be built in terms of resources (finance, skills, materials, and subject matter experts) to realize such projects. Further, the literature and evidence from this study suggest

that government assistance is essential to bridge the access to regenerative development for everyone without the resources to wait for better financial, timing, and legislative conditions. Given the upfront integration of professionals, and added new ones as advisors from the natural, human, social, and cultural capitals domains as required, it may mean substantial upfront costs for the project.

Additionally, certain New Zealand built environment projects are leading appointment of Iwi representatives as professional design, delivery and decision-making partners which can further elaborate the risk profile of the project (Kāinga Ora, 2020). Government assistance and political will are commonly emerging themes as supporting agencies of change (Advisian Worley Group, 2019; The Construction Sector Accord, 2019).

As stated by a Phase Two Participant and repeated by others,

“Partnerships are simply not easy with public agencies due to a lot of barriers which were supposed to function as enablers such as the Public Finance Act and Resource Management System.”

Figure18 shows the interactions and high-level connections among system participants and their roles regarding positive, broader outcomes from regenerative development and associated barriers as interpreted by the researcher after data analysis.

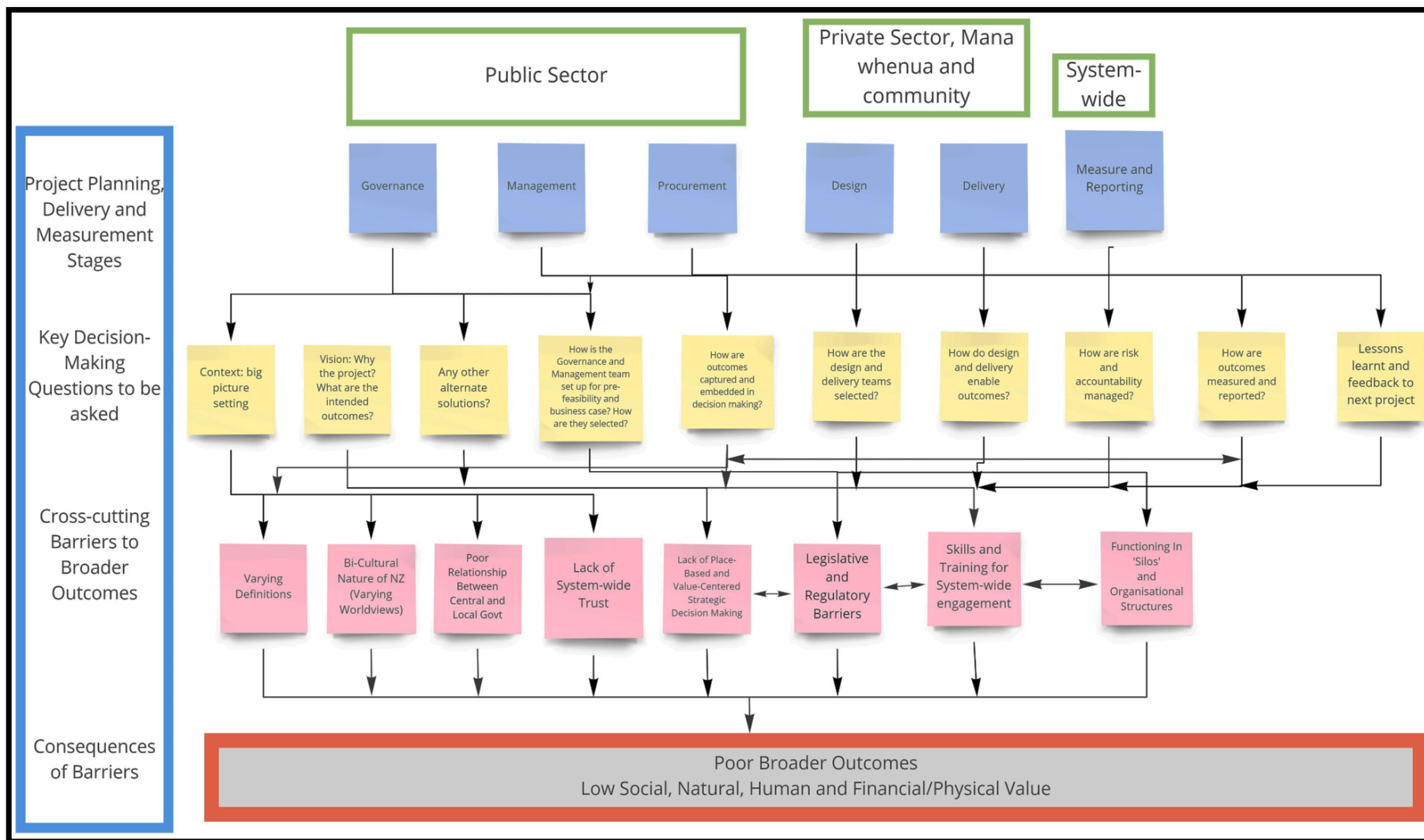


Figure 18 System participants, system roles, and interaction resulting in barriers to poor outcomes as per findings from Phases One and Two

b. Lack of trust

Participants interviewed identified a lack of trust between the public and private sectors, various public-spend agencies, and industry stakeholders. This lack of trust manifests itself in the approach to governance, management of projects, procurement (including the perception of small and medium enterprises not provided with fair opportunities to tender), contracting with unfair transfer of risks and measurement and reporting of final project outcomes.

The consequences of not building trust in the system and between system-wide participants to identify, plan, deliver and manage social, cultural, natural, and economic outcomes mainly by reporting, measurement and assurance tools could result in system-wide participants not collaborating with each other and lack of confidence in the success of the project. This could further result in erosion of relationships.

This consequence could potentially be experienced by the subject matter experts as they will have to undertake constant lateral and longitudinal stakeholder engagement which could result in loss of interest, fatigue and eventual burn-out. This is important to note as it could result in the collapse of interest concept, negatively affecting its uptake, thereby losing the opportunity and capable people to apply and test the concept. This could result in the concept not maturing practically and experiencing an eventual 'fizzle-out'.

c. Diverse Representation: Varying worldviews

Fundamentally, the analysis of findings underlines strongly key differences in the Te Ao Māori and Western world views. These world views are notably different, and integration is complicated by historical events. It is critical therefore, that meaningful consultation be successfully undertaken during the early strategic decision-making stages of a project in New Zealand to incorporate the values of all concerned to ensure the project reflects these in the deliverable KPIs.

The analysis of the findings indicates the importance of purposeful and increased democracy in the form of inclusion and participation of stakeholders in early strategic decision-making. It is acknowledged that this may not occur without its own associated challenges, however multiple aspirations, attitudes, and behaviours could need to be managed and harmonized through value-based communication.

Further, to ensure ‘everyone is on the same page’, it is necessary that the project workshop, wānanga or meeting outcomes are captured and disseminated in a manner that is least time consuming to the reader; with information drafted in a fashion that everyone can understand and captures the values and expectations regarding ‘why, who, what and when’ of the project. The cost of continuing with business-as-usual may result in increased dissatisfaction and decreased transparency of decision rationale. Engaging everyone early in a strategic, integrated process with clarity on vision, purpose and values can prove to be of monumental benefit.

As stated by a Phase Two participant and a sentiment echoed by others,

“The relationship has to change from a stakeholder to a partnership. Māori and community groups need to be at the table from the very beginning. Thinking around procurement needs to happen in the pre-feasibility stage - who do we need on this project? If the thinking on procurement is holistic and brought forward in the project in the pre-feasibility stage, it can change a lot of decision-making and save resources. Staged thinking and decision-making are not particularly helpful. Community groups need to have inputs to design, tender, procurement and what gets built.”

The system could have to allow for the development and growth of trust among various stakeholders. To develop trust, the system will potentially have to leverage the skillsets and opportunities offered by Information and Communications Technology to enable and unlock measurement and reporting regarding visibility of enterprises, KPIs, data and insights for continuous future improvements.

Application of anticipatory governance to identify the barriers and opportunities could potentially be beneficial (Boston & Hall, 2019). A combination of circular thinking, integrated

planning, distributive design, and diverse decision makers will be crucial in the development of regenerative projects to address the challenges of the future (Raworth, 2018; Regenesys, 2012). The system potentially will need a major upskill of current decision makers to ensure they are thinking for all system levels and understand the external and internal implications of their decisions. These will have to be supported with robust, system-wide decision-making tools and fit-for-purpose, delivered by technology support and political will in the system to deliver place-based, value-centered outcomes focused on intergeneration value. The system potentially will have to take an all-of-government and system-wide, diverse and multi-cultural approach to outcomes-based decision-making, including planning, delivery and KPIs. Policy, legislations and regulations potentially will have to allow for place-based, value-centered decision-making.

The government mandate for projects and KPIs must align the requirements for place-based, value-centered outcomes. The mandate would have to prioritise these outcomes along with financial returns. The mandate and KPIs potentially will have to be specific about the deliverables, and will have to strategically select the change agents and subject matter experts to plan and deliver the projects.

Lastly, the system will have to allow for collaboration and inclusion of subject matter experts and strategically diverse representatives in decision-making.

6.5 Future: How can we get there?

The conceptual frameworks described below present a way for decision-making of regenerative projects for project owners i.e., public-spend agencies and the New Zealand built environment industry delivering the projects.

These frameworks have resulted from the findings of Data Collection Phases Two and Three, and the discussion presented in previous Sections 6.2, 6.3 and 6.4.

The participants of Phase 3 Focus Group Discussions agreed that these frameworks can be used as a way to bring together the thinking for social, natural, cultural, human and financial outcomes, and present a clear and transparent way of decision-making.

Lastly, it is acknowledged that the frameworks for public-spend agencies and the built environment are similar to the intent of driving consistency and transparency of information and expectations. The action points are based on the system participants' context and role in the system.

6.5.1 Framework for Regenerative Project Development for Clients/Owners of Projects

The steps mentioned in the framework for regenerative project development for public-spend agencies, as shown in Figure 19 are as follows:

Step 1: Define the vision and what success looks like at the beginning of the project. Ensure appropriate representation and diversity specific to the project stakeholders at this stage. Undertake place-based, value-centered stakeholder engagement to identify success measures.

Focus on quality of outcomes delivered rather than quantity which will allow for robust structures and allocation of appropriate resources as every outcome comes with a financial and resource cost to plan, deliver, measure and report for success. It is critical that time is spent in identifying priority outcomes to be delivered for optimal use of resources.

Step 2: Identify and procure the skills and capability.

Step 3: Clearly define the budget, including services for the delivery of social, cultural, natural, and human outcomes. Allow for this to flow into business cases, procurement, project design, delivery, measurement, and reporting.

Step 4: Develop business cases to address the barriers of financing and funding structures clearly articulating the value-based critical success factors of the project, required skills and competency and need to achieve broader outcomes.

Step 5: Develop appropriate measurement and reporting criteria for identified place-based, value-centered economic, natural, social, cultural, and human outcomes. This should happen prior to the commencement of design or procurement decision-making, so the measures inform the decision-making for progressive steps in the project or programme. Encourage and support the procurement planning and sourcing stages for all supply chain collaboration and cooperation to deliver, manage, measure and report for success.

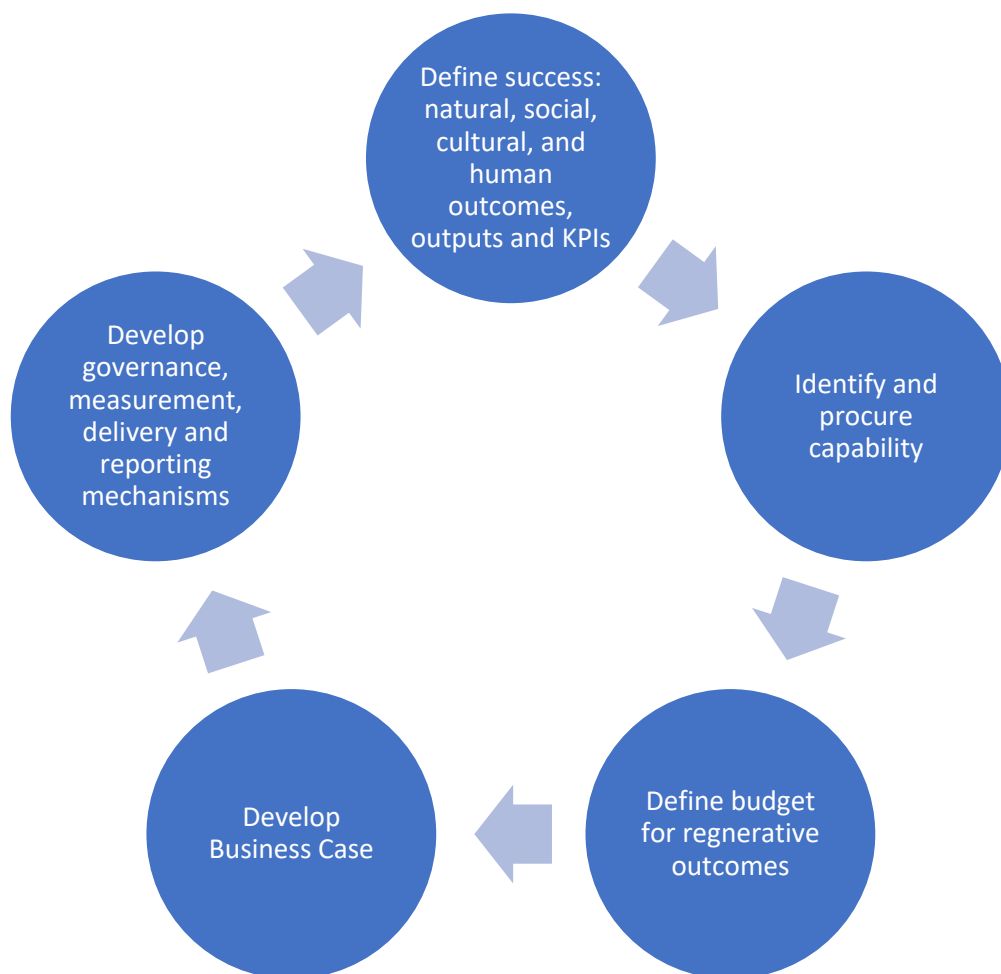


Figure 19 Framework for Regenerative Project Development for Clients/Owners of Projects

6.5.2 Framework for Regenerative Project Development for Industry

The steps mentioned in the framework for regenerative project development for the New Zealand built environment industry participants, as shown in Figure 20 are as follows:

Step 1: Define the vision and strategy within the business to deliver social, cultural, natural and human outcomes.

During project planning, ask the client/owner for their vision and strategy for expected place-based, value-centered regenerative (multiple capitals) outcomes. Focus on quality of outcomes delivered rather than quantity which will allow for robust structures and allocation of appropriate resources as every outcome comes with a financial and resource cost to plan, deliver, measure and report for success. It is critical that time is spent in identifying priority outcomes to be delivered for optimal use of resources.

Step 2: Undertake or participate in place-based, value-centered stakeholder engagement to identify success measures. Include in project planning and delivery KPIs. Ensure the early stakeholder engagement is with mana whenua, community groups, Government Agencies, Local Council and if possible, delivery teams.

Step 3: Identify and procure the skills and capability.

Step 4: Develop the Procurement Plans and response for tenders by identifying the appropriate price for the project, including the planning and delivery of regenerative outcomes. Pricing should be clearly articulate and properly priced and broader outcomes within the objectives of price, time and quality.

Address any barriers to delivery where additional collaboration could be required from the client and articulate the value-based critical success factors of the project, required skills and competency and need to achieve broader outcomes.

Step 5: Deliver and manage the project for success, accounting for delivery, reporting and measurement of positive, broader outcomes in every stage of the project. For large industry businesses, it is important to anticipate and plan for success, build capability and skills across the supply chain due to available resources. For the smaller businesses, it is important to actively engage and collaborate with large businesses to identify opportunity areas, work with the project owners and/or businesses to deliver, measure and report the delivery of these outcomes.

Step 6: Develop, or collaborate with the project owner in developing, appropriate measurement and reporting criteria for identified place-based, value-centered economic, natural, social, cultural, and human outcomes. This should happen prior to the commencement of design or procurement decision-making, so the measures inform the decision-making for progressive steps in the project or programme. Ensure the reporting mechanisms, tools, associated definitions and baselines are shared with the stakeholders to build trust.



Figure 20 Framework for Regenerative Project Development for the New Zealand built environment industry

CHAPTER SEVEN: CONCLUSION

7.1 Thesis Conclusions

The purpose of the study was to identify ways to improve strategic decision-making and governance for regenerative design and development projects. In the previous chapters, particularly Chapters Five and Six, findings and discussion regarding the various definitions, benefits, challenges, barriers, drivers, and landscape of regenerative development are presented through interviews and focus group discussion with more than 50 participants across three data collection phases.

Following from the previous chapters, Table 19 below presents the conclusions and extent to which the research questions were answered successfully. The information contained in this table is the result of all data collected and the further interpretations of the researcher to result in the following conclusions.

Sub-questions	Conclusions
1.What is the perceived definition of regenerative development in the New Zealand built environment?	<ul style="list-style-type: none">• Mang and Reed (2012), Plessis (2012), Robinson and Cole (2015), and Zari (2019) provided answers on the meaning of regeneration, regenerative development and regenerative design from a conceptual perspective. However, there was no information available on what regenerative development means from practical and New Zealand perspectives. This contributed to the researcher's sub-questions and added to the significance of the study. Given the nature of change-making, it is crucial to have practical and New Zealand related perspectives on regenerative projects so decision makers could potentially make the most informed decisions on public-spend.• RQ1 relating to the elements of definition for regenerative development was met with saturation and common agreement in Phase Two, continuing the saturation achieved with the sample selection in Phase One.• Although the question was not specifically asked in Phase Two, the initial conversation in most interviews in Phase Two included the researcher identifying the participants' awareness of the regenerative development concept, which included providing them with a high-level description if they were unfamiliar or loosely familiar with the concept. This resulted in the researcher identifying definition elements from Phase One that resonated or aligned with the participants' views in Phase Two.• The most agreed upon definition by the participants in Phase Three was, <i>"It is a community-based problem-solving approach with a two-way communication and information flow facilitating</i>

	<p><i>overall system collaboration. It develops and utilizes methods of accelerating decision-making but without abandoning evidence-based calculations, strategic integrity or holistic embrace.</i></p> <ul style="list-style-type: none"> • During data collection, this was refined to, “achieving positive, broader social, natural, financial and human outcomes through built environment investment decisions”. • Gaps, consequences, and observations from a systems approach are explained in Section 6.2.
2. What are the potential benefits of regenerative development in New Zealand?	<ul style="list-style-type: none"> • The literature review provided answers on the potential benefits from a conceptual perspective. Given that this is a relatively new concept with few practical examples and that built environment projects take between 2-5 years to demonstrate benefits, the demonstrated benefits are few and not enough to build a consensus on. The researcher used the benefits from other green development concepts to develop a picture of potential benefits for regenerative development. • There was no information available on what the potential benefits are from New Zealand and applied long-term perspectives. This informed the research sub-question and enhanced the significance of it, so the New Zealand perspective of benefits was available for decision makers to potentially make informed decisions. • The benefits of regenerative development are summarised as: <ul style="list-style-type: none"> ○ Improved intergenerational wellbeing – contributing positively to social, cultural, financial, human, natural and political capitals. ○ Uses community-based problem-solving approach for positive impacts. ○ Two-way communication with top-down and bottom-up information flow. ○ Facilitates overall systemic collaboration. Functions as an enabler/driver rather than barrier. ○ Strengthening connections to land and natural resources. ○ Community reassurance, Increased buy-in and participation from end users. ○ Will have follow-on effects from the industry to improve quality and standards of development, design, delivery, and measurement. ○ Integrated, fluid, and synergistic processes and results. ○ High quality early-stage planning. ○ Early understanding of performance indicators. ○ High levels of trust and collaboration. ○ Opportunity to combine soft and hard science to advance community-based development plans ○ and changes to education, health policy. ○ Innovation in measurement thinking, approach and techniques.

	<ul style="list-style-type: none"> • RQ2 relating to the elements of definition for regenerative development was met with saturation and common agreement in Phase Two, continuing the saturation achieved with the sample selection in Phase One. • Although RQ2 was not specifically asked in Phase Two, the initial part of most interviews in Phase Two included the researcher identifying the participants' awareness of regenerative development concept, which included providing them with a high-level description if they were unfamiliar or loosely familiar with the concept. This resulted in the researcher identifying definition elements from the Phase One that resonated or aligned with the participants' views in Phase Two. • Gaps, consequences, and observations from a systems approach are explained in Section 6.2.
3. What are the potential barriers to regenerative development in the New Zealand context?	<ul style="list-style-type: none"> • The literature review provided answers on the reported barriers from a conceptual perspective. The researcher has used the barriers from other green development concepts and from within the New Zealand public spend built environment system relating to upstream decision-making (strategy, procurement and project management) to develop a picture of potential barriers for regenerative development. • There was no information available in the literature on what the potential barriers are from New Zealand and applied perspectives. The researcher has referenced barriers reported from the wider New Zealand public spend procurement system (due to its system-wide impacts) to develop a picture of potential barriers for regenerative development. • RQ3 was met with saturation in the Phase Two data collection. • Sections 5.2.4 and 5.3.3 present: <ul style="list-style-type: none"> a. system-wide connections as experienced by the researcher during data collection Phases One and Two. These models present a picture of the full system from the researcher's perspective. b. Ecological System Maps for barriers and proposed solutions reported during Phase One and Phase Two. These barriers and proposed solutions were part of a systems-focused conversation with participants and therefore, presented in a cross-cutting fashion across system layers. • Success for regenerative projects from reported literature requires system-wide collaboration (regarding an all-of-capitals approach), and consistent stakeholder engagement, <i>taking everyone on the journey</i>. As interpreted implications, it also requires challenging the status quo and asking for information and visibility beyond their job level on influencing factors for decision-making in order to involve risks, trade-offs and

	<p>externalities. From an operational perspective, it is important to consider the effects on operations-focused employees and allocate appropriate resources necessary to support them in the shift to regenerative approaches while continuing on-going operations.</p> <ul style="list-style-type: none"> • Section 5.3.5 further presents the perception of various capitals and their reference in interviews by system participants indicating the participants' views of the capitals and whether they are front-of-mind for the participants. • These themes can be briefly summarised as clarity on the definition of regenerative development in the New Zealand built environment context, addressing reported barriers of funding and finance, skills and capability, and decision-making in the New Zealand built environment public-spend by nurturing project owner buy-in, trust and diverse representation of capabilities. <ul style="list-style-type: none"> ○ The findings highlighted the various negative short and medium term consequences of built environment developments focused solely on short-term economic gains. These consequences reportedly include disharmony among stakeholders, a loss of trust and/or unrealistic expectations regarding time, cost, and scope (Advisian Worley Group, 2019). ○ The evidence also points towards certain long-term consequences. These are mostly experienced by the occupants and others interacting with the completed project. Practical issues occur in tandem with an increased sense of disconnection with the culture of the place, and its values in future generations – as mentioned by a community leader participant. ○ Fundamentally, the findings underline strongly key differences in the Te Ao Maori and Western world views. These world views are notably different, and integration is complicated by historical events. It is critical therefore, that meaningful consultation be successfully undertaken during the early strategic decision-making stages of a project in New Zealand to incorporate the values of all concerned to ensure the project reflects these in the Key Performance Indicators (KPIs). ○ The findings indicate that regenerative projects can break into the policy landscape due to the systemic functioning of the project. This provides an opportunity to review existing policy and legislation to accommodate the needs of the projects within multiple capital-related outcomes. In New Zealand, the Treasury has adopted the Living Standards Framework (LSF) to incorporate the delivery of multiple value-based outcomes, however there is a significant gap in the alignment of LSF's objectives and current strategic
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	<p>decision-making and procurement practices. The cost of limiting the scope of our policies and legislations to facilitate collaboration and partnership among organizations is a reported barrier to systems integration and enabler of the existing organisational 'silos'.</p> <ul style="list-style-type: none"> ○ Further, this indicates the need for innovation in project strategic decision-making and governance structures. The cost of doing it later in the project or doing it wrongly may be unnecessarily expensive compared to doing it well as early as possible in the project, preferably in the pre-feasibility stages. This further indicates that the decision-making and governance structures will need to be flexible and accommodating of various stakeholders' expectations. ○ The analysis of the findings points towards the importance of purposeful and increased democracy in the form of inclusion and participation of stakeholders in early strategic decision-making. It is acknowledged that this may not occur without its own associated challenges, however multiple aspirations, attitudes, and behaviours will need to be managed and harmonized through value-based communication. ○ The upfront costs of pre-feasibility discussion and conceptualization of projects will be a major challenge initially due to the novelty and lack of long-term case study examples. It is important to acknowledge these upfront costs in early project planning and use the existing set-up of systems to integrate the delivery. Some of the processes that can be plugged-in together system-wide include the Living Standards Framework and Better Business Cases Tools by New Zealand Treasury and Rule 16: Broader Outcomes by New Zealand Government Procurement. It is important that the upfront costs are addressed as early as possible in the planning, so the costs are not borne by future generations and lessens the burden of spend on the current and future generations of taxpayers. ○ Reflecting on the data indicates that there is an overall systems knowledge gap on how to collectively gather the existing knowledge, skills and experience to realize these projects. Lastly, there appears to be a difference in the understanding of method versus result. The industry has an affinity with the result in the form of finished buildings, certifications, awards and branding and public agencies are more inclined towards method. Projects perceived as 'gloss' factors are often rejected by public spend organisations factoring it towards expensive and unjustifiable spend of taxpayer funds compared to other commercial options. ○ From a systems perspective through the data collection phases it was found that awareness and application of regenerative development using both Rasmussen's Risk Management Framework and Ecological System Model can support system-wide collaboration, improve project owner
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	<p>buy-in due to wide consultation, and support the identification of required skills and capability to successfully deliver regenerative projects. This enables long-term integrated planning, delivery, measurement and reporting which supports development of trust across the system.</p> <ul style="list-style-type: none"> ○ Lastly, it was noted that, although the conceptual benefits of regenerative development are widely known and acknowledged, the concept requires a paradigm shift in how decisions are made and funded. It requires current system-wide decision-making and funding structures, processes, skills, training, reporting tools, and system-wide collaboration to mature to successfully deliver regenerative projects and measure success. Application and success of regenerative development requires a system-wide will to apply the concept which in turn requires a shift in approach and maturity of integrated processes and tools.
<p>4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?</p>	<ul style="list-style-type: none"> • The literature review did not provide any answers on this question. The researcher has referenced case examples of one Living Building Challenge in New Zealand and international examples of regenerative projects in Australia and British Colombia, Canada. • Regarding New Zealand, the researcher referred to projects, such as the Waipu East Coast Regeneration, Papatoetoe Food Hub, Eastern Porirua Regeneration, and others to understand the landscape of contextualisation with the public-spend system to deliver on inter-generational broader social, cultural, natural, and economic outcomes. • RQ4 was met with saturation in Phase Two data collection (proposed solutions). Detailed explanation of elements of proposed solutions are provided in Chapter Five and Appendix IV. These themes were further prioritised for action and next steps with a selection of system participants in Phase Three. • These themes can be briefly summarised as clarity on the definition of regenerative development in the New Zealand built environment context, addressing reported barriers of funding and finance, skills and capability, and decision-making in the New Zealand built environment public-spend by nurturing project owner buy-in, trust and diverse representation of capabilities. ○ The participants of the Phase Three Focus Group Discussion answering RQ4 agreed that the top three proposed solutions for early implementation are: <ul style="list-style-type: none"> ○ Political Will and/or Owner Buy-in ○ Skills and Capability ○ Strategic decision-making aligned with Value-based Outcomes leading to: <ul style="list-style-type: none"> ○ An all-of-government approach to problem solving

	<ul style="list-style-type: none"> ○ Effective Partnerships via Trust ○ Development projects aligning with the needs of Tangata Whenua and Te Tiriti O Waitangi ○ Many participants also mentioned that increased, diverse representation, in terms of more indigenous people, and women in strategic decision-making along with improved guidance (education), long-term (programme based) and non-partisan approach to investment decisions are key in unlocking the solutions for these reported barriers. ○ Participants also noted that a reform of the Ministries or a Ministry of Works was not worth the effort and would simply result in enormous political and bureaucratic challenges. There was strong disagreement from the participants on this particular proposed solution. <ul style="list-style-type: none"> ● Although the current New Zealand built environment public-spend decision-making concept is new to the concept of regenerative development, the concept can potentially find alignment with decision makers when advocated from the underpinning principles of integrated design, long-term planning, multiple capitals approach to public value, and intergenerational benefit.
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Table 19 *Conclusions table as per research questions*

7.2 Contributions to Theory and Knowledge

7.2.1 Methodology and Methods

Given the centrality of a phase-based approach, with each phase leading to an improved understanding of research aim, the researcher believes repeatability of research design and methodology is possible. The systems framework – as a roadmap for data collection – provides a guide for future researchers on what to include when considering regenerative development in built environments. The methodological contribution is, therefore, the creation of a systematic framework that can be used as a pathway for complementary co-construction studies with facilitated sample selection, question formation, and analysis and interpretation that would collectively build a richer understanding of regenerative development in built environments.

7.2.2 Contextual Factors

This study has provided a fuller understanding of the complexities of the industry from the perspectives of those within it. Very few studies globally have considered the highly complex nature of contextualisation of regenerative development with a few exceptions, (e.g., Zari, 2012; Regenesys, 2009) let alone in New Zealand. Although the New Zealand built environment industry has some unique features such as geographical layout, many of the factors considered in this study could be usefully investigated in overseas studies.

7.2.3 Combined Private and Public-Sector Data

This study included a unique set of data from the private and public sectors and did not simply rely on publicly available information such as the New Zealand Treasury (2016) Asset Investment and Management information. The inclusion of the data outlined in Phase One of this study was the compilation of integrated multiple perspectives and showed how different members of the system interacted.

7.2.4 Data from Macro (Central Government) Level

This study included a unique set of data from the interviews with high-level Central Government officials explaining the contextual factors, barriers, and drivers for the application of regenerative development in the New Zealand built environment. Very few studies have captured data ranging across various levels of the Ecological System Model, including the relationship with Context-Process-People-Timeframes.

7.2.5 Rasmussen's Risk Management Framework and Ecological System Model

This study used Rasmussen's Risk Management Framework to track the role and decision-making process for regenerative development in a built environment. Further, the researcher mapped the information using Rasmussen's Risk Management Framework lens applied to a modified Ecological System Model's level to demonstrate the contextual setting and decision-making capability at each system level from the perspectives of the individuals involved.

Figure 21 below shows another conceptual representation of key public-spend decision makers as per Rasmussen's Risk Management Framework (Y-AXIS), various levers and tools available for change (X-AXIS), and system levels as per the Ecological System Model who inform and are impacted by public-spend decision-making. The system-wide participants also inform how the various levers and tools can be used by the public-spend decision makers to influence change.

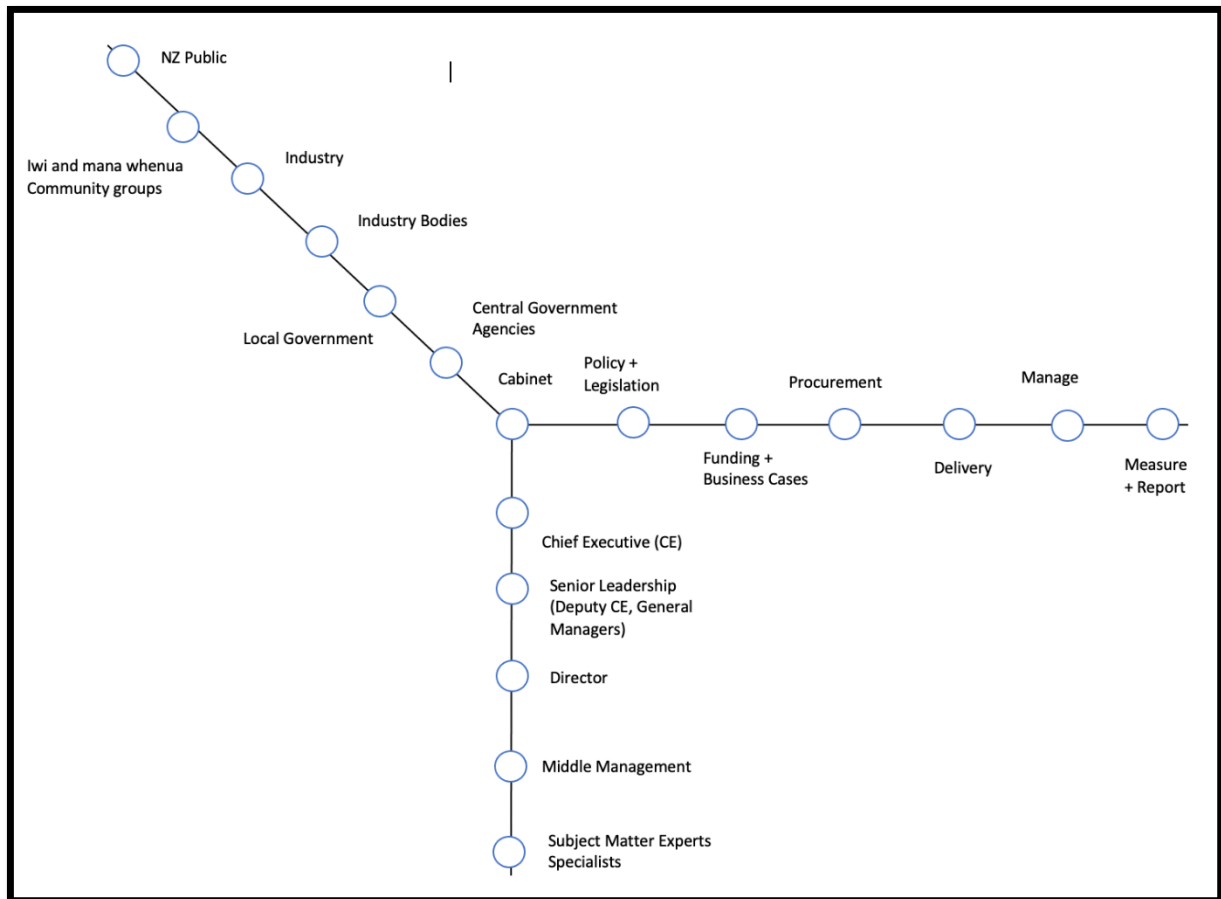


Figure 21: Conceptual, dynamic model of key public-spend decision makers as per Rasmussen's Risk Management Framework (Y-AXIS), various levers and tools available for change (X-AXIS), and system levels as per Ecological System Model

7.2.6 Evidence-Based Weaknesses

Additionally, this study has provided an extensive identification of knowledge gaps and crucial questions. Without the answers to these questions, the industry would struggle to build an evidence-based action plan.

7.2.7 Frameworks for Improving Investment Decisions

This study presented the frameworks for Project Owners (Central and/or Local Government) and the New Zealand Built Environment Industry in Section 6.5. Given the phase-approach to the research method and data collection covering the entire system, these frameworks are repeatable and can be used/contextualised to global applications.

7.3 Limitations and Strengths of the Study

7.3.1 Limitations

Adjacent System Levels Not Well-Represented

Not all related and relevant parties from adjacent systems to the built environment such as transport, materials manufacturers and exporters-importers, business consultants, audit and risk were covered in the proponent system sample. It was not the intention of the researcher to go beyond the boundaries of the built environment system, as described in the sample criteria of Data Collection Phases One and Two. The system's approach invited a large sample size, but due to the resource availability and restrictions of this study, lines had to be drawn.

Further, politicians were excluded from the phase Three Focus Groups due to time availability and to mitigate the risk of political ideology pivoting the purposes of the discussion as representatives from the major four political parties with significantly different political ideologies could not attend the Focus Group Discussions.

Data collection limited to Auckland and Wellington

It is also noted here that the study and participant selection was limited to Auckland, Wellington and their greater regions. However, in the researcher's opinion this does not present a major limitation due to the limited available literature and low number of practitioners in the regenerative community whom the participant was able to consult during Phases One, Two, and Three. It was also a driving principle of the researcher to keep the research method repeatable and applicable to local and global contexts.

Regenerative Development not well Understood by Most Participants

The concept of regenerative development required significant education and guidance, and, in the experience of the researcher, considerable time was spent with early and late majority participants explaining the concept and its proposed benefits. The researcher thinks that, given the time constraints, should there have been increased awareness of the concept, the

interview discussion could have focused on further details regarding reported barriers and proposed solutions.

Limited Availability of Literature on Regenerative Development

The concept of regenerative development currently has limited literature, mainly ranging from 2009 – 2017. Since 2017, there has been further limited literature, mainly as application cases in Australia and British Columbia. The literature from the New Zealand context is even further limited, with currently only one strongly acknowledged application of regenerative approach, which is in the business case development for Eastern Porirua led by The Urban Advisory.

7.3.2 Strengths

Findings

The systems approach was ambitious but generated multiple targets for potential interventions – both at single levels (e.g., driver or regulator) or more commonly as packages spanning multiple levels.

Method

The phase approach to research and data collection yielded richness that would not otherwise have been obtained and provides a workable model for other researchers wishing to generate complementary data sets here or overseas.

Approach

This study brought together the private and public sectors – not previously achieved in regenerative development in built environment and very rarely in New Zealand. Due to limited literature being available on regenerative development, this research contributes towards improving the decision-making and governance for the application of regenerative projects.

Additionally, the value of the systems approach is the ability to simulate making the changes and then registering the overall impact – its positives and negatives. The depth of understanding built by this thesis goes a long way in anticipating previously unthought-of decision-making, consequences, and outcomes.

7.4 Final Reflections: Implications for Industry, Society, and Practice

Overall implications of the study based on the conclusions are listed as below:

- Increased application of concept-regenerative development is still in its innovation phase in New Zealand, as per the Diffusion of Innovation theory. The findings suggest that effort will be required to shift the system beyond the tipping point and towards early and late majority (Diffusion of Innovations Model, Section 1.5). Public-spend agencies with an affinity for stability and risk-averse culture lie mainly within the late majority and laggard space regarding adoption of innovation.
- From a systems perspective through the data collection phases it was found that awareness and application of regenerative development using both Rasmussen's Risk Management Framework and Ecological System Model can support system-wide collaboration, improve project owner buy-in due to wide consultation, and support the identification of required skills and capability to successfully deliver regenerative projects. This enables long-term integrated planning, delivery, measurement and reporting which supports development of trust across the system.
- The regenerative development concept requires a paradigm shift in how decisions are made and funded. It requires current system-wide decision-making and funding structures, processes, skills, training, reporting tools, and system-wide collaboration to mature and successfully deliver regenerative projects and measure success. Application and success of regenerative development requires a system-wide will to apply the concept which in turn requires a shift in approach and maturity of integrated processes and tools.
- Complexity of system thinking and whole-of-system engagement – *taking everyone on the journey* – can potentially require higher upstream resource allocation due to extensive engagement costs. Engagement could potentially stagnate or stop design ideas and lead to engagement fatigue of those undertaking the design and engagement. Further, it will be challenging to control scale and thought jumping in such extensive engagements which will potentially require higher upfront planning costs.

- Currently, the concepts lack examples of contextualisation regarding social sustainability and what does regenerative development mean to humans inhabiting a space, especially urban spaces and cities.
- As per the findings, it is interpreted by the researcher that traditional and/or conventional systems and people in these systems may struggle to grasp the interconnectedness of the system, and associated processes, tools, technology, contextual factors, and all-of-capitals benefits.
- It is a challenge with system-wide interventions regarding drawing system boundaries. *How whole is whole enough? How integrated is integrated enough?*
- Achieving a system-wide transformation (*evolution rather than revolution*) could potentially take a long time based on the duration taken to evidence success through application of concept, which in built environment can be a decade or more, and several decades in the case of intergenerational projects.
- With comparatively short-term election cycles and shifting public priorities, it can be expected that long-term intergenerational issues continue to be “*compromised in the political realm by economic, social and military priorities*” (Clegg, 2015). It can also be expected that these priorities may remain the same from previous several decades without the exploration and application of system-wide solutions.
- regenerative development as a concept supports other complex to approach and applied concepts such as integrated design, systems thinking, whole-of-life approach, and levels of work to name a few. These concepts are inter-related and have organisational and system-wide impacts which make them challenging to apply together (Raworth, 2015). This is another complexity posed by regenerative development and practitioners of this concept potentially will have to grasp layers of other complex concepts, which could seem “airy-fairy” or “waffle” to those whose everyday functioning is in a reductionist or ‘silo-ed’ worldview as per the findings and interview participants functioning in such environments like Central and Local Government for example.
- It was observed by the researcher that the burden of change-making is a system-wide collective responsibility, and the regenerative development concept highlights this expectation off the system. Further it was observed by the researcher from the

findings and interviews that this burden is disproportionately distributed on those communities and demographics that are currently seeking innovative solutions to address their social, cultural, natural, human, and financial challenges. It is important that the system decision makers acknowledge this disproportionate distribution of expectation and drive policies and initiatives that allow for equitable change.

- Finally, regenerative development has conceptual merits with complex system-wide barriers. However, the aspirations of the concept are ahead of its time and require a complete system shift, as per the literature review and findings from Data Collection Phases One, Two, and Three.
- Although the current New Zealand built environment public-spend decision-making concept may be new to the concept of regenerative development, the concept can potentially find alignment with decision makers when advocated from the underpinning principles of integrated design, long-term planning, multiple capitals approach to public value, and intergenerational benefit.

7.5 Next Steps – further research

The table below shows a summary of tentative further research questions/topics that have arisen from this research study. The questions have been grouped regarding modified EST system levels and three main discussion themes: funding and finance, skills and capability, and New Zealand built environment system.

Themes	System Areas			
	Central and Local Government	Industry	Community and iwi groups	Adjacent system levels
Funding and Finance	What do funding and financing of regenerative projects look like? <ul style="list-style-type: none"> • Policy/legislation such as Public Finance Act 1989 • Systems • Processes such as business cases and procurement • Tools • System-wide collaboration 	How do measurement and reporting work for regenerative projects? What does success look like for the delivery of regenerative projects?	What role do community and iwi groups play in the decision-making of regenerative projects? How is their participation paid for? When working with community and iwi groups, how is ownership of the project and place defined?	What are the consequences of funding regenerative projects to adjacent system participants such as business planning, audit, risk, legal, transport and logistics?
Skills and capability	What are the system-wide skills and capabilities required to benefit regenerative projects?	What does the training and education of skills and capabilities for regenerative projects look like? What does diverse representation mean in regenerative projects?	What changes to skills and capability of community and iwi group leadership are required to facilitate regenerative projects?	

NZ built environment system <ul style="list-style-type: none"> • Project owner/buy-in • Trust • Diverse representation 	How can funding and financing adapt for NZ built environment regenerative projects? <ul style="list-style-type: none"> • Policy/legislation such as Resource Management Act 1991 • Systems • Processes • Tools • System-wide collaboration 	What systems, processes, and tools are required by the NZ built environment system to deliver regenerative projects? <ul style="list-style-type: none"> • Business cases • Project Management • Architecture and Engineering capabilities • Costing • Materials manufacturing • Materials logistics • Labour skills and capabilities • Post-occupancy management and reporting 	What role do community and iwi groups play in the planning and delivery of regenerative projects?	
Evaluation	Objective, longitudinal evaluation across the system to: <ul style="list-style-type: none"> • Inform future steps • Identify the nature and extent of externalities • Inform evidence-based future decision-making • Inform the skills and capability growth required in present evaluators 			

Table 20 *Topics for future studies*

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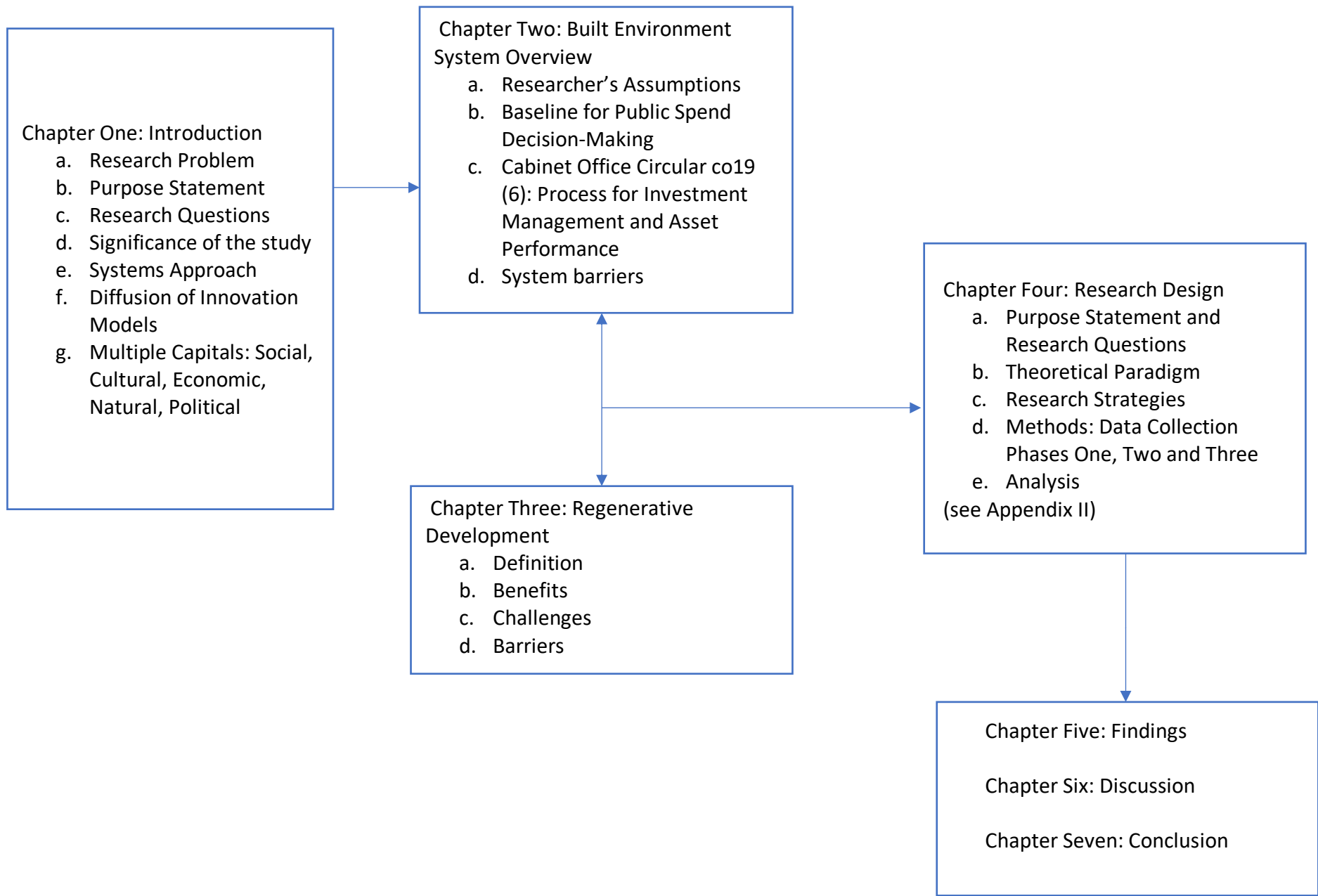
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APPENDICES

APPENDIX I: Study and Thesis Roadmap



APPENDIX II: Literature Review and Research Questions

Potential Benefits:

1. Improved and integrated decision making.
2. Improved feedback mechanisms and lines of communication.
3. Improved equity resulting in enhanced political efficacy, well-being, democratic processes, and an increased sense of ownership and belonging.
4. Improved emphasis on local traditions and place-based indigeneity.
5. Improved place-based economic benefit.
6. Improved use of resources and waste prevention.
7. Generation of positive economic, social, cultural, and natural outcomes.

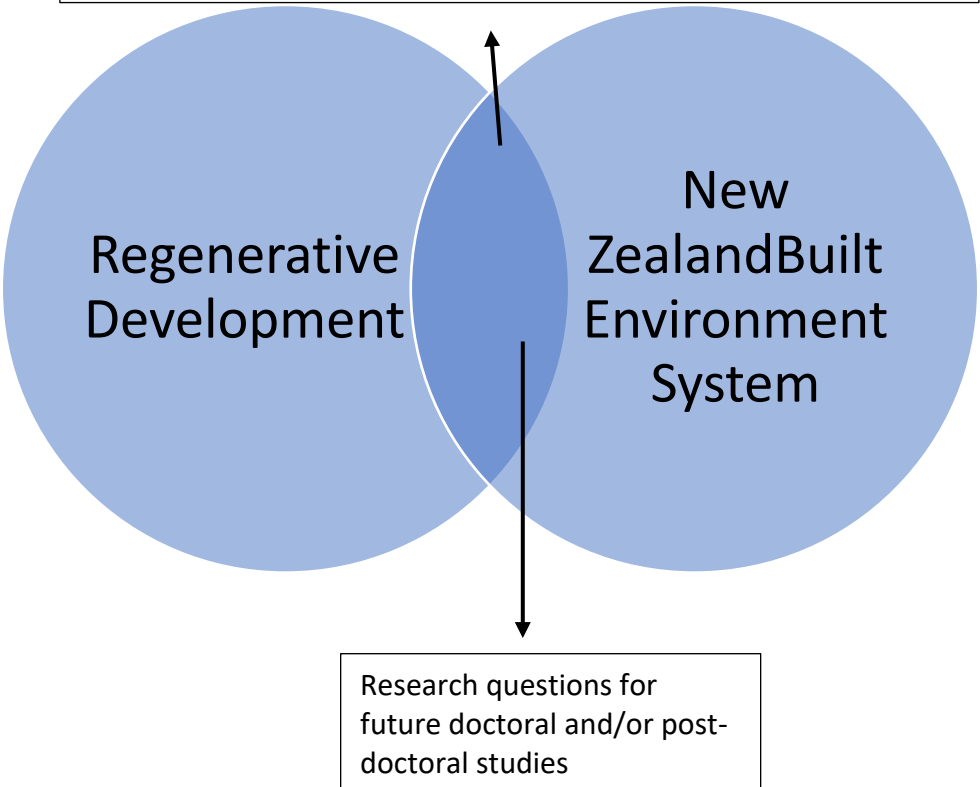
Reported Barriers:

1. 'Silo' Approach
2. Poor link between system-wide decision makers.
3. Lack of practical application of tools.
4. Lack of skills and capability to support application of tools.
5. Disproportionate focus on capital costs compared to whole-of-life costs.
6. Lack of knowledge transfer, cynical attitudes to sustainability, and fear of failure.
7. Sustainability is perceived as the 'last line item' or 'secondary set of benefits'. Often first to be dropped.

Research Question: How does public-spend development need to change to deliver regenerative projects?

Sub-questions:

1. What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?
2. What are the potential benefits of regenerative development in New Zealand?
3. What are the potential barriers to regenerative development in the New Zealand context?
4. How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?



Challenges for social, cultural, natural, and economic outcomes in New Zealand:

Strategic Planning and Governance:

1. Focus on operational issues and project output) (relatively little attention has been given to understanding project success from a strategic perspective.
2. Lack of performance measurement.
3. Lack of identification of key performance indicators from a strategic perspective: what does good look like?
4. Poor early, long-term planning in the pre-feasibility stage.

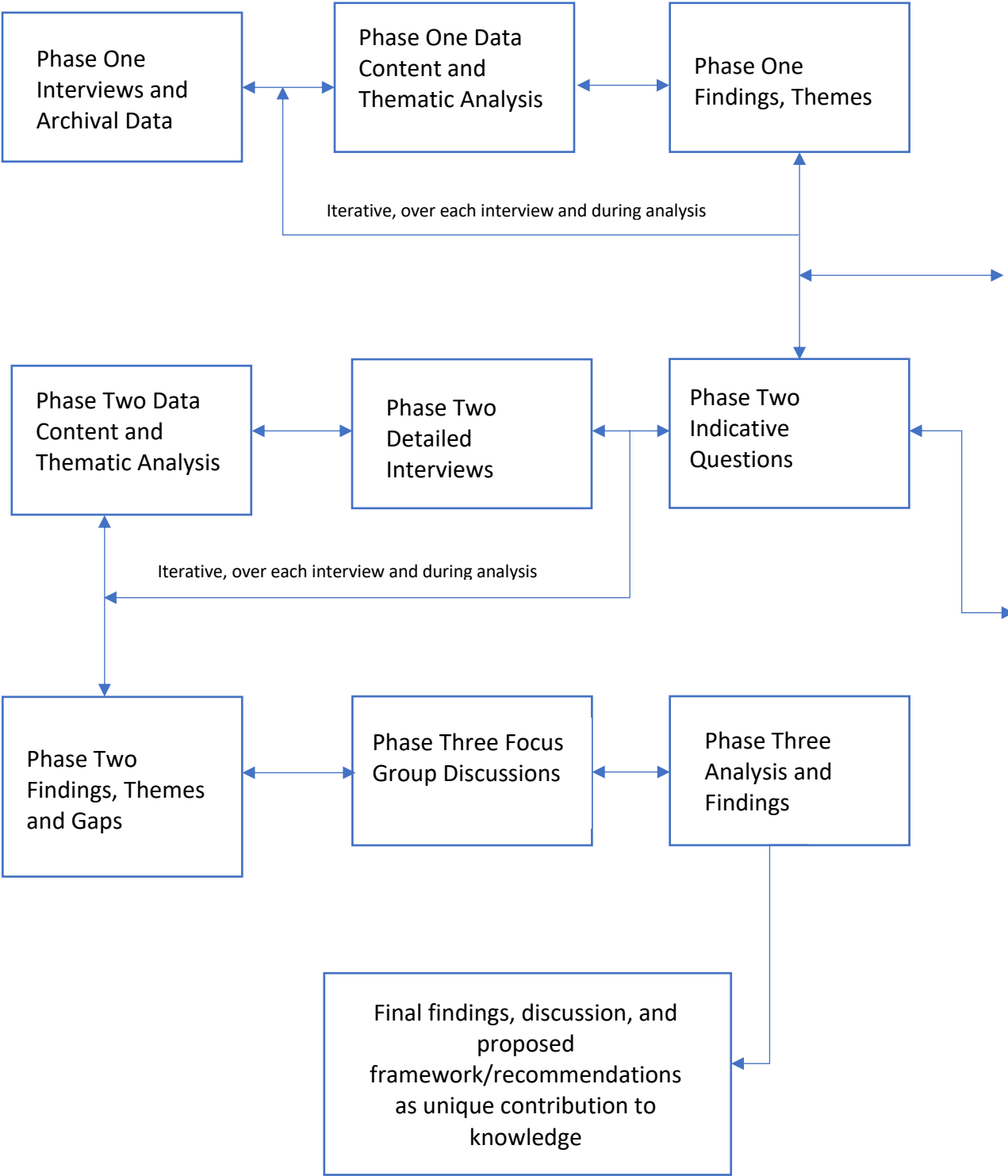
Procurement:

5. A risk-averse culture amongst procurement staff, influenced by perceptions of governmental propriety and transparency
6. Administrative compliance burdens for procurement officers and short-term contractual arrangements limit their ability to develop more collaborative supply relationships
7. Lack of ownership of strategic procurement objectives amongst senior staff
8. The narrow role and influence of procurement staff constrain their potential to build supply relations
9. High turnover of procurement staff and very little investment in training staff
10. Restrictive procurement procedures and limited coordination between government departments in strategic, value-based decision making
11. Lack of communication between public sector and suppliers focused on broader outcomes
12. Lack of clear definitions of social, cultural, natural, and economic value, and transparent processes for assessing such value
13. Low understanding of how broader outcomes can be incorporated in procurement processes and tendering activities

Project Management and Key Performance Indicators:

14. Increased scrutiny and criticism from civil society and social interest groups, public resistance and protests against construction projects, and government regulations.
15. Highly context-dependent and value-laden, different intervention points for different outcomes makes it difficult to plan, prioritise and allocate KPIs at pre-feasibility stage.
16. Fragmented research and literature on definition of social, natural, cultural, and economic outcomes and processes, both integrated and separate, required to achieve them.

APPENDIX III: Data Collection, Analysis and Findings Flowchart



Phase One Research Questions and Gaps:

Sub-questions:	Comments on gaps in analysis
Q1: What are the perceived definitions of regenerative development, as held by parties active in the shaping of the New Zealand built environment?	Lacks clarity on top-tier decisionmakers' (Ministry bodies, Treasury and Project Governance Groups) perspective on the meaning of regeneration and a complete system definition.
Q2: What are the potential benefits of regenerative development in New Zealand?	Due to the novelty of the regenerative field and time taken to plan, build and measure benefits, there are very few New Zealand examples demonstrating benefits. Benefits can mainly be stated from the archival project planning data of these projects.
Q3: What are the potential barriers for regenerative development in the New Zealand context?	Lacks clarity on and confirmation from top-tier decision makers (Ministerial bodies, Treasury and Project Governance Groups) on perceived potential barriers and ideas to address the barriers.
Q4: How may a regenerative approach for built environment development fit within the strategic pre-feasibility decision-making process of public-spend projects in New Zealand?	Lacks clarity on and confirmation from top-tier decision makers (Ministerial bodies, Treasury and Project Governance Groups) on perceived potential barriers and ideas to address the barriers. Lacks understanding of how current systems and processes can facilitate regenerative development. How can change happen: needs further work and elaboration in Phase Two .

Phase Two Research Questions and Gaps:

Sub-questions:	Comments on gaps in analysis
Q1: What does regeneration mean in the New Zealand built environment context?	Q1 answered satisfactorily to saturation. Various perceived differences in understanding of regenerative development require a Focus Group Discussion with participants to find a common understanding of the definition.
Q2: What are the potential system barriers for the adoption of regenerative development in New Zealand?	Q2 answered satisfactorily to saturation. Various perceived barriers need a Focus Group Discussion with participants to identify the urgent barriers to address.
Q3: What would be specifically needed from the public-spend built environment system for the adoption of regenerative development to deliver integrated, multiple capitals, broader outcomes change?	Q3 answered satisfactorily to saturation. Various proposed solutions need a Focus Group Discussion with participants to identify the urgent solutions to implement.

Phase Three Research Questions and Gaps:

Sub-questions:	Comments on gaps in analysis
Findings 1: Definitions: Based on the findings shared and on reflection since the Phase Two Interview with you: a) Do you feel the findings to be accurate and complete? b) Do you think anything else needs to be added or deleted? c) Do you think anything has been omitted? d) Are you surprised by anything in the findings?	This sub-question was answered satisfactorily by the participants. The participants arrived at a consensus on the preferred definition and shared their insights and discussion on it.
Findings 2: Barriers: Based on the findings shared and on reflection since the Phase Two Interview with you: a) Do you feel the findings to be accurate and complete? b) Do you think anything else needs to be added or deleted? c) Do you think anything has been omitted? d) Are you surprised by anything in the findings?	This sub-question was answered satisfactorily by the participants. The participants arrived at a consensus on the top three barriers and shared their insights and discussion on it. The participants also shared additional thoughts from reflection of Phase Two Interviews. The researcher has taken the findings of this sub-question into consideration to develop Chapter Six: Discussions.
Findings 3: Based on the findings shared and on reflection since the Phase Two Interview with you: a) Do you feel the findings to be accurate and complete? b) Do you think anything else needs to be added or deleted? c) Do you think anything has been omitted? d) Are you surprised by anything in the findings?	This sub-question was answered satisfactorily by the participants. The participants arrived at a consensus on the top three barriers and shared their insights and discussion on it. The participants also shared additional thoughts from reflection of Phase Two Interviews. The researcher has taken the findings of this sub-question into consideration to develop Chapter Six: Discussions.

APPENDIX IV: RQ3 & RQ4: Phase Two Reported Barriers and Solutions Elements From an Ecological System Approach Perspective

POLITICIANS (MACRO)	
Elements of reported barriers	Elements of reported solutions
<ol style="list-style-type: none"> 1. Ideological barriers between hyper-capitalism (extreme capitalism) and socialism (collective action and growth). 2. Lack of alignment on values, vision/mandate and link it to supply chain, procurement, KPIs, contracts and measurement - Governance, management and delivery of projects - linked to values and vision. 2. Lack of partnership and collaboration. 'Siloed' system structure and operation harming system-wide collaboration and collective effort for change. 3. Lack of clarity on how funding and financing structures enable/support the delivery of multiple capital outcomes. 4. Lack of relevant skills and capability. 5. Lack of political and project owner buy-in and support in influencing change. 6. Lack of long-term planning for key performance indicators and allocation of resources to reduce duplication of effort, time, and public-spend. 7. Lack of clarity on definitions for regenerative development, and social, cultural, natural, political, human, and economic capitals and outcomes. 8. Lack of understanding on how to measure success and evidence it by upstream decision makers. 9. Oversimplification of complex, inter-twined issues especially as they travel upstream. These are related to multiple capitals causing loss of data and compromising depth of place-based issues. Public-spend agencies can be disconnected from the needs of the people on the ground. Not everyone in politics is experienced to handle the portfolios they are assigned and often issues can be "dulled" or "dumbed" down. 10. Time gap between making investment decisions in one election cycle and seeing change/results over multiple election cycles. 11. Lack of early engagement of community groups, iwi, and mana whenua in identification of place-based issues and continued engagement through the decision-making process. 	<ol style="list-style-type: none"> 1. Demonstrate leadership driving towards values of intergenerational equity, equal opportunities, economic growth while <i>taking everyone on the journey and leaving no one behind</i>. 2. Start with values, vision/mandate and link it to supply chain, procurement, KPIs, contracts and measurement - Governance, Management and delivery of projects - linked to values and vision. 3. Partnership and collaboration are key. Open 'silos' and incentivise system-wide collaboration and collective effort for change. 4. Align funding and financing structures to support the delivery of multiple capital outcomes. This requires strong upstream ownership in decision-making, capturing the need to deliver multiples outcomes in Cabinet mandates, business cases, procurement and process to measure success. Identify barriers in funding structures and address them to support delivery of multiple capital outcomes. 5. Develop relevant skills and capability to support above. 6. Build political and project owner buy-in and support in influencing change. 7. Adopting a strategic, programme view for delivery and cost and resource allocation. 8. Clarity on definitions for regenerative development, and social, cultural, natural, political, human, and economic capitals and outcomes. 9. Develop relevant frameworks, processes, and tools to measure success. 10. Long-term planning for key performance indicators and allocation of resources to reduce duplication of effort, time, and public-spend. Identify what this looks like for intergenerational projects seeking to deliver multiple capitals outcomes. Identity pricing, trade-offs and externalities through upstream decision-making process so transfer of risk can be clearly mapped and adequate measures can be planned for accordingly. 11. A reform of Ministries or a sperate new, revised, strategic Ministry of Public Works. 12. Early engagement of community groups, iwi, and mana whenua. 13. Avoid oversimplification of complex, inter-twined issues especially as they travel upstream. For this reason, it is critical to build relevant skills and capabilities internally in public-spend agencies so the intensity and depth of place-based issues can be appropriately captured and communicated for development of appropriate solutions.
CENTRAL GOVERNMENT (MACROSYSTEM) AND LOCAL GOVERNMENT (EXOSYSTEM)	
Elements of reported barriers	Elements of reported solutions
<ol style="list-style-type: none"> 1. Lack of alignment on values, vision/mandate and link it to supply chain, procurement, KPIs, contracts and measurement - Governance, management and delivery of projects - linked to values and vision. 2. Lack of partnership, collaboration, and transparency between central and local government. 3. Lack of clarity on how funding and financing structures enable/support the delivery of multiple capital outcomes. 4. Lack of relevant skills and capability. 5. Lack of clarity in responsibility and accountability of system participants in the planning, delivery and management of projects. Who is accountable for the lack of delivery of outcomes? 6. Lack of political and project owner buy-in and support in influencing change. 7. Lack of long-term planning for key performance indicators and allocation of resources to reduce duplication of effort, time, and public-spend. 	<ol style="list-style-type: none"> 1. Start with values, vision/mandate and link it to supply chain, procurement, KPIs, contracts and measurement - Governance, Management and delivery of projects - linked to values and vision. 2. Partnership and collaboration are key. All decision-making areas such as policy, legal, management, reporting and assurance should potentially support system-wide collaboration and enable opening of 'silos'. This could potentially build trust and improve partnership and reduce duplication of effort and resources. 3. Develop long-term relationships and partnerships with the industry to address their challenges such as "boom-bust" nature of work, cash flow challenges, and contractual relationship and attitude problems encountered in projects, all resulting in erosion of trust between public spend agencies and built environment industry. Adding the expectation of delivery of broader outcomes further only creates additional complexity and perception of increased demands for low returns from the industry. There is

<p>8. Lack of clarity on definitions for regenerative development, and social, cultural, natural, political, human, and economic capitals and outcomes.</p> <p>9. Lack of understanding on how to measure success and evidence it by upstream decision makers.</p> <p>10. Increased focus of central and local government agencies in driving internal efficiencies, including reduced effort as a way to demonstrate responsible spend of tax-payer funds, instead of focusing the time, effort and other resources on external value and planning for long-term benefits and increased productivity value for all of New Zealand. This seems to suggest there is lack of clarity for public-spend agency leaders on the definition of ‘value’ and ‘productivity’. This is further exacerbated by constant media and political scrutiny.</p> <p>11. Oversimplification of complex, inter-twined issues especially as they travel upstream. These are related to multiple capitals causing loss of data and compromising depth of place-based issues. Public-spend agencies can be disconnected from the needs of the people on the ground. Not everyone in politics is experienced to handle the portfolios they are assigned and often issues can be "dulled" or "dumbed" down.</p> <p>12. Time gap between making investment decisions in one election cycle and seeing change/results over multiple election cycles.</p> <p>13. Lack of early engagement of community groups, Iwi, and Mana Whenua in identification of place-based issues and continued engagement through the decision-making process.</p> <p>14. Lack of alignment in vision, objectives and priorities between central and local government resulting in conflicting priorities for spend allocation resulting in the compromise of spend for social, natural, and cultural outcomes. Economic returns are prioritised over other capital returns. This becomes even more problematic in projects with intergenerational benefits, which need careful consideration and spend allocation for capability development, and planning, processes, and tools development.</p> <p>15. Broader outcomes for multiple capitals, apart from economic return generally are missed because they are defined as “secondary benefits” by public-spend agencies and no direct funding is allocated to broader outcomes. Further, there is a perception that evaluating projects and project teams on broader outcomes compromise the technical delivery aspects. For this reason, broader outcomes for multiple capitals are not evaluated with the same ‘earnestness’ as technical and price aspects. This could be a result of lack of knowledge and understanding on broader outcomes and what the delivery of these contribute to the place and its people.</p>	<p>a need for collaborative approach to build partnerships and subsequent trust between agencies and industry.</p> <p>4. Align funding and financing structures to support the delivery of multiple capital outcomes. This requires strong upstream ownership in decision-making, capturing the need to deliver multiple outcomes in Cabinet mandates, business cases, procurement and process to measure success. Identify barriers in funding structures and address them to support delivery of multiple capital outcomes.</p> <p>5. Interventions from upstream decision makers are necessary to drive behaviours and attitudes change to how projects are planned, funded, managed and measured. Prioritise long-term benefits over short-term gains and ‘quick wins’.</p> <p>6. Develop relevant skills and capability – what are the skillsets required in the future to identify, plan, fund, manage and measure regenerative projects?</p> <p>7. Develop clarity in responsibility and accountability of system participants in the planning, delivery and management of projects. Who is accountable for the lack of delivery of outcomes?</p> <p>8. Build political and project owner buy-in and support in influencing change.</p> <p>9. Adopting a strategic, programme view for delivery and cost and resource allocation.</p> <p>10. Clarity on definitions for regenerative development, and social, cultural, natural, political, human, and economic capitals and outcomes. Defining broader outcomes for multiple outcomes as ‘primary benefits’ instead of ‘secondary benefits’ may potentially shift the perception, attitude and behaviour of upstream decision makers towards broader outcomes.</p> <p>11. Develop relevant frameworks, processes, and tools to measure success.</p> <p>12. Long-term planning for key performance indicators and allocation of resources to reduce duplication of effort, time, and public-spend. Identify what this looks like for intergenerational projects seeking to deliver multiple capitals outcomes. Identify pricing, trade-offs and externalities through upstream decision-making process so transfer of risk can be clearly mapped and adequate measures can be planned for accordingly.</p> <p>13. If any project results in job losses due to the delivery of natural outcomes, such as reduction of carbon emissions (leading to reduced transport consumption leading to job losses of drivers, loaders, and support teams), how will this labour force be transitioned in a just manner? What will their skill redevelopment and job redeployment look like?</p> <p>14. A reform of Ministries or a separate new, revised, strategic Ministry of Public Works.</p> <p>15. Early engagement of community groups, Iwi, and Mana Whenua.</p> <p>16. Avoid oversimplification of complex, inter-twined issues especially as they travel upstream. For this reason, it is critical to build relevant skills and capabilities internally in public-spend agencies so the intensity and depth of place-based issues can be appropriately captured and communicated for development of appropriate solutions.</p> <p>17. Identify the role and increase the use of digital strategies, processes, and tools to capture place-based issues and subsequently set-up adequate measurement and reporting tools.</p> <p>18. Improved relationship and alignment of priorities between central and local government. It also requires clear messaging to support the planning and delivery of multiple capital outcomes and plan for allocation of funding of capability development, and planning, processes and tools development. Central government could improve the support to local government and align priorities, especially for long-term, intergenerational projects, example current Broader Outcomes project by Construction Sector Accord in Hawke’s Bay.</p>
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BUILT ENVIRONMENT INDUSTRY (MESOSYSTEM)	
Elements of reported barriers	Elements of reported solutions
<ol style="list-style-type: none"> 1. Lack of alignment on values, vision/mandate and link it to supply chain, procurement, KPIs, contracts and measurement - Governance, management and delivery of projects - linked to values and vision. 2. Lack of partnership, collaboration, and transparency resulting in lack of trust between public-spend agencies and industry. 3. Lack of clarity on how funding and financing structures enable/support the delivery of multiple capital outcomes. 4. Lack of relevant skills and capability. 5. Lack of clarity in responsibility and accountability of system participants in the planning, delivery and management of projects. Who is accountable for the lack of delivery of outcomes? 6. Lack of political and project owner buy-in and support in influencing change. 7. Lack of long-term planning for key performance indicators and allocation of resources to reduce duplication of effort, time, and public-spend. 8. Lack of clarity on definitions for regenerative development, and social, cultural, natural, political, human, and economic capitals and outcomes. 9. Lack of early engagement of community groups, Iwi, and Mana Whenua in identification of place-based issues and continued engagement through the decision-making process. 10. Broader outcomes for multiple capitals, apart from economic return generally are missed because they are defined as “secondary benefits” by public-spend agencies and no direct funding is allocated to broader outcomes. Further, there is a perception that evaluating projects and project teams on broader outcomes compromise the technical delivery aspects. For this reason, broader outcomes for multiple capitals are not evaluated with the same ‘earnestness’ as technical and price aspects. It could be a result of lack of knowledge and understanding on broader outcomes and what the delivery of these contribute to the place and its people. 11. Lack of clarity on impact of policy, legal, regulatory, commercial, and reporting decision on industry. There is a perception of increased bureaucracy and ‘intentional’ barriers added to create distance between delivery and governance of projects and associated decisions. 12. Lack of understanding on what policy and commercial decisions are related to logistics, people and choice of materials enable and support the delivery of broader outcomes, especially carbon reduction, low use of red-list materials, increased value for place-based communities, etc. 13. Perception of evaluation and decisions on broader outcomes could compromise commercial returns and technical aspects. Industry is still maturing its understanding and knowledge on broader outcomes. In some cases, and as evidenced by various advocacy initiatives by built environment industry, it seems that the industry has better understanding of natural outcomes when compared to social or cultural outcomes. 14. Lack of industry senior leadership commitment to strategically approach service delivery of multiple outcomes through planning, management and reporting of projects. 	<ol style="list-style-type: none"> 1. Start with values, vision/mandate and link it to supply chain, procurement, KPIs, contracts and measurement - Governance, management and delivery of projects - linked to values and vision. 2. Partnership and collaboration are key. All decision-making areas within the industry should potentially support system-wide collaboration and enable opening of ‘silos’. This could potentially build trust and improve partnership and reduce duplication of effort and resources. Actively address the silos and build strong relationships with central and local government to remove barriers such as supporting planning of long-term projects so there is visibility on pipeline of available long-term work available for the industry, addressing the “boom-bust” nature of project planning and consequential cash flow problems. 3. Develop relevant skills and capability- what are the skillsets required in the future to identify, plan, fund, manage and measure regenerative projects? 4. Develop clarity in responsibility and accountability of system participants in the planning, delivery, and management of projects. Who is accountable for the lack of delivery of outcomes? 5. Build political and project owner buy-in and support in influencing change. 6. Adopting a strategic, programme view for delivery and cost and resource allocation. 7. Seek clarity on definitions for regenerative development, and social, cultural, natural, political, human, and economic capitals and outcomes. Defining broader outcomes for multiple outcomes as ‘primary benefits’ instead of ‘secondary benefits’ may potentially shift the perception, attitude, and behaviour of upstream decision makers towards broader outcomes. 8. Seek senior leadership and shareholders’ support for broader outcomes through evidence-based frameworks and tools to drive decision-making. 9. While providing services for businesses cases and project planning for long-term, intergenerational projects, potentially ask the questions: <ol style="list-style-type: none"> a. What consents and approvals are required? b. How does the Resource Management System and social support system enable the delivery of expected outcomes? c. What are the additional cost constraints? d. What are the trade-offs and where have the risks been externalised? e. Where will we get the workforce from? 10. For projects results in job losses due to the delivery of natural outcomes, such as reduction of carbon emissions (leading to reduced transport consumption leading to job losses of drivers, loaders, and support teams), how will this labour force be transitioned in a just manner? What will their skill redevelopment and job redeployment look like? How will the project teams’ wrap around services be planned and paid for?

COMMUNITY GROUPS, IWI AND MANA WHENUA (MICROSYSTEM)	
Elements of reported barriers	Elements of reported solutions
1. Lack of visibility on rationale of central and local government decision-making. 2. Lack of collaboration and engagement with place-based communities, Iwi and Mana Whenua. 3. Lack of consultations on decisions that directly impact place-based communities. Usually, they are informed of decisions rather than being asked for what they need or want. 4. Lack of understanding and consideration of what the place means to Iwi and Mana Whenua. 5. Lack of consideration of Te Ao Maori and tikanga Maori in decision-making rationale and influencing factors. 6. If wrap around services are required from place-based communities, how are these factored in decision-making rationale and subsequent funding. Delivery, management and reporting structures? 7. Lack of understanding on what success looks like from a place-based perspective.	1. Clearly identify and incorporate in decision-making rationale and tools success factors for place-based communities, Iwi and Mana Whenua. 2. Effective, system-wide early engagement and collaboration with place-based communities, Iwi and Mana Whenua. 3. Take everyone on the journey throughout the project and seek constant engagement and consultation. 4. Appropriately plan for allocation of resources in case place-based communities, Iwi and Mana Whenua are required in the decision-making process and subsequent provision of wrap around services during delivery of projects.

APPENDIX V: Phase Two Reported Barriers

It could potentially be perceived as the participants having remarkable inter-consistency in their answers. However, these themes were identified and participants answers were sorted in these themes after Phase Two interviews, as per the researcher’s interpretation. For clarification, the researcher did not attempt to influence the responses by offering a predetermined list of barriers to the participants and asking if they agreed. The themes shown below are collapsed for presentation and discussion purposes, and associated sub-themes are shown in Section 5.1, Table 11 and Appendix IV.

L4A	L4B	L4C	L4D	L4E	L4F	L4G	L4H	L4I	L4J	L4K	L4L	L3A	L3B	L3C	L3D	L3E	L3F	L2A	L2B	L2C	L2D	L2E	L2F	L2G	L2H	L2I	L2J	L2K	L2L	L2M	L2N	L2O	L2P	L2Q	L2R	L1A	L1B	L1C
Politician	Politician	Politician	Politician	Asset Management and Planning Official	Senior Climate	Government agency	CEO, Public-spend agency	Ministry, Building for	Regulatory - Senior Leader Health and	Regulatory and Research	CEO, Public-spend agency	Councillor	Councillor	Councillor	Project Manager, Private-Public	Senior Leader, Local	Local Government	Asset and Facilities Manager	Industry body representative and lobby	Industry body representative and sub-	Industry body representative, ex-public	Union Body Rep and	Industry body representative	Property Industry body	CEO Health and Safety	Project Manager for	Green Building	Green Building	Engineering Industry	Leading Property	Probity	Researcher, built	Industry Body Representative and Researcher	Procurement researcher	Researcher	Social enterprise	Social enterprise	Mana whenua

REPORTED BARRIERS	COUNT	L4A	L4B	L4C	L4D	L4E	L4F	L4G	L4H	L4I	L4J	L4K	L4L	L3A	L3B	L3C	L3D	L3E	L3F	L2A	L2B	L2C	L2D	L2E	L2F	L2G	L2H	L2I	L2J	L2K	L2L	L2M	L2N	L2O	L2P	L2Q	L2R	L1A	L1B	L1C
Varying Definitions	19																																							
Varying Worldviews: Bi-cultural nature of NZ	37																																							
Lack of Trust	38																																							
Legislative and Regulatory Barriers	38																																							
Skills and Competency	38																																							
Lack of Place-Based and Value-Centred Strategic Decision-making	39																																							
Functioning In 'Silos'	38																																							
Funding and Financing Structures	25																																							

APPENDIX VI: Phase Two Proposed Solutions

L4A	Politician	L4B	Politician	L4C	Politician	L4D	Politician	L4E	Asset Management and Planning Official	L4F	Senior Climate	L4G	Government agency	L4H	CEO, Public-spend agency	L4I	Ministry, Building for	L4J	Regulatory - Senior Leader Health and	L4K	Regulatory and Research	L4L	CEO, Public-spend agency	L3A	Councillor	L3B	Councillor	L3C	Councillor	L3D	Project Manager, Private-Public	L3E	Senior Leader, Local	L3F	Local Government	L2A	Asset and Facilities Manager	L2B	Industry body representative and lobby	L2C	Industry body representative and sub-	L2D	Industry body representative, ex-public	L2E	Union Body Rep and	L2F	Industry body representative	L2G	Property Industry body	L2H	CEO Health and Safety	L2I	Project Manager for	L2J	Green Building	L2K	Green Building	L2L	Engineering Industry	L2M	Leading Property	L2N	Probity	L2O	Researcher, built	L2P	Industry Body Representative and	L2Q	Procurement researcher	L2R	Researcher, built environment	L1A	Social enterprise,	L1B	Social enterprise,	L1C	Manufacturing
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Reported solutions	Count	L4A	L4B	L4C	L4D	L4E	L4F	L4G	L4H	L4I	L4J	L4K	L4L	L3A	L3B	L3C	L3D	L3E	L3F	L2A	L2B	L2C	L2D	L2E	L2F	L2G	L2H	L2I	L2J	L2K	L2L	L2M	L2N	L2O	L2P	L2Q	L2R	L1A	L1B	L1C
Clarity on Definitions	39																																							
Effective Partnerships via Trust	39																																							
Strategic Decision-making aligned to Values-based Outcomes	38																																							
Systems-Based Thinking, Practice and Solutions	38																																							
Context, process and timeframes	38																																							
Skills and Competency	38																																							
A Reform of Ministries or Strategic Ministry of Works	8																																							
Political Will / Owner Buy-In	37																																							
Just Transition	10																																							

Auckland University of Technology Ethics Committee (AUTEC)

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6 December 2019

Dave Moore
Faculty of Design and Creative Technologies

Dear Dave

Re Ethics Application: **19/451 To improve strategic decision making necessary for the effective design and governance of regenerative design and development projects**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 5 December 2022.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted. When the research is undertaken outside New Zealand, you need to meet all ethical, legal, and locality obligations or requirements for those jurisdictions.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

Yours sincerely,



Kate O'Connor
Executive Manager
Auckland University of Technology Ethics Committee

Cc: jas.abdul@aut.ac.nz

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20 May 2020

Ali GhaffarianHoseini
Faculty of Design and Creative Technologies

Dear Ali

Re: Ethics Application: **19/451 To improve strategic decision making necessary for the effective design and governance of regenerative design and development projects**

The application for Phase Two of the study(semi structured interviews) is approved.

The change of supervisor is noted.

I remind you of the **Standard Conditions of Approval**.

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
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Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

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26 November 2020

Ali GhaffarianHoseini
Faculty of Design and Creative Technologies

Dear Ali

Re Ethics Application: **19/451 To improve strategic decision making necessary for the effective design and governance of regenerative design and development projects**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application (Focus Group Phase) has been approved for three years until 5 December 2022.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: jas.abdul@aut.ac.nz; Dave Moore