Intergenerational Healing
Redefining the Healthcare Environment

Explanatory Document
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ABSTRACT

Hospitals are known as places of healing, and they hold a symbolic meaning of health; however, they do not always evoke the idea of well-being. The difference between being healthy and being happy is an issue that hospitals are struggling to define and address. Social interaction and the integration of the natural environment within a healthcare context are two key factors, which are often overlooked, that need to be addressed. These factors, when correctly implemented, have the potential to play a vital role in creating places of healing. There is substantial research to show that social interaction and maintaining a connection with the natural environment aids the healing process.

More importantly, there are concerns surrounding New Zealand’s ageing population and the tradition of segregating children and the elderly. Widening the gap between generations can often lead to social prejudices and stereotyping between age groups. The elderly can become disconnected from society after retirement, often experiencing feelings of loneliness and social isolation. This project aims to explore how the architectural design of a healthcare centre can be integrated with an intergenerational programme. To achieve this, the project proposes to introduce an intergenerational healthcare centre. The primary focus of which being the integration of social spaces, inviting staff, visitors and patients to engage and interact with one another. The centre amalgamates aged care and childcare within one facility in an attempt to break down the barriers between generations, and counter the development of prejudice and social isolation in the elderly.

With leading technologies in today’s societies and the knowledge of how to utilize passive design, it now becomes the role of the architect to address the social issues that have emerged within healthcare centres, and to integrate the natural environment within the design. Interactive bump spaces are at the core of the design, connecting the different programmes along the central circulation ‘social street’. The objective is to positively impact the well-being of the inhabitants, creating an environment that fosters physical and psychological well-being, while cultivating a platform for learning. The presence of the natural environment is important, and the integration of therapeutic landscapes has been used as a tool to enhance the inhabitants’ health. In particular, the incorporation of biophilic design principles has enabled the project to connect with nature, integrating both architecture and landscape.
KEY TERMS
All definitions taken from the Oxford dictionary of English and reworded by the author.

Biophilia – human beings’ innate affinity and relationships with the natural environment.

Biophilic Design – enables the built environment to articulate the relationship between health and nature, providing positive benefits to well-being.

Bump Space – the places where ‘accidental encounters’ occur, enabling social interaction.

Healing – not only physical but social healing, breaking down the barriers between generations, aiding the combat against prejudice and social isolation in the elderly.

Healthcare – the allocation of medical care to an individual and communities.

Intergenerational – the engagement between generations that empowers shared influence.

Loneliness – an emotional response to isolation, experiencing a permanent or temporary loss of contact with other humans.

Positive Distraction – allows an individual to shift focus from negative to positive, helping to mitigate stress.

Salutogenic – focuses on factors that support health and wellbeing, concerned with the relationship between health, stress and coping.

Social Isolation – a lack of contact between an individual and society.

Spatial Daisy Chain – spaces that link to one another in a logical sequence allowing ease of navigation.

Therapeutic Environments – a space causing someone to feel happier and more relaxed, in turn improving his or her health.

Wayfinding – design elements that guide people through a physical environment and that improve the spatial experience, allowing people to orientate themselves within their surroundings.

Well-being – the state of being comfortable, healthy, or happy.
TABLE OF CONTENTS

ACKNOWLEDGEMENTS 3

ABSTRACT 5

KEY TERMS 7

1.0 INTRODUCTION 11

1.1 BACKGROUND OF THE PROJECT 12

1.2 PROJECT OUTLINE 13

1.3 AIMS & OBJECTIVES 14

1.4 RESEARCH QUESTION 15

1.5 SCOPE & LIMITATIONS 16

1.6 STATE OF KNOWLEDGE 18

1.7 METHODS 19

2.0 LITERATURE STUDY 21

2.1 HISTORY OF HEALING SPACES 24

2.2 INTERGENERATIONAL INTERACTION 35

2.3 SOCIAL INTERACTION 41

2.3.1 Design for Play 43

2.3.2 Bump Space 44

2.3.3 THERAPEUTIC ENVIRONMENTS 48

2.4 Biophilic Design: Human-Nature Connection 49

2.4.1 Impacts of Biophilic Design 54

2.4.2 Positive Detraction 58

2.4.3 Wayfinding 60

2.4.4 Daylighting 61

2.5 TRANSFORMATIVE APPROACH 63

2.5.1 The Elderly 64

2.5.2 Children 66

2.5.3 Combining The Elderly and Children 68

3.0 PRECEDENT STUDY 71

3.1 SOCIAL 74

3.1.1 Nieuwmarkt Playground 76

3.1.2 Centre for Seniors in Sheffield 78

3.2 NATURE 82

3.2.1 Rehab Basel 84

3.2.2 Burwood hospital 86

3.4 PRECEDENT DESIGN INDEX 88

4.0 SITE 93

4.1 WAIWARA DISTRICT HEALTH BOARD 94

4.2 SITE SELECTION 96

4.3 SITE ANALYSIS 100

5.0 DESIGN 109

5.1 DESIGN STRATEGIES 112

5.2 DESIGN ITERATIONS 118

5.3 DEVELOPED DESIGN 128

5.3.1 Bump Space 130

5.3.2 Programme 136

6.0 CONCLUSION 151

7.0 BIBLIOGRAPHY 155

8.0 LIST OF FIGURES 163

9.0 APPENDIX 175

9.1 FINAL PRESENTATION 177
1.1 BACKGROUND OF THE PROJECT

“Since we are living much longer than in the past and spending more time in hospitals, either as patients or carers, the building type will morph into something more complex, as it is beginning to do.”

The issues this research project aims to address includes New Zealand’s ageing population, social isolation and loneliness within the elderly, intergenerational prejudices and stereotyping, and people’s lack of engagement and connection with the natural environment. By combining the idea of well-being with the field of architectural history and theory, the result is the concept of architectural healing. Architectural healing is the notion that, when purposefully considered, architecturally designed spaces hold properties that may assist the healing process. Through the investigation of the effects of social, environmental, and health architecture, it became apparent that an intergenerational healing centre would be an appropriate topic to research, and address the issues highlighted.

Dr Hamish Jamieson from the University of Otago identified that nearly one in five elderly people experience some form of social isolation.

Research gathered by McMaster University supports this stating, “Social isolation and loneliness are common and much higher in elderly people, after never-living elderly people can often feel disconnected.”

New Zealand’s ageing population is increasing, and as such, there is presently an increased need for aged care. The project offers an alternate approach to the care of young and old, instead, combining the two together. It reinforced intergenerational relations and focuses on the interaction between different generations. Many studies have found positive correlations in the well-being of individuals who engage in intergenerational interaction, with these positive correlations occurring often within both parties.

1.2 PROJECT OUTLINE

The centre primarily focuses on social spaces, inviting the staff, visitors, and patients to engage and interact with one another. By converging aged care and childcare, the centre aims to encourage physical, psychological, and social healing. It attempts to break down intergenerational barriers and combat prejudice and social isolation in the elderly. Interactive ‘bump’ spaces are at the heart of the design connecting the different programmes along the central circulation known as the ‘social street.’

The objective is to have a positive impact on the well-being of the inhabitants, creating an environment that promotes physical and psychological well-being, as well as a platform for learning. The inclusion of the natural environment is crucial, and the integration of therapeutic landscapes was used as a tool to enhance the inhabitants’ health.


1.3 AIMS & OBJECTIVES

The overarching aim for this research project is to investigate the relationship between intergenerational interaction and the well-being of patients. Additionally, it aims to design a healthcare centre that uses social spaces and the natural environment as healing tools for both the young and elderly.

The objective is to create a care environment that arouses the interaction and engagement of different generations. The project should utilise architectural design elements that improve the well-being of the inhabitants, create a platform for learning, and have a relationship between the indoors and outdoors.

1.4 RESEARCH QUESTION

How can the architecture of an intergenerational healthcare centre encourage healing through social engagement of its inhabitants and the integration of the natural environment?
1.5 SCOPE & LIMITATIONS

The project primarily concentrates on the social interactions of the inhabitants, that being the patients, staff and visitors. The inclusion of the natural environment has also been considered in an attempt to aid the healing of the inhabitants. The project looks into the physical conditions of a space and how they impact the inhabitants. The treatment of natural daylighting and the connection to the natural environment have become critical aspects that drive the project’s design.

The cultural issues revolving around the site are addressed and integrated into the design where appropriate; however, they do not exceed social and environmental issues regarding significance. Economic and political issues are less critical to the project as they do not concern the well-being of the patients and staff directly. However, the project still touches on elements of economics and politics to ensure a successful overall design.

The information gathered in both the literature and the precedent studies was applied to the design, allowing the architecture to take shape around reoccurring needs and necessities. Existing healthcare laws and regulations for both children and the elderly impacted the design, including expected requirements for accessibility, privacy, sizes, and staffing.

The programme is shaped by combining the old and young, who are traditionally socially segregated, thus offering an alternative to, and redefining, the typical healthcare centre. The site has had a significant influence on the project, with the design responding to both the immediate context and the local community.

The diagrams (Figure 1.) map out the scope of influencing topics. The maps illustrate the importance and weighting of each component. It highlights the change in direction with the focus shifting from health-driven to a social-oriented project. The final depiction illustrates the project and where it currently sits, reflecting the new and updated components based on the research.

![Figure 1. Diagrams of influencing topics](image-url)
The literature is oriented around three fundamental categories, health, social interaction, and nature. The research explores the history of healing spaces, including key concepts and design principles. Edward Steinfeld and Jordana Maisel state, “A Pattern Language: Towns, Buildings, Construction” (New York: Oxford University Press, 1977), x.

1.6 STATE OF KNOWLEDGE

The late Stephen Kellert, author and professor of social ecology, and environmental psychologist Roger Ulrich provide sufficient research into biophilic design. They address the relationship between people and the natural environment, and how this can be expressed through architecture and built environments. They, as well as others, discuss the origins of health architecture and what is at its core, including key concepts and design principles. Edward Steinfeld and Jordana Maisel state, “Health and wellness are the foundations to positive living. With good health comes the ability to engage in the community, to interact with family and friends, and to fulfill one’s own potential.” At the focal point of health architecture are people, and both Gehl and Holland highlight the use of bump spaces as an instrument to connect people and communities. Intergenerational relationships are of the utmost importance to the project. The literature identifies the benefits of and formulates architectural strategies to encourage intergenerational interaction.

The precedent study categorises each example under social, nature, or health, in order to help define the approach to the design. The research investigated the concept of intergenerational interaction. It analysed case studies, identifying the methodology used to measure the participants’ health and well-being. The focus of this research was to establish a best practice to equip the healthcare centre with beneficial social spaces. This provided a platform for learning and heating for the patients, staff, and visitors.

1.7 METHODS

Constant evaluation throughout the process of research and design has been imperative to this project as it aims to define the programme. The synthesis between each of the areas below was crucial, allowing them to overlap and influence one another, and more importantly, allowing the design to address all the ideas and issues identified in the research.

Research through Literature

The research investigated the concept of intergenerational interaction and the benefits of therapeutic environments, and the ability to improve people’s well-being. The research project draws on literature and case studies to understand the characteristics that encourages social engagement as well as physical and psychological healing. The aim was to understand the characteristics of health and environmental architecture, and social spaces in order for them to be applied to the final design. Importantly local New Zealand building examples were used to better understand the local, conceptual, and cultural influences.

Research through Precedents

A series of different buildings and programmes were analysed to obtain an understanding of what is needed to create an environment that encourages social engagement as well as physical and psychological healing. The aim was to understand the characteristics of health and environmental architecture, and social spaces in order for them to be applied to the final design. Importantly local New Zealand building examples were used to better understand the local, conceptual, and cultural influences.

Research through Site

The site itself needed to be thoroughly analysed in order to understand and take into account the surrounding influences. The site also played an essential role in formulating how the final design relates to the immediate context.

Research through Design

The information gathered from the literature and precedents has been applied to design through experimentation. The systematic approach to the analysis of people in social and healthcare contexts and strategies that were key to the project. A series of iterations that responded to the identified criteria allowed the design to take shape, addressing the issue raised.
The literature study investigates three fundamental categories that have influenced this project, that being, health, social interaction, and nature. The investigation highlights the key principles that have informed the final design outcome. It examines the development of health architecture throughout history and discusses the importance of learning from the past. Intergenerational interaction is essential to the project, and the literature identifies the positive attributes it has to both participating sides. Biophilic design is a tool that can be used by designers to integrate nature into the built environment successfully. The literature also outlines the positive effects of biophilic design on the health and well-being of people. Finally, the investigation explores the concept of redefining the healthcare centre by combining the elderly with children and having shared spaces for both to interact and engage with one another.
2.1 HISTORY OF HEALING SPACES

A relationship between architecture and health has been observed from as early as the Neolithic period. Research suggests that the Stonehenge in Salisbury Plains, England, is thought to have been used for ritualistic healing. Over the centuries the approach to the architecture of health has transformed from sacred or religious, to scientific logic. What were once megalithic and monumental structures, have evolved over the years, eventually arriving in the modern era to the clean and sterile environments we know today as hospitals or healthcare centres. American medical historian Guenter Risse, in Mending Bodies, Saving Souls: A History of Hospitals illustrates an extensive history of the hospital, underlining the influential building types that shaped these structures.17


English author and architect, Edwin Heathcote also outlines major events and changes in the history of medical architecture in “Architecture and Health.”8


Places of healing concerning architecture can be described as buildings that are devoted to cater to the needs, values, and desires of humans. When translated into the context of a hospital, the layout is essential, focusing on the relationship between environmental, social, and cultural issues. In Healing by Design, Professor of Epidemiology, Robert Horsburgh discusses the four main elements of a hospital, orientation, connection, scale, and symbolic meaning. Horsburgh argues that architecturally, a hospital requires a balance of function and considered design in order to be successful.9


In Humanist, Principles, Sustainable Design and Salutogenics: A New Form of Healthcare Architecture, Australian architect Corbett Lyon suggests that hospitals must both cater to functional needs alongside the well-being of the patients.10


Origins

There is evidence of healing spaces dating back to the period we know as prehistory. Stonehenge was believed to be used as a secular tool for calculating dates. However, recent discoveries by two leading archaeologists, both world-renowned experts on Stonehenge, Professor Timothy Darvill and Professor Geoff Wainwright suggest a secondary purpose.11 They argue that it was also used as a place of healing which people travelled to from across the British Isles to receive treatment. Darvill says “This was a place of pilgrimage for people... coming to get healed.”12 Part of the evidence for this theory is found in bodies excavated from the site, which showed signs of skeletal trauma. They argue that these individuals, along with the sick and injured, travelled to the site with the intent of receiving treatment. These traditionally nomadic people may have found value in a specific location they regarded as a place of healing.


12 Wilson, “The Healing Stones.”

Ancient

The ancient world has historically had strong connections between architecture and health, which is evident in the civilisations of the ancient Greeks and Romans. The ancient Greeks took a holistic approach to healing. They were not only concerned with the physical, but also the psychological and social attributes of health. This is evident in the Greek Asclepion, a healing temple located at Epidauros. Edwin Heathcote identifies that, “temples dedicated to the god of healing, Asclepius, son of Apollo, housed priest-physicians and developed into something between a sanatorium and a hospital.” Heathcote’s comparison of the Greek Asclepion to a sanatorium is supported by Guenter Risse. Base describes the Asclepion as often having scenic views of the surrounding landscape and being a place often used for social gatherings. In addition to the temple, another important part of the Epidauros was the theatre. According to Risse the Greeks believed that to maintain good health, people required entertainment in order to purge one’s emotions. They also understood that sleep was a necessary part of the healing process, and had an activity called ‘temple sleep’. Patients would sleep in the temple and receive dreams from the gods, allowing them to heal.13


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With the fall of ancient Greece came the rise of the Romans, who adopted many Hellenic customs and beliefs. Risse identifies that many of the healing spaces built by the Romans were constructed for military purposes, such as the Roman Valetudinaria.\(^{15}\) Heathcote supports this, stating that "Archaeologists have found military hospitals, starting out as field hospitals, subsequently transformed into permanent structures that bear distinct similarities to modern buildings: corridor plans, multiple wards, each ventilated, naturally lit and separated from one another to impair cross-infection."\(^{16}\) Dr. Warren Kump identifies that the Roman Valetudinaria was used for the treatment of slaves, gladiators and soldiers. It consisted of rooms on either side of the quadrangular circulation, with a large central courtyard. The courtyard allowed natural daylighting into the inward facing patient rooms and also allowed for natural ventilation.\(^{17}\) The success of this design saw it replicated across the Roman empire and aspects of its design would go on to influence hospital architecture for centuries to come.

Health architecture was not only limited to the west. There are many examples across the globe from Western to Eastern Asia. Heathcote mentions that "The remains at Mihintale in Sri Lanka dating from the fourth century BC are claimed as perhaps the first hospital in the world, a claim Chinese historians contest, while the Persian Academy of Gundishapur, built around the middle of the sixth century AD, included a large training hospital, which attracted physicians and students from around the world."\(^{18}\) This highlights the historical importance and impact of health architecture on a global scale, and how the combination of knowledge and effective architectural design created world-renowned places of healing.

**Medieval**

The middle ages saw the rise of monasteries in Europe, as the church came into power. With the Crusades came destruction and plagues and an increase in sick and injured. Hospitals became the centres of the medieval city. Heathcote states, "The big monastic hospitals were housed in lofty halls, a chapel at one end, patients arranged in beds along the side walls."\(^{19}\) Although they served as places of healing, they held religion at the centre. They welcomed the sick, elderly, infirm and those who were outcast from society, and were typically part of a large monastic complex. Nikolaus Pevsner reiterates Heathcote's description with his depiction of the Hotel-Dieu or Hospices de Beaune being a historically important healing centre of Paris.\(^{20}\) A notable feature being the hospital's courtyards, allowing the inhabitants to have a connection with the outdoors.

During the Medieval period European hospitals began to undergo an important transformation. Heathcote describes how "The hospital slowly divorced itself from the church and passed into administration of the city, a process radically accelerated by the Reformation."\(^{21}\) Pevsner identifies Ospedale di Santo Spirito, remaining to this day, as one such hospital in Rome to undergo this change.\(^{22}\) Its design and layout shifted away from the monastic model and inspired many hospitals across Europe to follow suit.
During the Renaissance period cities had grown in population and size. Richard Miller & Earl Swensson explain how there was an increase in the population requiring treatment due to plagues and outbreaks of famine. Hospitals, therefore, became larger in order to accommodate the increasing population. During the Renaissance period cities had grown in population and size. It was used as an orphanage, and the design had an emphasis on symmetry. According to Heathcote, “The building laid the foundations for a new type of hospital, which looked more to the future and as improved ventilation for the patient's rooms. The Renaissance hospitals saw the integration of the cruciform plan, dividing the hospital into wards, with the arms of the cross becoming separate wings.”23

Enlightenment

The period of Enlightenment is often referred to as the 'Age of Reason'. Scientists and bright minds of the time questioned the traditional authorities of the church and instead turned to science for answers. At the beginning of the period Miller & Swensson describe the hospital as a place which, while secular “retained the look of essentially religious structures indicating the institutions former affiliation with the Church.” However during the Enlightenment this secular change in thinking in turn had an effect on health and health architecture. Heathcote suggests that during this period the hospital, along with the prison and the asylum, from which it was often barely, or poorly differentiated, emerged as effectively the building of a new era. Its role as an instrument of social control, of egalitarian intent and as a haven for rational, scientific thought made it the perfect laboratory for Enlightenment ideals.24 This highlights how the pursuit of scientific discovery turned hospitals into places of research and experimentation. The idea of rational thinking was embraced in hopes of advancing humanity and improving the way in which people live, arguably at the expense of the patient.

Public perception of the hospital shifted dramatically amongst the societies of Europe during the Enlightenment period. Heathcote reinforces the perceptual state amongst the populace as “The hospital, like the prison, has become a civic structure and a church (the chapel remained an essential feature). Hygienic and comfortable. But perhaps not too comfortable.”30 As public perception shifted, the hospital began to rapidly incorporate advancements in technology and hygiene. Hospitals were beginning to take on some of the familiar aspects of the modern building. Somewhere between a hotel, a civic structure and a church, the hospital began to emphasize its role as an instrument of social control, of egalitarian intent and as a haven for rational, scientific thought. Heathcote suggests that during this period “the hospital, along with the prison and the asylum, from which it was often barely, or poorly differentiated, emerged as effectively the building of a new era.”23

One of the most influential buildings of the time, which went on to reshape the hospital model, was the rebuilt Hôtel-Dieu de Paris. Pevsner identified that in 1772 the original medieval style hospital was burnt down. Miller & Swensson describe a revolutionary design, known as the pavilion plan. The separate building pavilions of the complex could be naturally ventilated. This was due to the smaller sizes of its various rooms, and network of pavilions with outdoor space in between. The covered but open spine that connected the pavilions acted as the main circulation of the complex allowing patients fresh air. Patients suffering from different diseases could be apart from one another in separate wings, preventing cross-infection. This may have helped create a more comfortable environment for patients, combating public opinion of hospitals.

As public perception shifted, the hospital began to rapidly incorporate advancements in technology and hygiene. Hospitals began to emphasize their role as an instrument of social control, of egalitarian intent and as a haven for rational, scientific thought, making it the perfect laboratory for Enlightenment ideals. At the end of the nineteenth century the hospital was ceasing to be identified with fear and death and instead beginning to take on some of the familiar aspects of the modern building. Somewhere between a hotel, a civic structure and a church, the hospital began to emphasize its role as an instrument of social control, of egalitarian intent and as a haven for rational, scientific thought. Heathcote suggests that during this period “the hospital, along with the prison and the asylum, from which it was often barely, or poorly differentiated, emerged as effectively the building of a new era.”27 Public perception of the hospital shifted dramatically amongst the societies of Europe during the Enlightenment period. The building laid the foundations for a new type of hospital, which looked more to the future and as improved ventilation for the patient's rooms. The Renaissance hospitals saw the integration of the cruciform plan, dividing the hospital into wards, with the arms of the cross becoming separate wings.
The early twentieth century saw a new obsession for hygiene. The hospital was characterised by whiteness, transparency, and stripped-back detailing. Cor Wagenaar explains that the hospital became compartmentalised and more specialised with advancements in technology and research. The invention of heating, ventilation and air-conditioning systems (HVAC) along with artificial fluorescent lighting saw the relinquishment of the once preferred pavilion plan. The hospital became a gleaming beacon of health, representing social responsibility of well-being.

The destruction caused by the First World War influenced the re-emergence of the sanatorium. Heathcote states, “Its ethos of fresh air and sunlight provided the antidote to the mud and blood of the trenches.” This highlights the importance of maintaining a connection with nature within a place of healing and pays homage to the ideals within the design of the Greek Asclepion.

After the Second World War efficiency and technology were at the heart of the hospital. The hospital became a medical machine and a monument to hygiene, reflecting the ideas of society. The typology of the ‘superblock’ in urban design became a preferred model for modern hospitals. Wagenaar suggests that their sheer mass allowed them to operate almost entirely independently from the city. Heathcote discusses the culmination of the modernist hospital and introduces the development of the healthcare model. He states, “The grand finale of the era of the great super hospital, the 1980s also saw the emergence of new ideas of evidence-based design.” This illustrates the shift in thinking, with the patient being reintroduced as the focus, instead of the medical machine.

While the hospital or healthcare model remains a medical machine, there is, however, no longer an emphasis on the treatment of sickness. Wagenaar suggests that instead, the focus is on maintaining health and well-being. Similarly, Heathcote explains, “The future, it seems, is almost certainly in smaller, more nimble institutions. Big hospitals are closing beds as they attempt to turn patients around as rapidly as possible. Instead smaller, specialist units seem likely to take the place of larger outfits and, arguably, these will be more amenable to good design than their forebears.” The patient plays an integral part in shaping the design of health architecture and as Heathcote explained, this may result in an increase in specialist units designed to cater to the specific needs of their patients. Salutogenesis and biophilic design have encouraged healthcare design to focus on the positive effects of nature on the well-being of patients. There is no denying that there is still a great deal of room for improvement; however health architecture is again beginning to express more than function and efficiency.

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Conclusion
This investigation emphasises the creation of a comfortable and pleasant environment, in contrast to many twentieth-century models which have a focus on efficiency and cleanliness. The project takes inspiration from the history and origins of healing spaces, alongside the principles and ideology of the contemporary twenty-first-century healthcare model. The intergenerational healing centre adopts elements such as the holistic approach initially used by the ancient Greeks, combining healing, nature, social gathering, entertainment and play. It considers the value of the pavilion plan and the inclusion of courtyards and cloisters, providing a connection with nature, ventilation and social spaces. The investigation also aims to learn from the mistakes of the past such as the isolation of patients in prison-like configurations of the superblock which detaches patients from nature. The design places people at the centre, encouraging social interaction, thus fostering a positive influence on health and well-being. Treatment of sickness is not the focus; instead, the architecture creates a therapeutic environment that promotes well-being.
Many studies have been conducted illustrating that prejudice and negative stereotypes between the young and the elderly are contracted when interaction transpires. Effects of Intergenerational Interaction on Aging, a report by psychology professors Carmen Requena Hernandez and Marta Zubiaur Gonzalez, offers research that supports this theory. When analysing the behaviours and psychology of elderly participants interacting with the youth “The results show that the elderly people who interacted improved in well-being.”40 Their findings showed that aged based stereotypes could be easily reduced with increased exposure and interaction with people of different ages. They suggest that a majority of negative, age-related stereotypes were often a result of a lack of understanding and familiarity with different generations.

Intergenerational programmes, often consisting of the integration of students into elderly care facilities or retirement villages, have been implemented worldwide in many cities around the world. They attempt to break social stereotypes, as well as offer an educational platform from which multiple generations can learn from one another. In Memories, a bridge towards intergenerational learning, researcher at Romanian Institute for Adult Education of Timisoara, Adriana Osoian, emphasises the positive results of intergenerational activities. The project brings to the forefront a new approach on how to make both adults and young adults aware of the importance of the past for understanding the present.41 The programmes attempt to engage different age groups through the provision of activities in which social interaction is encouraged, and in turn, social isolation may be reduced. These activities also helped to develop an understanding of cultural and societal differences between generations, diving in the participant’s perspective.

### 2.2 INTERGENERATIONAL INTERACTION

Intergenerational interaction is a concept at the heart of this research project, encompassing social and mental health benefits. The term intergenerational is used to describe the engagement between generations that improves generational understanding, promotes an increase in interaction, allows shared influence, and encourages positive change. The term ‘Intergenerational’ implies the involvement of members of two or more generations in activities that potentially can make them aware of different (generational) perspectives. It implies increasing interaction, cooperation to achieve common goals, a mutual influence and the possibility of change (hopefully a change that entails improvement).39


The effect of intergenerational programmes on the mental health of elderly adults is a study that was conducted to investigate the health benefits on elderly adults from intergenerational interaction. It concluded that the programme had a positive effect on the mental health of the elderly individuals who participated, decreasing the risk of social isolation and loneliness.42 Similarly, Intergenerational Interaction in Health Promotion, a qualitative study completed in Brazil utilized intergenerational engagement to promote well-being in not only the elderly but also the adolescent. It aimed to break down the "stereotypes and prejudice between generations," and concluded that there was an improvement in the participants’ wellbeing and "mutual trust and reciprocity was formed."43 However, it has proven to be difficult to quantify the research, as a lot of the information comes from observation. Hernandez and Gonzalez suggest however that their observations concluded that the elderly benefit the most from intergenerational interaction, "One of the reasons for this type of contact having such a positive influence is that the elderly feel useful."44 There is still much more to be learned and researched regarding intergenerational interaction, but so far there has been a lot of positive results. The research reinforces the observed positive influences, with evidence from professionals within social and behavioural science.

Hospitals and healthcare centres are buildings which should be designed around people, having their focus placed on the different types of social interaction. Consultant and writer in health, Sita Ananth argues that in order to create a building to serve as a place of healing, one must focus on the social and cultural factors at play, that is the architect must listen to the needs of the people. She quotes, "whether it is fostering healing relationships or healing culture – one cannot succeed without the other."45 In Healing Places, American author Wilbert Gesler explains, "There is a tendency to think that current health problems can only be solved by employing current thinking. This attitude fails to recognise the influence of the past on what people’s thinking is now."46 Similarly, in Healing by Design, Robert Horsburgh also discusses the importance of learning from experience to understand what is needed in a successful hospital design, that addresses the well-being of staff and patients. He quotes, "one-way hospitals improved was by listening to their patients."47

47 Horsburgh, “Healing by Design,” 739.
Conclusion

What is evident from each of these texts is the importance of analysing the past and learning from previous generations. The integration of intergenerational interaction offers an opportunity to share knowledge and provide healing for all generations. The participants may obtain a sense of belonging and importance, reaching the phenomena of social isolation, and can instead be actively engaged in their communities. Prior knowledge in terms of architecture can help architects understand what design implications need to be considered in order to resolve past issues. Though not all of the texts agree on what it is that makes a space a place of healing, there is an overall consensus that in order to create a place of healing, it is the role of the architect to implement the correct design choices. The inhabitants must feel comfortable within the space and have the opportunity for social interactions with one another in order to prevent feelings of isolation.
2.3 SOCIAL INTERACTION

Social interaction is essential for human well-being and health. It counteracts feelings of loneliness and social isolation by connecting people with one another. The research identifies that if successfully designed, public spaces can empower social interaction, in the same way, bump spaces can be used with indoor and outdoor spaces to activate social interaction. Playgrounds can be recognised as both a public and a bump space, becoming a catalyst for social play and fun.
2.3.1 Public Space

Public space within developed cities has changed over the decades, we have seen a shift away from the city with the development of towns accommodating industrial society. Public life in the city was once a necessity but has now become optional, even leisurely. A result of this shift is the change of quality in public space within the city. Once people would use the public space regardless of its condition, this is not the case today. Public spaces without character or considered design often become dead and lifeless. The treatment and condition of public space are crucial to ensure engagement with the architecture, as well as social interaction. Jan Gehl discusses this change in “Public Spaces for a Changing Public Life,” he highlights the events that led up to what we now know as twenty-first-century public life. “A hundred years ago, people went to the city because they had things to do and were forced to go… Today, where staying in the city is a choice, people need activities to keep them appropriately occupied for hours without attracting unwanted attention.”

Social Interactions in Urban Public Places is a report, written by Caroline Holland and associates, focusing on public spaces in urban areas. It describes the types of social interactions and how different groups of people use public spaces. Design tools are identified regarding the Aylesbury case study in England that can be implemented to make public spaces more inclusive. Holland states, “Socially inclusive public spaces enable people of all ages to access essential services and facilities without physical barriers, safety concerns or transport difficulties in reaching them.” This highlights the importance of inclusive spaces within cities that cater to all people, and provide a place where people come for all types of exchanges. There is a significant amount of research indicating urban planners’ interests in considering intergenerational interaction when it comes to public space. The research shows that it makes for a more cooperative and dynamic environment.

2.3.2 Design for Play

One crucial way in which children interact with one another is through play, asking social needs, as well as development and growth. The playground is a social space which can foster social interactions across all age groups, not only children. Architect and Educator René Altes discusses the social environment of playgrounds in Learn Move Play Ground. Altes believes “Creating a playable environment can be achieved by simple interventions: designing height differences (for example steps, stairs, seating walls, hills or slopes), material differences (sand, gravel, asphalt, tiles or grass), creating zones with interesting borders, or adding greenery.” She highlights that in order to include a diversity of age, playgrounds should include a balance of prescribed and non-prescribed equipment. The non-prescribed equipment allows children’s imaginations to be open and free to interpret independently, whereas the prescribed elements, such as benches allow for adult engagement. Altes states, “As adults, we have unfortunately lost the free vision that the thousands of playing possibilities an intervention or element might offer.” Benches or seating areas are important as they become part of observational play, providing children and adults with quieter areas to rest, watch others, learn from them, or just think about life.

Figure 18. Warrior Square Gardens, St Leonards
Figure 19. Floriade Playscape, Venlo

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2.3.3 Bump Space

A bump space is a space where ‘accidental encounters’ occur, enabling social interaction, and can be within both public or semi-public space. Gehl recognises the importance of bump spaces in cities, “The changing character of city life with its demands for good city space is a new expression of one of the most important functions of city culture: the meeting of people.”

They commonly occur in public spaces as bump spaces generally cater to large groups of people, by creating opportunities to ‘bump’ into one another. Gehl identifies this, “Public spaces allow people to meet on ostensibly neutral ground in planned and unplanned ways, to interact with others within the context of the whole community.” Bump spaces can be intentional or unintentional space for people to come and meet with one another to share ideas, relate to one another, or to simply feel connected. Although it can be unintentional, bump space does require design; otherwise, people will not engage with the space. Holland illustrates this, “In wide open spaces most people tended to skirt to the edges of the space unless there was an activity in progress.” Bump spaces regularly occur within indoor circulation spaces, such as hallways, staircases and public amenities.

These informal bump spaces have the possibility to activate social interaction. However, if they are not designed well, they instead can become awkward and uneventful space. Therefore, the architecture needs to accommodate elements that allow the socialising to continue without disrupting the flow and movement. Alcoves and seating areas are two examples which allow people to interact within bump spaces on a more meaningful level socially.

Figure 20. Two circulation arrangements that provide bump space (drawing)

Figure 21. Building circulation accommodating bump space for social interaction (drawing)
Conclusion
Public space is at the focal point of the research project, encouraging people to meet and engage in public life. The library and cafe space which are important components of the developed design, serve not only the residents but also the public. As stated by Christopher Alexander in *A Pattern Language* (No building ever feels right to the people in it unless the physical spaces (defined by columns, walls, and ceilings) are congruent with the social spaces (defined by activities and human group)). Or in other words, the social bump spaces should be informed by the final design, including layout and relationships of spaces. Playscapes that utilise non-prescribed equipment become productive for children’s imaginations, while at the same time accommodating seating and resting areas for the adults.

2.4 THERAPEUTIC ENVIRONMENTS

In regards to this research project, therapeutic is defined as causing someone to feel happier and more relaxed, in turn improving their health. Therefore, therapeutic environments are spaces that improve the health of the individual whilst simultaneously making them feel happier. Biophilic design is a device that supports the formation of therapeutic environments, revolving around the concept of connecting humans with nature. This project focuses on incorporating natural daylighting, wayfinding systems, positive distraction, and patterns of biophilic design. It also highlights the positive impacts of biophilic design and how it connects people to the natural world.

2.4.1 Biophilic Design: Human-Nature Connection

The word biophilia stems from the Greek word bio, meaning “life or living things”, and philia, meaning “love of”. It is used to describe the connection between nature and human-beings, attempting to explain the innate relationship man has with the natural world. The term was first used in 1964 by German-born American social psychologist Erich Fromm, however it was not popularised until 1984 with the release of Edward Wilson’s book “Biophilia”.56 Esther Sternberg discusses, “The idea that physical space might contribute to healing does, it turns out, have scientific basis. The first study to tackle this question, published in Science magazine in 1984, showed that when hospital rooms have windows looking out on the natural world, patients heal more rapidly.”57 This is an important correlation to consider in the design of healthcare centres in order to make them places of healing in addition places where patients may feel relaxed.

Over the last few decades, the term has grown in popularity with scientists and designers. Multiple studies have been conducted, highlighting the positive attributes of biophilic design and many have written about biophilic design including Stephen Kellert and William Browning. Browning suggests that “Biophilic design can reduce stress, improve cognitive function and creativity, improve our well-being and expedite healing; as the world population continues to urbanize these qualities are ever more important.”58 Kellert supports Browning, and states that “People living in proximity to open spaces report fewer health and social problems… even the presence of limited amounts of vegetation such as grass and few trees has been correlated with enhanced coping and adaptive behaviour.”59 Both Kellert and Browning stress the importance of incorporating biophilic design within all aspects of the built environment, in order to provide comfortable and positive conditions to live in.

While Biophilia is a relatively new concept, its characteristics have been utilised throughout history. Browning highlights that “Nature themes can be found in the earliest human structures: Stylized animals characteristics of the Neolithic Gobekli Tepe: the Egyptian Sphinx, or the acanthus leaves adorning Greek temples and their Vitruvian origin story: from the primitive hut to the delicate, leafy filigrees of Roccò design.”60 It is evident that designers and architects of ancient civilisations had been intuitively aware of biophilic design, and this is clear in their architecture and healthcare architecture. Building orientation, layout, scale, openness, ventilation and daylighting are just a few elements that have been employed to improve the conditions for healing.

58 Browning, Ryan, and Clancy, 14 Patterns of Biophilic Design, 4.
60 Browning, Ryan, and Clancy, 14 Patterns of Biophilic Design, 13.
14 Patterns of Biophilic Design written by William Browning and Catherine Ryan, constructs a framework for biophilic design. It categorises “patterns” or tools that can be integrated into the design to provide a successful biophilic response. Similarly, Stephen Kellert formulates the different elements of biophilic design categorising them into six main groups, all consisting of associated attributes. Both sources share common categories and attributes, which are derived from nature’s characteristics and have been translated into the built environment, both consciously and subconsciously. 14 Patterns of Biophilic Design is slightly broader and more contemporary than Kellert’s arrangement; nonetheless, Kellert’s work had a strong influence.

The “patterns” are grouped into three main categories including nature in space, nature analogues, and nature of the space. Examples of how they can be implemented in the research project are highlighted. Not all 14 patterns have been included, rather only those which are relevant and that have been incorporated into the research project design have been discussed.

The first category is nature in the space, referring to nature in its physical or ephemeral form being expressed within a space. Visual connection with nature can be stimulating or calming, by providing a view of nature people’s focus can be shifted toward relaxation. Non-visual connection with nature engages the other four senses, touch, sound, scent, and possibly even taste, for example, fragrant flowers and the sound of running water. Thermal and airflow variability, providing thermal comfort is necessary especially when dealing with the elderly, natural ventilation is also crucial for removing stale air. Presence of water has been proven to reduce stress, increase feelings of tranquility and lower blood pressure. Dynamic and diffused light, Stephen Kellert identifies “The benefits of natural light are often enhanced by modulating daylight, particularly by mitigating the effects of glare.”

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61 Browning, Ryan, and Clancy, 14 Patterns of Biophilic Design, 9.
62 Browning, Ryan, and Clancy, 14 Patterns of Biophilic Design, 32.
The second category is natural analogues, the organic, non-living and implicit expressions of nature. Material connection with nature, the use of natural materials with variability is recommended as people generally prefer them over artificial materials. Kellert explains, "The patina of time may provoke an intuitive understanding among some people of the benefits flowing from movement of nutrients and energies through natural systems." Complexity and order or ‘information richness’ can stimulate curiosity, imagination, exploration, discovery, and problem-solving. Examples of how it has been incorporated into the project include exposed structural systems, which is informative of the structure of the building or within the floor plan and how it is organised.

The final category is nature of the space, which looks at the arrangement and characteristics of spaces found within nature. This project concentrates on prospect and refuge which are opposites, yet balance one another. Refuge relates to security and protection, whereas prospect emphasises vastness and opportunity. Both ideas have been incorporated into the landscape design of the project, through the provision of large open spaces in combination with contrasting smaller private spaces.
2.4.2 Impacts of Biophilic Design

Stephen Kellert may have been the one to highlight the influences of biophilic design; however, Roger Ulrich’s research examined and documented the impacts of biophilic design on people’s health. Research shows biophilic design has positive impacts on learning, health, improving workplace concentration and efficiency, bringing communities together, and raising awareness about respecting the natural environment.

Learning

We grow as children by discovering and exploring nature. We develop as we learn about what surrounds us. Kellert suggests that “Young people need to engage the natural world repeatedly and in multiple ways to mature effectively.” There is an increasing separation from the natural environment with the average person spending nearly 90% of their time indoors. Highlighting why it is vital for our built environment to incorporate biophilic design, allowing natural elements to be reflected in our day to day lives, even in amongst concrete urban jungles.

Exposure to architecture and landscapes can be educational, as it can in turn teach all ages to care for not only the planet but also for themselves. Sounds, smell, touch, visual, even taste are critical elements of biophilic design, as they are how we interact with the world around us. By employing multi-sensory elements, people are able to engage and achieve a more stimulating experience.

Healing

Health architecture benefits considerably from biophilic design. Ulrich states, “In addition to afflicting patients, stress is also a burden for families of patients and visitors, and a pervasive problem among healthcare staff.”71 It is important to remember that all inhabitants need to be taken into consideration. Many studies have been conducted highlighting the positive impacts on the health and well-being of patients in hospitals and healthcare centres that incorporate biophilic design. It has been proven to help reduce stress, lower blood pressure, and increase feelings of tranquillity, to name a few. Ulrich highlights, “Although most nature views are stress-reducing, most built or urban settings lacking nature are unsuccessful in producing restoration, and in some instances worsen stress.”72 A tool used often used in health architecture is positive distraction, assisting people in relaxation. It is a space that allows people to switch off and disconnect for a period of time, enabling them to, if only briefly, forget their current stresses.

Work

In workplaces, biophilic design can improve worker productivity, skill retention, and focus. Workplaces such as an office that has little to no connection to the outdoors, including artificial lighting, can be less efficient and more stressful. A simple gesture such as a courtyard garden or views of nature makes working environments much more pleasant. Staff may develop a sense of ownership and pride toward their workplace, and by creating a more pleasant working environment talent may be easier to retain.73

Community

The natural environment offers a space for children to play and people to connect with one another. Likewise, biophilic design creates environments equipped for sociability, bringing people and communities together. Biophilic design encompasses vernacular design having a connection to place, “vernacular design enables a satisfying connection to the places where people live, also a necessary condition of human well-being.”74 For this reason it was integral for the project design to relate to the site and the surrounding community.

Ethical imperative

It could be argued that we need to respect ourselves by respecting the natural environment around us that gives us life, a sense of belonging, and connects us with other people. Strategies that can be employed to help preserve the natural environment include utilising renewable energy and passive design.75

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73 Kellert, Building for Life, 10.
74 Biophilic Design: The Architecture of Life
75 Biophilic Design: The Architecture of Life

Figure 36. Children’s Hospital in Zurich Figure 37. Del Amo fashion Centre, Los Angeles 5756
### Positive Distraction

Research on positive distraction shows that it can improve people’s moods, reduce stress levels and even prolong health benefits in long-term patients. Dr M McCuskey Shepley outlines positive distraction as being “the ability to allow the individual to shift focus from negative foci within the health environment to the more restorative aspects of the non-medical world.” Positive distraction not only reduces boredom, but it also allows the individual to take their mind away from negative thoughts, such as focusing on pain. As discussed, Roger Ulrich, a Professor in Healthcare Architecture, and one of the lead researchers in the effects of healthcare environmental design has contributed immensely to the research behind positive distraction. Ulrich identifies the types of positive distraction including, “comedy or laughter, caring or smiling human faces, music, companion animals, and nature such as trees, flowers, and water.” He focuses on the latter, exploring how nature can be integrated and employed within healthcare design. He notes, “prolonged exposure to nature views not only helps to calm patients but can also have positive effects on other health outcomes.”

Ulrich identifies the ability of positive distraction to help relieve stress in healthcare environments, as well as learning and workplace environments. He states, “Findings from several studies of non-patient groups (such as university students) as well as patients have converged in indicating that simply viewing certain types of nature can significantly ameliorate stress within only five minutes or less.” In addition, he sets design guidelines to help people deal better with stress, including control and privacy, and social support referring to emotional support for patients as well as staff. An example of this includes a comfortable waiting room, or attractive gardens with seating areas that facilitate socialisation between staff, patients and visitors.
2.4.4 Wayfinding

Landscape architect Katherine Southwell and occupational therapist Catherine Findlay describe wayfinding as “the ability to identify one’s location and arrive at destinations in the environment, both cognitively and behaviorally or, more simply, spatial problem-solving.” Southwell and Findlay identify that landmarks play a critical role in wayfinding, helping to navigate both familiar and unfamiliar areas. They become anchor points that allow the individual to locate themselves in relation to the landmark.

Wayfinding is an essential tool for any building, but specifically healthcare buildings, as they often comprise of multiple wards and can be difficult to navigate. The architectural technique of spatial daisy chains, where spaces link to one another in a logical sequence, is an effective way to combat this. Wayfinding systems also help reduce stress and increase staff efficiency by providing easy-to-follow signage and clear directions to their destinations, contributing to a sense of well-being, safety, and security. It gives the individual control over the space, preventing them from becoming anxious or upset in an unfamiliar environment.


2.4.5 Daylighting

As discussed throughout the research, natural daylighting is a significant design tool that aids the success of healing environments. In Health and Nature: The Influence of Nature on Design, the Environment of Care, Director of Healthcare & Sustainable Initiatives MSI Design, Jerry Smith discusses the importance of natural daylighting in healthcare environments. He highlights the positive impacts it has on the health and well-being of the inhabitants. Interior courtyards and atria are a great way of bringing in natural daylighting. They act as wayfinding cues, providing views of nature and the surrounding environment.

Smith states, “They provide a year-round benefit to visitors by bringing natural daylight to the major gathering spaces of the facility.” Due to the potential benefits highlighted, interior courtyards and atria became an important component to implement daylighting in the design.

Benefits of natural day lighting go beyond aesthetics, it has been proven to improve mental health and even help to control the spread of bacteria and viruses. Cynthia McCullough explains that a connection to daylight may help to eliminate anxiety. “By sitting in the body’s natural circadian system, which is the innate biological clock that regulates sleep and waking and controls the daily swings in emotion, natural lighting bridges the gap between indoors and out. Incorporating natural lighting can also reduce energy consumption and improve the sustainability of the architecture. It provides a connection with the natural environment through the warmth of the sun and the views of nature and the sky.”

83 Smith, “The Influence of Nature on Design of the Environment of Care.”
Conclusion
In order to create a therapeutic environment, the project has embodied elements of the “patterns” of biophilic design, stated within Biophilic Design: Human-Nature Connection (2.4.1). The positive impact of these design elements reinforces their importance, in particular, those directly relating to healthcare environments and design. Positive distraction is a result of the integration of the outdoor playscape personified in the project. Wayfinding and daylighting are also integral architectural constituents of the final design, aiding the therapeutic environment of the intergenerational healing centre.

2.5 TRANSFORMATIVE APPROACH
The transformative approach looks at combining programmes of geriatrics, paediatrics and childcare, which are separate entities, and are traditionally run independently. In this research project they converge and are housed in the one facility. This enables positive benefits to the well-being and health of the staff, visitors, elderly and children, creating a platform for social interaction and learning.
2.5.1 The Elderly

New Zealand has an ageing population and has a growing need for aged care facilities and homes to house the elderly population. Statistics New Zealand estimates that by 2028 the proportion of the population aged 65 and over will increase from 15% to 19% - an increase of around 350,000 people. By 2068 the proportion 65 and over is forecast to reach 28% of the population. The rapid growth is driven by longer life expectancies, increased immigration, and the baby boomer generation reaching ages of 65 and over.

After retirement people often feel disconnected from society, losing their sense of purpose. Dr Hamish Jamieson from the University of Otago identifies that with the increase of seniors living alone and the ageing population, nearly one in five elderly people over the age of 65 experience loneliness. The increase in social isolation and loneliness has also been proven to have impacts on the individual's health, with one study concluding that lack of social relationships is equivalent to smoking fifteen cigarettes per day, and has a risk factor similar to obesity or lack of physical activity. "It was found that having more supportive social relationships was indeed related to a decreased mortality risk." Current research identifies that creating opportunities for social interaction, such as attending social programmes, helps to decrease social isolation and loneliness.

In New Zealand, residential care is for elderly people who can no longer manage on their own in their home. It caters to elderly over the age of 65, or between the ages of 50-64 if they have a disability or illness that requires 24-hour care. Listed below are the four tiers of 24-hour care available to the elderly.

- **Rest Home** - the term used to describe the lowest level of care provided in an aged care facility. People in rest homes can do some things for themselves, however, are unable to live independently and require access to 24-hour care by trained staff.
- **Dementia Unit** - provides care to seniors with dementia and other mental illnesses. Similar to rest home care, but with increased security, and staff that specialise in dementia care.
- **Hospital** - offers long-stay care for elderly with high clinical needs, such as disabilities. Most residents need care by registered nurses and help from others to move about and complete daily tasks.
- **Psychogeriatric Care** - is the highest level of age care and caters for those with severe cases of dementia or who suffer from behavioural problems. It consists of high security with specialised nursing, also dealing with people who have addictions.

Retirement homes or villages differ from residential care facilities, instead comprising of independent living for people over the age of 55 years. Some villages provide a full range of care options, however, those with more significant care needs require aged care facilities. People who move into retirement villages often do so for the lifestyle, being able to connect and socialise with the community. Reasons, why elderly people choose to live in retirement villages, include maintaining independence, 24-hour ‘on call’ assistance, recreation facilities, and security.

A majority of age care facilities are funded by district health boards (DHBs). DHBs have contracts with the providers of rest homes and hospitals for the residents who are eligible for government funding. Retirement villages, on the other hand, are privately owned. Residents do not own the units; instead they buy the right to live there. Legal titles commonly used include a licence to occupy, title, lease, cross, lease, and leases for life.
2.5.2 Children

Early childhood care occurs at such a significant time of a person’s life, the first five years of a child’s life are the most significant when it comes to development. It is when they learn appropriate behaviour, boundaries, empathy and many other important social skills that will remain with them for life. Christopher Alexander recognises the significance of children interacting with other children, “If children do not play enough with other children during first five years of life, there is a great chance that they will have some kind of mental illness later in their life.” The final design provides spaces, such as the public playscape, for children to engage with other children to ensure social development.

It is vital to teach children from a young age how to live a healthy life to avoid the possibility developing an unhealthy lifestyle later in life, in turn reducing the number of people in aged care facilities. In October 2015 the government released the “Childhood Obesity Plan,” which aims to prevent and manage obesity in children and young people up to 18 years of age. One crucial component of this plan is not only to encourage physical activity but to promote being outdoors in nature. Highlighted previously in Impacts of Biophilic Design (2.4.2), one aspect that is very influential on a child’s learning is their engagement with the natural environment. It is crucial that from a young age that children connect with nature and learn about the environment that surrounds them.

In New Zealand there are two options for early childhood education, teacher-led and parent-led. As the names suggest, one is led by trained teachers and the other by parents. In the case of this research, the project focused on teacher-led services. Although trained teachers are paid and responsible for leading the programme, parents and whānau are encouraged to support and participate in the activities. There are two main types of teacher-led childcare, including kindergartens, education centres, and care centres. Kindergartens are chartered and licensed, employing qualified and registered teachers, and cater to ages of 2-5. They have a variety of sessional structures, including morning and afternoon sessions. Education & care centres cater to a more varied age group and offer all-day or part-day sessions. The operator must be qualified and registered, however not all staff must be qualified.

There are four essential quality standards that need to be addressed in all childcare services.

- **Group Size** - one centre can be licensed for up to 25 children under two years, and the number can increase to 75 if conditional approval is met, and 150 children over two years.
- **Trained Staff** - teacher-led services, such as kindergartens must have at least 50% of staff with a recognised qualification at all times.
- **Adult:Child Ratio** - there needs to be one person for every 50 children, usually the centre manager, who is responsible for supervising the children and adults. Ratios of adult: child include, children under two years 1: 5 minimum, children over two years 1: 6 minimum for 1-6 children, then 1: 10 for 6+ children.
- **Space** - Design and layout must include, different types of indoor and outdoor spaces, areas for active play, spaces for individual and group learning, and spaces for quiet time. Minimum indoor space is 2.5 square metres and outdoor space 5 square metres per child, excluding toilet facilities, passageways, staff rooms, and dedicated sleep areas. There must also be allocated space for staff including break rooms, private meeting rooms, storage for curriculum materials, and staff rooms for administration work.


2.5.3 Combining The Elderly and Children

As early as 1977 Christopher Alexander, in *A Pattern Language* recognised the need for intergenerational interaction. He quotes “Old people need old people, but they also need the young, and young people need contact with the old.” As discussed previously in Intergenerational Interaction (2.2) there is a range of benefits that come from intergenerational interaction. By combining both aged care and childcare in the same facility, both the elderly and the children benefit. The elderly offer wisdom, learning, patience, and time. In turn the children offer company, a sense of purpose for the elderly, learning, laughter and fun. The two are able to learn from one another helping to combat generational stereotyping and prejudice.

Alexander explains how the elderly typically group together in communities, as they often feel they are treated as outsiders. Alexander states, “The young in other parts of town, have no chance of the benefit of older company, and the old people themselves are far too isolated.” If the elderly are isolated in separate communities, they lose connection with the young. To counter this, and enable intergenerational interaction, the project intertwines and connects the programmes of both age care and childcare. Activity spaces that cater to both children and elderly are incorporated, including indoor and outdoor spaces. Train watching can be enjoyed by both the elderly and the young. Children are often fascinated by trains, and so too are seniors. The inclusion of a train observation room in the developed design generates a platform for intergenerational interaction.

This research project focuses on rest home care, the lowest level of aged care for safety and security reasons. For example, it would be difficult to integrate dementia patients with childcare, it would not be impossible, but would require a more complex set of conditions. For this reason, the project focuses on rest home care in combination with retirement units to allow the project to emphasise intergenerational interactions and coexistence.

The research project incorporates teacher-led childcare, specifically a kindergarten, catering to ages of 2-5 years. As acknowledged above (2.5.2) this age is considered the most important for development, children have the chance to learn respect, and acknowledge their elders. The research describes quality standards that are essential to the kindergarten design in order to cater successfully to the needs of the children.
The precedents have been categorised into three groups: social, nature and health. These categories constantly recur through the literature, illustrating their relevance to this project. They highlight the treatment of crucial criteria such as circulation and connection to nature. The design elements have been identified within the precedents and summarised to create a design index. The index has been utilised as a tool to aid the design and ensure that the final outcome integrates the essential elements from the precedents.
3.1 SOCIAL

Social space is at the heart of this research project. The project combines the old and young, encouraging intergenerational interaction. It incorporates public spaces, supporting a range of different social interactions. The social precedents all focus on bringing people together, presenting examples of how architecture can enable and influence the gathering of people of all ages.

Superkilen
Architects: BIG, Topotek 1, Superflex
Location: Copenhagen, Denmark, 2012

Combines architecture and landscape to create an urban park that supports diversity, accommodating a sculptural playscape, green space, markets, sports, and culture.

The Arcus Centre for Social Justice Leadership
Architects: Studio Gang
Location: Kalamazoo College, Michigan, 2014

The building creates an engaging social space for gathering and interacting with the public. The centrally designed plan puts people at the centre, encouraging people to come together, whilst simultaneously connecting them with nature.
3.1.1 Nieuwmarkt Playground

Architect: Aldo van Eyck
Location: Amsterdam, Netherlands, 1968

The Nieuwmarkt playground is one of many urban playscapes that Aldo van Eyck designed in the city of Amsterdam. In 1947, post World War II, van Eyck built his first playground, which was the start of his experimentation with spatial arrangements, shapes, public urban space, and the idea of inclusion for all generations. The Nieuwmarkt playground reflects the shift in the treatment of public spaces and neighbourhoods. There was a move away from large-scale modernist intervention, and instead, the focus was placed on the people and how they inhabit the city, “building for the neighbourhood,” a concept that was parallel to van Eyck’s ideas.101


Positive Distraction

The playscapes served as a positive distraction for Dutch cities that were largely in a state of dereliction post-war.102 Having just come out of the Second World War returning to “normal” was difficult for some, and at times too hard for those who had lost loved ones. The playgrounds brought laughter and fun back to the city. People both young and old were able to shift their focus away from negative thoughts. The young interacting through play, and the old through observational play.

102 Demerijn, “Aldo Van Eyck and the City As Playground.”

Public Space

Although largely forgotten, as many no longer exist, the playgrounds marked a positive shift for the inclusion of children within the urban fabric of the city. “They proposed that children were protagonists of the city freeing these spaces from their dependance on devices... elements like bars, walls, seating, or sandboxes could be explored by both children and adults.”103


Intergenerational

A playground for all generations, van Eyck explored the way in which people interact with the city, implementing social spaces that encouraged people to come together. The spaces that van Eyck created in his playground provided an open platform which people could interact with. The playgrounds used non-prescribed equipment, such as simple shapes and objects, leaving them open to the imagination in terms of how the individual engages with the architecture. Applying these ideas to the research project design helps to create and define social spaces that allow people to interact with the space differently.
3.1.2 Centre for Seniors in Steinfeld
Architects: Dietger Wissounig
Location: Carinthia, Austria, 2005

The centre’s primary purpose is to serve as a nursing home for the elderly; however, the design incorporates an open plan on the ground floor enabling public engagement. The internal circulation includes two intersecting axes on the ground floor. The circulation of the upper floors surrounds the internal courtyard, providing natural daylighting and visual connections between residents. "Flexible, generously-sized rooms enhance interactive communication in the building."\(^{104}\)

Integration
This project is an excellent example of the integration of public shared space within a private residential building. The ground floor includes a variety of spaces allowing residents to interact with one another as well as the public.

Intergenerational
The inclusion of a public library on the ground floor invites visitors to the centre. Children on their way home from school have the opportunity to go to the library and interact with the elderly. Thus enabling the elderly to engage in social interaction, feeling more connected and less isolated, as well as being able to pass on their wisdom to the younger generations.

Privacy
The centre houses facilities such as a large communal dining hall, creating a dynamic social space. The event hall, library and chapel also provide interest to attract visitors. These public spaces are located on the ground floor, with the residential units on the upper levels, giving the residents the option to retreat to the upper levels for privacy. The complex also includes a large internal courtyard which is private and sheltered from the external environment.

Connection to Nature
"The scenic beauty of the Drautal defines the degree to which the retirement home is opened to its surroundings."\(^{105}\) The corridor borders the internal courtyard, connecting the residents to nature even when inside the building. Open skylights and large windows connected to the ends of the circulation paths provide multiple views of the surrounding landscape.

Materials
The building uses a considerable amount of timber which was sourced from the local area. Laminated timber columns and prefabricated timber framed walling act as the main structural elements, directing the loads down to the reinforced concrete slab.\(^{106}\) The facade is clad with vertical timber larch panelling, mimicking the backdrop of forestry through material and repetition.

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\(^{106}\) Schittich and Ebner, *Housing for People of All Ages*, 104.
3.2 NATURE

The integration of nature and architecture with biophilic design elements, such as daylighting, is vital for the research project. As discussed before, connections to nature within the built form can serve as healing devices, improving the well-being of the inhabitants. Courtyards have become a focal point of this project, providing not only a connection with nature but also social space. The precedent examples illustrate how nature and architecture can be combined together. Often having nature as a driver for design, such as the courtyards in Rehab Basel.

Khoo Teck Puat Hospital
Architects: RMJM
Location: Singapore, 2009

“The hospital in a garden,” as it has been described, is a large-scale hospital with a very impressive jungle-like garden that provides a calming environment for patients and staff.

Sacromonte Hotel Shelters
Architects: MAPA
Location: Uruguay, 2017

A series of small 60-metre squared rectangular shelters scattered in amongst the landscape. They have been designed to reflect the natural environment surrounding them, allowing visitors to immerse themselves within the environment, while still providing refuge.
3.2.1 Rehab Basel

Architects: Herzog & De Meuron
Location: Basel, Switzerland, 2002

Rehab Basel is a rehabilitation centre that caters to patients with spinal cord and brain injuries. The brief that the clients set for the architects was to create a centre that does not have the look or feel of a hospital. The architects started with the arrangement of the courtyards, before dealing with the formation of the individual rooms. The building has an emphasis on accessibility and providing a connection with nature. The building is located in the suburbs and is exposed on all sides and surrounded by landscape, promoting a therapeutic environment that empowers good health and well-being. The precedent has been categorised under nature as it has many environmental features that dominate the project. However, it combines all three categories, social, environment and health within the one building, making it the perfect precedent for this research project.

Connection to Nature

The procession towards the building leads through a large open green space, reinforcing the strong connection to nature. The primary focus of the design was to provide a connection between indoor and outdoor. The project has been designed around the courtyards, allowing the natural environment to penetrate the building. The building also incorporates a green roof, helping the structure blend in with the natural environment.

Daylighting

Spherical skylights have been installed in the roof above the patient’s rooms. They help to illuminate the rooms that do not receive as much daylighting. The spherical shape means that they collect daylighting throughout the entire year.

Courtyards

The courtyards are pivotal to the design, the building is arranged around their placement. They emphasise the importance of bringing nature into the building’s interior, providing spaces, both public and private, that allow staff, patients and visitors to meet, socialise or relax.

Wayfinding

The courtyards act as wayfinding devices, allowing the inhabitants to orientate themselves within the building. Each courtyard is treated differently, having their own unique characteristics, for example, one is filled with water, while another is filled with trees.

Accessibility

The complex includes multiple staircases that are accessible by ramps, allowing people with wheelchairs to move around the building with ease.

Privacy

Each patient room has a deep veranda with a horizontal screen of wooden rods; this helps to control the solar gain and glare, but also provides privacy. The patients are able to enjoy the outside air and sun from their private veranda.

Figure 67. Rehab Basel - Analysis drawing
Figure 68. Rehab Basel indoor pool - Daylighting
Figure 69. Rehab Basel ramped entrance - Accessibility
Figure 70. Rehab Basel veranda - Privacy
3.3 HEALTH

Redefining the traditional healthcare model is one of the main objectives of the research project. The examples given highlight recent changes in thinking, which have resulted in new and different approaches to the design of health architecture. Elements such as wayfinding, circulation, balancing accessibility, and privacy are now all essentials parts of health architecture. Positive distraction is another design tool often used to create a more therapeutic environment.

Paimio Sanatorium
Architect: Alvar Aalto
Location: Paimio, Finland, 1933

A healthcare centre for tuberculosis, focusing on the connection to the natural environment and its healing capabilities, in particular, sunlight and fresh air. The centre is immersed within a vibrant forested area, isolated from the urban cityscape, and away from the distractions of everyday life.

Ospedale degli Innocenti
Architect: Filippo Brunelleschi
Location: Florence, Italy, Commissioned 1419

A classical example of a children’s orphanage/health centre that integrates a courtyard within the centre of the building, becoming the focal point and creating a space for people to gather.
3.3.1 Burwood Hospital
Architects: Jasmax, Klein and Sheppard & Rout
Location: Christchurch, New Zealand, 2016

The project was a collaboration between Jasmax, Klein, and Sheppard & Rout architects. It was critical for the building to connect with the natural surroundings; therefore they integrated both architecture and landscape disciplines in order to make a cohesive design. The final design creates a healthy environment with a patient-centric focus.

"Extensive use of natural ventilation allows patients personal control of their space, and together with extensive natural lighting contribute to the homely environment." 110

The significance of this project is the way in which it uses biophilic design to address healthcare regulations and restrictions. It intertwines the local context providing connections with the natural environment.

Courtyards
The complex includes internal courtyards that offer a connection to greenery, as well as private outdoor space for the patients and staff. The courtyards act as important social spaces connecting with lounge and dining areas. The architecture has relevance regarding local context and local cultural influences on the design.

Circulation
The centrally located atrium space allows visitors, patients and staff to orientate themselves within the building, acting as a wayfinding device. Visual cues and connections also enable the inhabitants to locate themselves within the complex.

Integration
It was not only essential to connect the people within the social spaces of the building, but also to connect the design to its natural context. The design is informed by both sustainable building methods, materials, operations and local cultural references and practices.111

Connection to Nature
Biophilic design elements have been employed by the building, particularly within the landscaping, including healing plant species with pleasant aromas. “The finger-like configuration of the wards with lots of internal courtyards creates a light, airy and securely-contained environment.”112


Wayfinding
The centrally located atrium space allows visitors, patients and staff to orientate themselves within the building, acting as a wayfinding device. Visual cues and connections also enable the inhabitants to locate themselves within the complex.

Circulation
The main entrance leads into a three-storey high atrium space, acting as the centre point of the circulation spine. The atrium joins the finger-like corridors, connecting the circulation to a central space, and minimizing the walking distance for the elderly.

Integration
It was not only essential to connect the people within the social spaces of the building, but also to connect the design to its natural context. The design is informed by both sustainable building methods, materials, operations and local cultural references and practices.111

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Figure 74. Burwood Hospital, Christchurch
Figure 75. Burwood Hospital - Analysis drawing
Figure 76. Burwood Hospital atrium space - Wayfinding
Figure 77. Burwood Hospital hallway - Circulation
Figure 78. Burwood Hospital courtyard - Connection to nature

86
The fundamental design principles that have been highlighted in the precedent study, in relation to the theory, have been summarised below. They have become a foundation of design tools for the project, and have been interpreted within the final design.

**Public Space** - inviting the public to engage with the architecture and programme, accommodating and encouraging social interactions.

**Integration** - combining both landscape and architecture to create a cohesive design. The natural environment bleeds into the built environment, helping to create a therapeutic environment.

**Connection to Nature** - incorporating elements of biophilic design, achieving connections with nature outside as well as inside the architecture.

**Intergenerational** - the architecture should encourage and provide opportunities for intergenerational interaction. This aspect of the project contributes to positive influences on health and well-being, in addition to aiding the combat against prejudice and stereotyping between generations.
Courtyards - reinforces the connection to nature, offering a range of public, semi-public, and private spaces, depending on the treatment of the courtyard. They have become a focal point of the final design, aiding the therapeutic environment and incorporating a range of biophilic design principles.

Materials - relating back to biophilic design principles, utilising natural materials, such as timber, helps to connect architecture to nature.

Daylighting - allows the inhabitants to have a connection to nature, reflecting the environmental conditions that occur outside the building. Daylighting can change the atmospheric qualities of the room, whilst also providing health benefits.

Positive Distraction - a design tool that allows the inhabitant to shift their focus away from negative thoughts, providing relief and relaxation.

Circulation - it is critical for healthcare centres and other health-related buildings to have adequate circulation. Poor circulation can result in a stressful and chaotic environment.

Wayfinding - helps to create a more efficient design, assisting people with navigation and circulation.

Accessibility - as the project accommodates the elderly, it is essential that the design be easily accessible and cater to all needs.

Privacy - people need privacy in order to find refuge within the space they inhabit. Private spaces allow people to feel more comfortable, however it is important to have a balance of both public and private space, in order to avoid isolation.
4.1 Waitematā District Health Board

Waitematā District Health Board (DHB) is the largest in New Zealand, serving a population of approximately 585,500. The population is diverse with almost a third having been born overseas. The regions that are serviced by the DHB include the North Shore, Rodney, and Waitākere. In 2017 Waitematā DHB conducted a health assessment, providing useful information and statistics on the current demographic breakdown, as well as future predictions and planning. It is a requirement of the DHB to regularly investigate the health needs of the people, in order to bring about positive change that is beneficial to health and well-being.

The population is predicted to increase by a third, over the next twenty years, with the average life expectancy also anticipated to rise. Māori, Pacific, and Asian populations are set to grow in the next 20 years, in particular, the Asian population is forecasted to grow by 83%, almost doubling in size. This will mean there will be more elderly to cater for, with the average life expectancy forecasted at 83.9 years, 2.3 years higher than the national average. This highlights that there is a need for more elderly residential care facilities. The population is becoming healthier, meaning people are living longer. The care facilities not only have to cater to the higher demands but also accommodate people for longer. With the predicted increase the DHB will need around 380 additional hospital beds to cater to population demands.

Key health challenges for the Waitematā DHB include; supporting healthier lifestyles, reducing inequalities in health care, access to mental health, addressing the needs of the elderly, and giving children a healthier start to life. All of these challenges are also issues that this research project aims to address, specifically those directed at the children and elderly.

Children:

"The well-being of children is critical to the well-being of the population as a whole." If children are taught how to be healthy from a young age, they are more likely to live healthier lives and have satisfactory health as an adult.

Elderly:

There is a vast majority, nearly 60% of seniors living within the Waitematā DHB with no funded support. Older people need greater access to health services. At present almost 45% of hospital beds are occupied by the elderly. With the forecasted population growth, the demand to provide health services will be challenging for the DHB to meet. Therefore new facilities that cater to the unique health needs of the elderly will be required.

Summary:

The Waitematā DHB is currently operating at capacity and is struggling to keep up with population growth. It has the nation’s highest life expectancy which is rising, as people continue to live longer. This research project could be beneficial for the expected growth in population and the rising demand for healthcare. The project’s objectives are similar to those of the Waitematā DHB.

Figure 92. Map of North Island’s District Health Boards

Figure 93. Waitematā District Health Board’s population by age

Figure 94. Waitematā District Health Board’s population by ethnicity
4.2 SITE SELECTION

A survey of the Auckland region, concerning a variety of criteria, was conducted in order to select an appropriate site. The objectives of this research project became tools for site selection, along with information gathered from the District Health Boards. In order to create an environment that assures the interaction and engagement of different generations, the location of the site and surrounding area needed to have a relatively high population of people aged over 65 years. The project encourages diversity, therefore the area chosen also needed to reflect a mix of ethnicity.

Research into precedents and theory demonstrated the benefits of an intersecting social space that is open to the public. Public foot-traffic has the potential to be filtered into the site, therefore an adjacent busy street or urban area became a requirement. Having a relationship between the indoors and outdoors was essential to integrate biophilic design principles. Creating a platform for learning is also critical for the project, so having a connection to local schools was appropriate to engage with the children.

The site criteria included having a connection to an urban environment, schools, open green space, and a body of water. With the greenery and water aiding the therapeutic qualities of the design. The site looked at the demographics of the areas, looking for diversity and a high population of people aged 65 years and over. Finally having a connection with an existing hospital, sitting within a 2km radius, as well as contact with a public transport line.

Potential sites and areas that were considered included Lake Pupuke in Takapuna, Swanson Road in Henderson, Rātā Street in New Lynn, and Manukau.
Figure 101. Site Analysis - Locating Henderson within the wider context of Auckland and zooming in on the chosen site.
4.3 SITE ANALYSIS

Immediate Site Qualities & Context

The proposed site is located on a main street, 170 Swanson Road, north-west of the urban centre of Henderson, situated within the confines of the Waitematā District health board. Henderson has a diverse mix of ethnicities and a reasonably large percentage of seniors over 65 years of age. The primary vehicle route to the site is from Swanson Road joining at a five-way intersection with Lincoln Road, which provides a direct link to the Waitākere Hospital. Entry to the site is from a private access road, which aligns with the north-east axis and connects to Swanson Road.

To the south-west side of the site runs the western train line. On the opposite side of the train line sits the Paremuka Lakeside Park. Adjacent to Swanson Road, and directly across from the access road to the site is a large open green space, that functions as the sports field for Waitākere College. These two green spaces are pivotal in shaping the proposed pedestrian access through the site.

To the north-west of the site, there is a large twelve-metre high warehouse that sits along the boundary line of the site. The site sits back from the main thoroughfare of Swanson Road, allowing the site to be secure and sheltered from some of the traffic noise. Trees are planted along the entire perimeter of the site, including the east side of the access road, but excludes the north-east boundary. The total area of the site, including the access road, is approximately 44,000 square metres. There is a slight slope falling from the east side to the west.

Figure 107. Site Analysis: Map of the surrounding building context, which highlights the proposed pedestrian access.
Existing Infrastructure & Amenities

Henderson, located in West Auckland, is growing at a steady rate. It is listed as a ‘development area’ with the Auckland Council currently facilitating nine development projects, along with upgrades to public spaces, walking and cycling links. On completion of the City Rail Link, the travel time between Henderson and the city centre is expected to improve, shortening the trip to approximately 30 minutes. The development will also provide employment growth, with anticipated household growth.

Relating back to the site criteria, the site is positioned within a 2km radius of the Waitākere Hospital. There are also six schools, a combination of secondary and primary, inside a 1.5km radius of the site. The main urban centre of Henderson is located approximately 1.5km south-east from the site. It includes retail stores, public and community amenities, such as the Waitākere Central Library.

There are a variety of public transport options, including bus and train, within a close proximity to the site. Swanson Road includes public bus routes, both leading into the city as well as heading out further west of Henderson. The western train line runs along the back of the site. Sturges Road Station is only 1km south-east of the site, and the Rānui Station is 1.5km west of the site. Both stations have the potential to link with the site, through the use of pedestrian access directly to the site.
Nature & Urban Conditions

The association between nature and the urban setting of the site was a principal reason for the site’s selection. The park situated to the south-west of the site includes a large body of water, surrounded by native wetland planting. Research into theory and precedents during this investigation demonstrated the benefits of close proximity to nature, and therefore this generous quantity of green space provides an extension to the site.

The site plays the role of a perfect connection for pedestrians between the two green spaces. It provides an alternate and shorter route that connects the surrounding south-west residential areas with the school located on the north-western side of the train line. Alternatively, it also links the north-west residential areas with the Paremuka Lakeside Park.

The locality of the urban centre provides an opportunity for social engagement and community participation. The site is orientated along the north-east axis, receiving plenty of all-day sun, with prevailing winds from the south-west. The proposed design includes landscaping on the perimeters of the site, providing buffer space between the centre and the neighbouring buildings.

![Figure 111. Residental housing neighouring Paremuka Lakeside Park](image111)

![Figure 112. Scenic view of Paremuka Lakeside Park from the site](image112)

![Figure 113. Local rugby fields off Swanson Road](image113)

![Figure 114. Paremuka Lakeside Park wetlands planting](image114)

![Figure 115. Paremuka Lakeside playground](image115)

![Figure 116. Site Analysis - Map of green spaces and water bodies, depicting the site's potential to extend and connect the surrounding green spaces](image116)
The site is presently utilised as a bus depot. The unitary plan has currently zoned the site as light industry. However, given that it is located in such close proximity to the metropolitan business centre it makes the site a suitable location for the proposed project. It neighbours a high-density residential zone, as well as being directly opposite a scenic recreational park. It is an ideal site for the intended intergenerational healing centre. The large size allows the design to have a horizontal quality, and the opportunity to integrate both landscape and architecture.
The project proposes a new healthcare centre at 170 Swanson Road, Henderson. As identified throughout the literature, providing opportunities for the elderly and young to meet and interact with one another is essential to create a place of intergenerational healing. It opens a platform for learning, and invites public engagement, helping to reduce social isolation and loneliness among the elderly. Shared meeting, activity, garden, and relaxation spaces are all included to support the intergenerational interaction. The biophilic design patterns (2.4.1) alongside the precedent design index (3.4) have shaped and modelled the final design outcome including materials, organisation and form. The idea of bump space investigated within both the literature and precedent has also become a critical element that has been intertwined with the project through the use of the social nodes. The social nodes celebrate the concept of people coming together to interact and socialise with one another. The size of the project was quite significant, and there were many complexities within the programme. The final design, instead of trying to complete every aspect of the project has focused on developing the social street, social nodes and public spaces.
5.1 DESIGN STRATEGIES

The strategies used within the project were both techniques and key concepts that defined and helped to formulate the final design. One important strategy when dealing with site planning was the access through the site. The core concept diagram (Figure 121) illustrates how the site has been treated as a connecting passageway that links the park and green space. It promotes the flow of foot traffic through the site from both the community and residential areas. The scheme introduces two main routes through the site, both dealing with the movement of people. The first route is the integrated social street that intercepts the building along with the central circulation. It focuses on engaging people in social interaction by implementing architectural devices, such as those illustrated in the precedent design index (3.4).

The second alternative route focuses on engaging people with nature. It provides an entirely outdoor pathway that travels through the landscaping and does not cut through the building. It incorporates elements of social interaction, however, it is not the primary objective. Instead, it deals with accidental social encounters.

Horizontal vs Vertical

‘The core’ and ‘the street’ are two different design approaches that were investigated which deal with the layout and organization of the programmes. ‘The core’ focuses on the vertical, having multiple levels of programmes attached to the central circulation. This is common in many hospitals designed in the twentieth century. The problem with ‘the core’ model is that the upper levels become disconnected from the ground. The deep floor plates of the block formation prevent biophilic design elements such as natural ventilation and daylighting. Privacy is one positive from the vertical organization, however, it can also be seen as negative, in turn isolating people. Circulation is minimized; however, visual connections between social spaces is often lost.

‘The street’ emphasizes the horizontal nature of the building with the programmes stemming off the main circulation like branches. The approach allows overlapping between spaces and directs the pedestrian foot traffic along a horizontal procession, as opposed to a vertical stacking that is evident in ‘the core’. One negative of the horizontal model is that the circulation is extended. However, the model allows integration between the architecture and landscape, with the two supporting and providing an extension of one another.

The final design has taken a horizontal form that spreads out across the site in order to maximize the physical and visual connection with nature. Elements such as the green roof allow the design to integrate with the site, becoming a part of the landscape. It was essential for the final design to have a relation to the natural environment, but more importantly put people at the centre, expressing a human-nature connection.
Social
Planned social and bump spaces both became design drivers. The social spaces of the final design encourage people to come together and enable intergenerational interaction. The bump spaces permit ‘accidental encounters’ to occur, adding a dynamic social element where multiple types of social engagement and interaction can take place.

The social spaces of the final design have applied the research gathered from both the literature and precedent studies, promoting inclusion instead of segregation. The central circulation formulates a spatial “daisy chain” wayfinding device that visually connects the spaces. It incorporates large circular spaces along with the circulation that activates the space and intertwines the programmatic components of the healthcare centre. These circular spaces are viewed as the social nodes with the central circulation becoming the social sheet. The two elements work together to form the backbone of the design celebrating the social qualities of the project.

Nature
The principles highlighted in the biophilic design patterns (2.4.1) have influenced the final design. The formation of the courtyards was an important design driver. They encompass not only elements from the biophilic design patterns, but they also create social spaces for staff, residents and visitors. The placement of the courtyards is significant, forming a relationship between the architecture and nature. There is a public to private gradient that the courtyards have created. There are multiple courtyards throughout the building, some of which have been completely closed off and become private, while others open outwards, becoming semi-public. The courtyards allow plenty of natural daylighting, and views of nature. They act as wayfinding devices, allowing people to orientate themselves within the complex.

The surrounding landscaping and gardens of the site are open to the public. The landscaping incorporates a collection of New Zealand native trees with the use of wetland plants around the pond area. The planting takes in inspiration from the Paremuka Lakeside Park containing a wetland area, and provides a continuation of the ecosystem. The presence of water, in the form of the pond, contributes to the therapeutic qualities of the site and design. Skylights and clerestory glazing are used along the central circulation providing natural daylighting and a connection with nature.

Figure 125. Frits Philip Lyceum-Mavo, Eindhoven
Figure 126. Slack Headquarters, New York
Figure 127. Public terraced seating
Figure 128. Rehab Basel internal courtyard
Figure 129. Biophilic design patterns
Green roofs have also been incorporated into the final design to help integrate the building with the surrounding landscape. The green roofs help to camouflage the architecture, with second level rooms looking down onto greenery as opposed to roofing materials. Francis Ching outline the guidelines and requirements of a vegetative roofing system or green roof. He states, “Extensive vegetative roofing systems are low maintenance and built primarily for their environmental benefit. The lightweight growing medium they use is typically 4” to 6” (100 to 150) in depth and contain small, hardy plants and thick grasses that are accessed for maintenance only.”

The green roof system that Ching explains is the system that the final design has incorporated.

Summary
It is essential for the final design to have a relationship to the natural environment, but more importantly to put people at the centre, expressing a human-nature connection. The biophilic design patterns should be incorporated through all aspects of the design where appropriate. It provides positive influences on the well-being of the inhabitant but also encourages a more sustainable approach. The movement of people through the site allows the architecture to engage with the surrounding community. It should create a platform for all ages to engage in different types of social interaction. Establishing a social gradient allows the individual to interact as little or as much as they choose.
5.2 DESIGN ITERATIONS

A significant component of the design included design through iteration, allowing the design to test ideas and investigate propositions from the theory and precedents. While not all iterations were radical, they all influenced how the final design took form. Bubble diagrams were used to help with the spatial arrangement of the programmatic components. They supported the design process by providing organisation. They formed a hierarchy of spatial relationships that helped to identify the fundamental components which could then applied to the final design.

The initial bubble diagram (Figure 134.) depicts the spatial arrangement and the relationships that began to form. It displays the key components that were significant through the whole iterative design process, which were essential to understand in order to then change the form without losing the key relationships.

The design needed to be reorganised. Instead of starting from scratch, some shapes from the created form were kept, and the design was reorganised in order to best consider the centre axis (Figure 135.). The complication that arose however was that the social street was still not aligned with the pedestrian path as the floor plates became to be too large.

The first design iteration (Figure 133.) struggled to take shape, instead, turning to the site for guidance. The design took form using only a third of the site area for the building footprint. It eventually began to make adequate progress and formulated a promising arrangement. However, one crucial attribute was forgotten; the central pedestrian axis through the site via Swanson Road was overlooked.

The design iteration two (Figure 135.) introduced the pedestrian path. Instead of starting from scratch, some shapes from the created form were kept, and the design was reorganised in order to best consider the centre axis (Figure 135.). The complication that arose however was that the social street was still not aligned with the pedestrian path as the floor plates became to be too large.
After aligning the main entrance with the pedestrian access from Swanson Road, the programme components were organised to incorporate biophilic design effectively. Modelling the design (Figure 137) identified how the form was sitting in relation to the site and the connections that it had with the surrounding context. The elderly and children were grouped, with the placement of the aged care directly opposite from the childcare. Having correspondence between the two was paramount to achieving the project’s objective. The journey toward the elderly residences travelled past the childcare, and vice versa. Identifying the journey people would take and the social interactions that may occur, influenced the arrangement of the programme components. The public space was located at the corner of the circulation spine, the pivot point of the design.

Revisiting the literature and precedent studies raised the following questions; would it be counter-intuitive to cut the pedestrian pathway through the site diagonally? Do the retirement apartments deserve more privacy? Could the form of the design read more cohesively and identify the biophilic design patterns more clearly?

Figure 136. Design iteration three - model photograph

Figure 137. Design iteration three - model photograph from directly above

Figure 138. Design iteration three - aligning the entrance with the pedestrian access
Both iteration four and five attempted to address the questions raised and began reshaping the design. Iteration four (Figure 139) introduced the train spotting room, which was adapted into the final design. However, it did not change the previous arrangement dramatically. Instead, it explored how the overall form could be reshaped in order to communicate a more cohesive design.

Iteration five (Figure 140) took a more dramatic approach, by beginning to remodel the form and arrangement. Curved elements broke up the rigidity of the design, adding a more organic dimension. The aged care was moved towards the corner of the design providing more privacy for the elderly. While both iterations failed to achieve was to change the axis of the pedestrian pathway.

The iterations struggled to address all the questions raised from literature and precedent studies. It was apparent the design needed to be analysed further, so the developed bubble diagram (Figure 141) was created. Unlike the initial bubble diagram, the developed diagram included the pedestrian axis. Immediately illustrating the divide created by the pathway, which disconnected the public space, children and outpatients from the green space. This led to the formation of the final bubble diagram (Figure 142). The key components (Figure 143) were extracted, allowing the metamorphosis of the building towards the final developed design.
The sixth iteration (Figure 144.) formulated a new layout by reconfiguring the pedestrian path on the site. The critical components of the final bubble diagram were applied to the design, resulting in a more cohesive building form. The iteration placed the public space at the heart of the complex and introduced the concept of social nodes. The retirement apartments were given more privacy and were no longer interrupted by the pedestrian path.

Iteration seven (Figure 145.) highlights the further refinement of the design and became the basis for the final developed design. The concept of the social nodes was expanded, adding new nodes at key social interaction areas. The retirement apartments were orientated north for better solar access and a second level was introduced to the library.

- Introduced additional social nodes
- Access road and carpark added
- Orientation of the retirement apartments changed to account for solar access
- Second level added to the library space
- Wandering path incorporated to strengthen the public’s engagement with the landscape
- Introduced the indoor pool area
- Beginning to give the retirement apartments their own identity
- Pedestrian path direction was changed
- Introduced the social nodes

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Figure 144. Design iteration six – changing the pedestrian access route

Figure 145. Design iteration seven – additional social nodes introduced

125
5.3 DEVELOPED DESIGN

Following the design adjustments made in the last iteration, the final design was further developed. Focus was placed on the social bump spaces, with the social street and social nodes becoming driving forces for the development. Other social public spaces within the building and the surrounding landscape such as the library, cafe space, playscape, gymnasium and indoor pool area were considered as integral bump spaces and were subject to further development. Throughout the whole design process, the biophilic design patterns (2.4.1) and the precedent design index (3.4) were considered and incorporated where they were appropriate.
5.3.1 Bump Space

The bump space is a fundamental element of the final design that intertwines and connects the whole building. It accommodates the ‘accidental encounters’ and offers a place for both intentional and accidental interaction. Identified within the literature study, bump space (2.3.3) most regularly occurs within circulation spaces, and their design potential can often be overlooked. The final design instead looks at celebrating the ‘bump’ and activates the circulation with social interaction. There are multiple locations and potential areas for bump space within the design, but two were used to drive the design; the social street and social nodes. The social street links the nodes together along a ‘spine-like’ circulation that runs through the centre of the design.

Social Street

The central circulation through the building is viewed as the social street and is the backbone of the design. The social street is a crucial design element that connects both the programmatic spaces of the complex as well as creating a journey through the building that encourages social interaction and engagement. It incorporates alcoves for socialising, allowing people to stand or rest to one side of the thoroughfare without disrupting flow within the space.

The social street is an extension of the pedestrian path linking the site to Swanson Road. It acts as one of two main routes through the site, providing the opportunity for visitors, residents, and the public to engage with the building. The second route deals with external social opportunities. The social street, although internal, incorporates nature within the design, utilising the biophilic design patterns.

Social Nodes

The social nodes have been located at five pivotal points within the design. Each of the nodes has been treated differently, giving them unique wayfinding attributes and social qualities. While simultaneously communicating a cohesive language that reinforces the biophilic design patterns throughout the building. The nodes themselves are bump spaces, and the location of each is significant, offering different types of interaction between different generations.

Within the final design, the circle is used as a motif, signifying a place of social interaction and gathering. The circular form creates a relationship linking each of the social nodes. The repetition allows people to associate the spatial qualities of the circle with the concept of social participation. It is a simple geometric shape that can be easily recognised by all people, both young and old. It is symmetrical with no corners and has a central focus, providing excellent visual connections with everyone sharing the space. The form is a non-hierarchical symbolising fairness and promotes a place where everyone’s input holds equal importance.

- The Exchange Node
- The Welcome Node
- The Heart Node
- The Wisdom Node
- The Exhale Node
10. The Exchange Node
The first node is placed within the carpark acting as a waiting area and deals with the exchange of people. It identifies the significance of the car park as an area of socialisation, with the design accommodating a place for residents, parents, and visitors to sit and wait for friends, loved ones, or relatives. The architectural interventions act as both a wayfinding device and weather protection. The columns that support the roof align with the path, directing people towards the second node that is the main entrance.

11. The Welcome Node
This node is the main entrance to the healthcare centre and deals with the notion of acceptance. Its transparent qualities help to break down visual barriers and welcomes people into the building. It takes a principal position in regards to the design by extruding above the roofs that sit either side of it. Passing through the entrance ascends the individual into the atrium space via a ramped floor. Immediately emphasis is placed on the social street as it is elevated above the ground level. The atrium has a high ceiling putting prominence on its verticality, placing the individual’s attention up toward the sky. The curve encompasses the reception and directs the individual towards the main circulation.
The Heart Node

The Heart sits at the centre of the social street and is the pivot point of the design. The node deals with the congregation of people. The space is intended to engage with calendar activities such as Christmas and other culturally significant events. The social steps are incorporated to provide seating for related events. It spatially communicates its importance by being larger in size compared to the other nodes. It is the first full circular form, drawing attention to the centre where the ‘tree-like’ column stands. Inside the column is a large cylindrical downpipe that collects the rain from the roof adding the element of sound. The roof structure draws inspiration from tree canopies with adjustable louvres that diffuse the direct sunlight coming through the glass roof. The large curved window creates a visual connection with nature by overlooking the green space that funnels out towards the playscape. Nature has a physical presence in the design with plants sitting in front of the curved window. Large wooden fins filter people through from the node to the larger café space. This connection expands the social space of the node and accommodates larger gatherings.

Adjustable timber louvres
Glass roofing
‘Tree-like’ column with timber beams
Timber panels
Indoor plants
Wooden planter boxes and seating
Polished concrete floors with coarse aggregate

Figure 152. The Heart Node - interior perspective illustrating the social gathering and materiality
N5. The Exhale Node

The final node puts people within nature, providing a space to exhale and breathe in the fresh air. It uses the glade to create a tranquil space that reflects the natural environment surrounding it. This node is unique as it is not exclusive to the healthcare centre and is accessible to everyone. Its location on the site is purposeful, highlighting the three-way intersection that links the social street and public pathway with the pedestrian railway crossing.

The amphitheatre within the open space stimulates more active discussion and seminars. It is situated off centre, maintaining the flow of foot traffic along the social street. Group conservation and meetings are supported by the amphitheatre, simultaneously providing a place to sit and rest. The large wooden column that stands at the centre of the amphitheatre helps to draw the attention of people passing by. This provides an opportunity for incidental social occurrences.
As discussed previously, this research project has utilized a transformative approach (2.5) by intertwining children and the elderly within one facility. The individual programmes have been linked and arranged in a way that supports intergenerational interaction. The building programme is a hybrid of age care and child care, combining multiple elements related to patients, residents, staff, and visitors. Listed are the components that make up the programme of the healthcare centre.

5.3.2 Programme

As discussed previously, this research project has utilized a transformative approach (2.5) by intertwining children and the elderly within one facility. The individual programmes have been linked and arranged in a way that supports intergenerational interaction. The building programme is a hybrid of age care and child care, combining multiple elements related to patients, residents, staff, and visitors. Listed are the components that make up the programme of the healthcare centre.
The aged care is divided into two aspects, the nursing home units and retirement apartments. The nursing home units are located on the ground floor for accessibility and are adjacent to the intergenerational activity space for social engagement. They cater to people 55-years and over who can no longer perform daily tasks by themselves. 24-hour care and assistance are available to the residents of the nursing home, including kitchen facilities that service the flexible communal dining space. The communal dining is not limited to the residents of the nursing home. Residents of the retirement apartments are also able to utilise the service. The retirement apartments are orientated north and have been separated from the complex to provide privacy. The apartments are self-contained for independent living, catering to elderly people 65-years and over, also having 24-hour 'on call' assistance available. A large circular courtyard space has been placed at the centre of the retirement apartments providing an outdoor space that caters to the elderly residents. The circular form reiterates the form of the social nodes, identifying the courtyard space as a place for social interaction.

Child Care & Intergenerational Space

The childcare includes a kindergarten, focusing on the ages of 2-5 years old. The kindergarten has plenty of access and connection to the outdoors, incorporating a private internal courtyard. The ground floor consists of four classrooms catering to each of the year groups, kitchen facilities, office space, meeting rooms, storage, toilets, and a generous activity space. A quiet space occupies the upper level for sleeping and resting.

A large shared space sits between the kindergarten and rest home units and supports the intergenerational activities and gatherings. It is a flexible space that can host a variety of activities, such as communal dining. The intergenerational space can be opened up and combined with the activity space of the kindergarten, creating a larger space for organised events.
Rehabilitation

The centre includes a rehabilitation unit that services all ages but focuses on children from ages 0-16 years old. The rehabilitation component of the programme has been incorporated to support the Waitakere hospital. It provides inpatient, day patient, respite, and outpatient care. It works alongside the outpatient clinic, supporting children with physical and speech therapy, treatment of pain, and learning how to perform daily tasks. The patients have the opportunity to engage in social interaction through joint activities with the kindergarten.

Outpatient Clinic

The outpatient clinic is open to the public, in addition to providing services that assist the rehabilitation unit. The clinic ensures that patients remain connected and supported, offering specialized treatment and advice. Patients coming back for check-ups also have the opportunity to engage with the public spaces.
The public space is adjacent to the heart node, allowing the two to feed off one another. It includes an open plan cafe space that can be rearranged for events and other activities. Adjacent to the cafe is the library space that occupies two levels. The first level has a free flow of movement through the space with rotating door panels that connect with the outdoors. It has a strong connection with the surrounding landscaping and stimulates social energy. The second level of the library offers a place to retreat. It focuses on the concepts of thought and reflection, providing a quiet place to read and study. The majority of the outdoor space is also considered as public space.

The gymnasium and indoor pool accommodates the residents, rehabilitation patients, and is open for public use. It is a significant social space as it is where the groups have the opportunity to come together and support one another. The pool and gymnasium share the same space with the gym on a separate mezzanine level. It includes changing room facilities that are opposite from the indoor pool on the ground level.
Play is an integral part of the landscaping, providing a positive distraction to the inhabitants. The playscape creates a social environment open to interpretation and inclusive of all ages. The space it creates enables unintended or passive interaction between people. It provides ample open space for prospecting and smaller alcoves which are more private for refuge.

Landscaping
The natural environment is an essential part of the project. The gardens are vital for creating a therapeutic environment. The courtyards allow nature to interact with the architecture, in addition to having positive health attributes. The green roofing forms a continuation of the landscape, attempting to merge architecture and nature. The communal gardens are integrated to encourage intergenerational interaction, providing activities in which the elderly can teach the young.
Trainspotting Room
The trainspotting room is another space that enables intergenerational interaction. It is positioned at the end of the central circulation and located. The space is open to both the young and old, it provides an opportunity for the different generations to engage with the space and with one another. The room cantilevers out from the level below and provides 180-degree views of the train line, in addition to having a visual connection to the communal gardens. The train room takes prominence of the form, allowing it to be easily recognised. The design allows the space to be reconfigured and utilised additionally as a cinema room. The north-facing wall becomes the screen with the light being projected down from the mezzanine level. Roller blinds allow the windows and central skylight to be blacked out.

Staff Areas
There are multiple staff areas throughout the complex, including nurse stations to maintain the rehabilitation, outpatients, and nursing home components. The main staff room is connected with the front reception and sits within the rehabilitation unit. It contains the break room, staff kitchen, offices, meeting room, storage, and other staff facilities. It is essential to create a pleasant work environment for the staff, helping to reduce stress and increase productivity. The break room is attached to an internal courtyard, providing an outdoor area for the staff to relax and have a connection with nature.

Visitor Areas & Utilities
In addition to the public areas, the centre includes visitor areas such as waiting rooms and guest rooms. The guest rooms provide a place to sleep in case overnight stays are necessary. The design has allocated space for utilities and storage in order to service the building. The garden shed plays a vital role in the community garden. The shape and design of the shed allow it to act as a sundial, tracking the movement of the sun throughout the day. Not only that but it also acts as a wayfinding device within the site landscaping.

Parking
The design includes emergency vehicular access, a drop-off zone, parking for staff, visitors, and one park for each retirement apartment. The pedestrian path that travels along the west side of the building, joining the retirement apartments, can also be utilised in emergencies for access to the childcare and aged care facilities.
Summary

The healthcare centre is complex regarding the programme and consists of multiple components. Each component has been allocated space; however, not all spaces have been fully resolved in detail. The priority of this research project is creating intergenerational relationships. For this reason, the project focused on detailing the design of the social street, social nodes and public spaces of the buildings.

Figure 176. Ground plan identifying the section cuts through the site
Figure 177. Section Cut South-North illustrating the social street with connecting social nodes
Figure 178. Typical retirement apartment plans - identifying the different arrangements
Figure 179. Section cut East-West illustrating the roof formations and the terraced apartment levels
Loneliness and social isolation are disproportionately common within the elderly population, with one in five people over the age of sixty-five experiencing loneliness. Considering New Zealand’s current ageing population crisis, the number of elderly people feeling isolated from society is only expected to increase. There is also a growing disconnect between people and the natural environment. These issues lead to the manifestation of the research question, “How can the architecture of an intergenerational healthcare centre encourage healing through social engagement of its inhabitants and the integration of the natural environment?” The project intended to create a healthcare environment that encourages intergenerational interaction whilst simultaneously engaging people with nature, both in turn having positive influences on the health and well-being of the participants.

Health and well-being are comprised of a complex structure of physical, psychological, and social factors. Historically, hospitals and healthcare were focused on finding a cure or appropriate treatment for illnesses, and were less concerned with the holistic components of health and well-being. With the advancements in science paired with a greater understanding of human sociology concerning health, it was imperative that the architecture responded to the growing need for social interaction between generations. Therefore, the final design provides a holistic alternative. Bump spaces in the form of social nodes were used to generate social interaction. The biophilic design patterns were implemented to have a positive impact on the psychological well-being of the inhabitants, and a rehabilitation programme was integrated to help improve physical health.

This research project has created a care environment that contrasts to the traditional approaches to healthcare design. The centre is not treated as a segregated institution. Instead, it invites public engagement and allows people to feel connected to their surroundings through the integration of the biophilic design patterns. It celebrates the elderly by connecting them with, and locating them at the heart of the community. The bump spaces allow people to meet and socially interact on different levels of intimacy. The trainspotting room, library, community gardens, playscapes and other public spaces provide a positive distraction for the patients, staff, and relatives, while also serving as intergenerational spaces that can be utilised by all ages.

The proposed site located at 170 Swanson Road, Henderson, was analysed and proved to be an ideal location for two main reasons. Firstly the research identified that the site is situated in the Waitematā DHB, the largest DHB in New Zealand, that is currently running at capacity and in need of support and growth. Secondly the unitary plan highlighted that the site is currently zoned for future development as light industry, missing the opportunity to provide a diverse public space for the neighbouring high-density residential zone. For these two reasons, the final design supports the existing health services by providing an extension to what is currently offered. The design physically connects the communities either side of the train line by creating an alternative route through the site, in addition to providing a public social space that can be used by everyone.

The iterative design process identified that there were multiple ways of dealing with the organisation of the spaces on the site. It became essential to formulate a hierarchy of core design elements to ensure the outcome reflected the concepts discovered in the research, in addition to dealing with the relationship between the site and the community. The process highlighted that people needed to be placed at the centre of the design. The ‘heart node’ was introduced, located at the pivot point of the design and put the focus on the gathering of people.

Due to the complexity and significance in scale of the project, all aspects of the design were unable to be explored in detail. In order to best answer the research question and sufficiently address the issues highlighted in the research, the bump space became the primary focus of the design. Ideally, the design would be developed in complete detail, employing a team of designers that could work in collaboration to create a holistic design.

The next step of this research would be to apply it in a real-world context, working with the community in the hopes of reducing the disconnection between old and young. Some of the potential benefits formulated could include creating stronger connections between people and the natural environment. Working alongside the local community would be beneficial and could potentially allow the project to form a stronger cultural identity.
FIGURES
All figures are by the author unless otherwise stated.
Figure 1. Diagrams of influencing topics


Figure 12. Stevens, Dan. "Greenwich Hospital." University of Greenwich. 2016. https://alumni.gre.ac.uk/2016/01/21/university-of-greenwich-sq2/

Figure 13. Ayres, Ashley. "Intergenerational 3." Ashley Mayes. 2018. https://ashleymayes.co.uk/arch-project/ospilario/.


Figure 166. Indoor pool area depicting the laminated timber structural frames (perspective drawing).

Figure 167. Gymnasium space overlooking the pool and gardens (perspective drawing).

Figure 168. Ground plan highlighting the Playscape and Community gardens (plan drawing).


Figure 170. Sketch illustration of the playscape paw print.

Figure 171. Exterior perspective looking towards the playscape from the library steps (perspective drawing).

Figure 172. Exterior perspective of the community gardens (perspective drawing).

Figure 173. Interior perspective of the trainspotting room, illustrating the visual connection with the community gardens and surrounding landscapes (perspective drawing).

Figure 174. View from the pedestrian path toward the courtyard space adjacent to the library (perspective drawing).

Figure 175. Window view from the second floor of the rehabilitation center, illustrating the green roof, and the timber slats that provide solar shading (perspective drawing).

Figure 176. Ground plan identifying the section cuts through the site (plan drawing).

Figure 177. Section Cut South-North illustrating the social street with connecting social nodes (section drawing).

Figure 178. Typical retirement apartment plans - identifying the different arrangements (plan drawings).

Figure 179. Section cut East-West illustrating the roof formations and the terraced apartment levels (section drawing).
9.1 FINAL PRESENTATION
Wayfinding

Thermal & Airflow Variability

Prospect

Visual Connection to Nature

Complexity & Order

Dynamic & Diffused Light

ROOFING LAYER

STRUCTURAL LAYER

GLAZING LAYER

FLOORING LAYER

Glass Roof

Adjustable Louvres

Rotating Glass Doors

Skylights

Material Connection to Nature

Non-visual Connection to Nature

CENTRAL DOWNPIPE FOR RAIN COLLECTION

Timber Louvre

10mm Thickness

CLOSED BLADE DETAIL 1:1

4mm Diameter Axel

Rubber Seal

Timber Beam

250 x 50mm

Timber Column

200mm

100mm

SECTION 1:100

SOCIAL STREET SECTION 1:100

SOCIAL STREET - HEART NODE LAYERS Axonometric 1:100 (A1)

HEART NODE - CENTRAL COLUMN DETAIL Axonometric & Section 1:10 @A2

CROSS SECTION 1:100 (300 x 2000mm Banner)

SOCIAL STREET CROSS SECTION 1:100 (300 x 2000mm Banner)
RENDERED PERSPECTIVES

The Heart Node
Interior Perspective (original size: A2)

Train Spotting Room
Interior Perspective (original size: A2)
N1 - THE EXCHANGE NODE

DETAIL MODEL - NODE 1
Top View (Scale 1 : 50)

CURVED ONYX WALL
Detail Model - Node 1 (Scale 1 : 50)

LIGHT WELL & SEATING AREA
Detail Model - Node 1 (Scale 1 : 50)
N2 - THE WELCOME NODE

DETAIL MODEL - NODE 2
Top View (Scale 1 : 50)

PUBLIC PATHWAY
Detail Model - Node 2 (Scale 1 : 50)

MAIN ENTRANCE
Detail Model - Node 2 (Scale 1 : 50)
N3 - THE HEART NODE

DETAIl MODEL - NODE 3
Top View (Scale 1 : 50)

CENTRAL ‘TREE-LIKE’ COLUMN
Detail Model - Node 3 (Scale 1 : 50)

MOVEMENT BETWEEN SOCIAL SPACES
Detail Model - Node 3 (Scale 1 : 50)
N4 - THE WISDOM NODE

DETAIL MODEL - NODE 4
Top View (Scale 1 : 50)

GREEN WALL
Detail Mode - Node 4 (Scale 1 : 50)

AMPITHEATRE SEATING
Detail Mode - Node 4 (Scale 1 : 50)
N5 - THE EXHALE NODE

DETAIL MODEL - NODE 5
Top View (Scale 1:50)

WITHIN NATURE
Detail Model - Node 5 (Scale 1:50)

RAMPED EARTH SEATING
Detail Model - Node 5 (Scale 1:50)
Redefining the Healthcare Environment
Together
Declaration

Name of candidate: Michael Kadwell

This Thesis/Dissertation/Research Project entitled: Intergenerational Healing: Redefining the Healthcare Environment

is submitted in partial fulfillment for the requirements for the Unitec degree of

Principal Supervisor: Hamish Foote

Associate Supervisor/s: Renata Jadresin Milic

CANDIDATE’S DECLARATION

I confirm that:

• This Thesis/Dissertation/Research Project represents my own work;

• The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.

• Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number:

Candidate Signature: ________________________________ Date: 21-05-19

Student number: 1411734
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Institute of Technology

Full name of author: Michael Kadwell

ORCID number (Optional): ________________________________

Full title of thesis/dissertation/research project (the work):

... Intergeneration Healing: Redefining the Healthcare Environment ... 

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Degree: MARCH (PEOF)

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Principal Supervisor: Hamish Foote

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