

# Mediating the Brief

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*Reconceptualising Typology for  
New Zealand's Ageing Population.*



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Victoria University of Wellington, in partial fulfilment of the  
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# Abstract

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New Zealand, like much of the developed world, has an ageing population. This fact is accompanied by evidence which shows that people's life spans are also increasing (WHO 6). As the population continues to age, housing facilities for older New Zealanders are going to become more visible and more important. With huge growth looming for this housing sector questions are surfacing over the capacity for existing elderly housing typologies to allow residents to age positively. Positive ageing is judged by the state of someone's physical, social and mental well-being (WHO 12). The field of architecture has an opportunity to play an active role in transforming the typology of elderly housing facilities, to make a new living environment that feels like an enjoyable place to be housed during a person's later years.

This thesis develops a position on the current state of living options for the elderly and the effect they have on the well-being of residents. The findings and insights drawn from literature and case study analysis help to determine a suitable direction for the future design of elderly housing typologies. This is tested through a design-based project. The outcome of this research finds that elderly housing typologies require a change in theme from segregation to integration. In response, the design project proposes a multigenerational housing environment in close proximity to a high number of leisure, health, educational, cultural and voluntary amenities to ensure elderly people can remain independent longer and continue to be active citizens within the community. The project supports strong links with the community through the use of a semi-public external courtyard space which provides significant interface between the elderly and members of the wider community, making it an effective mechanism for integration. The design of interior living environments aims to provide more flexibility to the living unit over time and enhance opportunities for casual social interaction to take place. Overall the research suggests that a living environment for elderly people which is well integrated into the community and provides opportunities for casual social interaction will help reduce problems associated with ageing and ultimately contribute to the elderly living a better quality of life.

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# 1



Introduction

# 1.0 Introduction

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## 1.1 Context of research

### *1.1.1 History of elderly housing typologies*

The social arrangement of families has changed dramatically since the end of the Second World War. Pre-1945 the extended family was the primary social unit and children took care of their older family members, often living with them as well. This changed after the war when Western Europe turned to building a welfare state where everyone became entitled to a “lifelong, guaranteed, material minimum” (Oosterman, 2011a, p.3). Running parallel to this was retirement, a state pension and taxes. Dychtwald (2005, p.19) argues that the state pension for elderly citizens was introduced for two purposes. First, it was designed to provide a safety net for the elderly during a period of economic frailty. Secondly, with unemployment rates fluctuating, retirement provided an institutional process whereby “older people would be removed from the workforce to make room for the young” (p.19). In principle this welfare model is based on intergenerational solidarity where the working population is expected to pay for the care of its elderly. However, this has come at great cost to traditional social arrangements. Oosterman (2011a, p.3) explains how with the introduction of the pension the working population cannot be held back in any way to contributing to production as it is their taxes which fund the pension. With this view in mind, elderly retirement facilities were created to help relieve the family unit from their traditional responsibilities. Retirement villages began emerging in the 1970s in New Zealand. These were initially run by government and other not-for-profit organisations, however during the 1980s private for-profit developers started to enter the market (Bosman p.4). This market, dominated by large-scale providers such as Ryman Healthcare, Bupa and Summerset, has grown considerably over the past two decades and will continue to do so as the baby boomer cohort starts to enter the later years of life. A major problem which has arisen from this change is that a major portion of the population has effectively been alienated from society in what some people consider to be ‘gated communities’ due to their poor integration within their communities. The practice of architecture must take some responsibility for this and work harder in the future to achieve built outcomes which prevent these perceptions becoming a continual reality.

### 1.1.2 Phases of old age

Traditionally, 'old age' was based on social factors such as becoming a grandparent, however in most modern western societies 'old age' is now identified in terms of chronological age (Koopman-Boyden, 1993, p.3). Presently in New Zealand this term is imposed on people who are eligible for the government pension at 65 years of age. Hopflinger (2008, p.33) and Huber (2008, p.55) suggest that to better understand the concept of 'old age' it is important to differentiate the population so that it outlines the different phases of one's life. In both of their articles they set out the typical phases of life most important to the housing market:

**Post adolescence** (*Extended Youth*) – Moving from the parental home and trying different housing arrangements, i.e. hostels, flats.

**Middle adulthood** (*Founding a Family*) – Moving into larger, more affordable housing within a family friendly environment.

**Late adulthood** (*Mature family phase*) – Children become older which improves parents' economic situation. This allows them to rethink housing desires which may involve a move into better quality housing.

**Post-parental phase of life** (*Empty-nest phase*) – Children move out making the living environment more spacious. It also provides parents with more disposable income since they no longer bear the costs of raising children.

**Autonomous retirement age** (*"Young old" or "Go-Gos"*) – This is marked by more social and personal independence due to likely good health and financial security. Often, they are not burdened by the constraints of physical ageing and may consider downsizing their house to reduce amount of property maintenance.

**Fragile retirement age** (*"Old age in transition" or "Slow-Gos"*) – The independent life they are used to may become more difficult due to physical restrictions. As their social, mental and physical capabilities decline, the likelihood of a move to an assisted living environment increases.

**Dependent old age** (*"Advanced elderly" or "No-Gos"*) – Age related frailties increase dramatically therefore making them more dependent on others. This may result in a move to an aged care environment.

### 1.1.3 Typical housing typologies for the elderly.

In the context of an ageing society, it is far from surprising that retirement housing has one of the highest growth rates in New Zealand architecture typologies (Thornton, 2010, p.5). In this country there are predominantly five different categories of elderly retirement housing, each catering for different levels or stages of care (New Zealand Aged Care Association, 2012, n.p).

The first type, '**ageing in place**' refers to a person's ability to remain dwelling in their community, either in their own family home or in some type of supported accommodation, rather than being moved into residential care (Davey et al., 2004, p.21). Being able to stay in their own home within a familiar community is the desire of most people anticipating old age (Brenton, 2001, p.170; Huber et al., 2008, p.78). This approach to ageing is also favoured in New Zealand government policy (Schofield, n.d., p.276). However, this is not always the best or preferred option for some older people's individual circumstances. It is inevitable that most elderly people will eventually reach a point at which staying in a family home is no longer possible due to their inability to cope with everyday chores, maintenance and activities (Peace et al., 2006b). There is also a trend towards those in the 'young old' phase taking a more proactive approach to ageing by seeking out alternative living arrangements in preparation for the future. This is where other forms of elderly housing become an accepted solution.

'**Independent living**', (more commonly referred to as 'retirement villages') is projected toward elderly people who are generally healthy, able to care for themselves and wish to retain a significant level of independence. These facilities usually offer services such as communal facilities, social activities, security and general maintenance of properties. They provide an environment which aims to promote independence and offer a range of social and leisure activities. People choose to move to this type of environment for companionship, security and low levels of maintenance. The next level, '**assisted living**', provides for those who are no longer able to care for themselves in an independent setting and require some assistance to carry out everyday activities such as preparing meals or cleaning. Often considered the last resort, the '**nursing home**' is an institutionalised facility that assists individuals who require skilled nursing care due to their limited ability to care for themselves and their living environment. '**Continuing Care Retirement Communities**' (CCRC) exist as a fifth category of elderly retirement housing. These communities combine independent living, assisted living and nursing care on one large site, therefore allowing elderly residents to alter their living arrangements as needs change. Oosterman (2011a, p.3) and the American Institute of Architecture (2004, p.10) acknowledge that these single environment arrangements could be the way of the future because of their ability to cater for all realities. As suggested on their websites, New Zealand's three largest providers of retirement housing, Ryman Healthcare (2012), Bupa (2012), and Summerset (2012), all embrace the CCRC concept on the basis that as an elderly resident's dependency increases, they can move within the same community, allowing them to build and maintain a network of friends throughout the course of their stay. Operating as an up and coming typology is '**Abbeyfield housing**'. This is a volunteer-based, not for profit, organisation that provides affordable rental housing on a communal living basis (Davey, 2004, p.64). Residents



must be able to care for themselves. Generally accommodating between eight to ten residents, Abbeyfield is styled as a large family home where each of the residents has their own ensuite bedroom and share common facilities such as kitchen, laundry, dining and sitting areas. Each house has a live-in housekeeper who cooks residents' two meals a day and takes responsibility for household shopping.

Various other forms of elderly housing currently exist overseas. These include co-housing, sheltered housing and intergenerational living communities.

Developed in Denmark, the Netherlands and Germany, '**CoHousing**' is defined by Brenton (2001) as "a cluster of friends and neighbours in their own homes, loosely associated with each other for a common purpose, rather than as a closed-in institution" (p.177). CoHousing, unlike sheltered housing and retirement villages, is not set up and run by a third party but instead by older people themselves, providing them with a sense of control over their own living environment (Brenton, 2001, p.170). One of the main features of this living arrangement is the sharing of common facilities. These often include a central common space containing a kitchen and bar space to accommodate large gatherings for special events. The primary advantage to this housing arrangement is it allows residents to maintain their privacy and independence within a chosen micro community setting (Davey et al., 2004, p.90).

'**Sheltered housing**' is a common elderly living scheme in the United Kingdom. It generally encompasses many dwellings within a collective setting of communal facilities, usually comprising lounges for gatherings, guest rooms and laundry areas (Davey et al., 2004, p.93). Living on site is a house warden who monitors residents and provides a direct point of contact when they require general assistance or in the case of an emergency (Peace, 2006a, p.183). An alarm system links the warden with all housing units, providing the elderly with a continuous measure of safety and security (Davey et al., 2004, p.93). The concept of sheltered housing is not well developed in New Zealand, however, some of its attributes have been incorporated into elderly housing schemes run by voluntary groups and social housing providers (Davey et al., 2004, p.94). Abbeyfield housing is an example of this model.

'**Intergenerational housing**' is a popular concept throughout Europe which brings all generations together in a residential complex where young and old live in separate units/apartments but also have community spaces. The

concept is founded on everyone living under one roof and supporting each other, which in turn helps to integrate the elderly back into the community and develops to a sense of community (Huber, 2008, p.117). This type of environment offers many benefits for the elderly, in particular the ability to maintain independence and daily intergenerational contact with young people, which helps to prevent feelings of loneliness or isolation, and thus supports psychological well-being in old age (Huber, 2008, p.111).

The housing models discussed above suggest that the spectrum of housing possibilities for the elderly has increased significantly since the development of elderly housing facilities in New Zealand. Noticeably, what all these alternative forms of living appear to have in common is that they combine independent living with aspects of communal living, security and care assistance.

#### *1.1.4 Current elderly housing issues for baby boomers*

The Western world is facing a change in its demographic profile, led by a generation of ageing baby boomers born during the post-war birth boom between 1946 and 1964, that has lived through great social, technological and political change. The impacts of this change are discussed by Ken Dychtwald (2005) when he notes that “baby boomers will transform the look, meaning, experience and purpose of maturity” (p.18). He further explains how this generation would rather rebel against age stereotypes by viewing the normal retirement age as a “turning point” in life, an opportunity to re-evaluate their lives and consider new options but still remain productive and contribute to society. This viewpoint suggests that baby boomers consider themselves youthful for longer and judge themselves old later than previous generations.

The change in baby boomers’ mindsets extends into their living expectations. Baby boomers have grown up with higher expectations of choice and autonomy than previous generations and are more willing to question the status quo (Brenton, 2002, p.151; McLaughlin, 2011, p.46). Thus, different ideas about living and housing arrangements during their later years have been developed. An example of this is in the aesthetics of a building. Baby boomers place a larger emphasis on the aesthetic appeal of a building to that of the pre-war generation who still consider price to be the most important consideration in determining where they live during their later years (Hopflinger, 2008, p.34). Gelauff (cited by Oosterman, 2011b, p.152) contributes to this point by suggesting that baby boomers don’t want to appear old and thus don’t want their elderly housing arrangements to emphasise their age; for them housing should be designed to fit seamlessly within the community rather

than stand out. Consequently, many traditional forms of elderly housing appear to be unacceptable to the baby boomer generation.

Baby boomers are used to freedom of choice and doing things differently, however at some stage in life they will face the same housing problem as previous generations where, for various reasons, family homes become no longer practical. In this circumstance baby boomers will inevitably consider making the move into one of the current elderly housing models. For this move to successfully occur, elderly housing models need to satisfy the evolving demands of an ageing population. From an architectural point of view, change is on the horizon. This will result in architects having an opportunity to redefine the brief of how elderly people are housed in the future and create a new image with which another generation could identify.

#### *1.1.5 Lifemark design principles*

New Zealand's ageing population mean that all designers should now consider designing and building homes according to a set of design standards that make it safe and easy for people to continue living in their own homes as their needs change with age. Lifemark Design Ltd is the New Zealand champion of the International Universal Design Movement and is supported by the New Zealand Government. Driven by the need to provide appropriate housing for older people, the goal of Lifemark is to promote adaptable, barrier-free and accessible design standards to designers and builders to ensure housing will cater to everyone, regardless of age (Lifemark Design Ltd, 2012). Design standards include common sense design features that meet the needs of different aged people and allow them to remain living in their home longer. Features include kitchen facilities that are designed to be easy to use, with sufficient space to manoeuvre a wheelchair and level thresholds. Unfortunately, the design of most New Zealand houses does not yet take into account this dramatic shift in demographics (Olsen, 2012, p.56). Therefore, it is the role of today's designers to make the lives of future elderly people easier by creating new homes that are designed to be accessible, easy to adapt as needs change and ultimately encourage independence through the adoption of Lifemark Design standards.

## **1.2 Problem statement**

The number of elderly people living in New Zealand is increasing, both as a number and as a proportion of the total population. The implications of this for society and for the economy as a whole is significant. According to the 2010 Aged Residential Care Service Review (Thorton, 2010, p.6), in the 20 years between 2006 and 2026 the New Zealand population is likely to grow by almost 20 percent from 4.2 million to 5 million. Parallel to this is the expected growth of the over 65 population where estimates show an expected increase of 84 percent from 512,000 to 944,000. As a result between 12,000 and 20,000 more elderly people will require residential aged care. This rise in the elderly population is largely attributed to the baby boomer generation. In addition, the increasing population is accompanied by evidence that shows people's life spans are increasing (WHO, 2002, p.6).

A growing ageing population is driving demand for housing for the elderly. This presents many challenges and highlights the need for elderly housing typologies to be reviewed to ensure a changing elderly demographic can age positively during their later years. Presently, it appears the elderly are considered a burden to society and there is concern that barriers are growing between the elderly and the surrounding community due the way retirement housing facilities have been arranged. This is having an impact on the positive ageing process. Positive or active ageing is judged by the state of someone's physical, social and mental well-being (WHO, 2002, p.12). In 2001 the New Zealand Ministry of Social Development developed the 'New Zealand Positive Ageing Strategy' which promotes the value and participation of older people in communities. This development was a positive step, acknowledging the important role of elderly people and the contributions they can still make to society. With the number of elderly people living in New Zealand increasing, the government has shown a change in mindset to now view elderly people as a valuable resource with many skills, knowledge and experience (Dalziel, 2001, n.p).

To remove present barriers, a shift in thinking is required to better integrate elderly housing typologies into the surrounding community and to also create opportunities for intergenerational exchange. This will have a definite influence on the positive ageing process where the elderly can become valued members of the community again rather than a burden.

### **1.3 Research intention**

Recent research shows that housing ranks high among the factors which influence the ability for elderly New Zealanders to age positively (Davey et al., 2004, p.8). While the positive ageing process recognises a number of factors, such as health, participation, financial security, independence and safety, the physical environment in which someone chooses to inhabit during their later years also plays an important part. This is where design and architecture can play a valuable role.

The main intention of this design research is to develop a housing option for elderly New Zealanders that will better support the positive ageing process and provide for a better quality of life during their retirement years, and which also acknowledges different approaches and attitudes to ageing. It also aims to change the theme of elderly housing typologies from segregation to integration so that the elderly can remain valued members of the community.

### **1.4 Scope of research**

The physical context of the research is the Wellington region, however conclusions can be applied to other locations within New Zealand or internationally. One of the limitations of this research is that there was no actual client identified. In reality, to ensure a successful outcome, it would be beneficial to consult with all elderly building stakeholders in the design and planning of elderly housing projects. The research could be extended with the addition of focus groups and interviews to substitute for this. The interpersonal relationship between the design team and a true community of building users is undoubtedly important in the success of a project like this.

## 1.5 Overview of chapters

This research is split into four broad methods of enquiry - Literature Review, Case Studies, Site Analysis and Proposed Design - with graphic representations and analytical drawings used throughout.

### *Chapter 2: Literature review*

This chapter provides a review of literature to help identify current issues and debates surrounding the elderly and their ability to age positively within their built environment and surrounding community. From this review a summary of contemporary knowledge is established which will be used to evaluate case studies and later help inform the proposed design project. The five main points discussed are proximity, segregation and isolation, intergenerational contact, sense of community and community participation.

### *Chapter 3: Case studies*

This chapter reviews five international examples of elderly housing typology, all built or designed within the last 10 years. Each case study conveys some of the different concepts discussed in the literature review. Due to a lack of suitable architectural drawings being made available for each case study, a thorough graphic analysis could not be completed. Schematic plans were however located for some projects, and these have been useful in analysing the different building layouts. The following section provides a systematic analysis of apartment plans specifically designed for the elderly within different elderly housing arrangements using Hillier and Hanson's 'Gamma Analysis' method. This analysis was undertaken to address the lack of information gained about elderly people's interior living environments through the review of literature. This method shows how individual apartment interiors are arranged with respect to spatial and social conditions. The summary of this chapter discusses aspects of the selected case studies which could be used to later support the design case study.

### *Chapter 4: Site Analysis and design brief*

This chapter discusses the process used for selecting a suitable Wellington site for elderly housing. A thorough analysis of the chosen site is followed by a design brief specifically developed to complement existing community facilities within the area. The end of this chapter consists of criteria for evaluating the design component of this thesis.

#### *Chapter 5: Description of the design*

The role of the proposed design is to test initial research findings and explore further possibilities for how the elderly can be housed in the future. Addressing the key issues established in the literature review and the analysis of case studies, the design investigates how elderly housing can become better integrated into the wider community in order to create more opportunities for casual social interaction to occur between a mix of age groups, thus reducing the chance of elderly people feeling lonely and isolated from society and contributing to a better quality of life during their later years. The main intention for the design is to reflect a change in theme for elderly housing typologies from segregation to integration.

#### *Chapter 6: Conclusion*

The final chapter concludes with a critical reflection of the design outcome and discusses how the research has met the main intention of developing a housing option for elderly New Zealanders which will better support the positive ageing process and provide for a better quality of life during their retirement years. The last section presents further possibilities for research.





# 2



## Literature Review

## 2.0 Literature review

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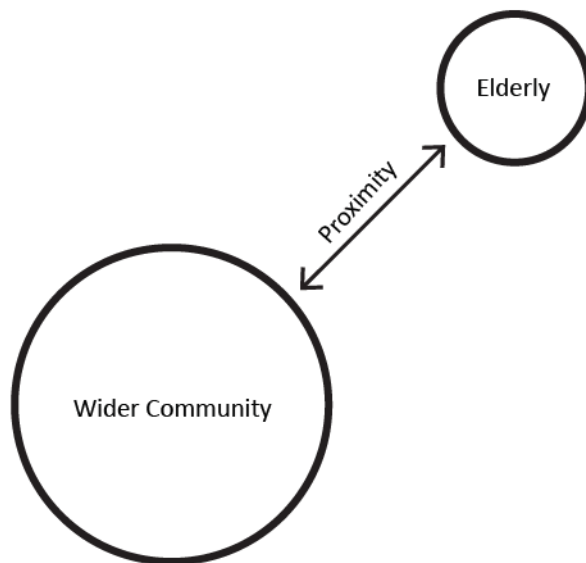
### 2.1 Overview

The aim of this literature review is to identify factors and debates surrounding the elderly and their ability to age positively within their built environment and surrounding community. Factors identified by this review will be used as a means to analyse case studies in the following chapter, and later help inform the proposed design (Chapter 5). During the course of this research key topics were consistently discussed throughout literature. This literature review has been broken down and discussed under these topic areas - location, proximity to amenities, isolation, segregation, intergenerational contact, community participation and sense of community. Much of the literature related to elderly housing typologies and general well-being in later life has been written in the United Kingdom and Scandinavia.

### 2.2 Proximity to amenities

Access to public transport is an important element for the elderly as it provides a link between themselves and their surrounding community. Peace et al (2006b, p.76) argue that a sense of control over movement and mobility is important to the self-esteem of elderly people living in a community. Thus, it is suggested that being located within close proximity to public transport increases in importance for the elderly as they age so they can access important amenities. Results from Gabriel and Bowling's study (2004, p.23) also support this view. They discuss how poor access to public transport makes it difficult for elderly people to get out and about, therefore having an impact on their quality of life. The views of these authors support the notion that public transport provides a lifeline for the elderly as it helps them to maintain their participation in social, recreational, cultural, and religious activities.

Other authors' works dismiss the importance of public transport by arguing that elderly housing facilities should be located somewhere in close proximity to essential amenities to avoid dependency on it. Scharf et al (2004, p.86) discuss how a lack of proximity to local services, such as shops and medical centres, can be problematic for the elderly as it necessitates dependence upon others or unreliable public transport. The work of Smets (2009) contributes to this viewpoint. His study focused specifically on whether elderly people wanted to live in a proposed new 'senior city' development in the Netherlands. This development involved elderly people living together in a village type environment at a distance from urban centres and services such as shops, health care and



**Figure 2.1:** The elderly segregated from the community

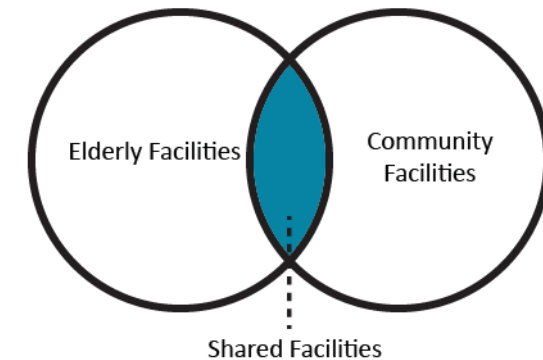
public transport. His research concluded that the elderly did not have a preference for this type of arrangement due to the distance from essential amenities which would result in more dependence on transportation.

Park (1987, p.33) acknowledges through his research that proximity is one of the most critical considerations for locating a facility for the elderly in order for them to retain some form of independence. Locating elderly housing facilities within an active part of the community provides the elderly, particularly those with physical limitations, with more opportunities to be involved in mainstream social activities and also be close to important resources such as medical centres and churches. Gelauff (cited by Oosterman, 2011, p.154) discusses how elderly housing facilities should be more city-based to provide the same capability.

Location and proximity to amenities appear to be considerations of high importance when deciding where to site an elderly housing facility. Successful implementation of this will allow the elderly to remain more independent and encourage them to integrate and interact socially with the community, therefore helping reduce any feeling of isolation and segregation amongst its residents.

### 2.3 Loneliness, isolation and segregation

People living in conventional elderly housing facilities can often feel isolated and segregated from society (Park, 1987; Victor et al, 2004). Park attributes this to the way elderly housing models are often set up as 'gated communities' which allow little or no interaction with the wider community or with younger generations. Evans and Means (2007, p53) report that some old people felt that the gated nature of a retirement housing development made them feel safer, however they also state that its gated nature was also likely to present a psychological and physical barrier between residents and the wider community. Within such a model the elderly have been shown to develop feelings of isolation, confinement and very quickly become very dependent on others due to their reduced physical mobility (Park, 1987, p.15). Breen (cited by Park, 1987) suggests that the "segregation of the elderly from other age groups prevents them from filling their social roles as models for the young and that this is a serious loss to society" (p.47). Kenzelbach (2011, p.13) and the World Health Organisation (2002, p.12) acknowledge that for ageing to be a positive experience, longer life must be accompanied by continuing opportunities to participate in society according to their needs. Victor et al add to this by stating that "social factors, especially social engagement and participation, are key dimensions in defining and enhancing quality of life" (2004, p.107). They go on to suggest the need to design and implement interventions that will encourage



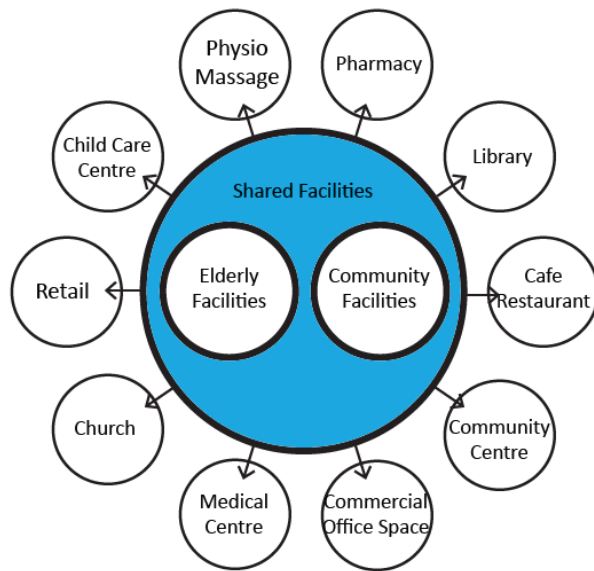
**Figure 2.2:** Elderly housing facilities combined with community facilities.

better engagement between the elderly and the wider community. Within the realm of architecture, a building programme can perform a role in achieving this. This is elaborated on through the work of Park.

Conventional elderly housing arrangements tend to be locationally segregated from society, therefore Park (1987, p.2) suggests that a 'mixed use' concept should be applied to help address the problems of isolation and segregation. This involves placing wider community and elderly housing facilities together on one site, with certain amounts of shared space, in order to help stimulate interactions between the elderly residents and younger generations on a daily basis. Hollwich supports a 'mixed use' model in suggesting that the best way of mitigating problems associated with segregated elderly housing facilities is to "inject new community based programs" (2011, p.20). This would reintroduce urban life and vitality back into aged care environments and invite broader community participation in caring for the elderly.

## 2.4 Community participation

Community participation is considered one of the main contributors to quality of life and well-being among elderly people. In their study on the quality of life of old people, Gabriel and Bowling (2004, p.27) mention the importance of 'keeping busy' during retirement. In spite of negative changes associated with ageing, participation in social activities, such as voluntary work and helping other people, were found to be highly cherished by the elderly as it made them feel valued within the community. They go on to suggest that the elderly deliberately pursue social activities as a way of retaining an interest in life and serving as a forum for social interaction with people of all ages. Evans (2009, p.6) also found that older people enjoy increased levels of participation in voluntary and social activities. He argues that it is important to take into account their aspirations by trying to aid their desire to contribute toward the wider community, rather than viewing them as a burden to it. He also discusses how opening up on-campus facilities to the public can help prevent the elderly from feeling excluded from society and make for a more vibrant community (p.87). Karidis (2008, p.6) acknowledges the potential success an integrated mixed use approach could have by discussing the effectiveness of a senior centre in Nashville. This centre runs an intergenerational, community-based theatre programme where the elderly showcase their theatrical abilities and socialise with younger generations. Karidis (2008, p.7) reports how the elderly feel physically and mentally better about themselves as a result of community interaction.



**Figure 2.3:** Elderly housing facilities adjacent to community facilities.

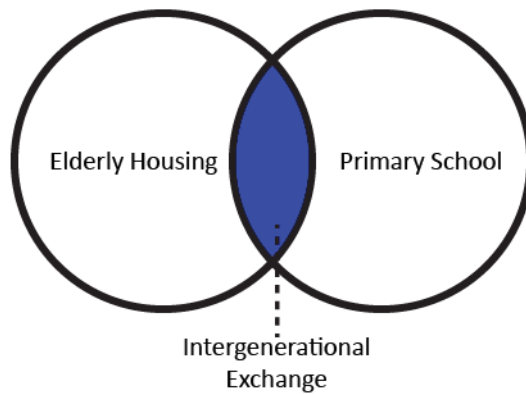
While the injection of mixed use programmes has already been used in many international models for housing

the elderly, such as on site hairdressers and cafes, in most cases these appear only to be accessible by the elderly residents themselves. From observation, the inclusion of community facilities within New Zealand's retirement villages or nursing homes do not appear to have been adopted to any great extent. Exploring a new building typology for the elderly provides an opportunity to investigate the application of the mixed use concept to encourage social interaction with the wider community, thereby changing the theme of elderly housing environments from segregation to integration. This method could be a successful tool for reintegrating the elderly back into society.

## **2.5 Sense of community**

A sense of community is an important factor in quality of life for many older people. Currently there is widespread concern at the weakened status of community in modern society and a fear that it is starting to be replaced by individualism, consumerism and greed (Evans, 2009, p.7). In recent times retirement villages have become increasingly popular due to their ability to provide community living, while at the same time promoting independence and well-being (Evans, 2009, p.128). This fact is reinforced by multiple texts suggesting that being part of a community is one of the reasons older people choose to move into retirement villages (Evans, 2009; Evans and Means, 2007; Croucher et al., 2006). Croucher et al (2006) discuss how the inclusion of key facilities within retirement villages, such as bowling greens and spaces for leisure classes, present opportunities for social interaction which helps foster the development of a sense of community. They also suggest that the overall attraction of retirement villages to older people is the combination of independence, security, social engagement and an active lifestyle. Evans and Means (2007, p.25) suggest that the search for a sense of belonging is behind some elderly people's reasons for shifting into retirement housing. Evans further contributes to this topic area by stating that living in retirement villages "offers older people the opportunity to choose and shape communities that are consistent with their own biographies and life histories" (2009, p.26). Due to the way they are set up, Brenton (2002, p.54) considers the CoHousing concept as the best model in which a sense of community can be developed. He explains that as older people get to select who they want to live with, and invariably choose people who share the same ethos and norms, this contributes greatly to the development of a sense of community. A consistent theme across all literature was that the elderly enjoy the sense of belonging to a community as it provides them with confidence and a real sense of security (Gabriel and Bowling, 2004, p.22).

Research conducted by D,Abundo and Carden (2009, p.90) shows that community gardens help to foster a sense



**Figure 2.4:** Elderly housing facilities combined with educational facilities to create opportunities for intergenerational exchange.

of community while also helping to improve social networks within the community. Austin, Johnston and Morgan (2006) found that a community garden programme for the elderly had a significant effect on elderly participants' physical, social and emotional health by giving them a sense of achievement, satisfaction and aesthetic pleasure. It also provided the elderly with opportunities to socially interact with the local community in a safe and relaxed environment. The work of Firth, Maye and Pearson (2011) adds to this by suggesting that community gardens act as hubs for the community and are places where potential barriers can be broken down between different social, cultural and age groups. A community garden could be an appropriate programme for the proposed design (Chapter 5) as they are very inclusive spaces that can help to foster a sense of community between residents and the wider community by providing a space to gather, network and educate one another. This is shown to not only improve the quality of life of elderly people, but also help improve the collective wellness of a community.

While retirement villages have been praised for their ability to provide an environment with a sense of community, Evans (2009, p.131) raises concerns about their focus on age segregation and what this means for intergenerational contact. Opportunities to interact with the wider community remain crucial for many elderly people living in any type of housing arrangement thus he suggests that any model keeping old and young apart cannot be sustainable in the long term. Based on this literature review it appears designing elderly housing typologies which collaboratively foster a sense of community and intergenerational contact should be important design criteria for any project if elderly residents are to age positively.

## 2.6 Intergenerational contact

Relationships with grandchildren are important for grandparents as they get older. This was brought to light recently when a New Zealand newspaper published an article about two parents publicly advertising to adopt grandparents for their own young children (Honeybone, 2012, n.p). As both sets of grandparents lived out of town they felt that their young children were not getting enough personal contact with the older generation. Within the article the parents discuss how the older generation are rich with stories and life experiences which deserve to be shared with younger generations. "You get different influences from an older generation" (Honeybone, 2012, n.p). The role this relationship plays in contributing to the quality of life for old people has been researched by Clarke and Roberts (2004, p.188). Findings from the study found that grandparents not only welcomed the role they could play in supporting the upbringing of their grandchildren but also the opportunity to actively play a part in mentoring the younger generation within the community (2004, p.188). They also

discovered that the elderly really enjoyed regular contact with the younger generation as it opened them up to new experiences which helped keep them young and feeling like they are still involved in the world (2004, p.208). Studies conducted by Gabriel and Bowling (2004, p.20) support the work of Clarke and Roberts when they conclude that the elderly gained an emotional boost from spending time with children and teenagers which contributed to the enhancement of their quality of life.

Current elderly housing typologies create a barrier between elderly residents and the wider community in an attempt to provide additional security and safety for residents. However, this intergenerational segregation can have a negative impact on the positive ageing process. This poses the question as to whether facilities that encourage intergenerational contact and provide opportunities for the elderly to pass on their wealth of life experience should be provided within the arrangement of elderly housing models.

## **2.7 Summary**

The literature review firstly reveals the importance of proximity to amenities when selecting a site for elderly housing typologies. Proximity enables the elderly, particularly those with physical limitations, to maintain a sense of independence which can help reduce feelings of isolation and segregation. Living in an environment which fosters a sense of community and provides opportunities for intergenerational exchange are also important factors raised within the literature. This can contribute to the elderly maintaining an identity within society and remaining valued members of the community.

Concerns are raised about the way existing elderly housing models are set up as gated communities which provide barriers between residents and the wider community. This focus on age segregation is considered by Evans (2009) to be unsustainable in the long term and appears partly to blame for some of the issues raised within the literature. Injecting community-based programmes is suggested as one way of inviting broader participation and engagement between the elderly and the wider community. In particular, a community garden is considered an appropriate mechanism for fostering a sense of community and improving social networks within a community.

This literature review shows that with an ageing society comes new opportunities and a new role for design and architecture to improve the living environments of the elderly. Exploring a new elderly housing typology provides an opportunity to develop a living environment which will encourage social interaction and support intergenerational exchange while also providing an appropriate interface between elderly people and the wider community.





# 3



Case Studies

## 3.0 Case studies

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### 3.1 Overview

With an ageing population, there is a growing need for a diversity of elderly housing typologies to be built. While New Zealand is unlikely to see the demise of either the traditional nursing home or large scale retirement village in the foreseeable future, new models will need to emerge to meet the living expectations of the baby boomer cohort. Their ideas about living and housing in later life differ somewhat to those of previous generations, who have been more willing to accept what was presented to them. In comparison, this demographic have grown up with higher expectations of choice and autonomy than previous generations and are more willing to question the status quo (Brenton, 2002, p.151; McLaughlin, 2011, p.46). Thus, different ideas about living and housing arrangements during their later years have been developed. This chapter analyses five international case studies with a focus on how these convey the different concepts discussed in Chapter Two – proximity, integration, intergenerational contact, sense of community and community involvement. No emerging precedents for elderly housing typologies were identified in New Zealand. This is due to the New Zealand elderly housing sector consisting predominantly of traditional facilities such as the nursing home, retirement village and continuing care retirement communities (CCRC). The second part of this chapter is a systematic analysis of apartments specifically designed for the elderly within different elderly housing arrangements using Hillier and Hanson's 'Gamma Analysis' method. This method shows how individual apartment interiors are arranged with respect to spatial and social conditions. The intention is to determine specific spatial and social relationships that can be integrated into the design case study. The conclusion of this chapter discusses aspects of the selected precedents which could be used to support the design case study of this research.

### 3.2 Emerging elderly housing typologies

The five case studies, all built or designed within the last 10 years, were selected because they illustrate the different concepts discussed in the literature – proximity, integration, intergenerational contact, sense of community and community involvement. Unfortunately there were limited suitable architectural drawings available for each case study to enable a graphic analysis to be completed between them. The case studies are:

- Cote D'Ivoire Retirement Village for priests, Cote D'Ivoire Ivory Coast.
- Darwin Court Independent Living Apartments for over 50's, Southwark, London, England.
- De Rokade Residential Tower Block for Seniors, Groningen, the Netherlands.
- Multigenerational Housing Scheme, Konigsbrunn, Germany.
- Oosterhoogeburg Apartment Complex for Seniors, Groningen, the Netherlands.

#### 3.2.1 Cote D'Ivoire Retirement Village

The Cote D'Ivoire Retirement Village was designed by HWKN architects and is currently still in the developed design phase. This project is notable because it is the first of its kind in West Africa where traditional, family-based models of elderly care continue to be the norm (HWKN, 2012). It has been designed specifically for Catholic priests who do not have a family and are therefore excluded from family-based models of care. The client for the project was inspired to commission it when he found out that a lot of elderly priests become homeless when they retire (Hollwich, 2011, p.23). The retirement village features housing for the priests located around a small school building for the village. As all the priests have studied, including a school building at the heart of the retirement village provides the elderly priests with the opportunity to educate younger members of the community and share their wisdom (Hollwich, 2011, p.23). Aesthetically, the village attempts to blend in with the surrounding site and become part of the land using green roofs. The school is designed to be a landmark within the community.

While the architectural typology appears simple and still quite undeveloped, its attempt at fostering intergenerational exchange and enabling the elderly to pass knowledge and skills down to younger generations are the main ideas which can be taken from this case study. By placing the retirement project within an existing village, it attempts to blend the elderly priests into the community therefore breaking down barriers between the old and young. By inserting a school into the heart of the retirement village it acknowledges the positive influences the elderly can have on the young and encourages interchange between all ages.



*Figure 3.1: Birdseye view showing housing for the priests surrounding the centrally located school building.*



*Figure 3.2: School building.*



*Figure 3.3: Central courtyard space.*



**Figure 3.4:** Street View



**Figure 3.5:** Cafe located at street level

### 3.2.2 Darwin Court

Darwin Court was designed and built by architects Jestico and Whiles in 2003, specifically to respond to the changing needs of a local community and its older people (HAPPI, n.d, p.14). Recognised by the United Kingdom Housing Federation as an innovative approach to housing the elderly, it was designed to create and encourage a mixed use community which becomes a hub for intergenerational interaction (HAPPI, n.d, p.14). Located in London, this six-storey mixed-use building combines housing space, workspace and shared facilities under one roof. Shared facilities include a small medical centre, swimming pool, gym, café, IT suite and a large multi-purpose space, which can be used by residents and the wider community for meetings and social events. There is also a dedicated training centre which was developed to allow elderly residents to pass on skills and knowledge to the wider community. One of the founding principles behind the project was to promote a change in thinking about how the elderly are housed within the community (HAPPI, n.d, p.14). Darwin Courts is considered to have helped provide a focus for the surrounding community and contributed greatly to the rejuvenation of the local area (HAPPI, n.d, p.14). While innovative in some aspects of its design, the building aesthetically lacks street appeal and has not progressed from the low-key aesthetic typically associated with elderly housing typologies. The design scheme does not incorporate an exterior courtyard space. This represents a missed opportunity to provide an interface between the elderly residents and members of the community.

The defining idea taken from this case study is its focus on promoting community integration. By combining independent apartment living with inclusive community facilities, the building aims to make connections with the local community which helps to break down barriers between the elderly and the wider community. The outcome appears to be an engaged and vibrant community which contributes to the well-being of the elderly in later life.

### 3.2.3 De Rokade

De Rokade was built in 2003 and is a 21 storey residential tower accommodating 74 apartments intended for the 'young old'. Designed by Arons en Gelauff Architects, De Rokade aims to push the boundaries of the public image of elderly housing typologies. Instead of the understated, sterile aesthetic normally assigned to this type of building, De Rokade makes a show of itself with playful design features that make it a prominent building from the streetscape, such as round signature windows bubbling up the tower façade. The tower has a cruciform plan with four apartments per level, situated in an L-form. Each apartment has three different layout possibilities allowing new residents to alter the floor plate to suit their needs when a change of ownership occurs.

The tower, located immediately adjacent to a large nursing home, sits on a three storey plinth which is occupied by a combination of mixed use commercial spaces at ground level and car parking above. By placing public mixed use and elderly housing facilities together on one site, the designers attempt to foster interactions between the elderly residents and wider community (Arons & Gelauff, n.d, p.70). However, their success is debatable due to its location within a larger complex of elderly facilities on the outskirts of the city in which very few other commercial buildings exist. The main relevance of this precedent to my research is in its ability to challenge the traditional aesthetic of elderly housing typologies and its adoption of the mixed use concept.



Figure 3.6: Apartment tower entry area.



Figure 3.7: A typical apartment interior.



Figure 3.8: Street view of apartment tower.





**Figure 3.9:** View of apartment clusters.



**Figure 3.10:** Site Plan

### *3.2.4 Multigenerational housing scheme*

This multigenerational residential housing scheme was designed by SMAQ Architects as part of an international competition exploring future housing models. The project aims to develop a new typology of living apart and together at the same time, across generations (SMAQ website). Located in Königsbrunn, Germany, the design scheme comprises three blocks of residential apartments alongside a community facility in the form of a kindergarten. The built forms are gathered around a collective outdoor courtyard, creating a shared space necessary for community life. This provides residents and the wider community with an area in which to interact with casual frequency and in a relaxed and non-confrontational manner. The scheme does not include garaging for residents as it promotes the use of public transport.

This project's relevance to my research emerges within its primary architectural concept based upon encouraging the elderly to live within a multi-generational community. This concept attempts to foster exchange between a diverse population of residents, therefore providing the elderly with opportunities to interact with younger generations on a regular basis. The centrally located semi-public courtyard creates a threshold between public and private living spaces and acts as a mechanism for fostering social interaction. The multigenerational apartments make a connection to the community through having a kindergarten on site.

### 3.2.5 Oosterhoogebrug

The Oosterhoogebrug residential housing complex was designed by Arons en Gelauff Architects with the aim of creating a new community hub for a suburb on the outskirts of the city. It is about to enter construction phase. Located on one site, a cluster of four building volumes have been arranged to form a small community. Adopting the mixed use concept, each volume has a different programme associated with it. The first volume is a residential tower containing 60 apartments for the 'young old'. Next to this are a small nursing home, medical centre and community centre. The third building volume houses a youth centre, retail space, cafe and a multifunctional space which doubles as both a gymnasium and theatre hall. The smallest volume is a day care centre. An interesting feature of the apartment tower is the creation of large 'urban rooms' which are viewed as large voids in the rectangular tower blocks. These act as a shared surface and serve to encourage the elderly to interact with one another on a daily basis to help foster a sense of community (Arons & Gelauff, n.d, p.58). The building's overall aesthetic appears to be one of crisp modernity, well lit forms using plenty of contemporary materials. This helps to transform the image of this elderly housing facility from sterile to spritely.

The relevance of this case study to my research is in the emergence of a change of theme. Typically, elderly housing typologies have been viewed as segregated from the wider community. This project adopts integration as its primary theme where facilities are being provided to encourage intergenerational exchange. The inclusion of public amenities and a shared exterior courtyard space invites the wider community into the complex, in turn helping activate the site and create vibrant public space.



**Figure 3.11:** Birdseye view with day care centre in the foreground.

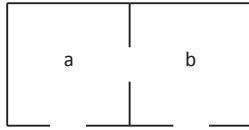


**Figure 3.12:** 'Urban rooms' are viewed as large voids in the rectangular tower blocks.

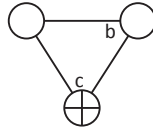


**Figure 3.13:** View from ground level.

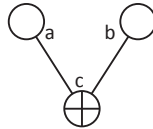
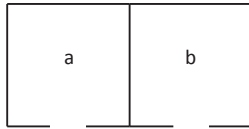
Floor Plan



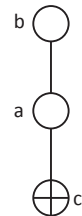
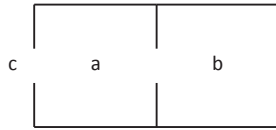
Gamma map



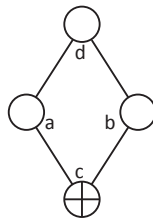
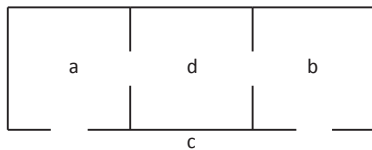
**Figure 3.25:** Distributed Configuration



**Figure 3.26:** Non-distributed Configuration



**Figure 3.27:** Non-distributed Configuration



**Figure 3.28:** Distributed Configuration

### 3.3 Gamma analysis of elderly apartment interior configurations

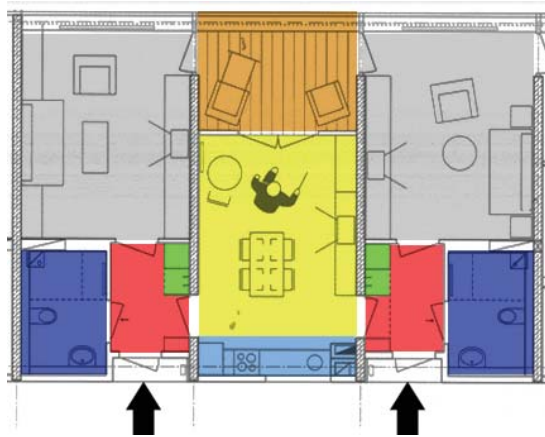
Hillier and Hanson's 'gamma analysis' method is a tool which can be used to analyse and compare building interiors in terms of how spaces are arranged and related to each other, and also how a building works to interface the relationship between occupants and those who enter as visitors (1984, p.143). This analysis was needed as there was a lack of information about elderly people's interior living environments gained during the review of literature. The examples that have been selected to undertake this analysis are all apartments designed for the elderly. International examples from a range of countries were sought to provide a range of elderly apartment interiors with the intention to see if cultural differences existed between countries. However, no architectural drawings were available from countries such as Australia and Britain. New Zealand retirement villages were included to identify how they compare with their international counterparts.

The examples for analysis are:

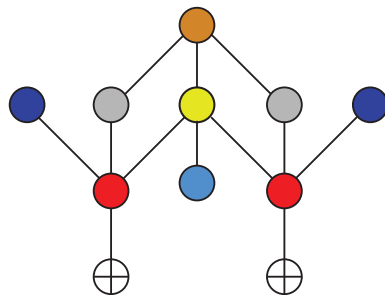
- De Plussenburgh elderly apartment complex, Rotterdam, Netherlands
- De Rokade elderly apartment tower, Groningen, Netherlands
- Integrated housing apartment complex, Nuremburg, Germany
- Keystone Retirement Village, Faribault, USA
- Multigenerational apartment complex, Stuttgart, Germany
- Rita Angus Retirement Village, Wellington, New Zealand
- Senior Centre apartments, Manching, Germany
- Senior residence apartment complex, Muri, Germany
- Village at the Park, Wellington, New Zealand

The 'gamma map' analysis assists in developing an understanding of the spatial structure of elderly apartment floor plans by illustrating the relationships between different rooms. Hillier and Hanson discuss how all interior environments have certain permeability properties which display either a distributed or non-distributed pattern (1984, p.148). A distributed configuration occurs when there is more than one independent route from a particular space (figure 3.25). Non-distributed configurations occur when there is a common space, through which someone must pass through to get to other spaces (figure 3.26). A gamma map is a graph in which spaces are represented by circles and permeabilities by lines, with the lines representing direct permeabilities between spaces.

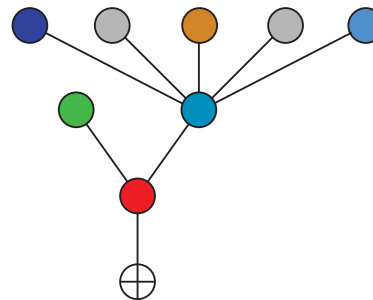




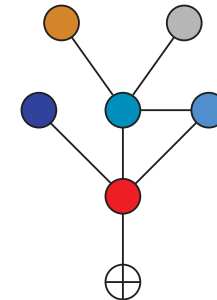
**Figure 3.14:** Multigenerational Apartment  
 Stuttgart, Germany  
 Scale 1:200



**Figure 3.15:** Integrated Housing Apartment,  
 Nuremberg, Germany  
 Scale 1:200

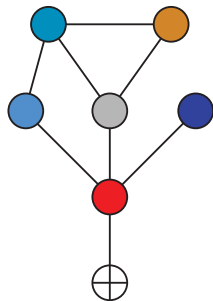


**Figure 3.16:** Senior Centre Apartment,  
 Manching, Germany  
 Scale 1:200

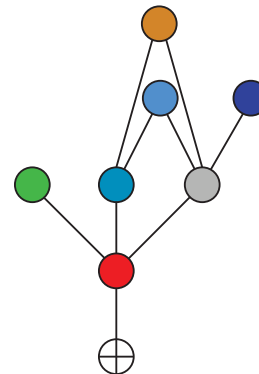




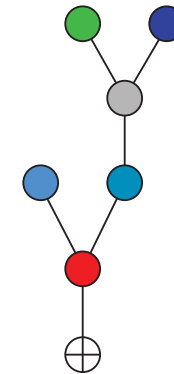
**Figure 3.17:** Senior Residence Apartment,  
Muri, Germany  
Scale 1:200



**Figure 3.18:** Senior Residence  
Apartment, Muri, Germany  
Scale 1:200

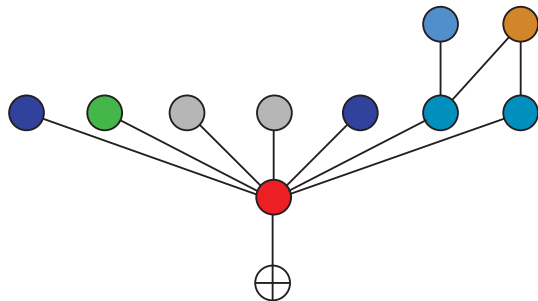


**Figure 3.19:** Keystone Retirement Vil-  
lage Apartment, Fairbault, USA  
Scale 1:200

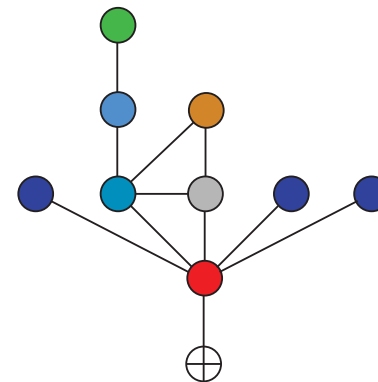


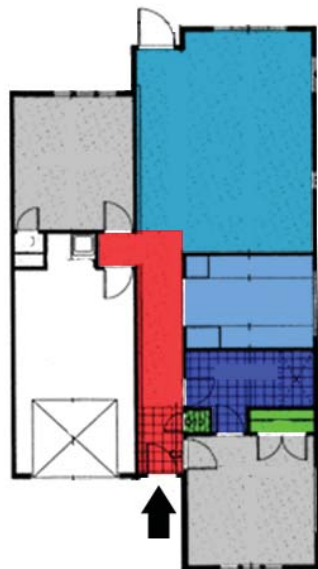


**Figure 3.20:** De Rokade Elderly Apartment Tower,  
Gronigen, Netherlands  
Scale 1:200



**Figure 3.21:** De Plussenburgh Elderly Apartment,  
Rotterdam, Netherlands

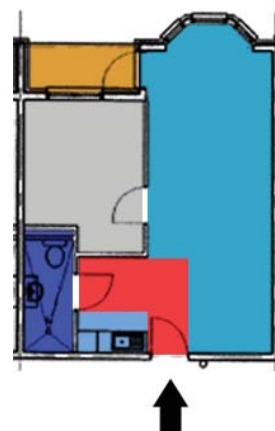




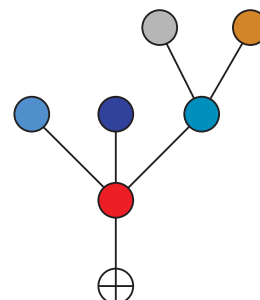
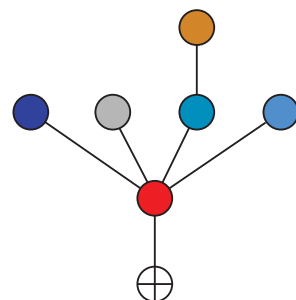
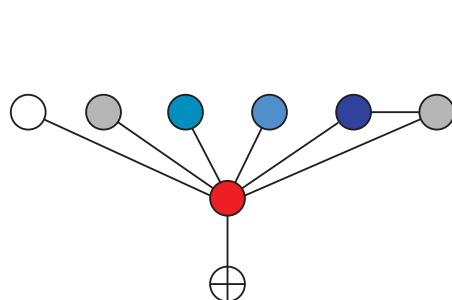
**Figure 3.22:** Village at the Park - Independent Villa, Wellington, New Zealand  
Scale 1:200



**Figure 3.23:** Village at the Park - Villa, Wellington, New Zealand  
Scale 1:200



**Figure 3.24:** Rita Angus Retirement Village Apartment, Wellington, New Zealand  
Scale 1:200



The eleven apartment case studies show a mix of both distributed and non-distributed layouts. Figures 3.20, 3.21, 3.22 and 3.33 show a non-distributed configuration where someone must pass through the lobby/hallway area to get to almost all of the other rooms. In some cases this articulation appears to have been done to achieve maximum segregation between the sleeping and living areas for privacy reasons. The gamma maps indicate that the living area, in many cases, is the most integrated space within an apartment with a distributed configuration. This is emphasised by its central positioning on the 'ring' where multiple permeability lines connect between spaces adjacent to it.

One important observation is the importance of distributed configurations being assigned to shared rooms, such as the bathroom. Figures 3.18 and 3.19 show a non-distributed configuration between a shared and private space. This means that a visitor must pass through a private threshold into a bedroom area in order to access the bathroom. This is problematic as it provides the elderly with little scope to conceal parts of their life which are not appropriate for display, such as personal possessions. In these cases the bathroom should have been accessible off another shared space, such as the lobby or living area, so the private threshold would not be crossed. Figure 3.21 avoids this problem by providing two entries into the bathroom, one via the bedroom and the other off the lobby. This emphasises the importance of achieving appropriate segregation between private and shared spaces.

### **3.4 Additional observations**

In addition to familiar themes discovered within the gamma analysis, a number of other issues pertaining to the interior design of elderly apartments can also be established. The most obvious observation is an apartment's lack of engagement with corridor circulation space via windows and doors opening out onto it. This is a missed opportunity for casual social interaction to be facilitated between elderly residents and passers-by, such interaction could help to prevent the elderly from becoming isolated and lonely within their own residence. Hertzberger suggests using a two-section door as a means for creating opportunities for interaction to occur. He states "such half-doors constitute a distinctly inviting gesture: when half open the door is both open and closed. It is closed enough to avoid making the intentions of those inside all too explicit, yet open enough to facilitate causal conversations with passers-by" (1991, p.34). This is an interesting element that could be tested within the proposed design as it would provide elderly residents with the option of welcoming casual exchange with passers-by from within the comfort of their own private space while also rendering the corridor as more than just a space for circulation.

The use of a shared living, kitchen and deck area between residents is an interesting concept applied to the internal layout of Stuttgart multigenerational apartments (figure 3.14). While its purpose could be assumed as a method for increasing the density of apartments, by halving the number of these spaces required in the tower block, it could also be interpreted as an effective mechanism for encouraging social interaction between residents. This concept has the potential to be further explored.

Notable in all of the example floor plans is a lack of flexibility in how the apartment spaces can be occupied. Conventionally rigid walls and doorways are used throughout, decreasing the ways that a room or combination of rooms might be used. A common method used to increase the flexibility and divide different spaces up is to provide moveable walls (Schneider and Till, 2007, p.191). These allow a connection between rooms to be formed when wanted or closed when more privacy is required. Their use can also help to increase the perceptual size of a dwelling by opening up a space, particularly in situations where tight spatial conditions are present (Schneider and Till, 2007, p.190). This particular element could be considered for the proposed design as a method for increasing the ways that a room or combination of rooms can be used by the elderly to accommodate different desires and needs.

### **3.5 Summary**

The selected case studies earlier in the chapter demonstrate some of the issues discussed in the literature review. They also introduce ideas and concepts that can be integrated into the proposed design. One of the main concepts is combining elderly accommodation with other community facilities such as swimming pools, medical centres, retail outlets and gyms. This enables a connection to be made with the community and provides opportunities for casual interaction to occur on a regular basis between the elderly and the general public. Locating public amenities at ground level shows an effort to engage the public through making them visible from the street. This indicates a move away from the conventional gated community concept. The inclusion of community facilities also highlights the importance of proximity when selecting a site for my proposed design; if a building site is situated too far away from the heart of the community, these shared facilities will not get enough use and render them a negative rather than a positive addition to any elderly housing scheme. Other concepts include the introduction of a children-centric amenity in close proximity to elderly housing to provide an opportunity for the elderly to make a positive contribution to the lives of the younger generation.

The aesthetic of some of these case studies also reflects visual change where an institutional appearance has been replaced by playful and stimulating design aesthetics. In particular, De Rokade provides a bold example of this. The case studies also present examples of built forms being organised around a semi-public collective space to promote social interaction and act as an interface between elderly people and the wider community. This provides a shared surface necessary for community life and invites the wider community onto the site, thus stimulating casual exchange to occur more frequently between elderly people and the public. This in turn leads to more vibrant urban spaces being created. These case studies provide good ideas for how elderly housing arrangements can be integrated into the wider community, while also promoting intergenerational exchange. All five case studies have moved away from the traditional theme of segregation to one which promotes integration.

An analysis of the spatial structure of selected elderly apartment plans using Hillier and Hanson's gamma analysis technique helped to identify permeability characteristics. A similar number of both distributed and non-distributed layouts were noted which indicates that there were different levels of permeability present. The living area was discovered to be the most integrated space across the different layouts by virtue of its central positioning on gamma maps. Apartments designed with distributed layout characteristics would be better suited to a resident, particularly the elderly, as they have the potential to provide more flexibility to the living unit overtime by increasing the number of independent routes from a particular space. However, it is also important that direct permeabilities between spaces are carefully considered against the function of the space to ensure privacy is maintained in some situations.

In addition to the gamma analysis, other observations were made regarding the internal layouts. Most notable was each apartment's lack of engagement with corridor circulation space. My proposed design will test whether a better relationship can be created between the accommodation and circulation spaces in order to better facilitate interaction between residents and passers-by, increasing the sociability of the scheme as a whole. One case study presented an example of an internal layout designed to promote social interaction (figure 3.14). While confrontational in nature, due to the fact that the elderly are forced to share a living space with another resident, this concept of providing a shared space between residents has the potential to be tested further in order to encourage casual social exchange and promote a more integrated living environment.





4



Design Parameters



## 4.0 Design parameters

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### 4.1 Overview

Previous chapters identified key issues to inform the selection of a site and building programme. They included identifying specific features which could aid the positive ageing process, in particular proximity to amenities. This guided the identification of an appropriate location for a new elderly housing typology in Wellington. Once a site had been selected the existing buildings were evaluated to decide whether it was more practical to maintain some or all of the existing structures or redevelop the site. In addition, a thorough analysis of the chosen site was completed to gain an understanding of the wider urban issues and the effect they will have on the development of the design case study. A design brief was developed by identifying the key programmes missing within the surrounding community which would benefit both elderly residents and the wider community. The aim is for the design case study to complement existing community facilities within the area. The end of this chapter consists of criteria for evaluating the design case study component of this thesis.

## 4.2 Site selection

The site selection initially involved identifying an area in Wellington which was flat to allow the elderly to move unobstructed around the site and wider community. The site selection was further refined taking into consideration findings from the literature and case study analysis. The factors are:

- Proximity to existing leisure facilities, such as library, retail, cafes, swimming pool, bookshops.
- Proximity to essential health facilities, such as medical centre, pharmacy, physiotherapist, hospital, medical specialists.
- Proximity to cultural facilities, such as churches, galleries, museums, cinemas.
- Proximity to existing primary schools, child care centres, secondary schools with the idea linking into these to encourage intergenerational exchange.
- Proximity to adult/community education facilities to provide the elderly with opportunities to continue to educate themselves and others.
- Proximity to voluntary organisations to offer opportunities for the elderly to volunteer their skills.
- Proximity to public transport routes and their frequency.
- Traffic density on primary and secondary roads to assess safety.
- Permeability and links to essential important amenities within the community, such as health and leisure facilities.
- Existing elderly population and future growth of this demographic.
- Site orientation to capture the sun.







The selected site for the proposed design portion of this thesis is located in Newtown, Wellington, New Zealand. It was chosen for its ability to meet the criteria set out above. Newtown is four kilometres from Wellington's city centre (figure 4.2). The suburb provides a link between central Wellington and the south coast suburbs. Newtown is a recognised hub for public amenities within Wellington South, with good public transport linking the suburb to the CBD (Central Business District) of Wellington City and Wellington Hospital facilities located in the heart of the community. It has an ethnically and socioeconomically diverse population and is considered an important cultural precinct within Wellington City. A range of retail, commercial and community buildings are present which would be useful for the elderly. The community also holds a number of popular community events such as fairs and markets.

**Figure 4.3: Newtown Suburban Centre Character Area.**  
Source: Wellington City Council



Figure 4.4: New Zealand

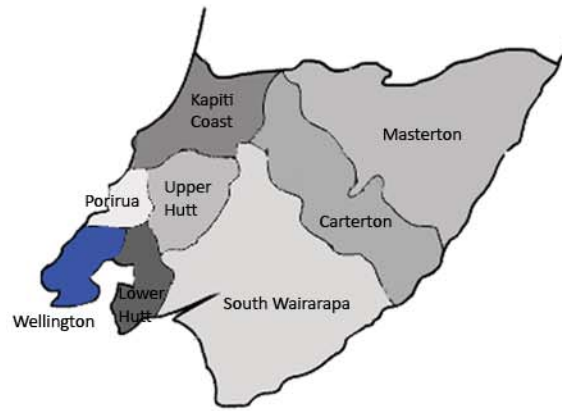


Figure 4.5: Wellington region



Figure 4.6: Newtown district

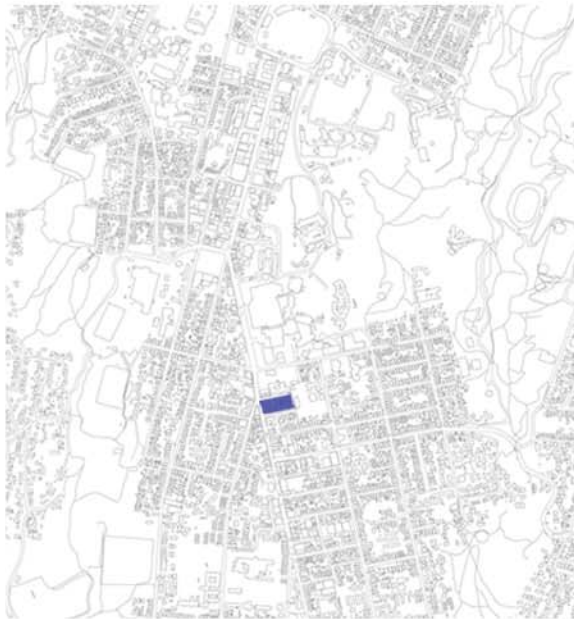


Figure 4.7: Central Newtown

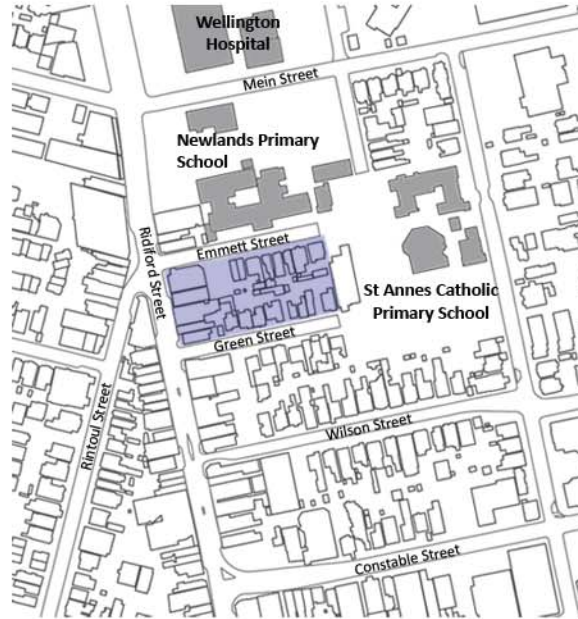


Figure 4.8: Survey plan



Figure 4.9: Existing site image.





**Figure 4.10: Figure Ground**

The block structure of Newtown is very strong. It would be very bold to break from this within the planning of the proposed site. Newtown's grain structure is predominately fine. A course grain is located where Wellington Hospital is sited.





Figure 4.11: Urban grid

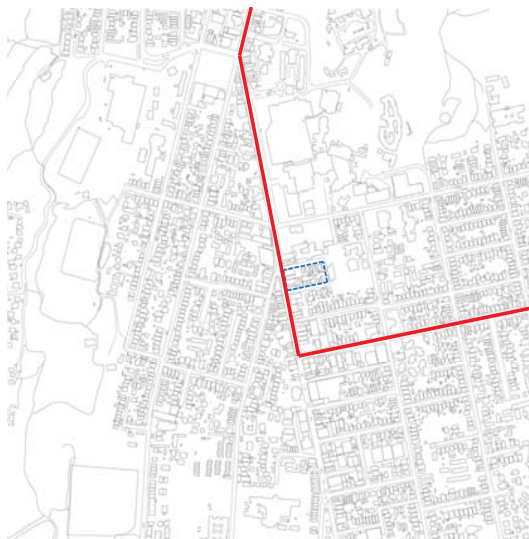


Figure 4.12: Traffic density



Figure 4.13: Public transport routes



Figure 4.14: Pedestrian traffic flow



Figure 4.15: Green park space



Figure 4.16: Green cores within block structures



Figure 4.17: Active edges



Figure 4.18: Gateway to Newtown

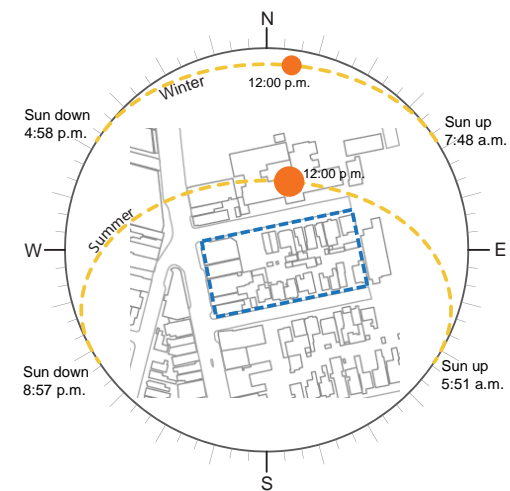


Figure 4.19: Solar analysis



Figure 4.20: Informal green core through urban blocks

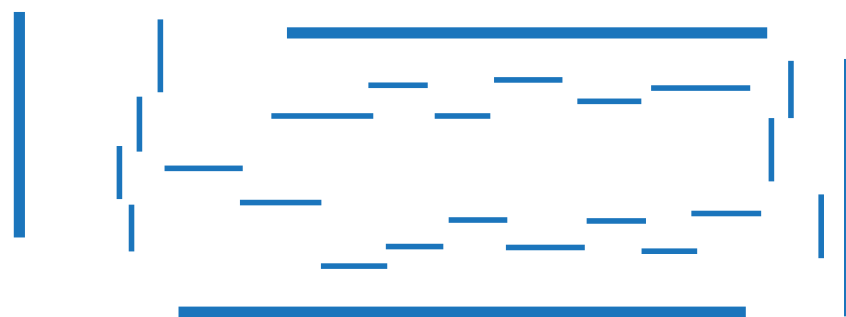


Figure 4.21: Building frontage slip pattern

### 4.3 Site analysis

Site analysis was conducted to gain an understanding of how the site relates to the wider urban context. Newtown has a strong rectilinear block structure and rigid street grid (figure 4.11). It is a typical main street, pedestrian oriented suburban centre with retail, commercial and community buildings predominantly located on and creating the edge of this main arterial route, with residential housing behind the edge. This creates an 'active edge' along Riddiford Street with a constant flow of foot traffic and the creation of a vibrant streetscape space. This increases during the weekend when people are attracted to the local 'cafe culture'. A strong public-private threshold is located between Riddiford Street and residential zones behind it.

The chosen site is part of a larger block combining educational, residential and retail buildings (figure 4.1). This results in a mixture of fine and coarse building grains (figure 4.10). The site is also located on a changing street grid, therefore making it more prominent within the overall urban form. The informal 'Gateway to Newtown' takes up the whole Riddiford Street frontage of the site, therefore presenting an opportunity to further enhance its status as an important node within the urban fabric (figure 4.18). Observation of the blocks also identified a consistent green core running centrally through them (figure 4.16). This is the result of commercial, retail and residential buildings being aligned together hard against the street edge. Emerging from this street alignment is a slip pattern at the back of the properties (figure 4.21).

The amenities plan (figure 4.1) shows that a number of leisure, health, educational, cultural and voluntary amenities are within a 10 minute walk of the site, providing the elderly with the ability to remain active within the wider community and have good access to essential amenities. In addition, Wellington's city centre is in close proximity, being only a seven minute bus journey to where a lot of appealing city amenities are located such as Te Papa Museum, Wellington Central Library, Lampton Quay retail strip, the waterfront and the Basin Reserve on the way to town. Timetables show that public transport runs at regular intervals throughout the day (10-15 minute peak hour intervals, 20-30 minute off-peak intervals) and bus stops are located in close proximity to the selected site (Metlink, 2012). As Riddiford Street is part of the main arterial route connecting the eastern suburbs to the city centre, heavy vehicle traffic occurs within the area, particularly during peak periods along Adelaide, Riddiford and Constable Streets between 8-9am and 5-6pm (NZTA, 2011). The New Zealand Transport Authority predicted in 2006 that vehicle usage along Adelaide Road equates to 9914 vehicles daily, with this projected to increase to 12893 in 2026 (NZTA, 2011). Vehicle traffic is expected to be high during the start and end of the

school day when parents drop off and pick up children going to the local Newtown and St Anne's primary schools. In addition, pedestrian traffic is likely to be high during this same period. Being closely located next to two primary schools, the elderly will be able to have regular contact with the younger generation. Child care facilities are also located nearby. Volunteer organisations, such as the Salvation Army (opposite the site) and Ronald McDonald House (opposite Wellington Hospital) offer elderly people the chance to volunteer their time for the good of others, providing opportunities for them to continue making contributions to society in close proximity to the site. The Wellington South Time Bank is also located nearby in the Newtown Community Hall. This is a community initiative set up to allow members of the community to build up personal time credits by working for others. The credits could then be used to "buy" skills and services from another member. A willingness to lend a hand, as well as receive help, makes the Time Bank a very beneficial service for the elderly.

Issues raised in the literature can be addressed in the selection of this site by being in close proximity to amenities and well integrated in the community which will offer the elderly more opportunities to participate in the community, remain independent for longer, and maintain constant contact with a mix of age groups.

#### **4.4 Existing buildings**

##### *4.4.1 Existing buildings along Riddiford Street*

The western edge of the proposed site along Riddiford Street is located within the 'Newtown Suburban Centre Character Area'. As stipulated under the WCC District Plan rules, the WCC (2008b, p.3) asks that any building development demonstrate a commitment to maintaining and extending the present and intended character of the area. With regard to the proposed site, this means that the five buildings located along the Riddiford Street edge must be retained unless there is justified reasoning for their demolition. The existing Bank of New Zealand outlet and Ming's Food Market are considered by the WCC as 'non-character' buildings which have no relationship to the collective streetscape (figure 4.22). Demolition of these buildings would not detract from the character and coherence of Newtown's streetscape, therefore justification for their demolition is acceptable. A new building in place of these presents an opportunity to improve the site's relationship to the collective streetscape. The remaining three 'character' buildings must be retained because their building characteristics make an important contribution to Newtown's distinctive streetscape. These buildings are of lightweight timber construction, therefore it is unlikely that these will require strengthening as part of the current WCC initiative for strengthening heritage buildings considered susceptible to potential earthquake damage.





**Figure 4.22:** Photograph looking down Riddiford Street toward chosen site.

The proposed design does not specifically participate in the design of new buildings in place of the proposed demolition of the existing Bank of New Zealand outlet and Ming's Food Market, however a building programme is suggested to complement the objectives of the design. Identifying this building site for future development is regarded as being beneficial towards the proposed design concept.

#### *4.4.2 Existing residential houses along Emmett and Green Street*

The residential dwellings located along Emmett and Green Streets are small two to three bedroom homes, which have been poorly maintained. It is proposed that the site be redeveloped to accommodate higher density housing rather than retaining and retro fitting the existing residential dwellings along Emmett and Green Street (figure 4.23). This proposed intensification is supported by WCC, which already has this as an accepted pattern for the future development of this part of Newtown, particularly along main arterial routes and transport spines (WCC, 2009, p71). Ultimately, this creates an opportunity to look at redeveloping the chosen site with residential intensification. Research suggests that the decision to intensify the site and introduce a new building typology that could better accommodate the elderly within a well integrated multigenerational living environment will have a positive influence on their well-being in later life.



**Figure 4.23:** Demolition plan Scale 1:1000

## **4.5 Design brief**

A specific design brief is presented for the site in relation to the urban context and reflects programmes which are considered missing or lacking within the Newtown community and which will benefit both the elderly and members of the wider community.

### **Multigenerational apartments**

Research suggested that elderly housing typologies should aim to foster intergenerational exchange. In response to this, a multigenerational concept featuring one, two and three bedroom apartments will be designed to accommodate a mix of stereotypes, such as professionals, families and the elderly. Apartments will be designed with 'Lifemark' design principles in mind to allow residents to 'age in place' and delay the move to nursing home care as long as possible. Findings from the analysis of apartment plans in Chapter 2, suggest three major themes could be further pursued within the proposed design - flexibility, engaging with circulation space and creating opportunities for casual social interaction - to help prevent elderly people becoming isolated and lonely within their own living environment.

### **University of third age facility**

The University of the Third Age (UA3) is an international organisation whose aims are the education and stimulation of retired members of the community. Volunteers run the organisation. This facility would provide the elderly with an opportunity to pursue further education or participate in actively mentoring other members of the community, which findings in the literature review suggest can enhance their well-being. Although primarily for the retired, it has an open membership to younger members of the community, thus becoming more inclusive and promoting intergenerational exchange. It acknowledges that retired people have a lifetime of experience and, collectively, a vast amount of knowledge and enthusiasm which deserve an opportunity to be shared with others. Currently, gatherings for different U3A events are scattered throughout the city depending on the type of activity. For example, book and writing groups are held at people's own homes, lectures require rooms within the city to be rented out and cooking classes need large restaurant kitchen spaces to be found. Locating facilities on site to cater for U3A gatherings would provide a local destination for the elderly to come together on a daily basis to participate in a range of activities and learn within different topic areas. This would contribute to the mental and physical stimulation of elderly people which findings in the literature review suggest can enhance the positive ageing process.

**Community garden**

A community garden will provide a significant interface between the elderly and the wider community. It will also provide an appropriate amenity for the Newtown community, which it currently lacks, and make a positive contribution to its surrounding urban environment. In addition, locating a community garden in close proximity to the neighbouring primary schools will support the 'Garden to Table' education initiative currently being developed within the New Zealand school system. This scheme aims to change the way children "approach and think about food" (Garden to Table, 2012) by teaching them how to grow, harvest, prepare and share fresh seasonal food within a productive community vegetable garden. It also sets up opportunities for elderly residents to play an active role in supporting and mentoring younger members of the community through applying their own food production learnings in the teaching of school children. As suggested by the findings of the literature review in Chapter Two, providing a community garden would help to foster a sense of community between residents and the wider community in addition to having a positive impact on old people's physical, social and emotional health which will support the positive ageing process.

**Kitchen classroom facility**

To complement the community garden and Garden to Table concept, a kitchen classroom will be incorporated on site to provide residents, school children and other members of the community with a facility in which to prepare and share fresh seasonal produce grown in the community garden. This facility will provide a space in which the elderly can pass on their wealth of life experience in the teaching of how to prepare meals, thus creating opportunities to interact with other members of the community. It will also support U3A activities such as cooking classes and has the potential to be rented for public and private functions which will help make this facility financially more sustainable in the long term.

**Gym**

A gym facility is not present within the Newtown community. This facility would provide the elderly with a therapeutic facility in which to participate in daily exercise. A recreational facility of this type would also benefit the wider community, particularly patients undertaking rehabilitation in the neighbouring hospital.



### **Car parking**

The Wellington City Council District Plan for Newtown suggests one on-site car parking space be provided for every household unit on site. Analysis of case studies in Chapter 3 found that two projects did not have allocated resident car parking on site due to their proximity to essential amenities, while the other two did accommodate residents vehicles, however this was assumed to be because of the size of the building site and ability to design a multi-storey tower block. Philosophically, due to the site's close proximity to frequent and reliable public transport routes, the area's off-site car parking potential, and possibility for a car pool system to be adopted, a restricted number of on-site car parking will be provided.

### **Existing school hall**

The existing St Anne's Primary School Hall, clad in weatherboard, will remain in its place adjacent to the eastern edge of the site. Keeping this facility in its current location presents an opportunity for a nice synergy to be created between elderly residents and school pupils. Currently in a rundown state, there is the potential to renovate it in the future to allow it to become better integrated with the proposed design case study.

## **4.6 Proposed design evaluation criteria**

The key ideas that form the basis, and from which the design case study should be evaluated are:

### *4.6.1 Proximity*

The facility needs to be in close proximity to leisure, health, educational, cultural and voluntary amenities to provide the elderly with opportunities to remain independent as long as possible and active within the community.

### *4.6.2 Integration and community participation*

A major aim is to change the theme of elderly housing typologies from segregation to integration. The intention is to locate an elderly housing facility within an active area of the community so the elderly would have more opportunities to be in the main stream of social activities and maintain an identity within the community. It is also important that the community can easily access the facility to encourage them to participate in the day-to-day lives of the elderly. Incorporating shared facilities within a 'mixed use' model would benefit both elderly people and members of the wider community.

#### *4.6.3 Interface between Newtown and elderly residents*

A significant interface between Newtown and elderly residents needs to be provided to present the elderly with opportunities to interact safely with members of the wider community with regular frequency. The intent is to increase the sociability of the scheme as a whole by attempting to break down barriers presently keeping old and young apart in many current elderly housing typologies.

#### *4.6.4 Sense of community*

The design case study needs to enable a sense of community to be established. This is a criteria that researchers have identified as being important to the elderly within housing environments in later life. Providing opportunities for a diverse population of residents to interact with casual frequency will help foster the development of a sense of community.

#### *4.7.5 Intergenerational contact*

The design should enhance opportunities for casual intergenerational exchange.

#### *4.6.6 Lifemark design*

It is important that the living environment is designed to accommodate the functional diversity of all residents, and cater to the changes people may experience as they age. Consideration needs to be given to Lifemark Design Standards to allow the elderly to remain in their residence as long as possible. This will aid the positive ageing process.

#### *4.6.7 Aesthetic*

The design should reflect a move away from the institutional appearance typically associated with elderly housing typologies and seek to create a new image with which another generation could identify. 'Sterile and boring' should be replaced with 'vibrant and stimulating'.

#### *4.6.8 Urban context:*

It is important that the design is coherent, relates well to its urban context and respects the collective streetscape. The height, bulk, scale, orientation and form of all buildings need to be carefully considered.





5



Proposed Design

## 5.0 Proposed design

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### 5.1 Overview

The role of the proposed design is to test research findings through a design medium and explore further possibilities for how the elderly can be housed in the future to help address issues raised in previous chapters. Research findings include location, proximity to amenities, isolation, segregation, sense of community and lack of intergenerational contact. This chapter is divided into sections and starts with a discussion about site planning and how the planning process adopted the concept of integration. Particular attention is given to the role of the external courtyard, and accommodating a community garden, as an interface between the elderly and members of the wider community with the potential to become an effective mechanism for integration. This is followed by a section addressing the design of both the apartments and other facilities with emphasis being placed on how they provide opportunities for social interaction, supporting the finding that intergenerational interaction is an important need in elderly housing. The chapter concludes with a section dedicated to a critical reflection of the design.

## 5.2 Site plan

This section focuses on the design and master planning of the site. The primary aim of this project is to locate housing for the elderly within an active area of a community, with elderly dwellers being in a location conducive to their integration within the community, while still being able to maintain a sense of independence.

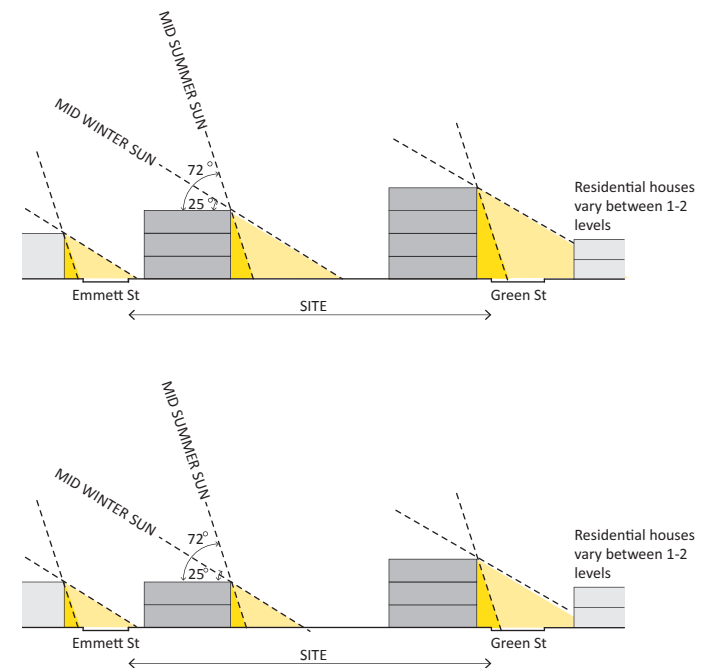
### 5.2.1 Built edge and external courtyard

Observations made in the analysis of the block structure helped to guide the planning of the site. Firstly, what became apparent is the nature of the built street edge in all block structures. As the site is situated in a nineteenth century suburban environment the decision was made to respond to the area's existing settlement pattern and grain by continuing to build up the street edge. View shafts and physical link ways are created to enable access into the site and increase its permeability. With such a built street edge being proposed, entry points into the site gain visual prominence by identifying themselves as a break in the built edge. The location of these breaks have been carefully thought about to align with important points of connection beyond the site's boundary, such as entry points into Newtown Primary School.

Secondly, an informal green core was identified running through the centre of many block structures. This observation has been applied to the site in a strong design capacity by introducing an external courtyard that primarily accommodates a community garden, discussed later in the chapter. The external courtyard space provides a significant interface between the elderly and the wider community and will act as a formal device for connecting the site with active street edges and green park space beyond. It is argued that this feature enhances the concept of integration through the idea of better engaging the site with its surroundings. Notably, creating a centrally located external courtyard has offered the opportunity for the built form to engage with the space.

### 5.2.2 View shaft

Conventionally, elderly housing typologies have been arranged as 'gated communities' with physical barriers, such as fencing, often preventing a connection being made between elderly residents and the wider community (Evan and Means, 2007; Park, 1987). The gated nature of these can also contribute to psychological barriers being formed (Evan and Means, 2007, p.53). To break down these barriers, further integrate the site with its public surroundings and connect the active public edge with the site's external courtyard core, two options were explored: a) make a connection around the built edges or b) make a break through the built edge facade along Riddiford Street. It was decided that more impact could be generated by breaking through the built edge and



**Figure 5.1:** Site section diagram showing relationship with adjacent buildings and shading impact of built form on site.

creating a prominent laneway and view shaft through to the site's external courtyard space. This laneway allows casual passers-by to get a glimpse of the external courtyard space from the street edge which in turn has the potential to create intrigue and stimulate interest in how the space is being occupied. This laneway plays an important role in breaking down any perceptions of the external courtyard being of a gated nature and instead provides an inviting gesture to encourage members of the public to move off the street edge to engage with the space, which in turn sets up opportunities for casual social interaction to take place and vitality to be created. While allowing the public to view in, the view shaft also allows the courtyard dwellers to look out to the public street edge therefore helping to form a visual relationship through the site. As previously mentioned, there are also a number of secondary links into the courtyard via breaks along the Emmett and Green Street edge to further increase permeability and movement through the site.

### *5.2.3 Building volume*

The qualities of this mixed use environment, close proximity to retail, commercial and community buildings combined with the suburban centre zoning defined medium-high density multi-storey construction as the most appropriate and financially feasible building option for the site. This is also consistent with the anticipated higher density character of the area in the future (WCC, 2009; WCC 2008a). To provide a central external courtyard space between buildings the built forms strive to be spatially efficient, acting as two bands that line Emmett and Green streets (figure 5.4). Separate clusters of buildings were considered, yet these were found to be an inefficient building form in this context due to its location and size of the site.

Sun shading analysis was undertaken early in the planning of the site to determine the impact of shading from different building volumes. The WCC Suburban Centre Zone Planning Regulations for the Newtown site permit buildings to be a maximum of 10 metres high. Different building heights were tested against the different summer and winter altitude angles of the sun (figure 5.1). Given that the design intention of the central external courtyard space is to provide a quality interface between the residents and members of the wider community, particular consideration was applied to the shading impact of built form along Emmett Street. This is due to its north facing orientation and its potential to have a negative impact on the quality of the external courtyard space with regard to excessive shading. Analysis determined that for the external courtyard spine to gain adequate sunlight throughout the year, the height of built form along Emmett Street could not exceed two storeys. While built form along Green Street does not impact on the shading of the central external courtyard spine, consideration was



given to its impact on neighbouring buildings along this street edge. Four storeys were found to have too great a shading impact on existing residences, therefore it was determined that the built form would not exceed three storeys. This is also in keeping with proposed council zoning regulations and is respectful of the surrounding urban context.

#### 5.2.4 Density

Two Wellington retirement villages located in close proximity to the proposed site – Rita Angus and Village at the Park - were analysed to determine how their building densities compared to that of the proposed design (appendix A). Both case studies had similar site areas, however Rita Angus is more densely built up than Village at the Park, with three levels of resident accommodation rather than one. Additional amenities within Rita Angus and Village at the Park include communal dining rooms, gyms, hair salons, library games room and nursing care. These amenities have an impact on building density, particularly in regard to the number of bedrooms and apartments being accommodated in them. Notably, Rita Angus and Village at the Park also provide considerably smaller nursing home suites on site rather than the larger independent apartments being proposed within the design, thus further complicating any density calculation and comparisons between them.

A comparison of site densities shows that the proposed design site is less densely built up than Rita Angus but more densely built up than Village at the Park when the different overall site areas are adjusted to be proportionate with one another. Reinforcing the importance of site selection is the inclusion of fewer additional amenities (e.g. a library) in the proposed design due to the site's close proximity to essential amenities. The table below shows that the building density of the proposed design provides almost twice the density of Village at the Park and so is likely to be an economically viable project.

<i>Name</i>	<i>Site Area</i>	<i>Levels</i>	<i>Total Rooms</i>	<i>Rooms/ 1000m2</i>
Rita Angus Retirement Village	10,000m2	3	120	120/10 = 12
Village at the Park	11,500m2	1	45	45/11.5 = 3.9
Proposed Design Case Study (not incl historic buildings on site)	3764m2	2-3	26	26/3.764 = 6.9

**Figure 5.2:** Site density table

### *5.2.5 Carparking*

The WCC District plan for Newtown suggests one on-site car parking space be provided for every household unit on site. As a result twenty four car parks would need to be provided on site. The proposed design deviates from council regulation in the philosophical belief that by locating the site in close proximity to frequent and reliable public transport routes, the area's off-site car parking potential (such as the large underutilised school car park located at the end of Green Street) and the adoption of a car pool system, only four on-site car park spaces are necessary. Information from the New Zealand Transport Authority (NZTA) helps to ground this proposed stance by showing that only 4.6 per cent of people aged 70 years or older in New Zealand hold driver's licences (NZTA, 2012). In addition, SMAQ's Multigenerational Housing Scheme (Chapter Three Case Study) has also helped to influence this position on on-site carparking by not including any in its scheme due to its proximity to amenities and promoting of public transport use. If more on-site car parking was deemed necessary two viable options remain available. Firstly, there is the option to increase the number of ground level on-site garage spaces (below apartment units) similar to what is already proposed. However, this would reduce the number of apartments and limit the ability for community and resident amenities to be accommodated at ground level. It would also likely have a negative visual impact on the quality of the street edge. Secondly, an underground basement car park could be incorporated. This was initially considered within the design case study concept scheme, however due to the relative cost of providing underground car parking in combination with the philosophical approach taken to on-site car parks, it was deemed unnecessary. Of the two options, building a car parking basement would be the most plausible option as it would create a concealed underground car park resulting in a better quality street edge. It is acknowledged that the stance taken towards car parking for this proposed design results in no on-site visitor carparks being provided, however, as mentioned previously, this was considered to be unnecessary due to the site's off-site car parking potential. In addition, limiting on-site car parking encourages elderly residents to use public transport as an effective and safe means for accessing other city amenities. There is also the potential for the elderly to gain positive experiences from using this mode of transport as being surrounded by other members of the community opens up opportunities for casual interaction to occur on a regular basis.

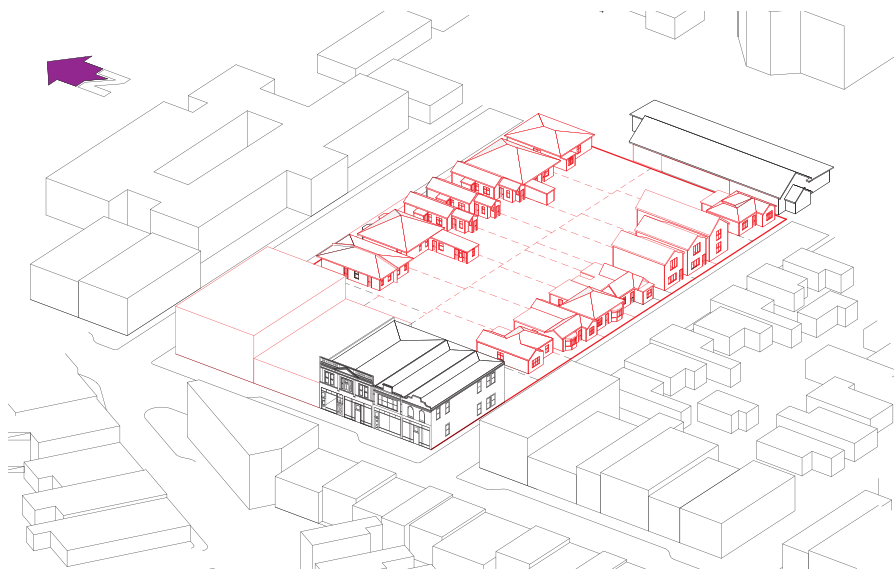
### *5.2.6 Community garden*

The community garden, located in the external courtyard space, provides a significant interface between elderly residents and the wider community. It also makes a positive contribution to the surrounding suburban environment by providing it with an appropriate and necessary amenity. Today community gardens are regarded

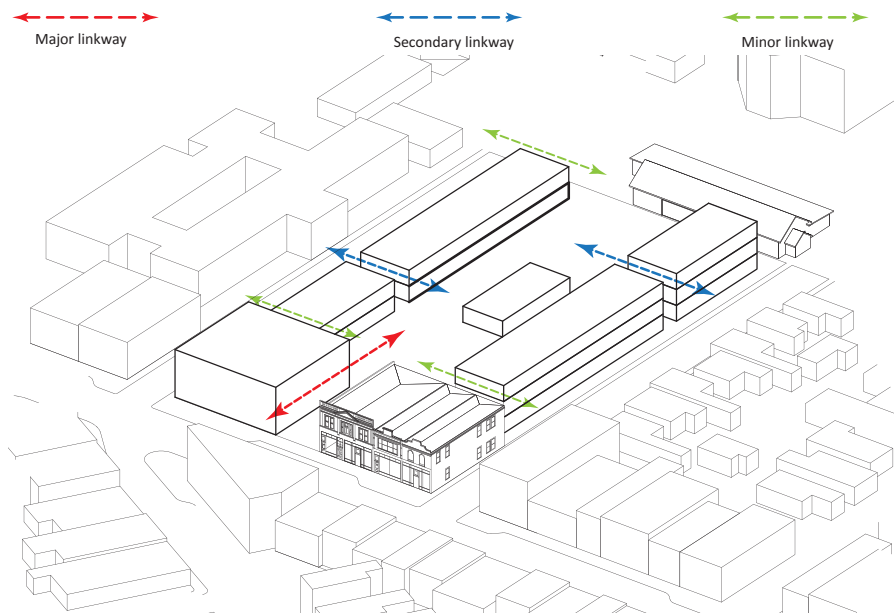
as a platform for educating children and the wider community on the benefits of growing and consuming fresh seasonal food (Garden to Table, 2012). This is emphasised through the 'Garden to Table' education initiative currently being developed within the New Zealand school system (Garden to Table, 2012) and WCC's support for setting up community gardens within the region (WCC, 2012). Locating a community garden in close proximity to Newtown Primary School and St Anne's Catholic Primary School will complement the 'Garden to Table' initiative.

It is widely acknowledged today that community gardens can help to prevent social exclusion and isolation by creating a social community (D'Abundo and Carden, 2009, p.90). This design recognises their role as an appropriate programme for integration. They can also provide other social benefits for the elderly, such as a platform to exchange food production skills and knowledge with younger generations. This can lead to the building of relationships between individuals and provide elderly people with an emotional boost and sense of purpose. They can also offer elderly residents additional health benefits through increased fresh vegetable consumption and providing a venue for daily exercise.

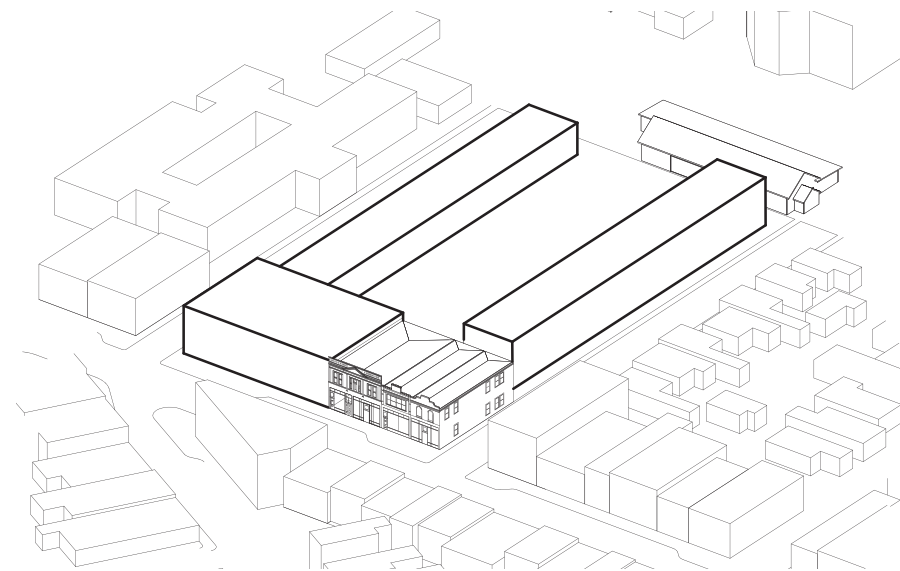
Ultimately, locating a community garden in the internal courtyard space provides residents and members of the wider community with opportunities to come together and physically share the experiences of space, labour and harvest. This in turn fosters a sense of community and helps to enhance the function of the site beyond just a space to dwell in, thus contributing to it becoming a hub for community interaction and an effective mechanism for integration.



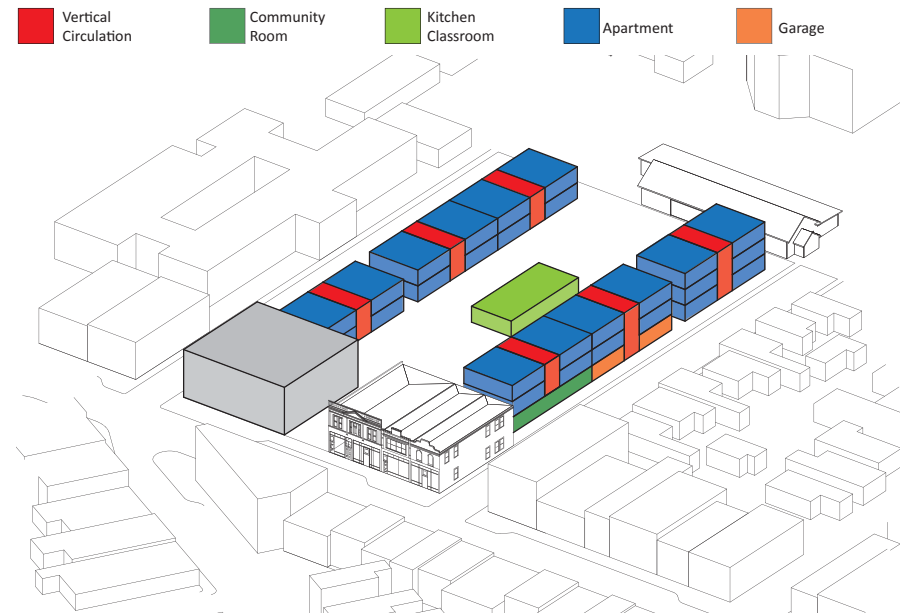
**Figure 5.3:** Selected site with existing houses.



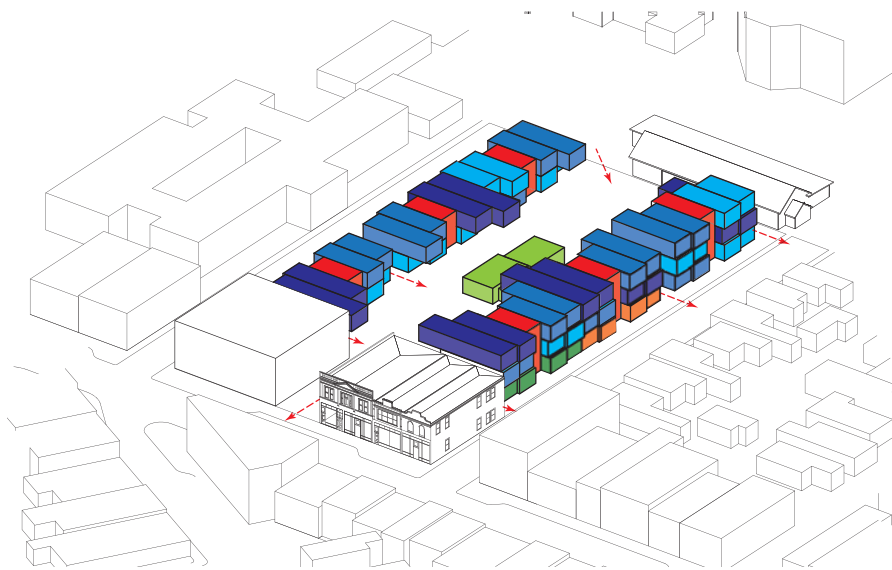
**Figure 5.5:** Linkways and permeability.



**Figure 5.4:** Proposed building volumes on selected site.

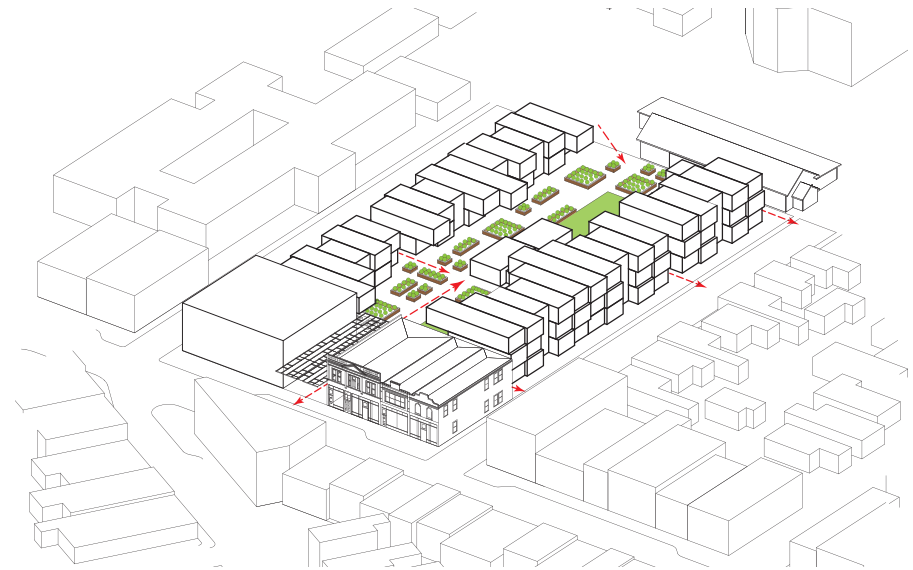


**Figure 5.6:** Programme layout.



**Figure 5.7:** Spatial and programatic requirements develop an architectural language around 'pushing' and 'pulling'.

<span style="color: red;">■</span> Vertical Circulation	<span style="color: green;">■</span> Community Room	<span style="color: lightgreen;">■</span> Kitchen Classroom	<span style="color: blue;">■</span> Apartment	<span style="color: orange;">■</span> Garage
<span style="color: darkblue;">■</span> 3 Bedroom Apartment	<span style="color: blue;">■</span> 2 Bedroom Apartment	<span style="color: cyan;">■</span> 1 Bedroom Apartment		



**Figure 5.8:** External courtyard, accommodating a community garden, provides a significant interface between residents and members of the wider community and acts as an effective mechanism for integration.

### 5.3 Building design

The building design section of this chapter focuses on the design of the built form.

#### 5.3.1 *Building form*

The building form strives to differentiate itself from the low key institutional aesthetic typically associated with elderly housing typologies in New Zealand (e.g. Rita Angus and Malvina Major retirement villages in Wellington, New Zealand) while also making subtle links back to the domestic home, typical of the dominant building-type in Newtown in order to reinforce the underpinning concept of integration. One of the main intentions was to create a building form which presented a non-institutionalised appearance in a bid not to disclose the age of residents occupying the building. Typically, elderly housing typologies are viewed as having a sterile appearance. The proposed design moves away from this by creating an architectural language around the idea of accommodating difference with facades pushing and pulling against each other. The alternating form also aims to visually convey the idea of intergenerational housing through its use of materials, discussed later in this section, and moves away from the typically flat façade alignment of conventional elderly housing by using varying façade depths. This differentiation of façade depths provides visual variety that draws the eye to the buildings, while also helping to activate the external courtyard. Colour was considered for the facades to help create a sense of place while also providing residents, particularly the elderly, with a mechanism for easily identifying their own residence from the exterior. The building aesthetic strives to make a move away from the institutionalised appearance of many of today's elderly housing buildings by creating an interesting aesthetic aimed at an upcoming baby boomer generation who wants to be seen in anything but tired and institutional looking housing during their later years.

#### 5.3.2 *Materials*

The materials used for exterior claddings have been chosen specifically to enhance the theme of integration. This is achieved through the specification of both traditional (timber weatherboards) and contemporary cladding materials (perforated aluminium sheet, glass) which reflect the mix of generations being accommodated on site, while also referencing the range of domestic architecture in Newtown. Ultimately, the material choice aims to convey that the underpinning concepts of integration and difference are as much about the building's aesthetics and planning as it is about occupancy.

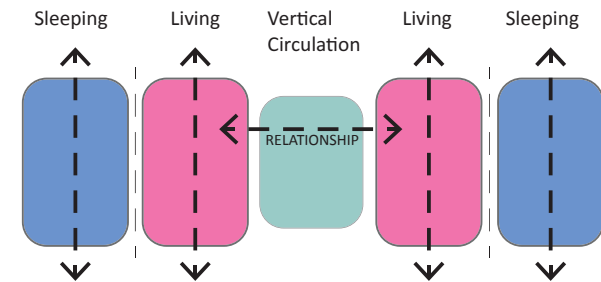
## 5.4 Apartment design

The apartment design section of this chapter focuses on the design of individual apartments.

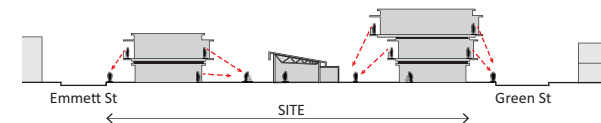
### 5.4.1 Planning

The intention was to provide each apartment with two aspects - one looking onto the street, the other into the external courtyard space - on one floor level. Keeping individual apartments to one floor level ensures that movement between levels is concentrated on the vertical circulation shafts to enhance opportunities for casual social interaction between people. This area is discussed later in the chapter. While Lifemark Design Standards do not necessarily state that living environments should be kept to one level, they suggest that this is preferable so that all living spaces remain accessible no matter the state of a resident's independence (Lifemark Design Ltd, 2012, p.25). The living spaces are located to capture the sun while all bedrooms have access to natural daylight and views either onto the street or into the external courtyard. Perforated retractable screens allow residents to control the amount of privacy and direct sunlight into their bedrooms, while still maintaining access to natural daylight. This feature means exterior facades are always in a state of change, helping create a more dynamic building image. To ensure ease of use for the elderly, these perforated screens operate with a motorised mechanism which is wired back to a switch in the bedroom. As older people tend to be seated more than younger people, or in some cases are in a wheelchair, full height windows are located along the north and south facing facades. These provide residents, particularly the elderly, with the opportunity to see outside more easily from a seated position, thus enabling them to feel more connected to what is going on outside and take advantage of the interest generated along street edges and in the external courtyard. This element can also improve neighbourhood safety by enabling natural surveillance, particularly as older people are often around to watch when other people are not. The balcony balustrade is also glazed to aid this. While full height glazing could be considered by some to be impractical for families with young children due to the safety concerns associated with it, the glass panes will be made of 10mm toughened laminated glass to ensure maximum strength and resistance against impact. Access between floors is gained via a vertical circulation core, each fitted with a disabled lift and an accessible staircase. These are expressed from the exterior and deliberately set in from other facades to allow people to clearly recognise entry points into the building.

Lifemark Design Standards have been included throughout the interior to make it safe and easy for people to continue living in their own homes as their needs change with age. Features include a 1500mm turning circle in



**Figure 5.9:** The apartments are organised around two dominant axis - sleeping and living. This allows the apartment module to slide along the central axis accordingly to reflect the spatial and programmatic requirements of different sized units. From the building programme developed an architectural language around built form.



**Figure 5.10:** Orientation of the apartments onto the external courtyard space and street provides a level of natural surveillance.

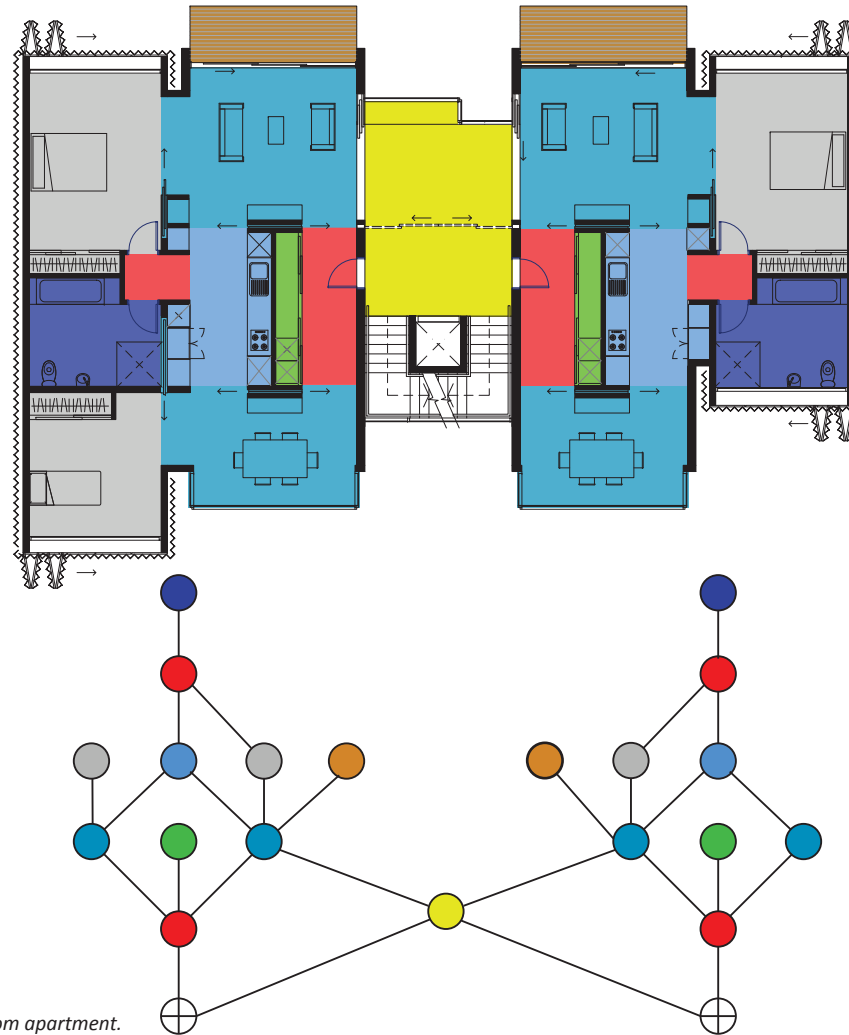
spaces to manoeuvre a wheelchair as well as specifically designed kitchen joinery to allow for ease of use (figure 5.36). Level thresholds (maximum 20mm) are located throughout the building site, including the transition between the balcony and living spaces and also into the shower. All doorways are a minimum of 860mm wide and fitted with lever action door handles in accordance with accessibility requirements under the New Zealand Building Code (NZBC). Appendix B contains a list of the Lifemark Design Standards which are accommodated for in this design.

#### *5.4.2 Gamma analysis*

The design and planning of apartment layouts has also been considered alongside Hillier and Hanson's gamma analysis technique. This analysis was originally applied to selected elderly apartment interior case studies in Chapter Three to develop an understanding of their spatial structures and identify permeability characteristics. The case studies showed a mix of, what Hillier and Hanson call, 'distributed' and 'non-distributed' configurations. A distributed configuration occurs when there is more than one independent route from a particular space, thus rendering it more permeable in nature (figure 3.25). Non-distributed configurations occur when there is a common space through which someone must pass through to get to other spaces (figure 3.26). A gamma map is a graph in which spaces are represented by circles and permeabilities by lines, with the lines representing direct permeabilities between spaces (Hillier and Hanson, 1984, p.148). From the case studies, distributed layouts were determined to be more beneficial for the elderly as they increased the options for room access and occupation. It also meant that visitors would not have to pass through typically private programmatic spaces, such as bedrooms, to access shared spaces such as a bathroom.

The gamma analysis of a one and two bedroom apartment for the design case study shows their layouts to be a distributed configuration, thus representing a permeable structure to their internal environment (figure 5.11). The gamma map shows obvious signs of permeability through the number of direct lines that connect with spaces, represented by colour coded circles. An important element in allowing more permeability is the use of moveable cavity sliding walls that divide spaces. These add flexibility because they can operate as either a wall or an opening and greatly increase the ways a room can be used. An example of this is shown in the wall separating the main bedroom from the living area. This wall has a large cavity sliding door which allows the space to function as both private and shared open space. When privacy between the spaces is not necessary the door can be opened, or closed when privacy is required. Opening the space up has the added benefit of increasing the perceptual size of an apartment unit.





**Figure 5.11:** Gamma map of a one and two bedroom apartment.  
Scale 1:200

The gamma map also shows that the living room is the most integrated space within the apartment as it occupies the most central position on 'the ring'. It indicates that most routes from one space to another will pass through the living room. It was important for this space to occupy this central position as it is the space where the elderly are likely to spend a lot of their time, especially when physical ailments start to affect movement. For that reason it also has a good visual connection with the exterior and is positioned as north facing to capture sufficient sunlight. In addition, the central location of the living area was an important consideration to allow the apartment to become less segregated and more integrated with the circulation space that provides access into an apartment. This move allows the living area to extend out into the shared space within the vertical circulation space and increase the visual and physical permeability between apartments, thus reinforcing the concept of integration. In contrast, the bathroom area achieves maximum segregation from other rooms with the least number of spaces coming off it. For privacy purposes, the bathroom area must be as strongly segregated from the rest of the spaces as possible.

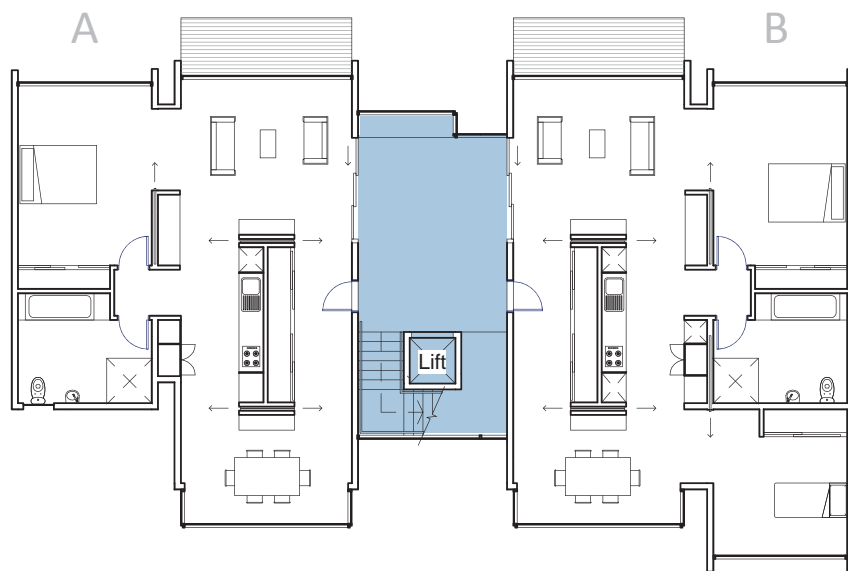
#### *5.4.3 Vertical circulation, shared surfaces and moveable walls*

Typically, vertical and horizontal circulation in many elderly housing schemes is reduced to a minimum. However, Schneider suggests a small increase in the size of the communal circulation can make this area much more flexible (2007, p185). Within the proposed design the stairwell landings in the vertical circulation cores have been enlarged to provide a habitable shared space. This shared space (a non-specific space) has the ability to serve many social purposes, thus rendering the vertical circulation core as serving functions more than circulation. Firstly, this area can simply act as a shared floor space between apartments (figure 5.12). Each apartment can both physically and visually engage with the shared space via two-section moveable cavity sliding doors which open out onto them. Hertzberger (1991, p.34) suggests such 'half-doors' constitute a distinctly inviting gesture. He states "when half open the door is both open and closed. This means that it is closed enough to avoid making the intentions of those inside all too explicit, yet open enough to facilitate casual interaction with passers-by" (1991, p.34), which may result in further engagement beyond the private threshold of the apartment unit (figure 5.17). This feature is particularly useful in situations when elderly residents have reduced mobility or when children require supervision. It would also be welcomed by other residents who appreciate opportunities for casual exchange to occur.

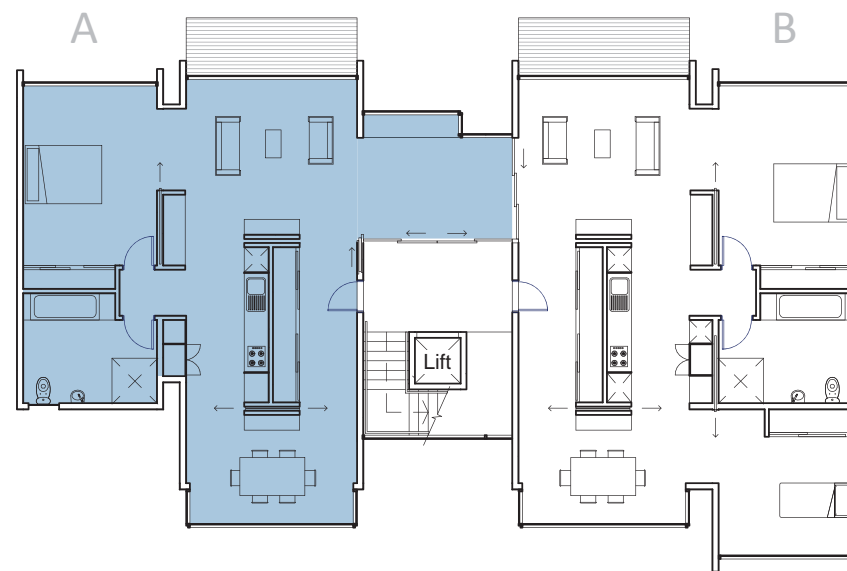
Another option is to fully retract the moveable sliding doors so the shared space becomes an extension of individual apartments (figure 5.13 and 5.14). This further blurs the threshold between private and semi-public space and creates opportunities for residents to increase the size of their living unit if necessary, for example to accommodate gatherings. This makes the intentions of the resident very explicit with regard to openly welcoming social interaction. It would be hugely beneficial in situations where the elderly are housed adjacent to a family unit. While the family could open out their living unit onto the shared space, and occupy it as an extension of their living space for children to play in, the elderly would get the benefit of increased social interaction with children, which research has shown can have a positive impact on elderly people's well-being (Clarke and Roberts, 2004; Gabriel and Bowling, 2004).

Thirdly, moveable cavity sliding walls in each apartment unit can be moved across to close off the stairwell space from the apartment (figure 5.15). This enables neighbouring apartments to overlap one another and create an opportunity for an extended family scenario where an elderly parent can live adjacent to their family while still maintaining their ability to live independently. Lastly, there is the option for one of the apartment units to gain an extra bed or hobbies room for a short or long term period (figure 5.18). This would be particularly beneficial for elderly residents who may require extra space to accommodate overnight visitors, in particular grandchildren. In the case of a one bedroom apartment accommodating an elderly couple, the design also provides the option of each person having his or her own bedroom. Kenny (2007) suggests that as people grow older their sleeping habits often change. This can have a major impact on the other spouse, thus providing the option of another room would benefit changes in personal circumstance.

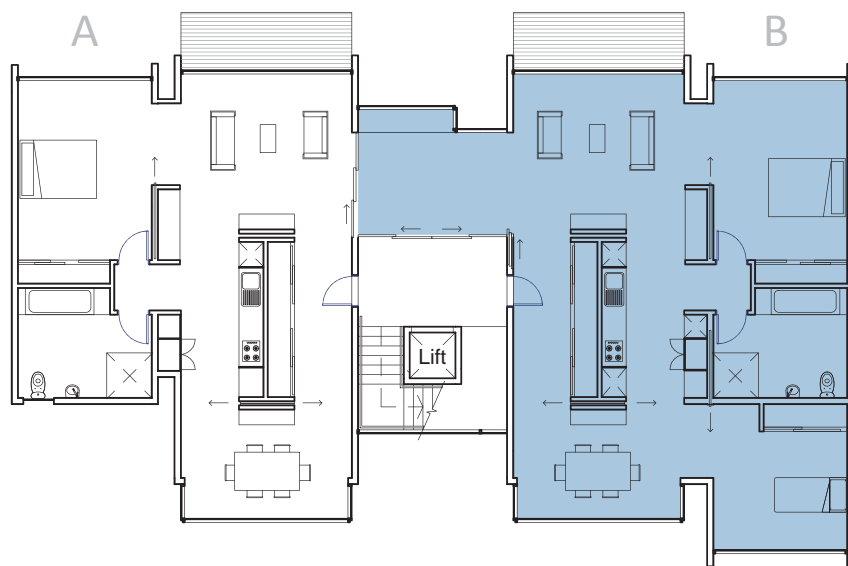
Increasing the size of the vertical circulation core provides a semi-public shared space that invites casual social interaction at a regular frequency between different aged residents and visitors. This increases the sociability of the scheme as a whole and further conveys the concept of integration. The primary hurdle to this design idea being accommodated is fire separation between the shared space and adjacent apartments. Further consultation with fire engineers and the New Zealand Department of Building and Housing is required to investigate ways to reconcile the current fire code lobby regulation in the New Zealand Building Code (NZBC). While there are management issues around the occupation of the shared space (e.g. who can use it when) it ultimately provides more flexibility to the living unit over time and has the potential to aid an elderly residents' ability to age in place.



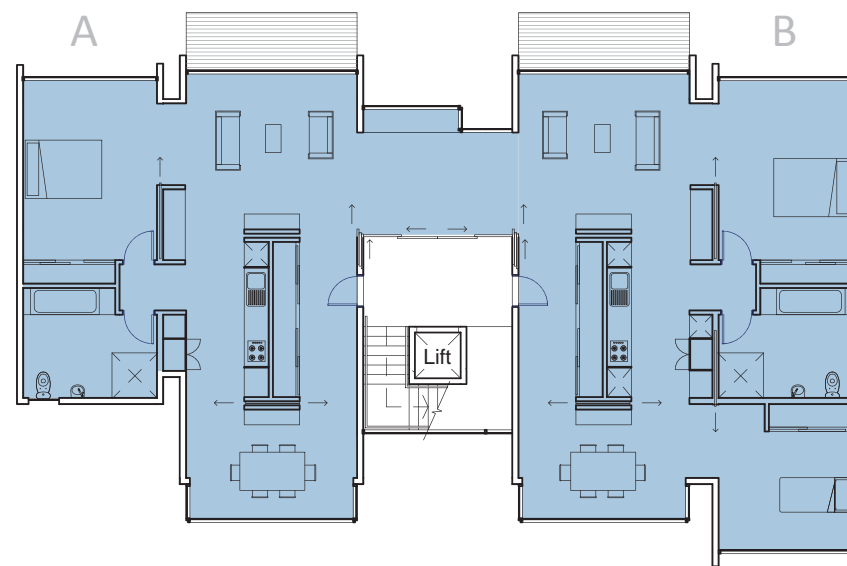
**Figure 5.12:** Semi-public common space within vertical circulation area is shared between residents and visitors.



**Figure 5.13:** Apartment A can be extended to occupy common space and create an extra room through use of moveable cavity sliding doors.



**Figure 5.14:** Apartment B can be extended to occupy common space and create an extra room through use of moveable cavity sliding doors.



**Figure 5.15:** Apartment A and B can be extended to overlap with one another to create an opportunity for an extended family scenario where an elderly parent can live adjacent to their family while still maintaining the ability to live independently.

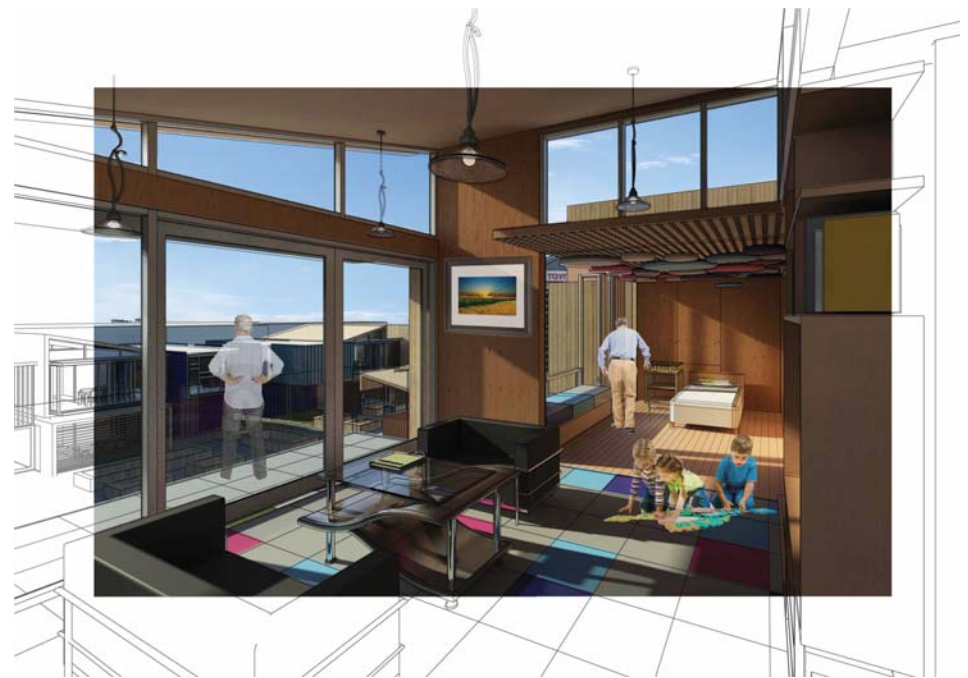


**Figure 5.16:** Retractable sliding doors allow the shared space within the stair landing to become an extension of individual apartments.





**Figure 5.17:** The stair landing acts as a shared surface between apartments. Two-section cavity sliding doors provide opportunities for casual interaction to be facilitated between residents and passers-by, while still maintaining a threshold between private and semi-public space.



**Figure 5.18:** Apartments have the option of gaining an extra room.



**Figure 5.19:** Level 3 apartment living space shown engaging with the shared space via two-section sliding doors. More modern interior aesthetic shown.



**Figure 5.20:** More traditional interior aesthetic. A different interior aesthetics helps to convey the underpinning concept of integration is as much an architectural idea as it is about occupancy.



**Figure 5.21:** Level Three apartment living space shown engaging with the shared space via two-section sliding doors. More modern interior aesthetic shown.



**Figure 5.22:** More traditional interior aesthetic.

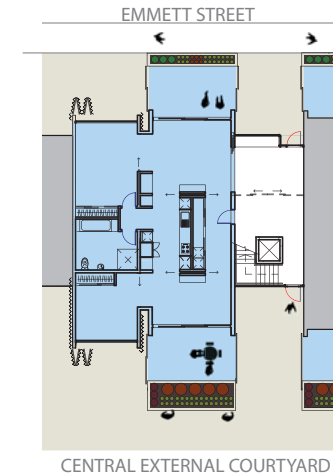


**Figure 5.23:** Apartment kitchen joinery is designed to allow for ease of use as residents' needs change with age.

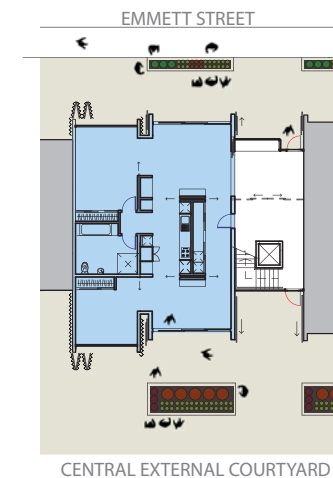


#### 5.4.4 Ground floor courtyards

Apartment courtyards at ground level have been carefully designed to provide a level of privacy at the same time as they create opportunities for interaction with passers-by. Similar to the internal layout of the apartments, flexibility is a dominant feature of this exterior space through the use of adjustable screens. When the screens are moved across to enclose the courtyard, it signals ownership of this space belongs to the resident, however the height of the community garden planter defining the edge does not prevent casual interaction being facilitated between the resident and a passers-by (figure 5.27 and 5.29). When the screens are retracted the courtyard becomes permeable and in essence an extension of the larger external courtyard surface (figure 5.26 and 5.28). The surface treatment of the external courtyard has been extended into the apartment courtyard space to ensure there is no visual barrier and to further indicate that the space is an extension of the external courtyard. In the open state the desire of the resident to enhance the prospect of casual interaction is explicit. As the raised planter is part of the community garden there is always going to be activity around this area involving members of the public who are involved in helping plant or maintain this amenity. In a delicate balance between privacy, sun and views, adjustable horizontal timber slat screens have been used at ground level only, enabling control of privacy from the inside of each apartment. Creating a public edge to a private space allows opportunities for the threshold between private and semi-public space to be blurred which further enhances the concept of integration.



**Figure 5.24:** Adjustable screens can be moved across to enclose the courtyard. This suggests ownership of this space belongs to the resident.



**Figure 5.25:** When adjustable screens are retracted the courtyard becomes an extension of the larger external courtyard surface which helps to facilitate interaction between passers-by and residents.





**Figure 5.26:** Emmett street edge. The ground level courtyard screen is shown retracted.



**Figure 5.27:** Emmett street edge. The ground level courtyard screen is shown moved across to enclose space.



**Figure 5.28:** View from the external courtyard area. Ground level courtyard screen is shown retracted.







*Figure 5.29: View from the external courtyard area. Ground level courtyard screen is shown moved across to enclose space.*



## 5.5 Additional building design

### 5.5.1 Community room

The community room is intended to primarily accommodate University of the Third Age (U3A) activities where residents and members of the wider community can come together to participate in a wide range of daily activities (figure 5.45). Located on the ground level to provide easy access off the street and external courtyard, it consists of multiple rooms which can be opened out or closed off from one another using moveable walls and bi-fold doors. The theme of flexibility has been carried through from the apartment interiors to help increase the ways the community room can be occupied. Large gatherings can be accommodated for weekly U3A events such as guest speakers or, alternatively, smaller spaces for activities such as board games or reading groups by simply adjusting the arrangement of internal moveable walls and bi-fold doors. This flexibility is a necessity for any space hosting U3A activities due to the different sized groups attending different activities during a typical week. When not in use for specific U3A related activities the community room has the potential to be rented out to other community groups or for private activities, which will provide a source of income. Ultimately, creating an on-site hub for U3A activities will provide a local destination, in close proximity to other amenities, for the elderly and other members of the community to come together to learn and participate in the exchange of knowledge. This will help make U3A a more integrated concept and prominent activity within the community while also providing the elderly with more frequent opportunities for casual intergenerational contact.

### 5.5.2 Kitchen classroom

The kitchen classroom building is located at the heart of the site to complement the community garden concept and provide a focal point for apartments facing into it. The building's roof plane will have a green vegetated roof to provide more aesthetic value to residents in apartments on level one and two while also providing a habitat for many species, particularly birdlife. The primary purpose of this building is to provide residents, school children and other members of the community with a facility in which to prepare and share fresh seasonal produce grown in the community garden, thus creating opportunities for casual social interaction. It is also intended to be flexible enough to accommodate other public and private activities such as private corporate events/conferences or provide additional space for larger U3A events and lectures. This flexibility is indicated through the design of kitchen classroom benches that are not fixed but instead operate on a sliding rail system which allows them to be pulled away and opens up the space for other uses (figure 5.43 and 5.44). These benches are deliberately fixed within a top hung rail sliding system, rather than free-wheeling, to ensure they cannot be removed from

the building. To cater for larger events an isolated commercial size kitchen can be created by sliding the bench back and pulling down the vertical sliding louvre screens which are fitted with opaque glazing (figure 5.44). These screens are located along the north and south facing facades to allow the building to open out onto the external courtyard and give the impression of the building operating as an extension of the external courtyard surface. This impression is enhanced through the external courtyard's surface treatment being carried into the building which helps to ensure there is no visual barrier and a seamless transition from inside to outside. The openness of the building also allows residents to look in and engage with people and activities inside while screens located centrally within the building enable larger spaces to be divided up. Creating an adaptable building provides opportunities for the spaces to be occupied in a number of ways, while also creating a revenue stream through its ability to be rented out for private events which will only make this facility financially more sustainable in the long term.

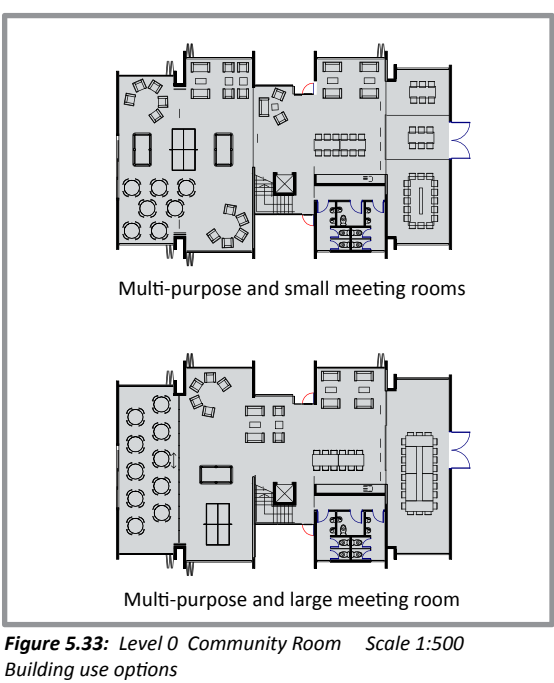
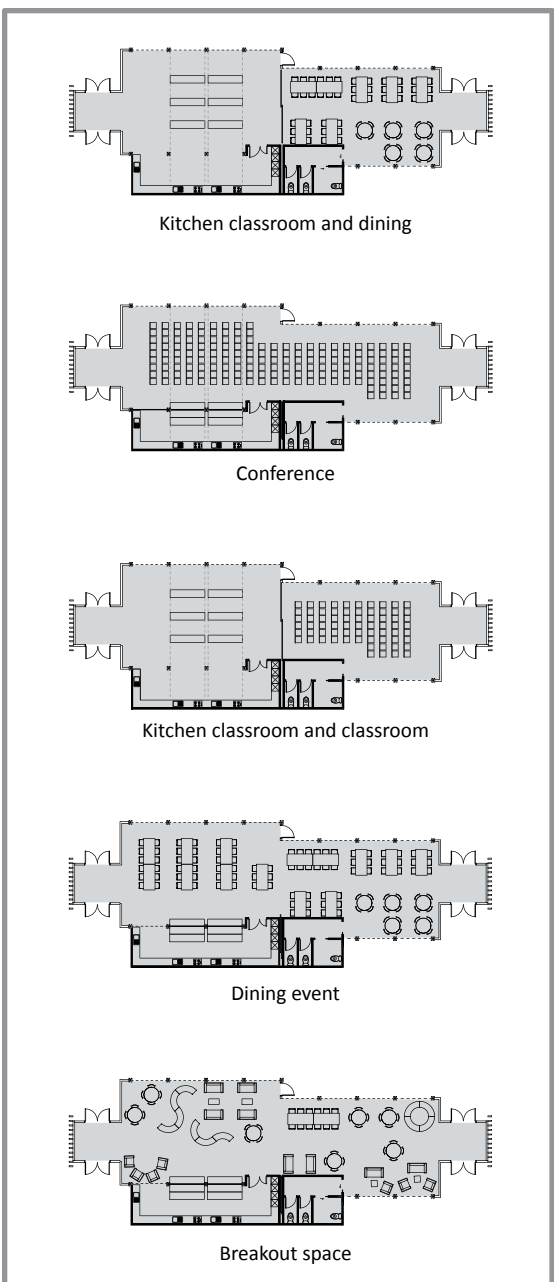
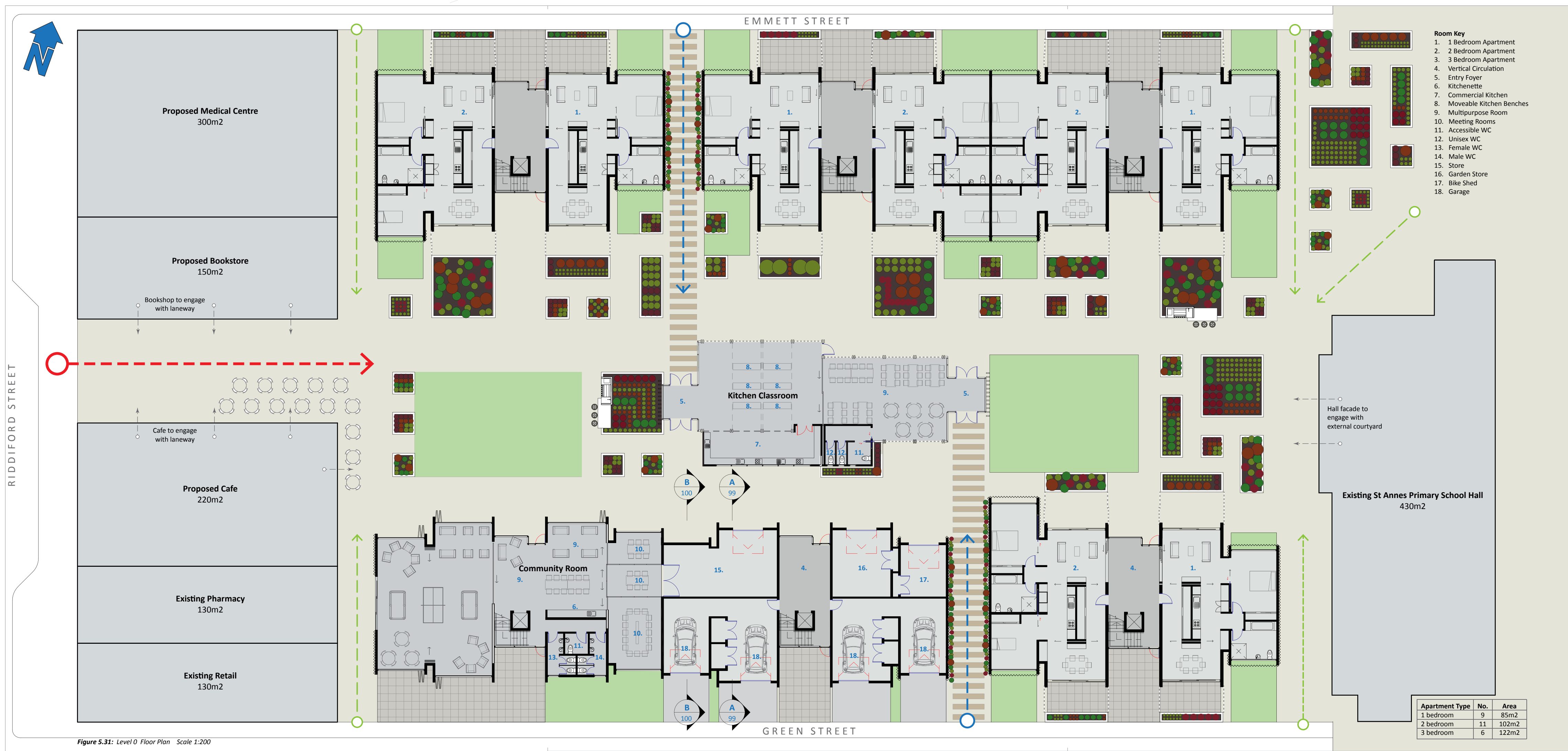
#### *5.5.3 Management model*

Building management is shown to vary between different elderly housing typologies. Conventionally, assisted living and nursing homes have managers looking after their day-to-day running, while sheltered housing in Britain has an on-site warden who can be called upon when assistance is required. Intergenerational and CoHousing concepts have an elected committee from within its resident group to manage the building. There is an assumption that the management model for the proposed design will also be based on an elected committee from its resident group. This group will be responsible for overseeing the management of the community room and kitchen classroom. However, as these spaces are intended to be used by not only residents but also other members of the community, and potentially be rented out for other public and private events, an alternative option could be for the WCC to run and own them.



Figure 5.30: Site Plan 1:1000





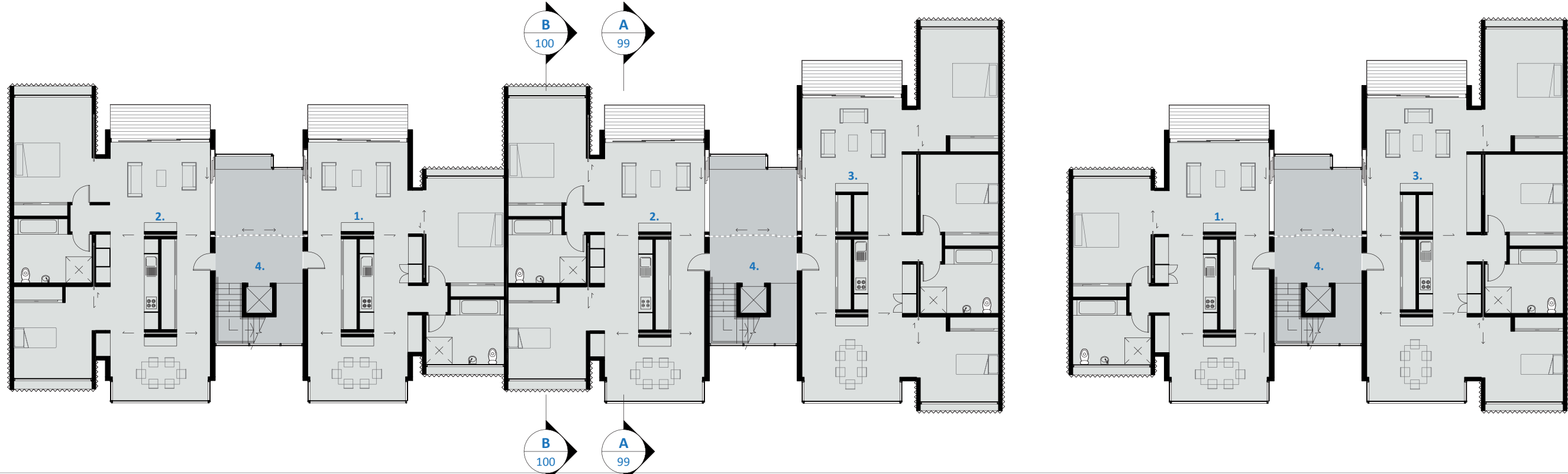
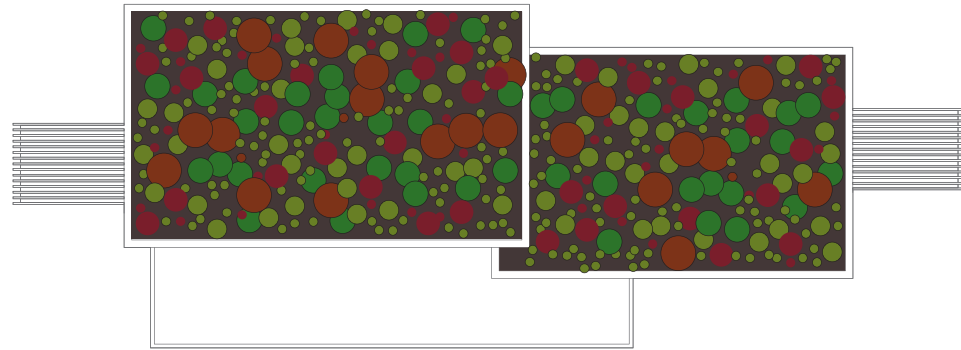
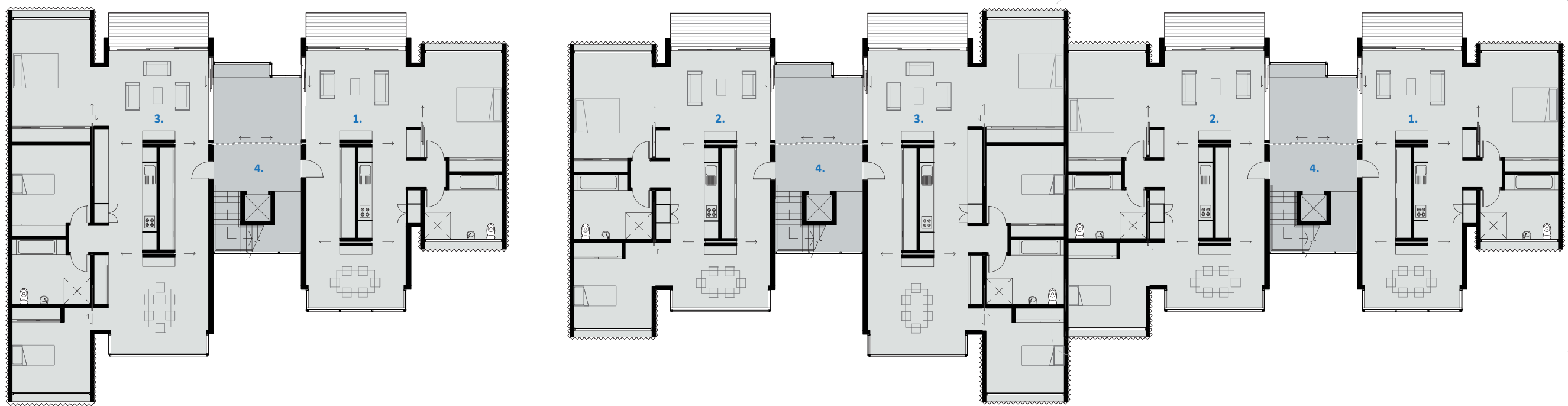
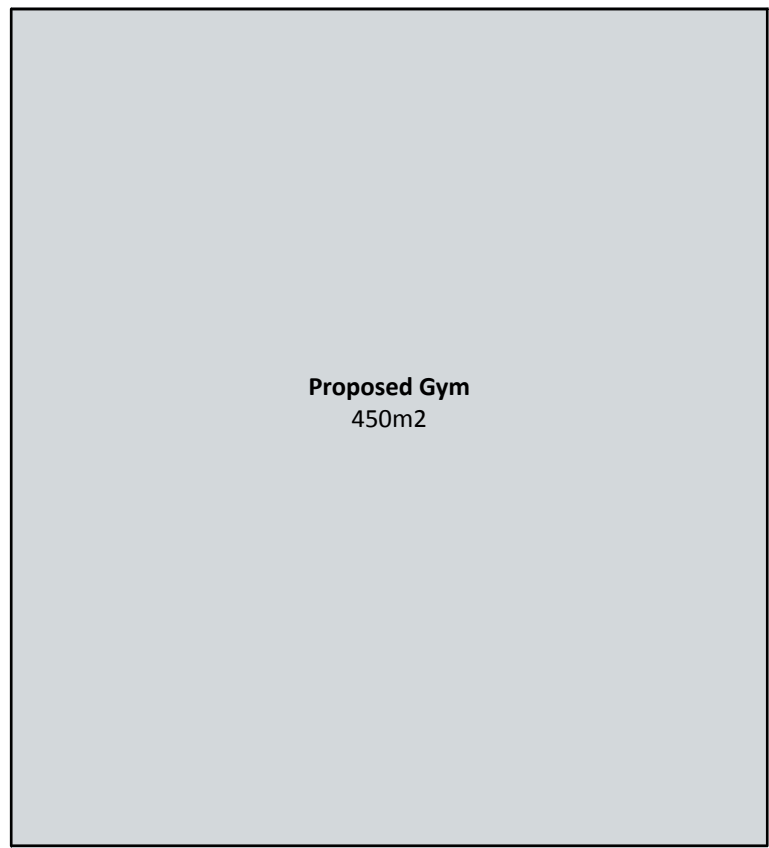


Fig 5.3b  
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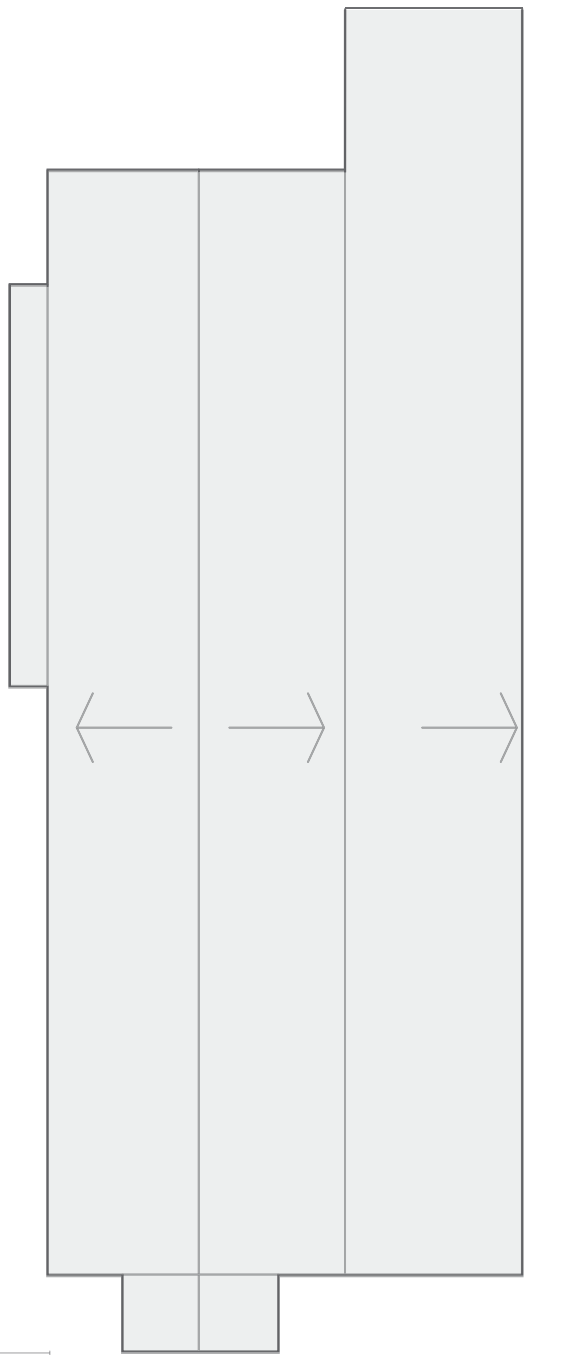


Figure 5.34: Level 1 Floor Plan Scale 1:200

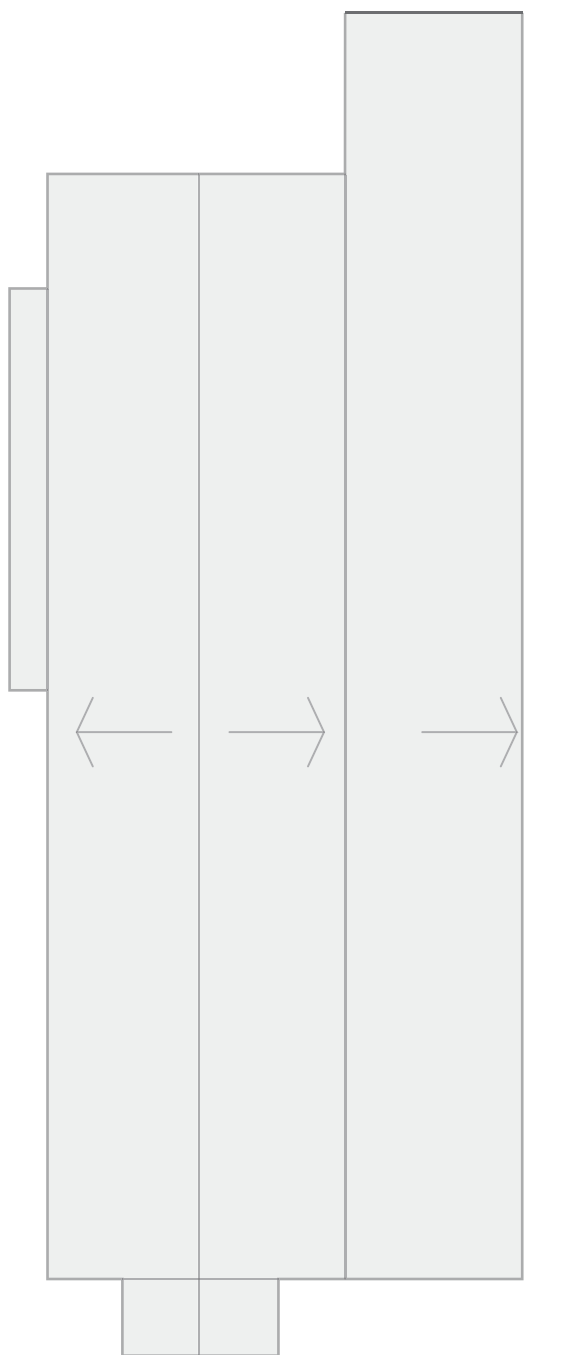
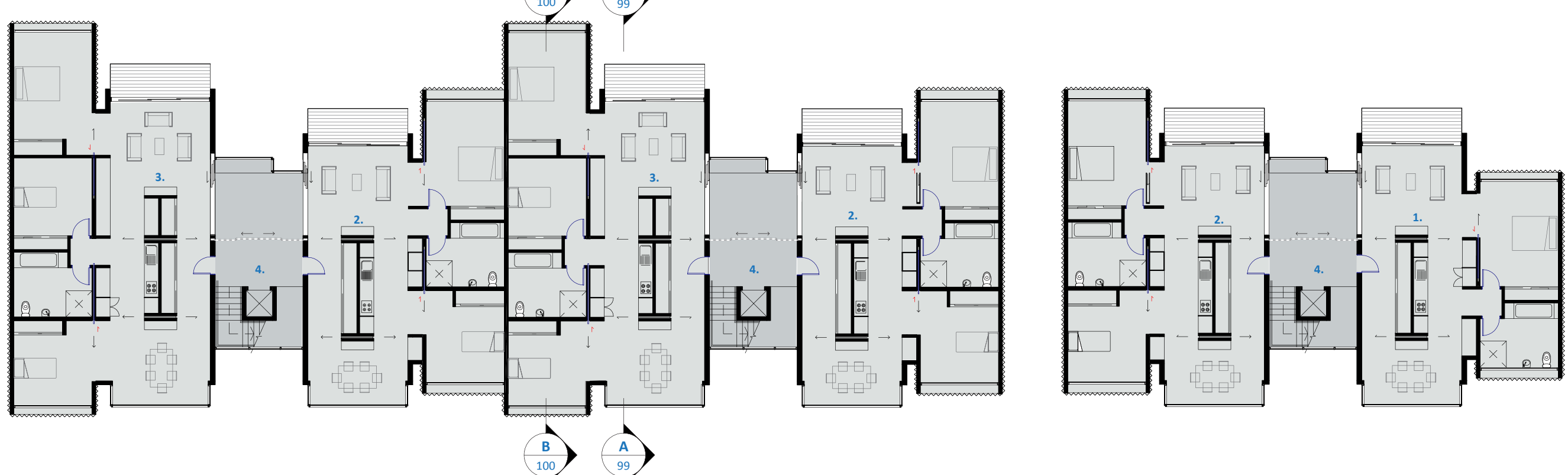
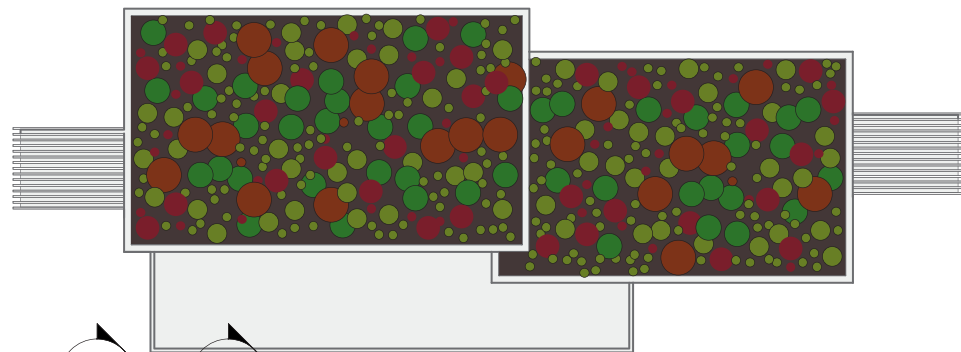
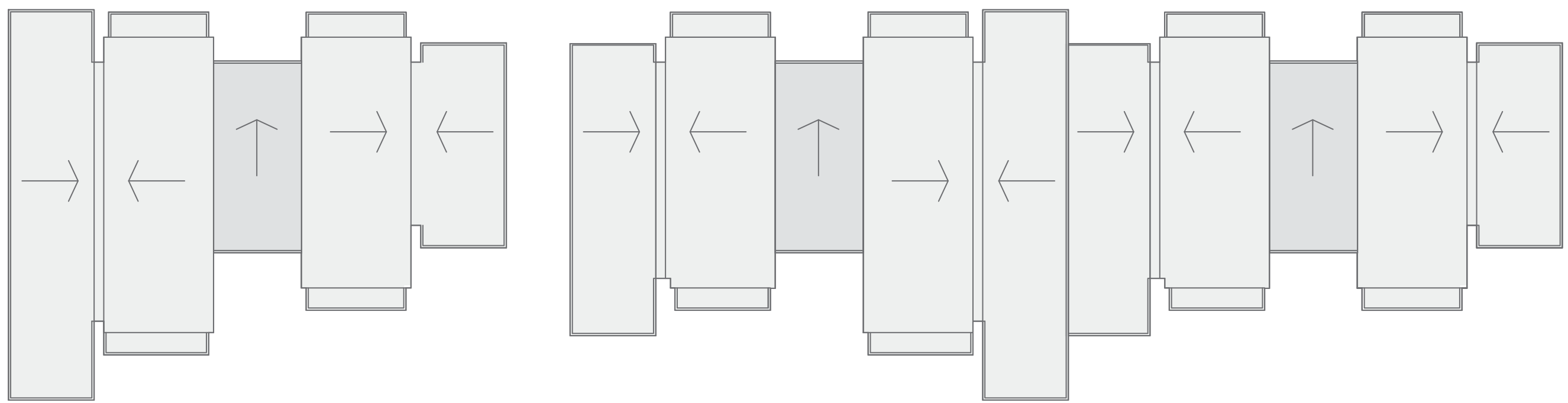
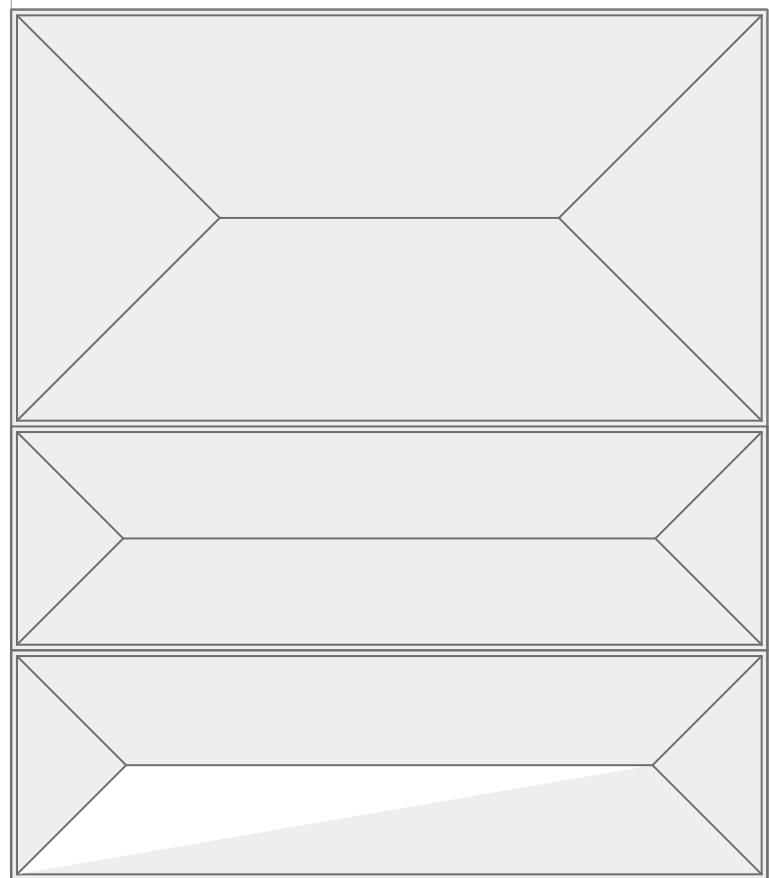
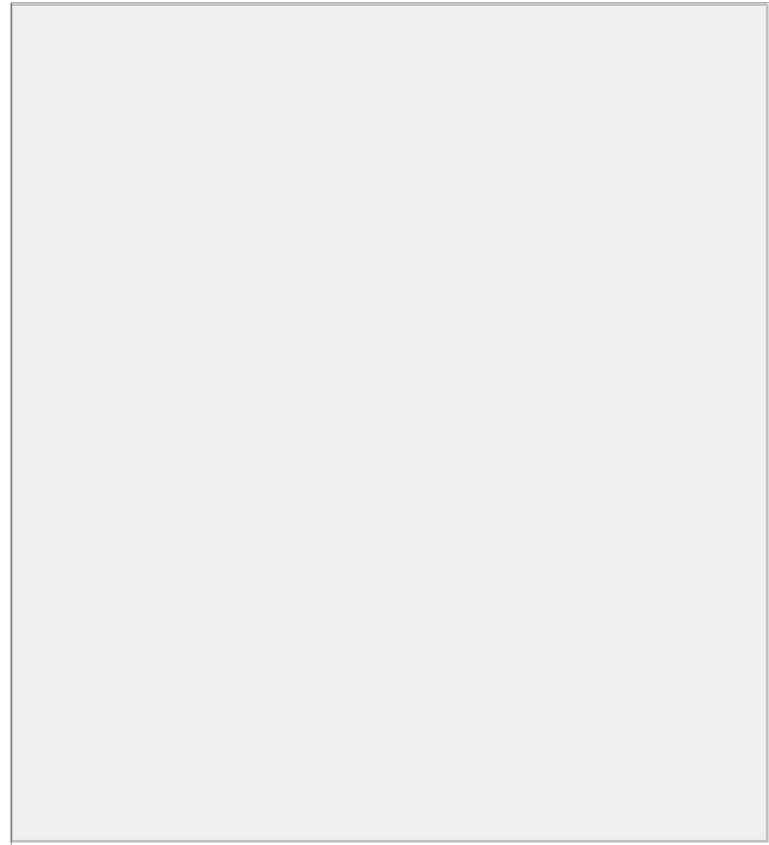


Figure 5.35: Level 2 Floor Plan Scale 1:200

- Room Key
1. 1 Bedroom Apartment
  2. 2 Bedroom Apartment
  3. 3 Bedroom Apartment
  4. Vertical Circulation
  5. Entry Foyer
  6. Kitchenette
  7. Commercial Kitchen
  8. Moveable Kitchen Benches
  9. Multipurpose Room
  10. Meeting Rooms
  11. Accessible WC
  12. Unisex WC
  13. Female WC
  14. Male WC
  15. Store
  16. Garden Store
  17. Bike Shed
  18. Garage

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  13. Female WC
  14. Male WC
  15. Store
  16. Garden Store
  17. Bike Shed
  18. Garage



### Primary Lifemark Design Considerations

1. Maximum 20mm threshold between spaces.
2. Level entry to shower with 1200 x 1200 min dimension.
3. Slip resistant flooring installed in bathroom area.
4. Toilet location allows for the future installation of grab rails.
5. 1500mm turning circles.
6. Minimum 800mm clear space provided around at least one side of each bed.
7. 860mm door leaf (clear opening width 810mm).
8. Sensors to automatically turn lights on/off.
9. Power outlets installed 300mm min off floor level.
10. Window, doors and fixtures to have lever action joinery.
11. Accessible kitchen joinery.
12. Kitchen space has at least half of storage units below bench tops.
13. 1200 x 1200mm platform lift installed.

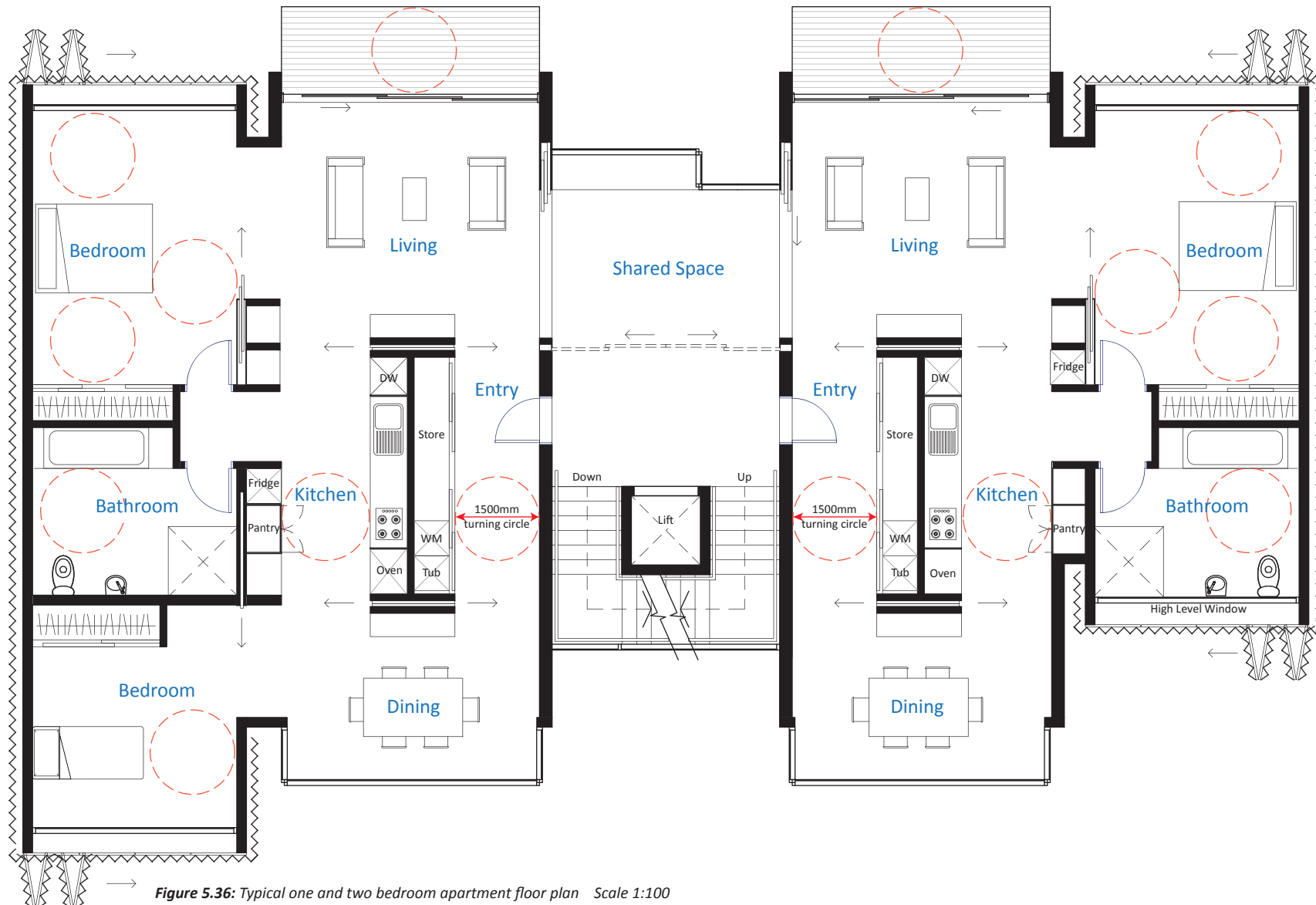


Figure 5.36: Typical one and two bedroom apartment floor plan Scale 1:100



**Figure 5.37:** Image looking from Riddiford Street edge through the laneway and into the external courtyard.







Figure 5.38: North-east perspective of the external courtyard.







Figure 5.39: Kitchen classroom entry.







Figure 5.40: South-west perspective of the external courtyard.

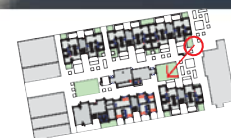






Figure 5.41: Image showing how a relationship can be created between the existing St Annes School hall and external courtyard.







Figure 5.42: Interior perspective of the kitchen classroom.





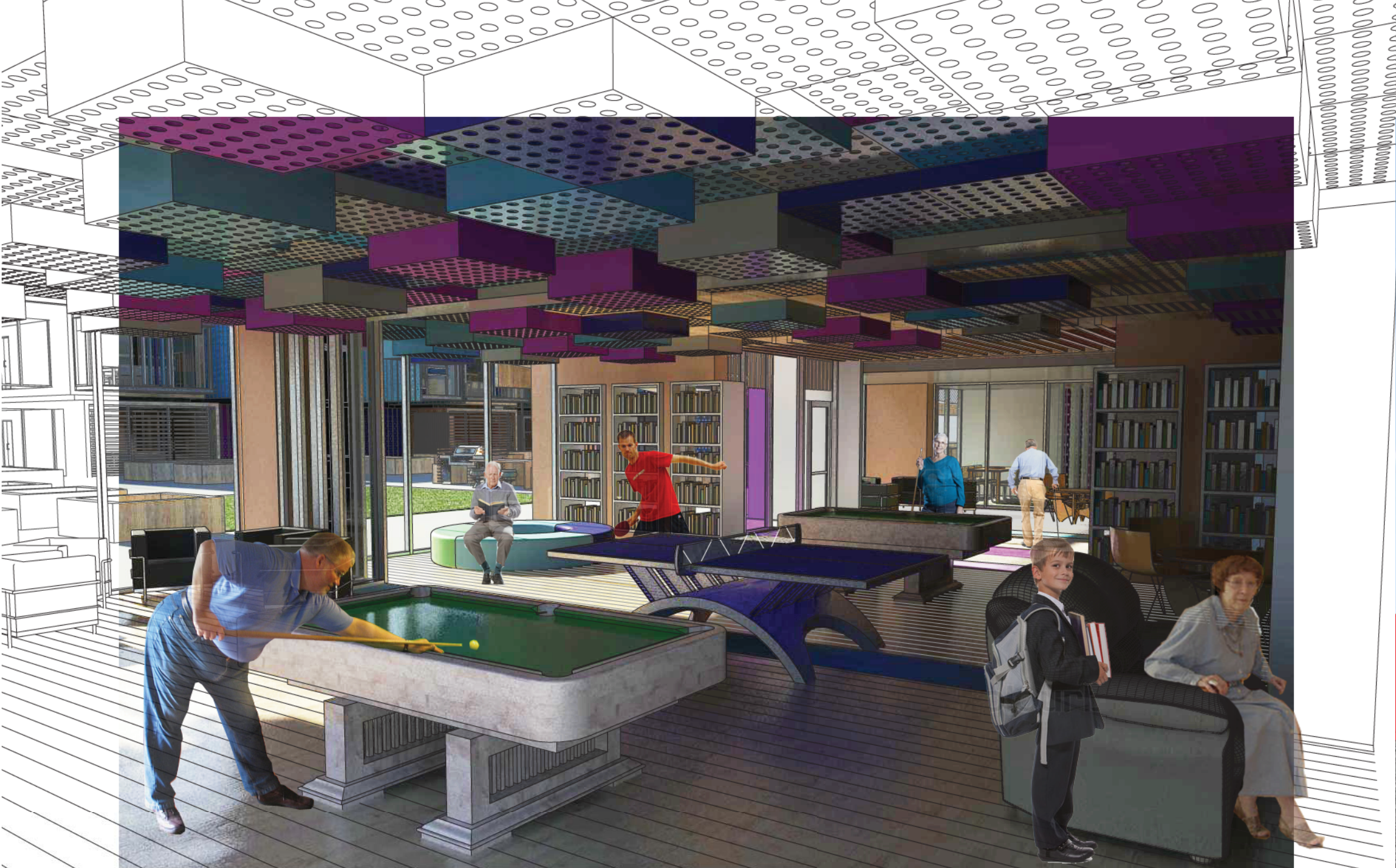
Figure 5.43: Interior perspective of the kitchen classroom being occupied for cooking classes.





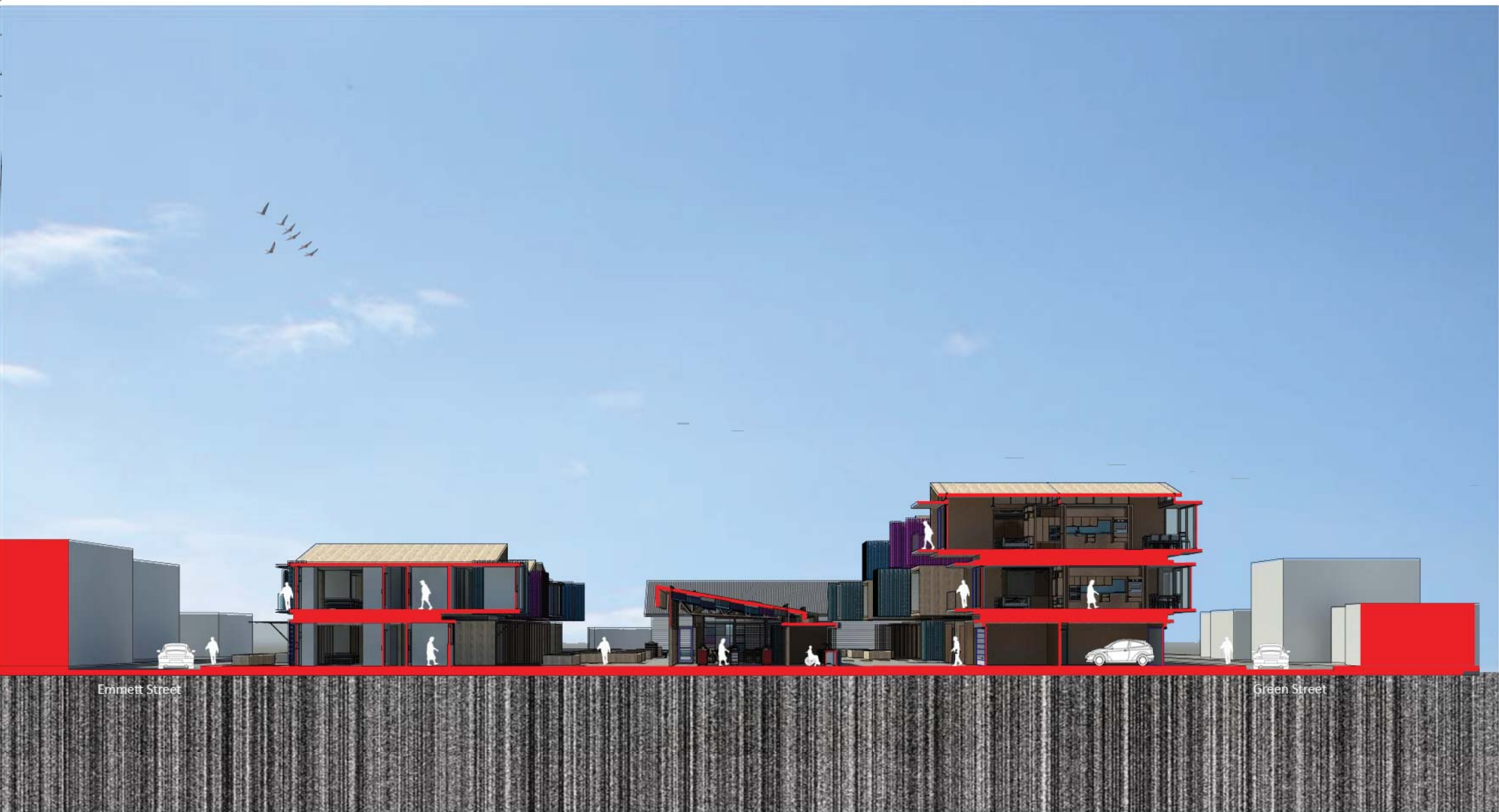
*Figure 5.44: Interior perspective of the kitchen classroom being occupied as a shared dining room.*



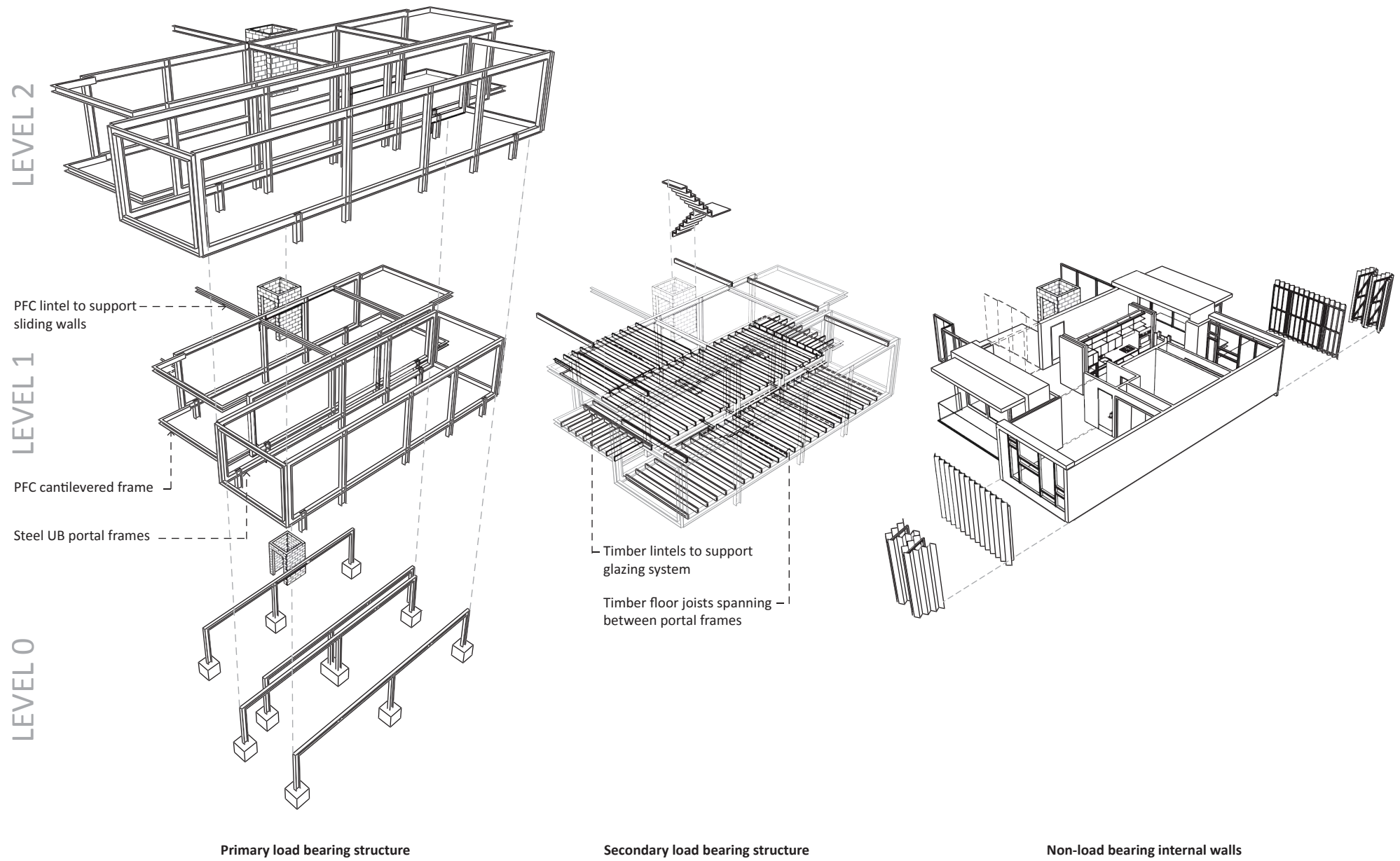


*Figure 5.45: Interior perspective of the community room being occupied as an informal gathering space.*

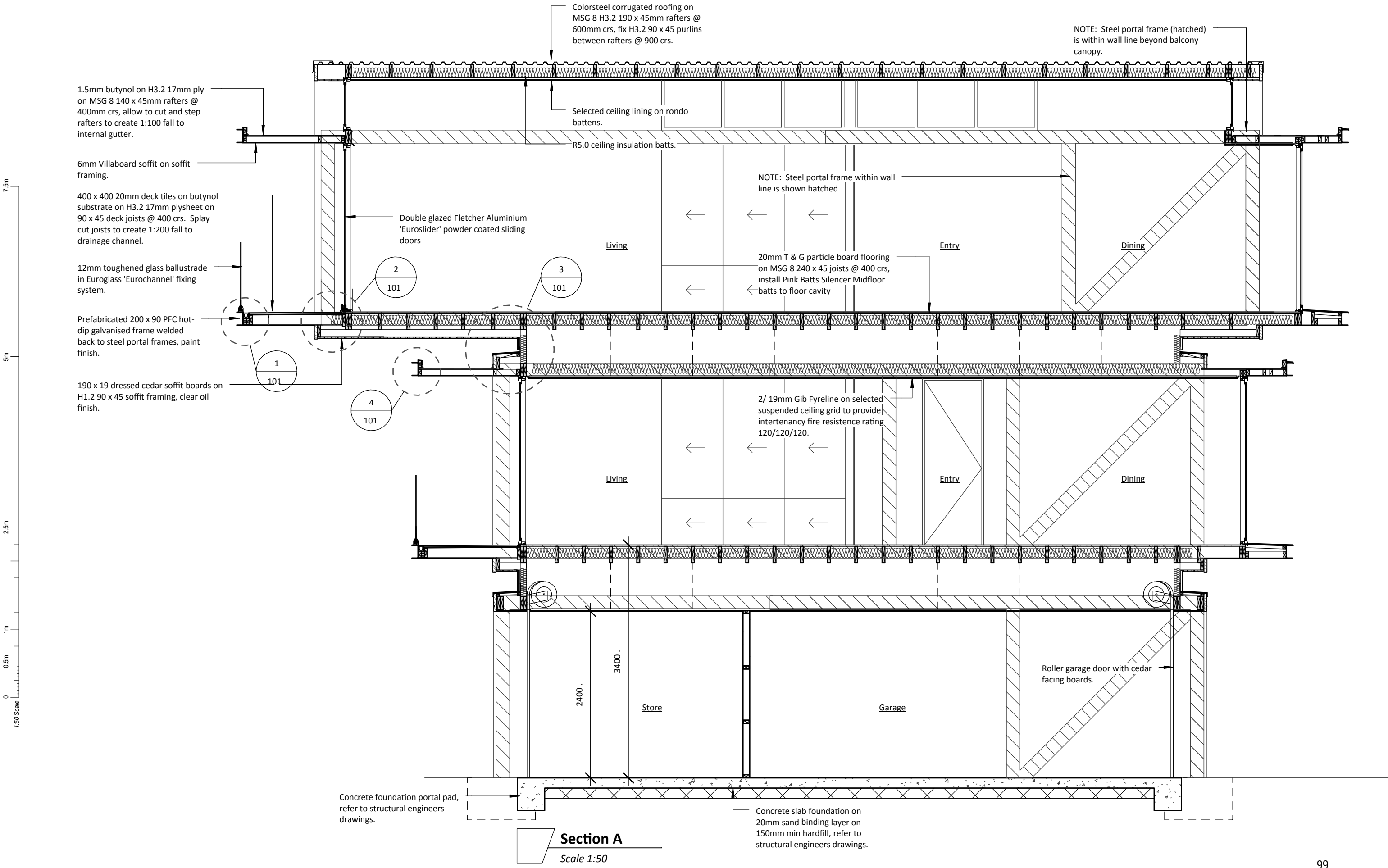




**Figure 5.46:** Perspective section through the site.



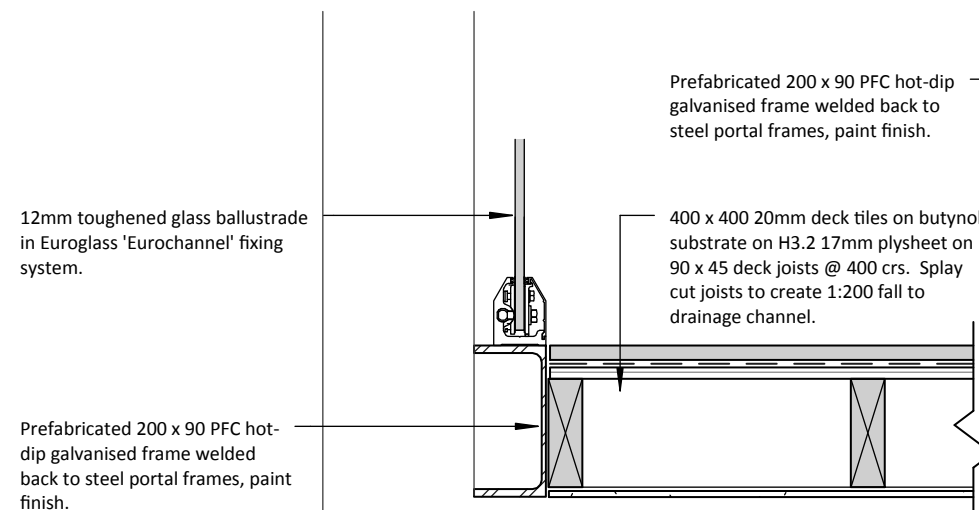
**Figure 5.47:** Exploded construction view of apartments.





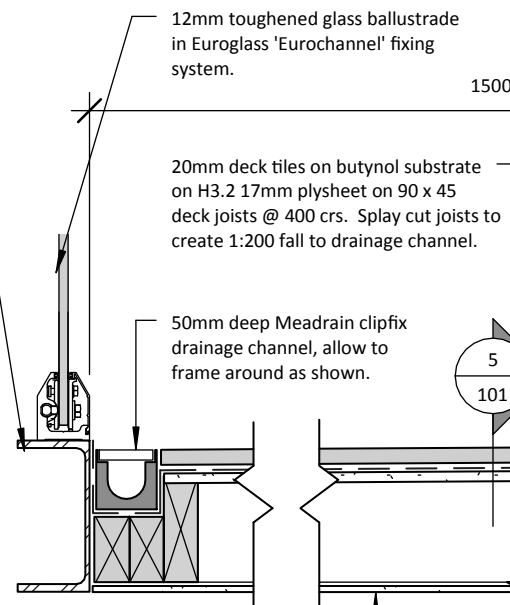
## 5 Balcony Detail

Scale



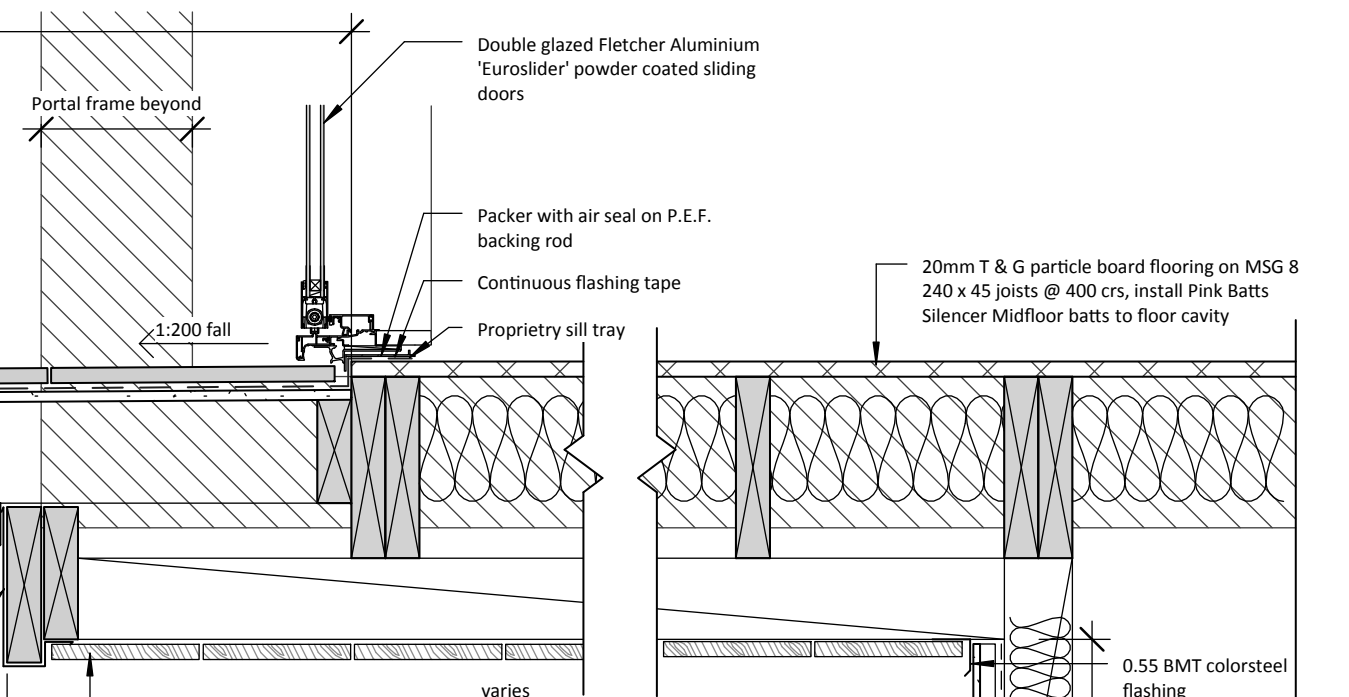
## 2 Balustrade Detail

Scale 1:10



## 1 Balcony Detail

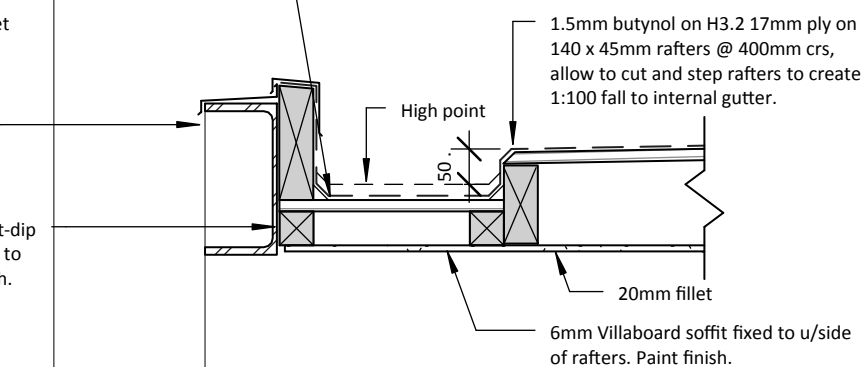
Scale 1:5



Gutter formed with 1.5mm butynol on 17mm ply on H3.2 70 x 45mm runners splay cut to create 1:100 fall, fix 45 x 45mm dwangs between @ ply sheet joints, lap butynol over parapet

0.55 BMT colorsteel capping on timber plate, splay cut to create 5 deg fall.

Prefabricated 200 x 90 PFC hot-dip galvanised frame welded back to steel portal frames, paint finish.



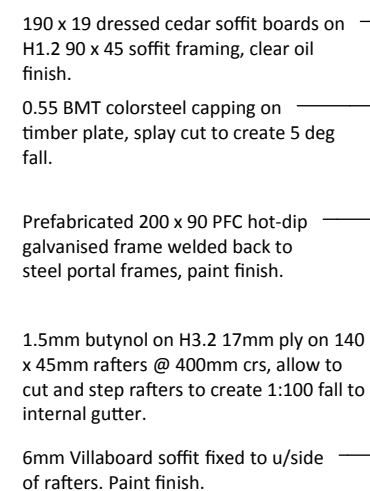
Cedar facing board beyond

## 6 Internal Gutter Detail

Scale 1:10

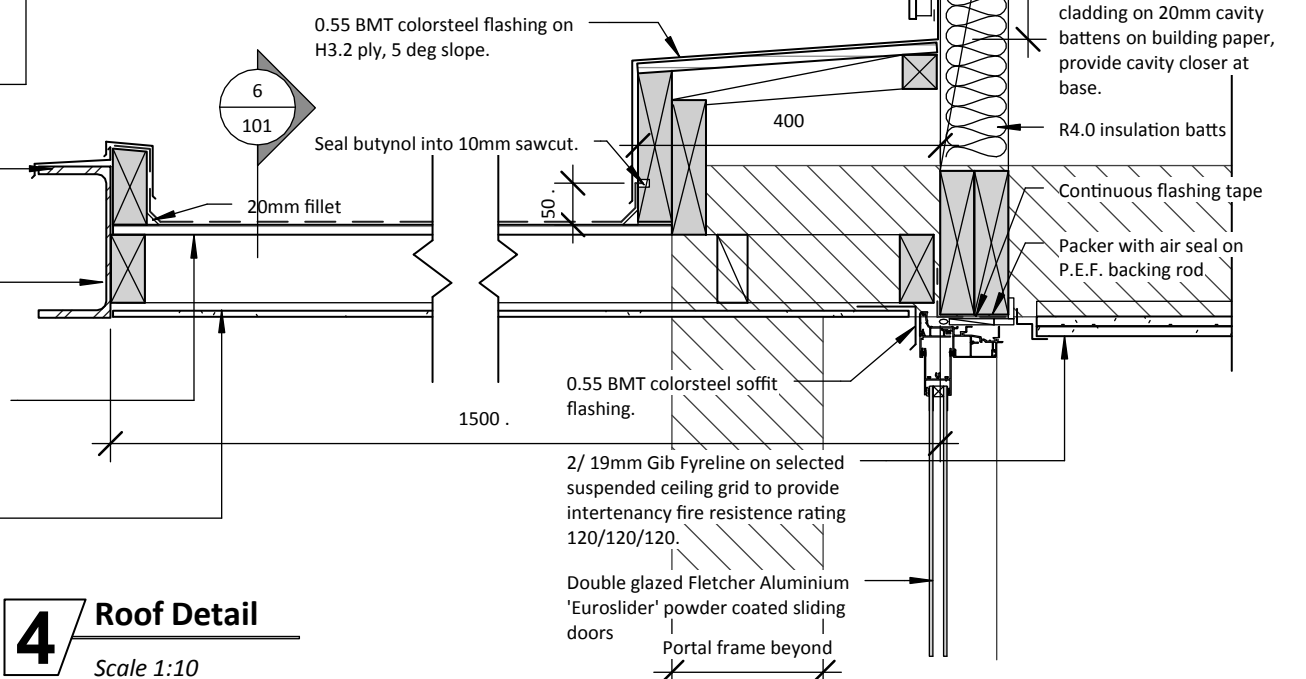
## 4 Roof Detail

Scale 1:10



## 3 Door Detail

Scale 1:10



0.55 BMT colorsteel capping on timber plate, splay cut to create 5 deg fall.

Packing to suit.

200 UB hot-dip galvanised portal frame.

**Bifold screens**  
Fixed 5mm thick Richardson Pacific Ltd perforated metal sheet screens welded together.

130 x 70 x 6mm mild steel galv plate tags welded to aluminium RHS louvres, drill 3 no. 14mm $\varnothing$  holes

130 x 220 x 6mm mild steel galv cleat welded to UB portal flange, drill 2 no. 14mm $\varnothing$  holes for M12 bolt fixings

9mm Exotec on 20mm H3 cavity battens on building paper on H1.2 140 x 45 wall framing.

## 10 Gutter Detail

Scale 1:10

portal flange above

Allow to cut slot in EXOTEC panel for louvre cleat, after installation of cladding seal around slot perimeter

130 x 220 x 6mm mild steel galv cleat welded to UB portal flange above.

## 11 Screen Fixing Detail

Scale 1:10

1.5mm butynol on H3.2 17mm ply on MSG 8 190 x 45mm rafters @ 400mm crs, allow to splay cut rafters to create 1:100 fall to internal gutter. Lap butynol over parapet

High point

Gutter formed with 1.5mm butynol on 17mm ply on H3.2 140 x 45mm runners splay cut to create 1:100 fall, fix 45 x 45mm dwangs between @ ply sheet joints, lap butynol over parapet

Prefabricated 200 x 90 PFC hot-dip galvanised frame welded back to steel portal frames, paint finish.

## 7 Screen Head Detail

Scale 1:10

0.55 BMT colorsteel capping on timber plate, splay cut to create 5 deg fall.

1.5mm butynol on H3.2 17mm ply on MSG 8 190 x 45mm rafters @ 400mm crs, allow to splay cut rafters to create 1:100 fall to internal gutter. Lap butynol over parapet

0.55 BMT colorsteel soffit flashing.

6mm Villaboard soffit fixed to u/side of joists. Paint finish.

2/ 16mm GIB Fireline ceiling on rondo battens fixed to u/side of rafters.

R5.0 ceiling insulation batts

Double glazed Fletcher Aluminium powder coated shopfront window system.

20mm deck tiles on butynol substrate on H3.2 17mm plysheet on H3.2 140 x 45 deck joists @ 400 crs. Splay cut joists to create 1:200 fall to drainage channel.

**Bifold screens**  
5mm thick Richardson Pacific Ltd perforated metal sheet fixed to hot dip galv 75 SHS frame with paint finish, frame to sit within head & sill track. Screens to be fitted with motorised system to allow screen to automatically open/ close according to building management system.

Prefabricated 200 x 90 PFC hot-dip galvanised frame welded back to steel portal frames, paint finish.

6mm Villaboard soffit fixed to u/side of joists. Paint finish.

## 8 Screen Sill Detail

Scale 1:10

450

1:200 fall

Packer with air seal on P.E.F. backing rod

Continuous flashing tape

Proprietary sill tray

20mm T & G particle board flooring on MSG 8 190 x 45 joists @ 400 crs, install Pink Batts Silencer Midfloor batts to floor cavity

50mm deep Meadrain clipfix drainage channel, allow to frame around as shown.

0.55 BMT colorsteel flashing

6mm Hardies Exotec cladding on 20mm cavity battens on building paper, provide cavity closer at base.

R4.0 insulation batts

0.55 BMT colorsteel flashing on H3.2 ply. 5 deg slope.

0.55 BMT colorsteel capping on timber plate, splay cut to create 5 deg fall.

**Bifold screens**  
5mm thick Richardson Pacific Ltd perforated metal sheet fixed to hot dip galv 75 SHS frame with paint finish, frame to sit within head & sill track. Screens to be fitted with motorised system to allow screen to automatically open/ close according to building management system.

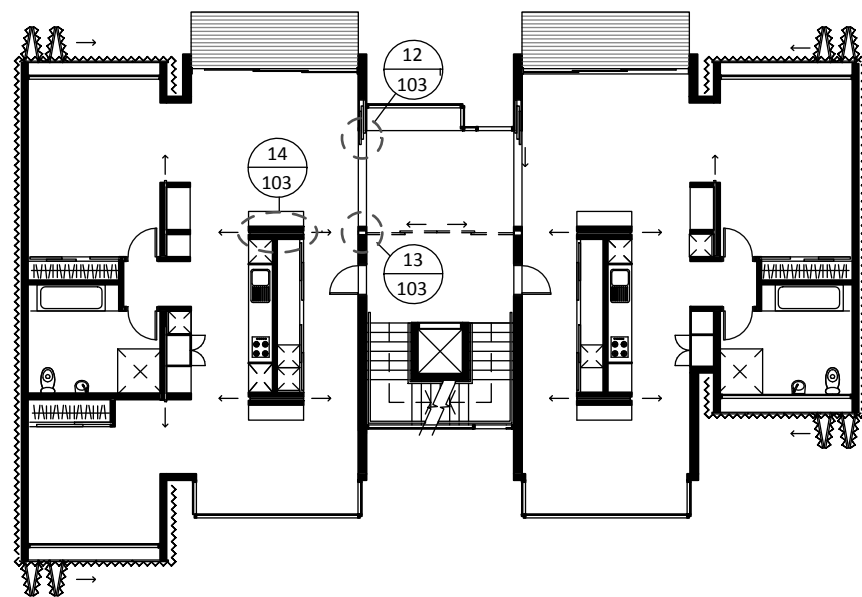
0.55 BMT colorsteel head flashing

Packer with air seal on P.E.F. backing rod

## 9 Screen Detail

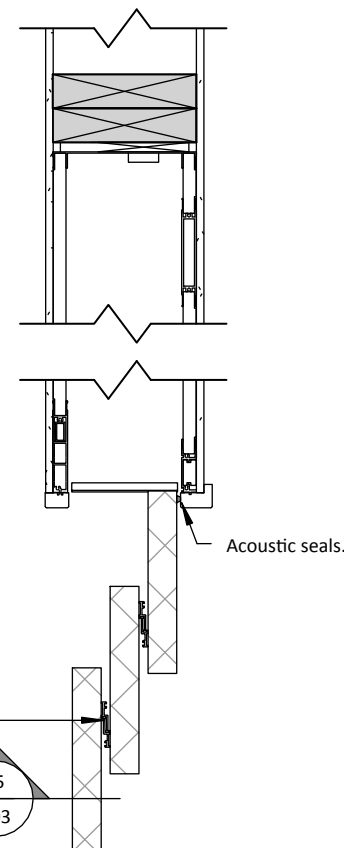
Scale 1:10





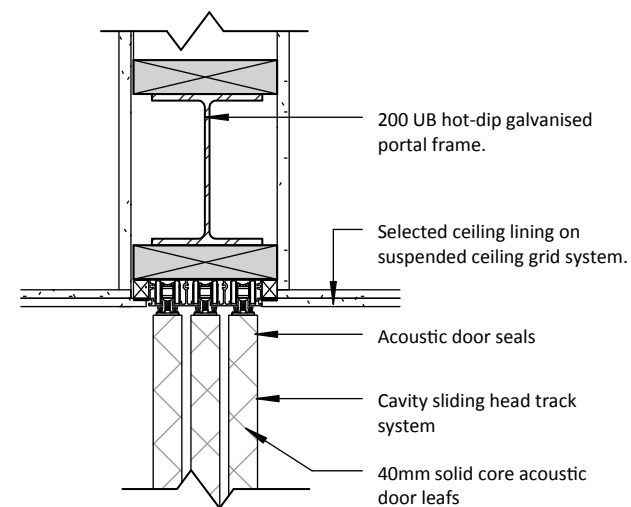
**Reference Plan (L1)**  
Scale 1:200

**12 Jamb Detail**  
Scale 1:10

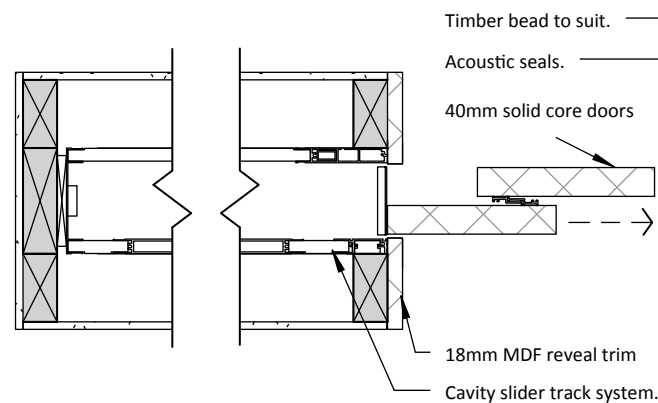


Acoustic seals contained as part of door system.

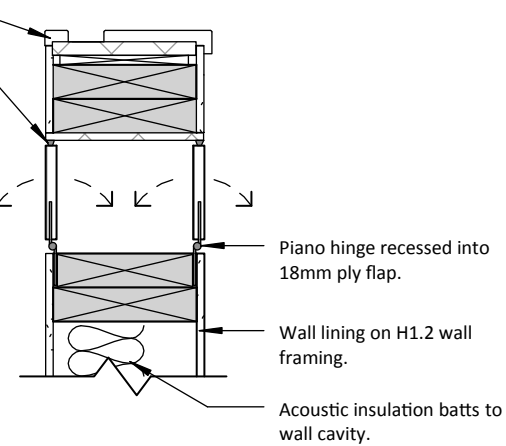
**15 Head Detail**  
Scale 1:10



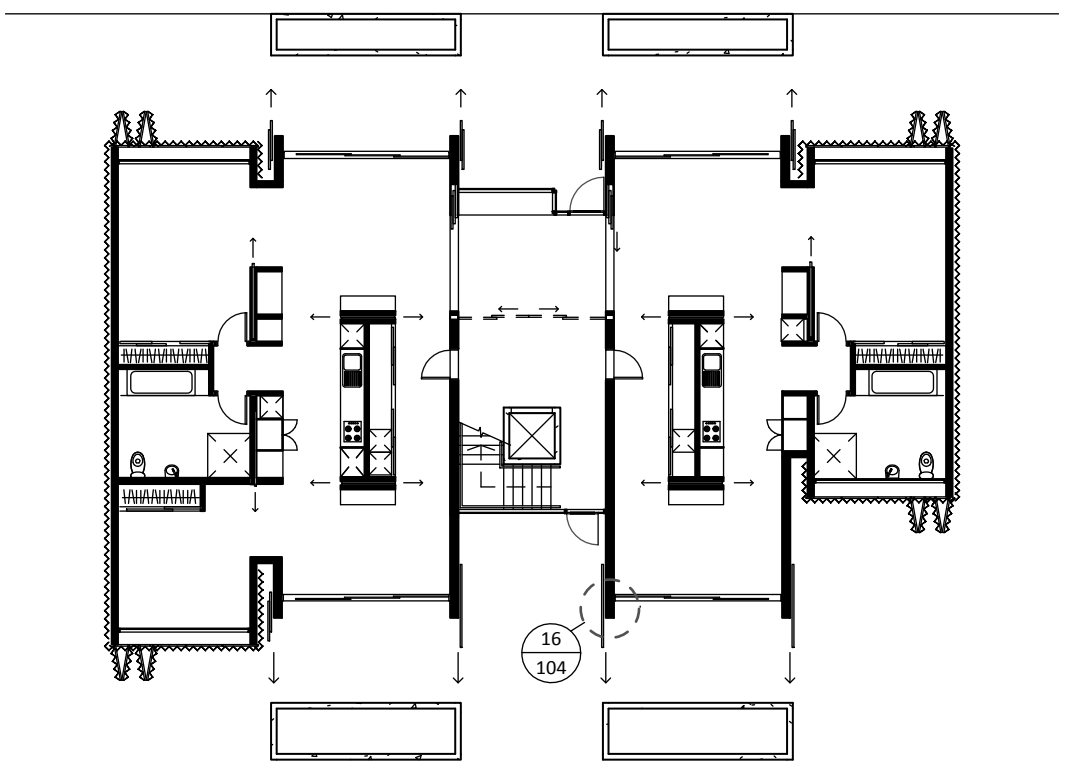
**14 Jamb Detail**  
Scale 1:10



**13 Jamb Detail**  
Scale 1:10



1.5m  
1m  
500mm  
100mm  
0  
1:10 Scale

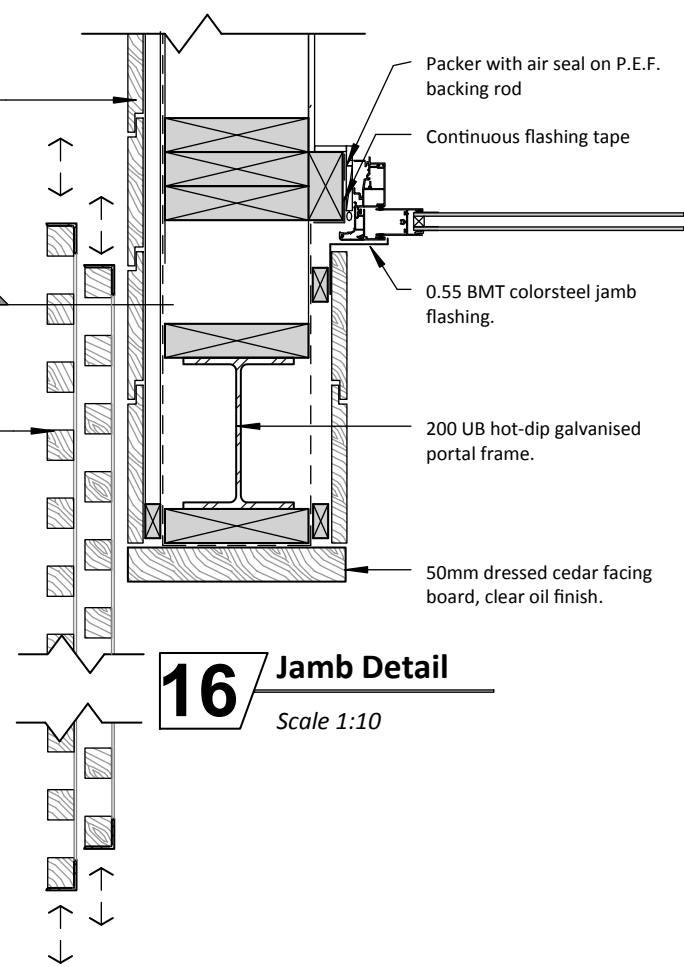


**Reference Plan (L0)**  
Scale 1:200

190 x 19 dressed cedar vertical weatherboards on H3 50 x 20 cavity battens on building paper on H1.2 190 x 45 wall framing, clear oil finish.

Horizontal sliding screens

17  
104



**16 Jamb Detail**  
Scale 1:10

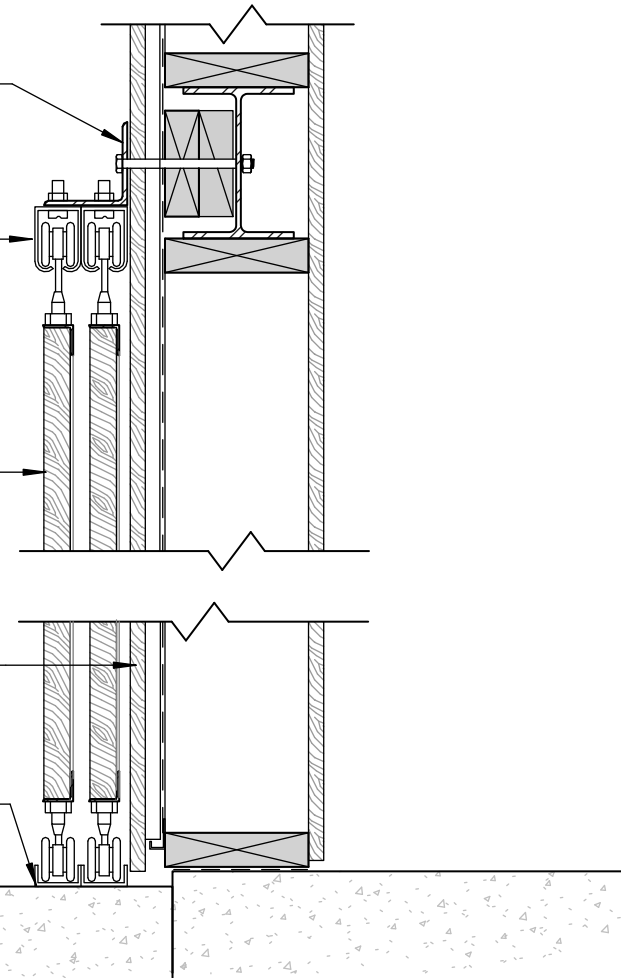
Hot dip galvanised 100 x 100mm equal angle fixed through UB portal frame with M16 stainless steel bolts @ 800mm crs.

Galv screen guides fixed to equal angle with M12 stainless steel bolts @ 600 crs. Roller system for sliding screens to sit within guides.

Screen formed with 40 x 40mm galv equal angle frame welded together. Fix 40 x 40mm cedar vertical slats to frame @ 90mm crs. Frames to be welded to roller system as shown.

190 x 19 dressed cedar vertical weatherboards on H3 50 x 20 cavity battens on building paper on H1.2 190 x 45 wall framing, clear oil finish.

Roller screen system to sit within bottom galv channel guides as shown.



**17 Screen Detail**  
Scale 1:10

# 6



Conclusion

## 6.0 Reflection and conclusion

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### 6.1 Reflection and conclusion

The main purpose of the research was to develop a housing option for elderly New Zealanders that will better support the positive ageing process and provide for a better quality of life during their retirement years. This research focus was established in response to New Zealand's ageing population and the evident growth that will be necessary in order for the housing sector to accommodate it. Conventional elderly housing typologies have been arranged as 'gated communities' to create a barrier between elderly residents and the wider community. As a result of this practice many elderly people have started to become forgotten members of society. Concerns have been raised about this existing model and research now suggests that this focus on segregation is no longer sustainable due to the negative impact it can have on the well-being of elderly citizens. This research presents a different way of thinking about the design of elderly housing typologies, with the main focus being on changing the theme from segregation to integration. This thematic shift aims to provide a living environment that helps to improve the well-being of elderly people and minimise some of the issues associated with ageing.

The final design outcome evolved from testing and challenging many of the issues and opportunities raised in previous chapters. Initial design concepts were tested, critiqued and reflected upon throughout the process which led to further development and redesign. The design outcome should not be regarded as a utopian solution but instead act as a guide for how the elderly could be better accommodated in the future.

Findings and insights drawn from a literature review and case study analysis have helped to identify ways of improving the living environments of the elderly. Research revealed the importance of proximity to amenities when selecting a site for elderly housing typologies. This provides the elderly with the opportunity to maintain their independence longer which can help reduce feelings of isolation and segregation. This was a common concern with conventional elderly housing facilities. Locating the proposed site in Newtown addresses this issue by providing an appropriate host community, with ethnic and socioeconomic diversity and a high number of leisure, health, educational, cultural and voluntary amenities in close proximity to one another useful for the elderly. The proposed intensification is already an accepted pattern in the future development of this area of Newtown, particularly along main arterial routes (NZTA, 2010), which presents a timely opportunity to look at redeveloping the chosen site with residential intensification. One of the main advantages of placing an elderly

housing facility in an inner city suburb, such as Newtown, is the opportunity for the elderly to interact with the wider community.

Research also emphasised that elderly people enjoy the sense of belonging to a community and having regular contact with younger generations as it provides them with a sense of security and an emotional boost. For this to be achieved it is important to ensure an appropriate interface is provided between the elderly and the community. This is explored in the proposed design through the idea of a semi-public external courtyard that extends out to Riddiford Street's public edge. This move significantly alters the interface between elderly residents and the wider community by providing a shared surface necessary for community life. Intended to accommodate a community garden and kitchen classroom, this space will offer the elderly and members of the wider community opportunities to come together and physically share the experiences of space, labour and harvest while also complementing the site's proximity to two primary schools and the 'Garden to Table' educational initiative currently being established within New Zealand schools. Gardening is an activity often associated with old age and retirement, thus the inclusion of a community garden will provide a useful amenity while also acting as a significant interface between the elderly and members of the wider community. Research has shown that including a community garden on site can help to prevent social exclusion and isolation by creating a sense of community. The social interaction generated and fostered by the community garden will provide an appropriate setting for the elderly to gain recognition and empowerment as continuing contributors to community life. It will also help to foster a sense of community and enhance the function of the site, contributing to it becoming a hub for community interaction and an affective mechanism for integration.

Preston (Lifemark Design Ltd, 2012, p.21) argues that being shut in and left alone is one of the great fears about ageing and it is also the antithesis of sustainable community making. Elderly housing typologies ought to encourage and allow controlled social interaction between its residents and members of the wider community. Choosing a multigenerational housing approach to the proposed design aims to support the sustainable community concept by recognising the necessity of adopting a holistic approach when promoting the general welfare of elderly citizens and the wider community.

While the floor plans of the apartments might appear simple they result from meticulous planning. Particular emphasis was placed on creating greater flexibility within the internal organisation of apartments to foster

casual social interaction between the elderly and younger generations living adjacent to one another. This was achieved by arranging the vertical circulation space in a way which allows it to be occupied in a number of ways. Moveable sliding walls are a key design feature in the internal plans to provide more flexibility to the living unit over time and ultimately increase the ways in which spaces can be used. Determining a structural resolution to accommodate the desired flexibility required careful consideration to ensure that top hung moveable sliding walls could be suitably supported while also allowing the ground floor surface to be occupied by larger open spaces within the community room.

One trend identified in the case study analysis was the locating of other shared community facilities on site to supplement local facilities and create opportunities for casual social interaction between the elderly and members of the wider community. This is addressed in the proposed design by providing a ground level community room and kitchen classroom facility. While intended to accommodate specific programmes these spaces are flexible enough to be rented out for other public and private events, thus providing an additional revenue stream for the facility.

The laneways and external courtyard space have the potential to be a location for crime, therefore the external courtyard space would require careful management in relation to security. However, the mixed use environment and orientation of the apartments onto this space provides the high level of natural surveillance necessary to create a safe pedestrian environment. In addition, an appropriate lighting scheme would be developed for the site in consultation with a lighting engineer. Providing a high level of natural surveillance will increase perceived safety, thus encouraging elderly residents and the wider community to feel safe within an environment set up to foster casual social interaction.

The purpose of the proposed design is to test whether the living environments of New Zealand's elderly can be better integrated into the community in order to reduce problems associated with ageing, such as loneliness, segregation, and lack of intergenerational contact and involvement within the community. The proposed design appears capable of supporting strong links with the community through the use of a semi-public external courtyard space and the prominent laneway and view shaft which connects the site with the public edge. Providing a shared external courtyard surface assists in community life and supporting the occurrence of casual social interaction.

Overall the proposed design is about creating a high quality living environment which will improve the well-being of the elderly and reduce some of the issues associated with ageing. Ultimately, the proposed design achieves this by increasing the sociability of elderly people's living environments and breaking down the barriers that keep old and young apart. This thesis concludes that the future of elderly housing typologies should reflect a change in theme from segregation to integration to enable the elderly to maintain an identity within communities and ultimately aid the positive ageing process.

## **6.2 Further research**

Opportunities for further research are present within the scope of this project. Firstly, it would be beneficial to carry out a feasibility study to assess its financial viability. One of the barriers to accommodating the elderly in close proximity to essential public amenities is the acquisition and cost of land. To help offset the costs associated with the selection of an inner city suburban site, consideration was given in the proposed design to higher density multi-storey construction as a more appropriate and financially feasible building option. However, it must be noted that the construction methodology for the proposed design is likely to be more expensive than conventional elderly housing. Multi-use programmes, such as a kitchen classroom space and community room that can be rented out for other events, were introduced on site to further reduce development costs and enhance the financial feasibility of developing the site while also helping to reinforce the integrative objectives trying to be achieved. The site selection also means the facility has access to nearby amenities (e.g. library, hospital, hairdressers) helping to reduce the cost associated with having to provide a similar range of amenities on-site. However, further research into appropriate multi-use programmes could be undertaken to ensure its financial feasibility. The potential to create a quality living environment that aims to help the elderly overcome some of the major issues associated with ageing could make the proposed design a fitting proposition.

Determining an appropriate ownership model for the proposed design project could also be further investigated. Currently, many of New Zealand's elderly housing models are arranged around a lease agreement between the resident and private company owner (i.e. Ryman Healthcare) where residents only receive a 60-70 per cent return on the purchase price when the bedroom suite or apartment is sold on. Further investigation could focus on whether Housing New Zealand or the local council could become more involved in the ownership model of elderly housing typologies. A community garden is used as a mechanism for integration within the proposed design, however, its design is worthy of further design-lead enquiry, particularly with regard to how its planning



and design could better facilitate casual social interaction between the users. An opportunity also presents itself for a landscape architecture student to undertake further investigation into how a planting schedule could influence the habitation of birdlife within the external courtyard space. This element has the potential to strengthen the design scheme by enhancing the soundscape on site, thus helping to stimulate the interest of residents. Investigating ways to reconcile the current fire code lobby regulations to accommodate the proposed 'shared space' between apartments requires further attention in order for this design idea to meet strict building code regulations. Other research could focus on building a connection between elderly housing arrangements and the wider community from a planning perspective. Planning suitable sites for elderly housing projects in relation to traffic flows and safe access to amenities is an important topic requiring further exploration.

Following further investigation it is hoped that future elderly housing typologies can become better integrated into our communities in an effort to contribute to this growing demographics physical, social and mental well-being and ensure opportunities exist for them to remain valued members of New Zealand's communities.



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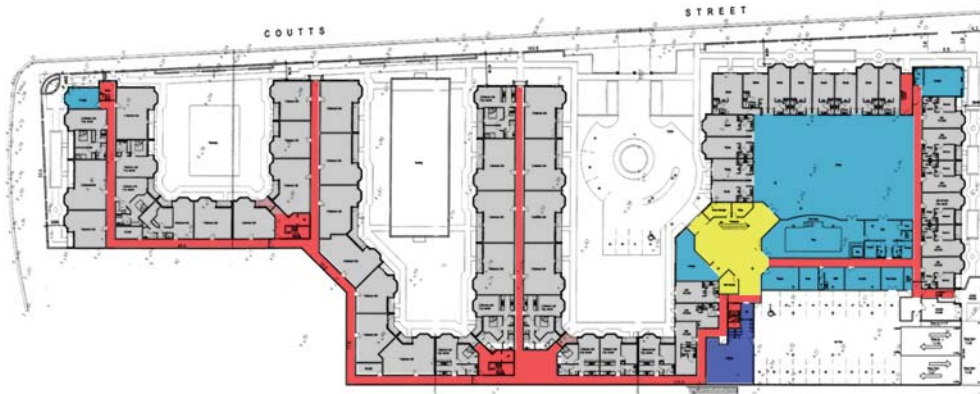
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## Appendix

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## Appendix A



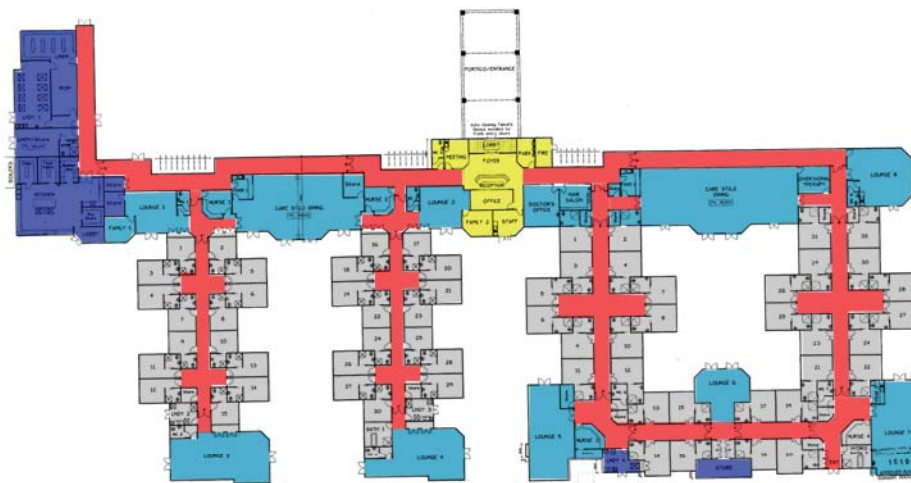
Site Area: 10,000m<sup>2</sup> (1ha)

Levels: 3

Type of dwellings: Rest home studios + apartments

Total rooms: 40/ level = 120 total

Site Plan and Ground Floor - Rita Angus Retirement Village



Site Area: 11,500m<sup>2</sup> (1.15ha)

Levels: 1

Type of dwellings: Rest home studios

Total rooms: 45 total

Site Plan and Ground Floor - Village at the Park, Wellington

## Appendix B

### LIFEMARK DESIGN STANDARDS ASSESSMENT FORM

The Lifemark Design Standards have been created to achieve a design solution based on the Lifetime Design Principles of Usability, Adaptability, Accessibility, Safety and Lifetime Value. The rating system below determines whether a design will achieve the 3-Star, 4-Star or 5-Star Lifemark. Scores are based on specific design features that illustrate a design standard is currently being met, OR is provisioned to be easily adapted so it can be met in the future. For example, 'able to be adapted' scores lower points than 'actually has'. A design can only accrue points that meet one option of each standard, for example, one cannot get points for achieving 1.1a and 1.1b.

**The Lifemark “Entry Level” is a 3-STAR RATING which requires certain minimum mandatory standards be met earning 140 points out of a possible 300 points for a single storey dwelling, or 165 points out of a possible 350 points for a multi-storey dwelling. Mandatory standards are indicated below in the BLUE PANEL COLOUR you see here.**

For the 4-Star rating designs must meet the 3-Star standards and earn a further 40 points (single storey) or 45 points (multi-storey).  
For the 5-Star rating designs must meet the 3-Star standards and earn a further 100 points (single storey) or 110 points (multi-storey).

#### ACCESSING THE DWELLING

1	CAR PARKING Where the parking space forms part of the dwelling access it shall allow a person to open their car doors fully and easily move around the vehicle	POINTS AVAILABLE	POINTS GAINED
1.1a	At least one car parking space is <b>able to be adapted</b> to a minimum width of 3500mm;	4	
1.1b	At least one car parking space <b>actually has</b> a minimum width of 3500mm;	7	
1.1c	At least one car parking space <b>actually has</b> a minimum width of 3500mm and length of 5000mm.	10	
1.2a	At least one car parking space is <b>able to be adapted</b> to have a level, firm, slip resistant flat surface with a slope not exceeding 1:20;	3	
1.2b	At least one car parking space <b>actually has</b> a level, firm, slip resistant flat surface with a slope not exceeding 1:20.	5	
2	PATHWAYS Occupants can easily and safely access the dwelling entrance	POINTS AVAILABLE	POINTS GAINED
2.1a	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is <b>able to be</b> installed with a minimum clear width of 1200mm;	3	
2.1b	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with a minimum clear width of 1200mm.	6	
2.2a	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is <b>able to be</b> installed with a level, firm, slip resistant surface with a maximum slope of 1:20 and a crossfall of not more than 1:50;	5	
2.2b	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with a level, firm, slip resistant surface with a maximum slope of 1:20 and a crossfall of not more than 1:50.	10	
2.3	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with a light switch at the dwelling entrance for pathway lighting.	1	
2.4	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with sensor lighting for the pathway.	3	
3	THE ENTRANCE Occupants can easily and safely enter and exit the dwelling	POINTS AVAILABLE	POINTS GAINED
3.1	The dwelling entrance <b>shall provide</b> an entrance door with a minimum clear opening width of 810mm (door leaf 860mm).	10	
3.2a	The dwelling entrance <b>shall provide</b> an entrance door with a maximum threshold of 20mm;	5	
3.2b	The dwelling entrance <b>shall provide</b> an entrance door with a level transition.	15	
3.3	The dwelling entrance <b>shall include</b> an external landing area measuring 1200mm x 1200mm.	2	
3.4	The dwelling entrance <b>shall include</b> an external landing area that is level with a 1:50 fall or shallower.	2	
3.5	The dwelling entrance <b>shall include</b> an external landing area that provides shelter from the weather.	2	
3.6	The dwelling entrance <b>shall include</b> an external landing area that is slip resistant.	3	
3.7a	The dwelling entrance <b>shall include</b> an external landing area with switch operated lighting;	1	
3.7b	The dwelling entrance <b>shall include</b> a landing area with sensor lighting.	3	
Required for 3-Star		35	
Subtotal Accessing the Dwelling Score		72	

#### GETTING AROUND

4	INTERNAL DOORS Facilitating comfortable and unimpeded movement between spaces	POINTS AVAILABLE	POINTS GAINED
4.1	ALL doorways to ALL rooms on the primary living level <b>shall provide</b> a minimum clear opening width of 810mm (door leaf 860mm).	15	
4.2	ALL doorways to ALL rooms on the primary living level <b>shall provide</b> a level transition and threshold. This accepts difference in floor materials either side of the doorway.	8	
4.3	ALL doorways to ALL rooms on the primary living level <b>shall provide</b> a 300mm return wall on the door handle edge of the door facing the side the door swings towards.	5	
5	CORRIDORS Facilitating comfortable and unimpeded movement between spaces	POINTS AVAILABLE	POINTS GAINED
5.1	ALL internal corridors or passageways <b>shall provide</b> a minimum clear width of 1050mm.	15	
5.2a	ALL internal corridors or passageways <b>shall provide</b> light switches at both ends of any corridors;	3	
5.2b	ALL internal corridors or passageways <b>shall provide</b> sensors to automatically turn lights on at night.	5	
Required for 3-Star		38	
Subtotal Getting Around Score		48	

#### FITTINGS AND FIXTURES

6	LIGHT SWITCHES Light switches are located at heights that are easy to reach for all occupants	POINTS AVAILABLE	POINTS GAINED
6.1	Light switches and other service controls (eg. security systems, intercommunication systems, air-conditioning controls) <b>shall be</b> horizontally aligned with door handles at 900-1200mm above finished floor level.	10	
6.2	Light switches and other switches (eg. security systems, intercommunication systems, air-conditioning controls) <b>shall be</b> toggle, rocker, push pad, or push button in design.	2	
7	POWERPOINTS Powerpoints are located at heights that are easy to reach for all occupants	POINTS AVAILABLE	POINTS GAINED
7.1a	Powerpoints, TV, phone and computer outlets <b>are installed</b> at a consistent height not lower than 300mm above the finished floor level;	2	
7.1b	Powerpoints, TV, phone and computer outlets <b>are installed</b> at a consistent height between 500-1200mm above the finished floor level.	8	
7.2	Powerpoints, TV, phone and computer outlets <b>are installed</b> at least 500mm from an internal corner.	2	
8	WINDOWS Window controls and sills are installed at a height that enables home occupants to operate the window and view the outdoor space from either a seated or standing position	POINTS AVAILABLE	POINTS GAINED
8.1	Window controls <b>shall be</b> lever handles and be able to be operated with one hand.	5	
8.2a	Window controls and sills in the primary living areas <b>shall be</b> no higher than 1200mm above the floor;	5	
8.2b	ALL window controls ON ALL LEVELS <b>shall be</b> no higher than 1200mm above the floor.	7	
8.3	Fit security stays on windows to prevent them from obstructing paths or walkways outside.	2	
8.4	Fit security stays on windows that are lower than 900mm where it is possible to fall one metre or more.	2	
9	DOOR HARDWARE Occupants are able to easily and independently open and close doors	POINTS AVAILABLE	POINTS GAINED
9.1	All door handles <b>shall have</b> a lever action.	5	
9.2	All door handles <b>shall be</b> horizontally aligned with light switches at between 900-1200mm above finished floor level.	5	
10	TAP FIXTURES Occupants are able to easily and independently use plumbing controls	POINTS AVAILABLE	POINTS GAINED
10.1	All plumbing controls <b>shall be</b> lever, push button or electronic.	5	
10.2	All plumbing controls <b>shall have</b> a single spout.	2	
11	ALARMS A smoke alarm system is installed	POINTS AVAILABLE	POINTS GAINED
11.1a	A smoke alarm system <b>is installed</b> that enables future adaptation to both audible and visual warnings;	2	
11.1b	A smoke alarm system <b>is installed</b> that is hard wired to provide both audible and visual warnings.	5	
Required for 3-Star		32	

## BEDROOMS

12	<b>BEDROOMS</b> Bed space and bedrooms support ease of movement around the bed by occupants	POINTS AVAILABLE	POINTS GAINED
12.1a	There is space on the primary living level where a standard single bed (measuring 900mm x 1900mm) can fit with a minimum 800mm clear space available around one side and the foot of the bed. A clear minimum 800mm wide path is also required from the door to the side of the bed;	5	
12.1b	There is space on the primary living level where a standard double bed (1350mm x 1900mm) can fit with a minimum 800mm clear space available around both sides and the foot of the bed. A clear minimum 800mm wide path is also required from the door to the side of the bed;	10	
12.1c	There is at least one bedroom on the primary living level where a standard double bed (1350mm x 1900mm) can fit with a minimum 900mm clear space available around both sides and the foot of the bed. A clear minimum 900mm wide path is also required from the door to the two sides of the bed. This path also must accommodate a 1500mm turning circle.	15	
12.2	Light switches are provided at the entry door and on both sides of the bed in the case of the master bedroom.	5	
Required for 3-Star		5	
Subtotal Bedrooms Score		20	

## DWELLING FACILITIES

13	<b>LAUNDRY SPACE</b> The laundry space is designed to support ease of movement and ease of use of laundry appliances and storage space	POINTS AVAILABLE	POINTS GAINED
13.1a	The laundry space or room <b>shall be</b> large enough to provide at least 1050mm clearance in front of fixed benches and appliances;	2	
13.1b	The laundry space or room <b>shall be</b> large enough to provide at least 1200mm clearance in front of fixed benches and appliances.	4	
13.2	The laundry space or room <b>shall be</b> large enough to accommodate appliances at ground level.	2	
13.3	The laundry <b>shall include</b> slip resistant flooring.	5	
14	<b>KITCHEN SPACE</b> The kitchen space is designed to support ease of movement between fixed benches and ease of use of appliances and storage space	POINTS AVAILABLE	POINTS GAINED
14.1	The kitchen space is not a main thoroughfare in the home.	3	
14.2	The kitchen space is located next to the dining area.	3	
14.3a	The kitchen space includes at least a 1200mm clearance provided in front of fixed benches, major appliances and fittings;	5	
14.3b	The kitchen space includes at least a 1200mm clearance provided in front of fixed benches, major appliances and fittings which extends to a 1500mm turning circle measured up to at least 250mm above the floor.	10	
14.4	The kitchen space <b>shall have</b> slip resistant flooring.	5	
14.5	The kitchen space <b>shall have</b> task lighting above workspaces.	2	
14.6	The kitchen space <b>shall have</b> easy to use handles on doors and drawers.	2	
14.7	The kitchen space <b>shall have</b> at least half of the storage space below the bench tops consisting of drawers and not cupboards. Bottom drawers shall be a minimum of 250mm from the floor.	2	
14.8	The kitchen space <b>shall be</b> designed with appliances located at least 300mm from internal corners of bench units.	2	
Required for 3-Star		5	
Subtotal Dwelling Facilities Score		40	

## BATHROOMS

15	<b>TOILET</b> The primary living level has a toilet to support easy and independent use for occupants and visitors	POINTS AVAILABLE	POINTS GAINED
15.1a	Dwellings <b>shall have</b> the plumbing and drainage space for the future installation of a toilet on the primary living level that includes a minimum 800mm clear space beside the toilet and a centre line of the toilet pan that is 450mm from the wall;	5	
15.1b	Dwellings <b>shall have</b> a toilet on the primary living level that includes a minimum 800mm clear space beside the toilet and a centre line of the toilet pan that is 450mm from the wall;	10	
15.1c	Dwellings <b>shall have</b> at least one toilet on the primary living level that is compliant with "accessible toilet" dimensions.	20	
15.2	Toilet walls <b>are reinforced</b> to provide a fixing surface for grab rails to be safely and economically installed in the future.	5	

## BATHROOMS continued

16	<b>SHOWER</b> The primary living level has a bathroom with a shower that supports easy and independent use for all occupants and visitors	POINTS AVAILABLE	POINTS GAINED
16.1a	Dwellings <b>shall have</b> the space for the <b>future installation</b> of a shower on the primary living level that includes a level entry shower recess with minimum dimensions of 1200x1200mm, drainage for the shower recess located in the corner of the room, a clear space that provides for a 1500mm turning circle and 800mm clear space beside the shower seat;	5	
16.1b	Dwellings <b>shall have</b> a shower on the primary living level that includes a level entry shower recess with minimum dimensions of 1200x1200mm, drainage for the shower recess located in the corner of the room, a clear space that provides for a 1500mm turning circle and 800mm clear space beside a shower seat;	20	
16.1c	A bathroom on the primary living level shall have a code compliant accessible shower.	25	
16.2	Dwellings shall have reinforced shower walls on the primary living level for the <b>future installation</b> of grab rails and a shower seat.	5	
16.3	Dwellings shall have slip resistant flooring in all bathrooms.	5	
Required for 3-Star		25	
Subtotal Bathroom Score		60	
Total Possible Score Single Storey		300	
Total Required for Single Storey 3-Star		140	
Total Required for Single Storey 4-Star		180	
Total Required for Single Storey 5-Star		240	

## MULTI-STOREY ACCESS

17	<b>STAIR LIFT OR PLATFORM LIFT</b> Enable access to multi-storey dwellings above or below the entrance level now or in the future	POINTS AVAILABLE	POINTS GAINED
17.1a	Multi-storey dwellings shall have reinforced stairway walls for the <b>future installation</b> of a stair lift;	4	
17.1b	Multi-storey dwellings shall have the space to provide for the <b>future installation</b> of a 1200mm x 1200mm platform lift;	8	
17.1c	Multi-storey dwellings <b>shall have</b> a stair lift installed;	12	
17.1d	Multi-storey dwellings <b>shall have</b> a minimum 1200mm x 1200mm platform lift installed.	15	
18	<b>INTERNAL STAIRWAYS</b> Where installed, stairways are designed to reduce the likelihood of injury	POINTS AVAILABLE	POINTS GAINED
18.1	Stairways shall provide a minimum clear width of 900mm.	4	
18.2	Stairways shall be straight in design and not have winder treads or spiral design.	4	
18.3	Stairways shall have consistent tread depth and riser height with a maximum riser height of 180mm and minimum tread depth of 310mm, with no open risers.	4	
18.4	Stairways shall be slip resistant and have a suitable non-slip tread.	4	
18.5a	Stairways shall have reinforced walls to provide for <b>future installation</b> of code-compliant accessible handrails on both sides;	5	
18.5b	Stairways shall have a code-compliant accessible handrail installed on at least one side;	7	
18.5c	Stairways shall have code compliant accessible handrails installed on both sides.	12	
18.6a	Stairways shall have a 1200mm x 1200mm unobstructed landing at the bottom of the stairs;	2	
18.6b	Stairways shall have a 1200mm x 1200mm unobstructed landing at the top and bottom of the stairs.	3	
18.7	Stairways shall have light switches at the top and bottom of the stairs.	4	
Required for 3-Star		25	
Subtotal Multi-Storey Access Score		50	
Total Possible Score Multi-Storey		350	
Total Required for Multi-Storey 3-Star		165	
Total Required for Multi-Storey 4-Star		210	

