THE FAMILY FRIENDLY HOME

A higher density adaptive reuse strategy for Wellington

April Valentine Tatnell

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By **April Valentine Tatnell**

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Acknowledgements

To my family and friends, thank you for the never-ending support you have given me throughout my years of study.

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Abstract

This thesis will explore what makes a place family-friendly and, how likely families with children will consider moving into high-density residences in the Wellington Region. With an increasing population and housing demand, Wellington housing must increase in density. Furthermore, Wellington must seek to provide higher-density housing that responds to the needs of all its population including families, rather than only the narrow market that high-density housing has previously been marketed to.

High-density housing has often been marketed to single professionals, young couples, and empty nesters, neglecting the idea that families with children may also wish to live comfortably in the inner-city. Therefore, this thesis seeks to understand the needs of families to provide a living environment that responds to a family's needs at all scales from the housing unit, building, and urban scale. It aims to do this through identifying and understanding issues identified previously by families living in high-density and exploring ways that they can be resolved in a design outcome. The thesis also reviews case studies of high-density residences to identify potential design solutions. This information was used to inform a questionnaire and the resulting survey identified specific needs and preferences in family-friendly higher-density housing for families. Using all of this, a site was chosen in the Wellington Region and developed through an iterative design process to provide a proposal for the issues identified in this thesis.

Initial research in Chapter one to Chapter five have been presented at the 52nd International Conference of the Architectural Science Association, in the paper titled 'Regeneration of unused buildings within Wellington to attract family living, in response to the Wellington demographic'.

Fig 1.1 *(Previous) Aerial photograph of Newtown, Wellington with site highlighted*

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CHAPTER 1: *Introduction*

This thesis explores international and local preferences for a family-friendly living environment. The aim of the study is to demonstrate how high-density residences can be family-friendly, creating an attractive housing option for families, and challenging the norm of the high-density housing market in Wellington, New Zealand. While this research responds directly to Wellington, this thesis also makes an argument for how these findings could be adapted for similar urban centres.

Background

Since colonization, suburban ideals have been entrenched in New Zealand (Marriage, 2010). This meant that many New Zealand houses were single-detached dwellings, with the house sited towards the front of the fenced section, and a yard at the back for family play. This ideal however, changed as towns became cities and pressures on residential land increased (Schrader, 2013). This led to the development of higher-density housing developments like semi-detached housing, flats, and apartments. These new housing developments were rejected by New Zealanders, partially because they symbolized "the congestion and, in some cases, the squalor of British housing" (Schrader, 2013). With rising transport costs and traffic congestion, commuting is becoming less desirable and inner-city living is becoming increasingly attractive (Carroll, Witten & Kearns, 2011). Despite New Zealand parents' long-standing dream of the 'quarter acre section' (Ferguson, 1994), and the prevailing debate of suburban qualities as desirable places for children (Dixon & Dupuis, 2003), the number of families living in Wellington CBD is expected to increase by 18.1 percent by the year 2043 (.id, 2016).

In 2015 the Wellington City Council (WCC) created the Wellington Urban Growth Plan which aimed to "provide a framework to manage the city's future growth while protecting [the] environment and heritage, and building on the things that make the city special" (WCC, 2015, p. 6). It seeked to support transformational growth areas, liveable and vibrant centres, real transport choices, housing choice and supply, Wellington's natural environment, and city resilience (WCC, 2015, p. 6). The WCC aim to keep the city compact with continued apartment developments in the central city and medium-density housing options in areas near the city centre. Furthermore, the WCC propose converting underused buildings in Wellington, into affordable apartments "as a way to tackle the capital's growing housing crisis" (Devlin, 2018, para. 1).

The Wellington Urban Growth Plan intends to implement "a number of existing Council policies and action plans" (WCC, 2015, p. 14). These include the 'Adelaide Road Framework' (2008). This framework outlines the "long-term vision, key outcomes, and supporting action plan for the area's long-term development" (WCC, 2008, p. 2). It aims to provide higher-density residential development, good quality public amenities and streetscape, safe and walkable streets, more employment opportunities, and improved public transport "which meets the

Fig 1.2 *(Previous) Aerial photograph of Wellington showing current urban form*

needs of all people living in, working in, and using the area" (WCC, 2008, p. 11). It also, aims to maintain and protect the heritage and character of the area. Although few families live in the Mt Cook area where the Adelaide Road Framework is located (WCC, 2008), the number of families anticipated to live there by 2043 is 810, a 3.43 percent increase from the calculated 2013 data (.i.d, 2016). Therefore, providing family-friendly housing needs to be considered as part of the future developments of the Adelaide Road Framework area.

Working with the Adelaide Road Framework outlined above by the WCC, this thesis examines adaptive reuse to provide additional residential density in Wellington. As Degnon (2017) observes, "…adaptive reuse refers to the process of reusing a building for a purpose other than which it was originally built or designed. It is viewed as a means to revive or reinvent an old building that still maintains some relevance or historic significance" (p. 27).

In many towns and city centres there are several unused buildings (Remøy & Voordt, 2014) which provide opportunity for further housing in the city to accommodate increasing populations and housing demand. It is unclear exactly how many unused buildings are in Wellington as occupation of a building is the concern of the property owner. However, there is a record of buildings deemed unusable by the WCC due to earthquake or resilience issues. From this, it was found that there are 751 buildings in Wellington deemed unusable (Ministry of Business, Innovation and Employment, 2019). Rather than demolishing these buildings and starting fresh, adapting them provides many opportunities and benefits. In a study by Towers (2005), it was found that many of these unused or underused buildings provide the opportunity to be adapted for domestic use. Adaptive reuse provides, and supplies many benefits such as sustainability, and historical integrity. From a sustainability perspective, adaptive reuse provides a sustainable option to housing because of the "reduction of natural resource consumption, energy use and emissions" (Bullen, 2007, p. 22). Furthermore, it "enhances the longer-term usefulness of a building and is therefore a more sustainable option than demolition and rebuilding" (Bullen, 2007, p. 28).

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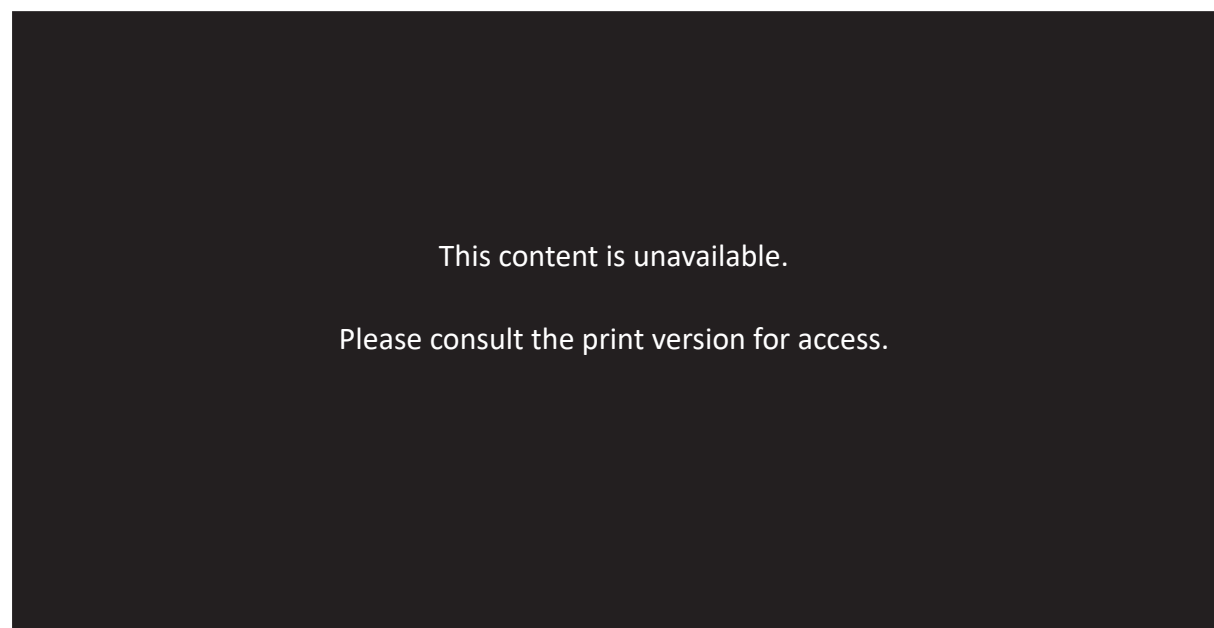
Fig 1.3 *Diagram showing conversion of office spaces into urban lofts*

Methodology

To achieve the aim of this thesis, the research sought to understand the needs of families to provide a living environment that responds to a family's needs at all scales from the housing unit, building, and urban scale. It aimed to do this through identifying and understanding issues identified previously by families living in high-density and exploring ways that they can be resolved in a design outcome. Building on the literature review and the design criteria identified in the review, other high-density buildings in Europe and New Zealand were examined to understand how they might provide design solutions for the issues identified. Some of the case studies also incorporated an adaptive reuse strategy, which was examined to understand how they might also provide design solutions for this component of the thesis.

Because the scope of this thesis focused on Wellington, it was considered vital that this research understood the perceptions of the Wellington population regarding family-friendly high-density housing, as they could one day be living there. Using the criteria developed from the literature review a questionnaire was designed to understand how the Wellington population perceived the design criteria, and if through providing these, would it enable them to move into higher-density housing with their family.

Using all of this, a site was chosen in the Adelaide Road Framework area. This site, 'The Tramway Hotel', currently deemed unusable (MBIE, 2019). This building was chosen because of its heritage, proximity to a number of family-friendly amenities, and possibilities for being adapted into family-friendly higher-density housing.

Thesis structure

The thesis is organized as follows.

Chapter two presents a review of literature in order to understand current issues of high-density housing for families and to identify what is needed to develop a viable family-friendly high-density housing proposal. Chapter three builds on the literature review by using the design criteria identified in the review to examine how other high-density buildings have successfully provided for family-friendliness.

In order to test the international research examined in chapters two and three, chapter four examines the perceptions of people living in the Wellington Region and what is required for them to consider moving into high-density with their family. It identifies themes and issues that are consistent with international literature and case studies, as well as new issues which emerge from this Wellington specific research.

Chapter five identifies and analyses a site within the area prescribed by the WCC's Adelaide Road Framework and examines it against site qualities considered to be important in a family-friendly living environment at the urban scale identified in earlier chapters. Chapter six begins to consider how the current building on the site analysed in chapter five (The Tramway Hotel) could be adapted into family-friendly housing through iterative planning. Finally, Chapter seven reflects on the success of the design proposal in relation to the thesis objectives and identifies design limitations, areas for development, and further research.

Chapter introduction
This chapter presents a review of literature which identifies the design attributes and amenities that are required for a high-density family-friendly living environment. "Family" is defined as a household unit with child(ren) living at home, consequently, the perceptions and experiences of both children and parents are included in the review, in order to identify what children and parents require from their living environment. The literature review also sought to understand the reasons for these requirements and their impact on a family's residential satisfaction.

Issues of high-density for families at the unit scale
The spatial organisation of the home is a significant part of the development towards a family-friendly living environment because it can influence a parent's perceptions and experiences of the home (Appold & Yuen, 2007; Groc, 2007; Shepard & Matthews, 2016; Cho et al. 2017; Kerr et al. 2007). The spatial organisation of a home impacts on the provision of sufficient space for living and storage, adaptability and flexibility of spaces, floor plan configuration and relationship to other units in the building, and materiality and construction.

Providing sufficient space is vital because of the negative impacts of insufficient space on a family's ability to function, and on overcrowding, which restricts a family's ability to perform the various activities believed to hold families together (Appold & Yuen, 2007). Furthermore, insufficient space can cause adverse health, education and income issues, as well as place emotional strain on families affecting relationships in the household (Shepard & Matthews, 2016). An example of this was cited in a study by Carroll et al. (2011), where families required to downsize homes stated that the higher-density dwellings they had to move into did not provide sufficient storage space, or space for day-to-day activities, for example the kitchen being too small to prepare family meals.

At the unit scale, the literature defines what is needed to provide sufficient space in a home for the family. It also identifies the need for private outdoor space and the criteria for providing this. According to the 'High-density housing for families with children guidelines' (City of Vancouver, 1992). Providing sufficient space for family-friendly housing in high-density, involves the following:

- Minimum of two bedrooms (each large enough to accommodate a single bed, a dresser, a desk or table, and in children's bedrooms, some floor space for playing).
- The design of the unit should provide for separation of conflicting uses.
- The bathroom should be larger than the minimum size so that a parent and child can be in it together.
- A generous entry area is highly desirable to permit room for toys and equipment, for dressing children on cold or rainy days, and for drying of wet shoes, boots, and outerwear (p. 10).

Fig 2.1 *(Previous) Photograph of child playing in high-density environment*

Child-friendly play areas are a critical in home with children because they provide children space to play (Carroll et al. 2011). These play areas should provide for the following:

- Preschool Children's Play Areas
- there should be a minimum of 1.0m^2 per bedroom, excluding the master bedroom
- Elementary and Teen Aged Children Play Area
- there should be a minimum of 1.5m^2 per bedroom, excluding the master bedroom
(City of Vancouver, 1992, p. 6).

Private outdoor space is another important attribute identified in the literature (Marcus & Sarkissian, 1986). There are three reasons for this: functionality, symbolism, and psychological. Functionally, private outdoor space provides a family with a space to grow a garden, dry washing, do minor repair jobs, and a place for pets and or children to play. The second is symbolism. Symbolically, private outdoor space is a space that can be personalized to make it our own, symbolizing individuality and home ownership. The final aspect is psychological. Psychologically, private outdoor space provides the family with a space to relax and provide relief from stressful work or activities within the house. According to the 'High-density housing for families with children guidelines' by the City of Vancouver (1992), private outdoor space should provide for a range of activities, as well as storage of equipment used for these activities. Furthermore, this space should be at least 1.8 m deep by 2.7 m wide, maximize sunlight access, and safety.

Some families, who had chosen to remain living in high-density apartments, had to adapt their home because of changes in their household, such as a new child. Family structures change over time, and it is not always known the direction they will take. In New Zealand, for example, there are a variety of family household types from couples without children (40.9%), couples with dependent children (33.6%), couples with adult children (7.6%), one parent families with dependent children (12.7%), and one parent families with adult children (5.0%) (.i.d. 2013). Providing an adaptable dwelling layout can encourage families to either stay or move into higher-density housing if it provides an adaptable dwelling layout. An example of this is a family in Pearl, Portland, who asked the developer of their condo to "convert the unit's second bathroom into a child's bedroom" (Groc, 2007, p. 9), for their child. In this instance, the family could live more comfortably in their home because the apartment design was able to respond to their changing household needs. Providing the option for families living in high-density environments to adapt their home is critical because it "helps contribute to users' comfort and choice, encourages social interactions without conflict, and builds a sense of control over space" (Cho et al., 2017, p. 625).

Issues of high-density for families at the building scale
The way apartments have been designed in the past can mean that doing household work, while children go outdoors to play, is not practical (Appold & Yuen, 2007). Furthermore, parents are scared to let their children go out and play unsupervised in an urban public space due to safety, security and traffic (Groc, 2007; Carroll et al., 2011). The relationship between the households was also found to be important because of the typically close proximity of high-density dwellings to other households. The requirements for each room vary, like communal spaces (e.g. living room, kitchen, and dining room) which are less private and private

spaces (e.g. bedroom and bathroom) which require greater levels of privacy (City of Vancouver, 1992).

Play is such a critical part of children's development in terms of physical, psychological and social well-being (Donovan, 2016). There are different types of play children can do, and which need to be considered. These can be categorized into the following:

> - **Individual play** can include observing, sitting, thinking, pondering, daydreaming, visualization or other autonomous activities;
> - **Social play** might involve interacting with others. Such social play activities include team games, role-playing, problem solving, imitation, creation and other related activities;
> - **Active play** can include ball games, running, sliding, jumping, winging, rolling, hopping, spinning, bouncing, crawling or other physical activities;
> - **Cognitive and creative play** provides the opportunity for imagination and problem solving, weighing up and considering the relationships between things. Activities can include digging, shaping, constructing, demolishing, exploring, discovering and other related activities (Donovan, 2016, p. 3).

Furthermore, the literature recommends that pre-school children under the age of six should be provided with a small play space adjacent to the building, that can be overlooked by the units in the building (Marcus & Sarkissian, 1986). Families with young children should be provided with housing on the floor level which is most easily accessible to the play space, allowing for better supervision and access by parents (Marcus & Sarkissian, 1986). For older children, Prezza et al. (2001), found through their research that an internal courtyard playground provided the most appropriate play space for children aged seven to 12. For children above the age of 10 it is important to provide a variety of activities and spaces for social interaction, space for multi-functional use, and more challenging play equipment Hart (2002) and Beer et al. (2003). According to Kytta's research (2004, as cited in Whitzman & Mizrachi, 2012, p. 242) "objects such as dirt, leaves or sand that can be grasped, shaped and dug into; relatively flat and smooth surfaces that can be used for running, scooting, biking and playing games such as hopscotch; things that can be heard, smelled, tasted or touched as well as seen; and social gatherings for conversation, role playing or eavesdropping on adult business", all contribute towards a child-friendly play area at the building scale.

The provision of communal space is also important to consider at the building scale. The City of Vancouver (1992) states that there "should be appropriate open space to meet the on-site needs of children and adults" (p. 4). To do this they suggest the following:

> With children using an outdoor space, it is essential that the landscape materials used stand up to wear and tear. Initial plantings of trees and shrubs should be of sufficient size to withstand the rough and tumble of children's play. Landscape should be designed to create varied spaces within a large common open space and to use a mixture of hard and soft surfaces. Materials should be selected to be interesting and safe (p. 5)

In addition to this, Marcus and Sarikissian (1986) state that this communal space should be easily accessible from the units to increase use by the residents, hence encouraging social interaction and creating a sense of community between residents.

The need for privacy (visual and acoustic) impacts on many aspects of high-density dwelling design. Kerr et al. (2007) found that the family-friendly home must be constructed of materials that reduce acoustics travelling to other units in the building. An example of this is placing carpet on floors where children will play (Kerr et al., 2007). Furthermore, services such as internal vents must be carefully considered because they can provide a means of sound travelling to other units in the building (Kerr et al., 2007).

Issues of high-density for families at the urban scale
At the neighbourhood scale, the connection of the home to the environment is critical to provide a family-friendly living environment. This includes connections to the main amenities used by families, such as public transport, car mechanic, family entertainment, work, and nature (Whitzman and Mizrachi, 2012). It is recommended that these connections are made to allow for safe independent travel by children (e.g. stop light crossings or pedestrian crossings, low traffic speeds), specifically on the travel routes most commonly used by children (Whitzman and Mizrachi, 2012). A study by Haigh, Ng Chock, and Harris (2011) found that areas that promoted physical activity tended to have increased physical activity. Furthermore, they found that, in higher-density environments, access to "local services (e.g. shopping, libraries), walking and traffic infrastructure (e.g. traffic volume and speed, the presence of footpaths), neighbourhood aesthetics (e.g. presence of parks and trees), and the availability of transport" (p. 3), influenced people's level of physical activity living in that area. Additionally, MacDonald (2015) has stated that "crime is correlated with specific features of places" (p. 338), with high crime and perceived crime being the result of the built environment having "high rates of vacant or dilapidated housing, high residential turnover, unsupervised youths, poorly lit streets or poor visibility, high permeable access to streets, and land use such as liquor stores" (p. 338).

Studies by Rudner et al. (2011) and Whitzman and Mizrachi (2012) found that the aesthetics of a place impact on how children perceive the safety and attractiveness of the built environment. Perceptions of cleanliness and maintenance were particularly important for those areas commonly used by children, like the pedestrian routes taken to amenities and the amenities themselves. The design of the frontages of sites were important. Children felt that more permeable frontages, like a low picket fence or higher fence they could see through, made them safe.

Another important issue identified by children was the age-appropriateness of designated play areas. It was commonly noted that many designated play areas like playgrounds were designed for younger children and did not accommodate older children (Whitzman & Mizrachi, 2012, Rudner et al., 2011).

Humans are social beings and we are attracted to places where we can be social and connect with like-minded people. This is supported by Whitzman and Mizrachi's (2012) research, where children were drawn to particular areas like playgrounds because they were spaces

spaces where they could socialize and interact with other children. Although some of these spaces were run down due to wear and tear, and did not provide enough variance in play equipment, children cared more about the ability to socialize with their friends. In addition to this, it was found that other people who inhabit these spaces can influence children's perceptions of safety and attractiveness towards inhabiting these spaces. For example, if people inhabiting the space made the children feel unsafe, they were unlikely to use that space (Rudner et al. 2011).

Because of their close proximity to amenities, it has been found that children living in urban environments have greater mobility independence in contrast to those children living in suburban environments (Whitzman & Mizrachi, 2012). However, the way these connections are designed can influence children's perceptions. A study by Rudner et al. (2011) found that children are very observant of the transport environment. They are aware of traffic volumes, practicality of different crossings, and the public infrastructure. This study found that, in streets where volumes of traffic were high, children did not feel safe crossing the road. This was because children found the traffic moved too fast and did not stop for them to cross. The study concluded that overall children preferred quiet streets with low traffic volumes, closely followed by streets with defined crossings.

A recurring issue in the literature for parents living in high-density urban dwellings was their diminished sense of control (Fleming, Baum, & Weiss, 1987; Kerr, Gibson, & Klocker, 2018; Groc, 2007; Cho, Trivic & Nasution, 2017; Shepard & Matthews, 2016; Carroll, Witten, and Kearns ,2011). There are a number of areas within high-density living that can affect a parent's sense of control. These include insufficient space, an adaptable dwelling layout, the inability to regulate social interactions in and around their home, safety and security, privacy, soundproofing.

A study conducted by Fleming et al. (1987), compared high-density living in an area of streets with stores and an area of streets without stores. The research examined how this difference impacted one's sense of control. It found that "residents of the streets with stores had lower feelings of control than did residents of the streets without stores" (Fleming et al., 1987, p. 903) because of the increased social interactions that occurred on streets with stores, and with this the inability for residents living there to regulate these social interactions.

Some high-density housing typologies incorporate a mixed-use strategy. Although mixed-use buildings can be advantageous because they provide job opportunities, services, facilities, and shops within close proximity to residents, they can also create conflict (Cho et al., 2017). This is because these building types are used by both public and private groups, and so residents might experience a reduction in their sense of control as they are unable to manage who goes in and out of different spaces within the building. It is important to consider access in and out of spaces to define what is for public and private use, and private only use. Furthermore, it is crucial that these buildings have good management of communal functions, this includes,

> public amenities (e.g., lighting, rubbish bins, public toilets and signage) and their maintenance [which] has a strong influence on the way residents perceive their public space, convenience, way-finding and security. Inadequate provision of such

facilities, along with insufficient maintenance, may result in uninviting, underused or misused public spaces (Cho et al., 2017, p. 628).

Chapter conclusion

A common theme found through the literature has been subjectivity and one's ability to regulate their living environment. Every individual has a different perspective of what constitutes a satisfactory living environment and this has been demonstrated in this chapter. It was found that children's perceptions and requirements were different to parents. For children, the perceptions and attractiveness of an environment were influenced by how safe they felt in that environment, and how engaging and aesthetically pleasing the environment was. It was important that children lived in an environment that provided this. Ways that this can be achieved include providing safe walkways to amenities, permeable frontages on sites, maintaining the environment, and providing play areas that responded to various age groups. For parents/adults it was found that the perceptions and attractiveness of a certain environment were influenced mainly by how they could control their environment and the safety it provided for their children. This included the provision of: sufficient space, adaptability for change to accommodate changes in their household, a high level of privacy and sound proofing, and an ability to regulate social interactions and supervise children in and out of the home.

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CHAPTER 3: *Case studies*

Chapter introduction

This chapter presents four case studies of higher-density residential architecture from Europe and New Zealand completed in the last decade. Specific criteria drawn from the literature and the parameters of this thesis were used to select the case studies. These criteria are presented below. The purpose of this chapter is to identify examples from the case studies to inform the design phase of this thesis.

Selection criteria at the unit scale

Sufficient space

    - Minimum of two bedrooms (each large enough to accommodate a single bed, a dresser, a desk or table, and in children's bedrooms, some floor space for playing) (City of Vancouver, 1992, p. 10)

    - The bathroom should be larger than the minimum size (City of Vancouver, 1992, p. 10). (1.9m x 2.1m (Department of Building and Housing (2011))

    - A generous entry area (large enough that it provides room for toys and equipment, for dressing children, and for drying wet clothes) (City of Vancouver, 1992, p. 10)

    - Storage of 2.8m^3 (City of Vancouver, 1992, p. 11)

Child-friendly play area

    - Minimum of 1.0m^2 play space in pre-school children's bedrooms (City of Vancouver, 1992, p. 10)

    - Minimum of 1.5m^2 play space in elementary and teen-aged children's bedrooms (City of Vancouver, 1992, p. 10)

Private outdoor space

    - Should provide for a range of activities (sitting, tending plants, barbecuing, outdooring eating, quiet children's play) and storage of equipment used in this area (City of Vancouver, 1992, p. 11).

    - Minimum space of 1.8m deep by 2.7m wide (City of Vancouver, 1992, p. 11)

    Privacy

    - Separation of conflicting areas (communal spaces (living room, kitchen, and dining room) in the home separated from private areas (bedroom and bathroom) in the home) (City of Vancouver, 1992, p. 10)

Adaptable dwelling

    - Space in the unit that can be adapted for another purpose that responds to the changing needs of the family (Cho et al., 2017, p. 625)

Fig 3.1 *(Previous) Internal view of Savonnerie Heymans communal space*

Selection criteria at the building scale

Child friendly play area

- Provides for individual play (observing, sitting, thinking, pondering, daydreaming, visualization or other autonomous activities), social play (interacting with others, for example, team games, role-playing, problem solving, imitation, creation and other related activities), active play (for example, ball games, running, sliding, jumping, winging, rolling, hopping, spinning, bouncing, crawling or other physical activities), cognitive and creative play (opportunity for imagination and problem solving, weighing up and considering the relationships between things. Activities can include digging, shaping, constructing, demolishing, exploring, discovering and other related activities) (Donovan, 2016, p. 3)

- Visual access for the parent or caregiver from the unit (City of Vancouver, 1992, p. 6)

- Natural surveillance over common areas from other units (City of Vancouver, 1992, p. 6)

- Visual and physical access to at least one of the common areas (City of Vancouver, 1992, p. 7)

- Pre-school children under the age of six should be provided with a small play space adjacent to the building, that can be overlooked by the units in the building (Marcus & Sarkissian, 1986)

- For children above the age of 10 it is important to provide a variety of activities and spaces for social interaction, space for multi-functional use, and more challenging play equipment Hart (2002) and Beer et al. (2003)

Communal space/sense of community

- Communal space should be easily accessible from the units to increase use by the residents, hence encouraging social interaction and creating a sense of community between residents (Marcus and Sarikissian, 1986)

- Communal space should be provided for children and parents where individual units are unable to provide for certain activities City of Vancouver, 1992, p. 8)

Good security

- Locate entrances to maximise casual surveillance from units, semi-private and public areas (City of Vancouver, 1992, p. 8)

Privacy

- Visual privacy is achieved by separating building facades by 24.4m or by using architectural or landscaping form of screening (City of Vancouver, 1992, p. 10).

Soundproofing

- Acoustic privacy should be provided between units. Common walls between units and around shared area should have a Sound Class of 55 decibels, and floors between units should have an Impact Isolation Class of 55 decibels (City of Vancouver, 1992, p. 10).

- Communal and private areas in units should correspond to adjacent units (communal areas next to communal areas and private areas next to private areas) (City of Vancouver, 1992, p. 10)

Selection criteria at the urban scale

Access to family friendly amenities

    - Public transport, kindergarten, school, grocer, and family entertainment (for example playgrounds and parks) (housing should be within 0.8km walking distance to kindergartens, schools and a grocer. It should also be within 0.4km walking distance to family entertainment and public transport) City of Vancouver, 1992, p. 1)

    - Low traffic volumes (measured using typical traffic congestion) (Google, 2019)

    - Pedestrian friendly streets (pedestrian walkways and defined street crossings)

    - Child-friendly play areas that aren't run down and provide different types of play and all age groups (Whitzman & Mizrachi, 2012, Rudner et al., 2011). Provides for individual play (observing, sitting, thinking, pondering, daydreaming, visualization or other autonomous activities), social play (interacting with others, for example, team games, role-playing, problem solving, imitation, creation and other related activities), active play (for example, ball games, running, sliding, jumping, winging, rolling, hopping, spinning, bouncing, crawling or other physical activities), cognitive and creative play (opportunity for imagination and problem solving, weighing up and considering the relationships between things. Activities can include digging, shaping, constructing, demolishing, exploring, discovering and other related activities (Donovan, 2016, p. 3).

Case Study 1: Savonnerie Heymans / MDW Architecture

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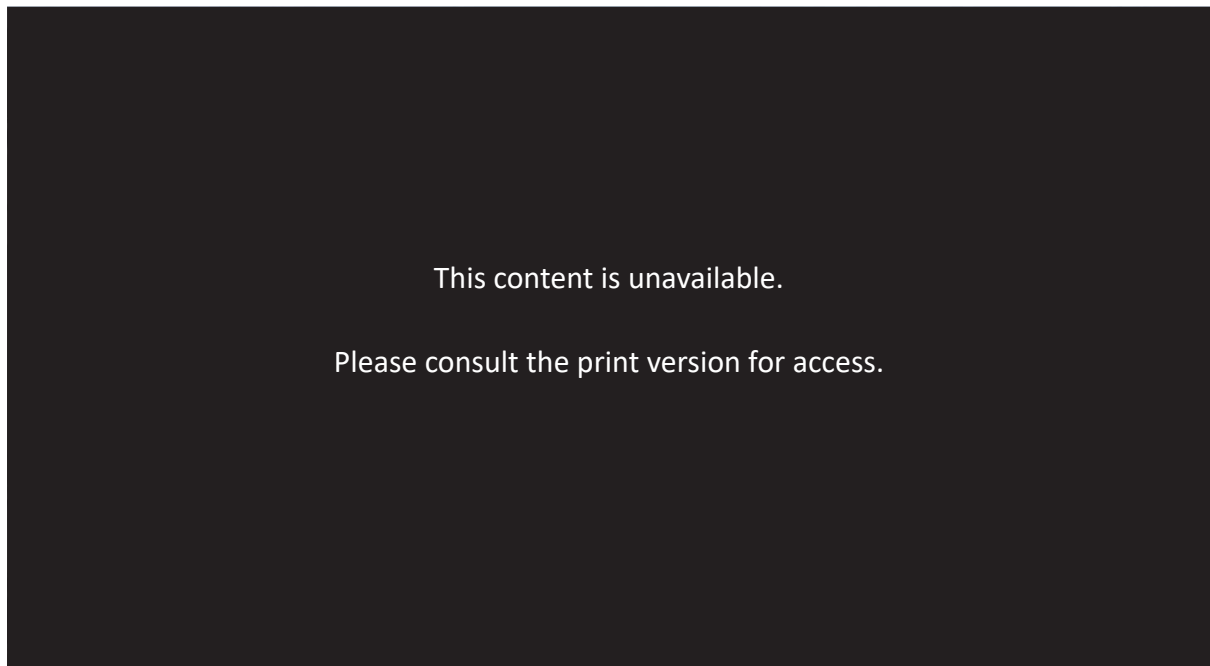
Fig 3.2 *Street view of Savonnerie Heymans*

Architect(s) – MDW Architecture
Location – Bisschopsstraat 9, 1000 City of Brussels, Belgium
Gross floor area – 6500 m^2
Project year - 2008
Population density of Brussels – 377 people per km^2
Occupancy density per person in Savonnerie Heymans – 100 m^2 (based on the interior unit plan which is analysed)

Project background
Savonnerie Heymans is situated on the site of a former soap factory (ArchDaily, 2012). One of the main aims of this project was to retain as much as possible of the existing industrial structure of the site. The architects achieved this by keeping the Savonnerie (soap factory), chimney and the post office. Each of these parts of the building were given a new use for the redevelopment of the site. The Savonnerie contains open lofts, the chimney filters the gases from the underground parking garage, and the post office houses triplexes (Mertens & Iraguha, 2016). The project aimed to create the sense of a "village" within the building complex. This was achieved by creating 42 units, ranging from studios, 1 to 6 bedroom apartments, lofts, duplexes and maisonettes.

Analysis at the unit scale

The analysis of the housing units within Savonnerie Heymans is limited to the available information on one, one-bedroom unit. The plan (Fig 3.3) shows how this unit provides for some of the selection criteria at this scale. In terms of sufficient space, this unit does not provide sufficient space as a whole. It does provide sufficient space in the bathroom because it provides more than the minimum bathroom space requirements by 0.7m² (Department of Building and Housing (2011). The unit provides a generous entry space with storage, however the amount of storage provided in this unit is insufficient, because it only provides 1.68m³ of storage in contrast to the minimum requirements of 2.8m³. This unit provides a generous private outdoor space (Fig 3.4) of 17.0m² allowing for a range of family activities however it does lack storage for the equipment used for these activities. Additionally, these private outdoor spaces known as loggias, provide residents with a space that can be used all year. The loggias have bioclimatic glass panels (Fig 3.5) that provide the units with warmth in the cooler months and act as a sound buffer, reducing the amount of noise entering and exiting the unit (Mertens & Iraguha, 2016).
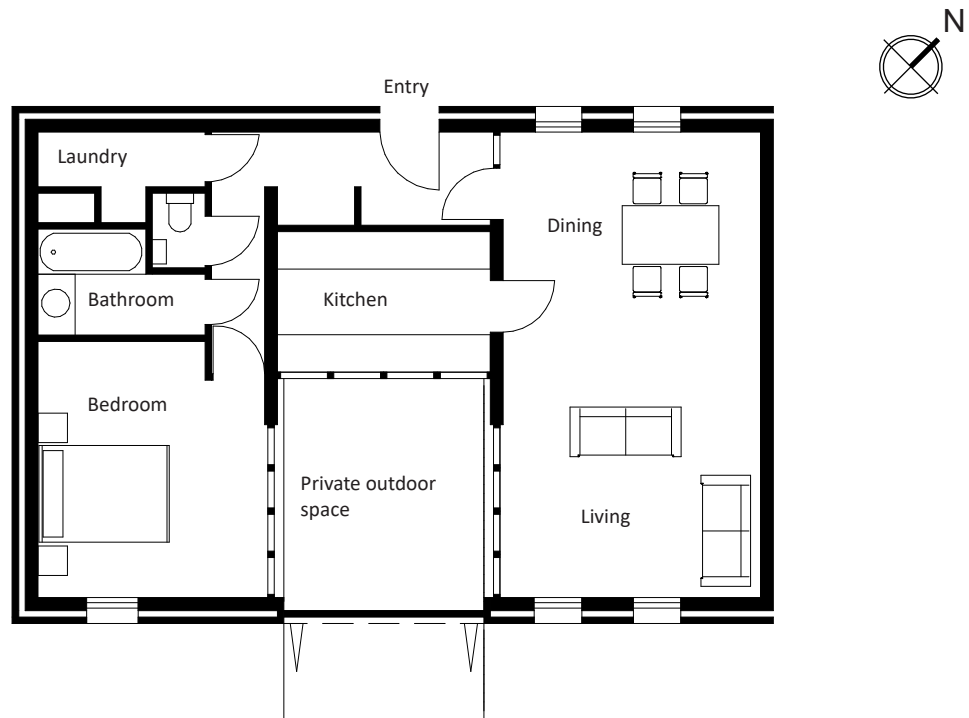
Fig 3.3 *Floor plan of housing unit in Savonnerie Heymans (scale 1:100)*

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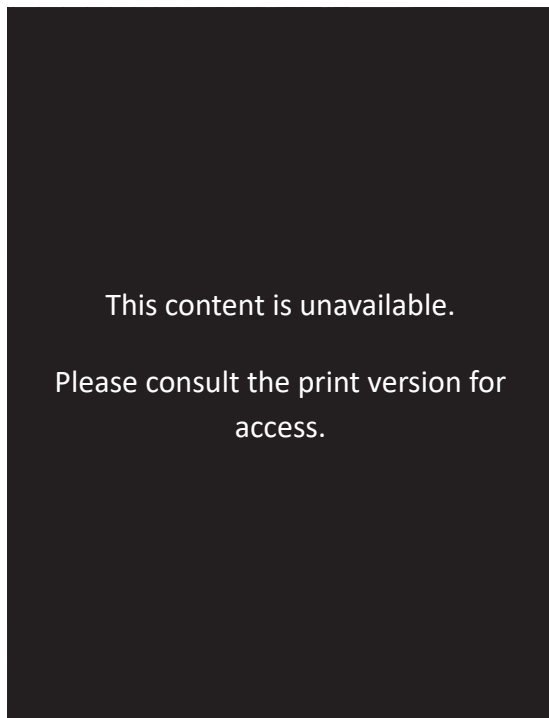
Fig 3.4 *Private outdoor space of unit in Savonnerie Heymans*
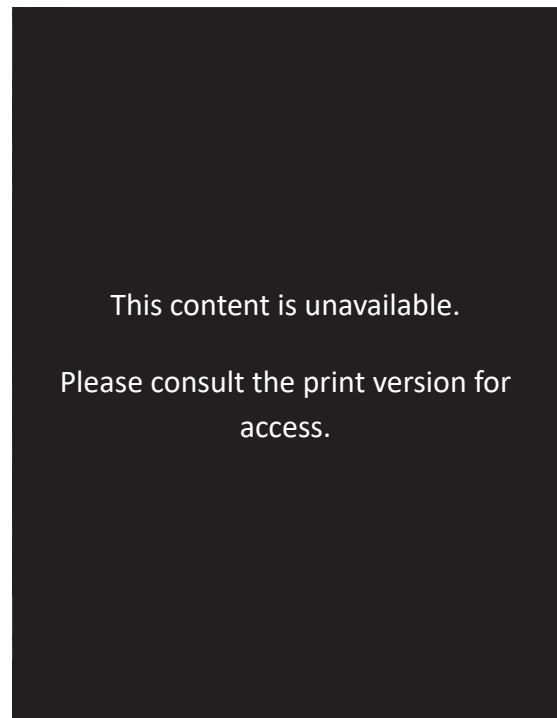
Fig 3.5 *Louvers providing units with soundproofing and privacy in Savonnerie Heymans*

Analysis at the building scale

Savonnerie Heymans provides good security through forms of natural surveillance because some of the housing units have views towards the entrance of the building allowing them to monitor who is entering and exiting the site (Fig 3.6). Furthermore, all entrances into each housing unit are from within the block ensuring natural surveillance over who is entering and exiting the units. As a form of physical security, there is a gate at the entrance of the site to further control who can enter the site (Fig 3.6).

As previously mentioned, Savonnerie Heymans provides communal amenities to support family friendliness. These amenities comprise "a room for social meetings and events, a public Ludothèque (game library) and extensive public space: the "Mini-forest" garden, the 3D landscaped park and playground and the main promenade" (ArchDaily, 2012). The provision of these amenities enables the facility to respond to the needs of different aged children and adults. The play areas are each designed for different aged children. For example, Figure 3.7 and Figure 3.8 show an open outdoor space where children can play individually or with other children. Furthermore, there is seating and views from surrounding units (Fig 3.7, 3.8), allowing parents to supervise their children while they are out playing. Figure 3.9 shows the "Mini-forest" which provides a space for children and parents to interact with nature. Figure 3.10 and Figure 3.11 are of the 3D landscaped park and playground. This space provides for individual and social play and encourages active and creative play because this space is not a structured or conventional playground. Finally, Figure 3.12 shows a multi-level area with seating. This space can used by parents to socialize or by older children who have outgrown the playground.

N

Landscaped 3D park

Mini-forest

Gated entrance

Rue d' Anderlecht

☐ Unit analysed in unit analysis
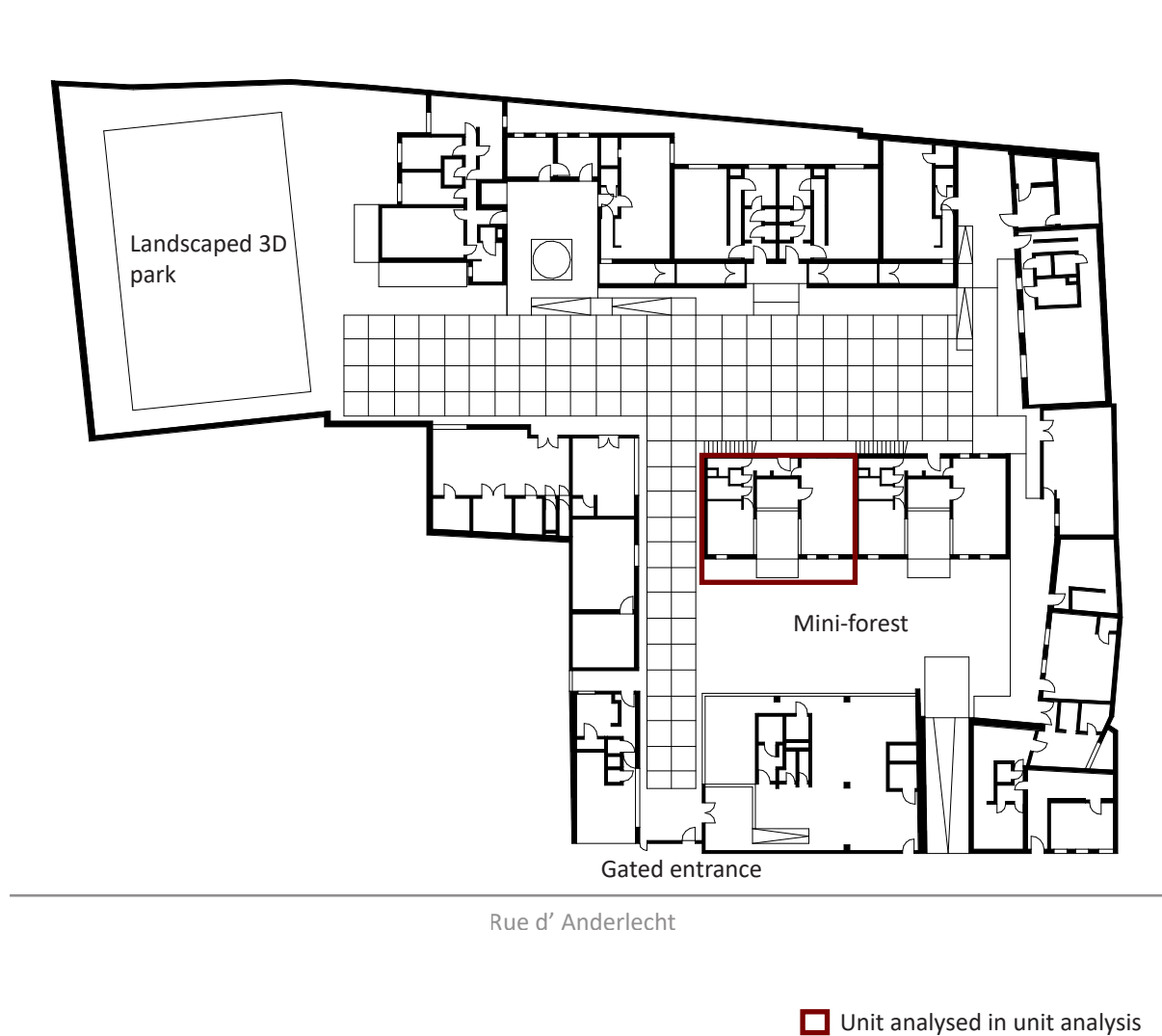
Fig 3.6 *Floor plan of building in Savonnerie Heymans (scale 1:500)*

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Fig 3.7 *Children playing socially in child-friendly play area*
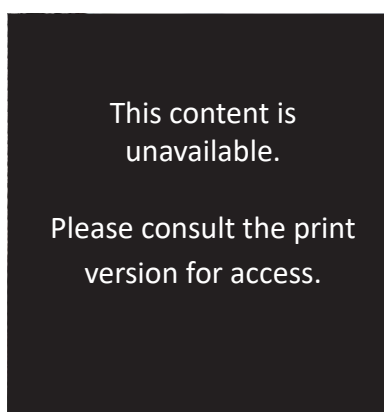
Fig 3.8 *Children playing in-dependently in child-friendly play area*
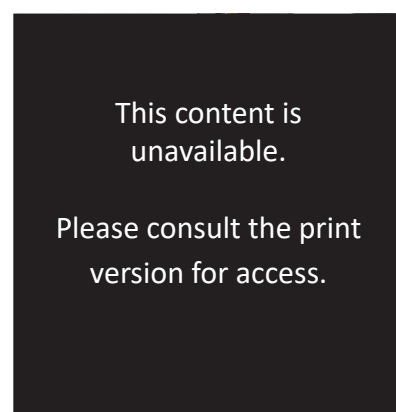
Fig 3.9 *Mini forest provides a space where families can interact with nature*

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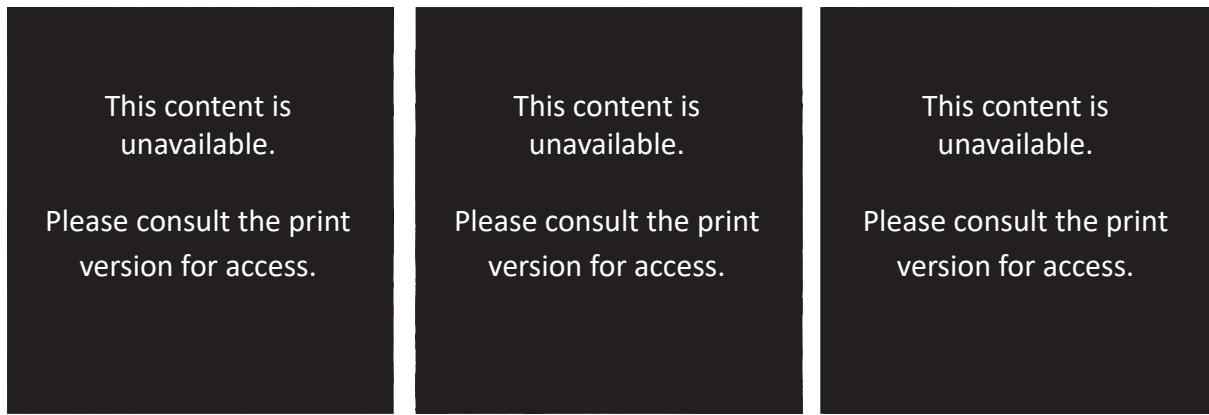
Fig 3.10 *3D landscaped park for social, independent and cognitive play*

Fig 3.11 *3D landscaped park for social, independent and cognitive play*

Fig 3.12 *Multi-level area with seating for socializing and older children*

Analysis at the urban scale

Savonnerie Heymans is situated in a residential area. Although there are limited family-friend-ly amenities located within close proximity, the building provides some of these to compen-sate for the lack in the neighbourhood, showing how family-friendly amenities can be provid-ed for in close proximity when the wider urban context does not provide these. The traffic on the main street directly outside Savonnerie Heymans changes at different times of the day. It was found that typically, traffic speed here is low between 8am to 12pm, and again after 8pm. The main amenity that is provided in the area for family-friendliness is the transport hub. There is a pedestrian crossing to provide safe access to the public transport hub. In addition to these facilities the design of the immediate context supports the perception of safety for children because there are no boundaries to surrounding buildings and they link directly to the footpath.

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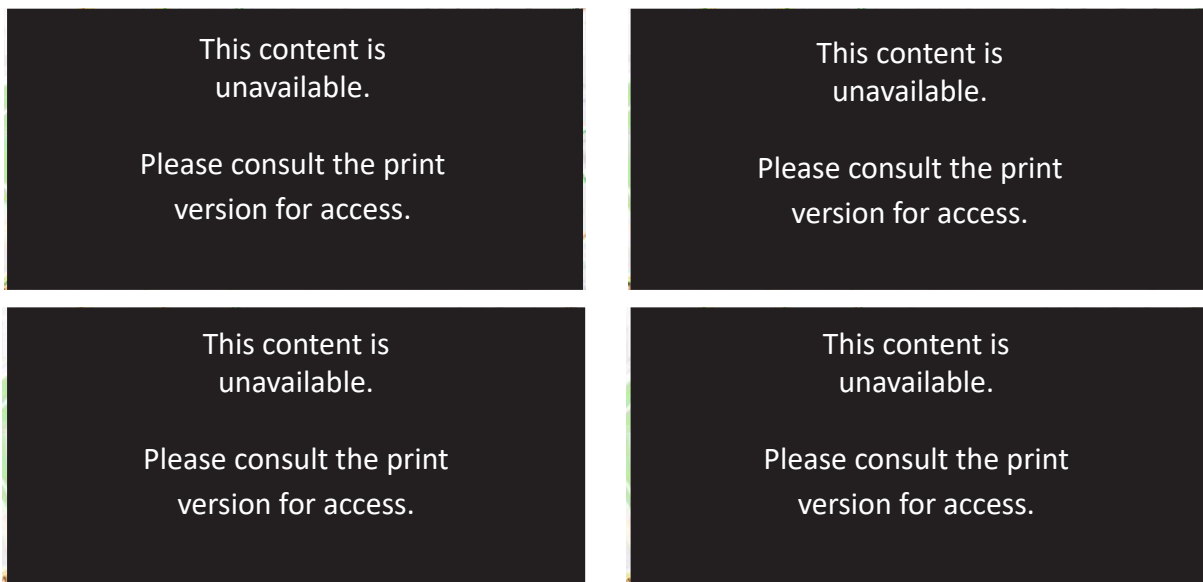
Typical traffic: *Fast* 🟩 🟧 🟥 🟫 *Slow*

Fig 3.13 *Typical traffic on streets surrounding Savonnerie Heymans*

Fig 3.14 *Urban plan of Savonnerie Heymans (scale 1:2000)*

Summary of Savonnerie Heymans

In summary, Savonnerie Heymans case study demonstrated a number of ways that high-density dwellings can provide for the needs of the families living there. At the unit scale it has an example of a private outdoor area that provides a usable space at all times of the year. At the building scale, examples of child-friendly play areas that respond to a range of ages and different types of play are provided. Although at the urban scale Savonnerie Heymans does not have close family-friendly amenities, the facility provides for some of these in the building complex. It is located in close proximity to a public transport hub, providing a sustainable means of transport to access other amenities.

Case Study 2: E3 / Kaden Klingbeil Architekten

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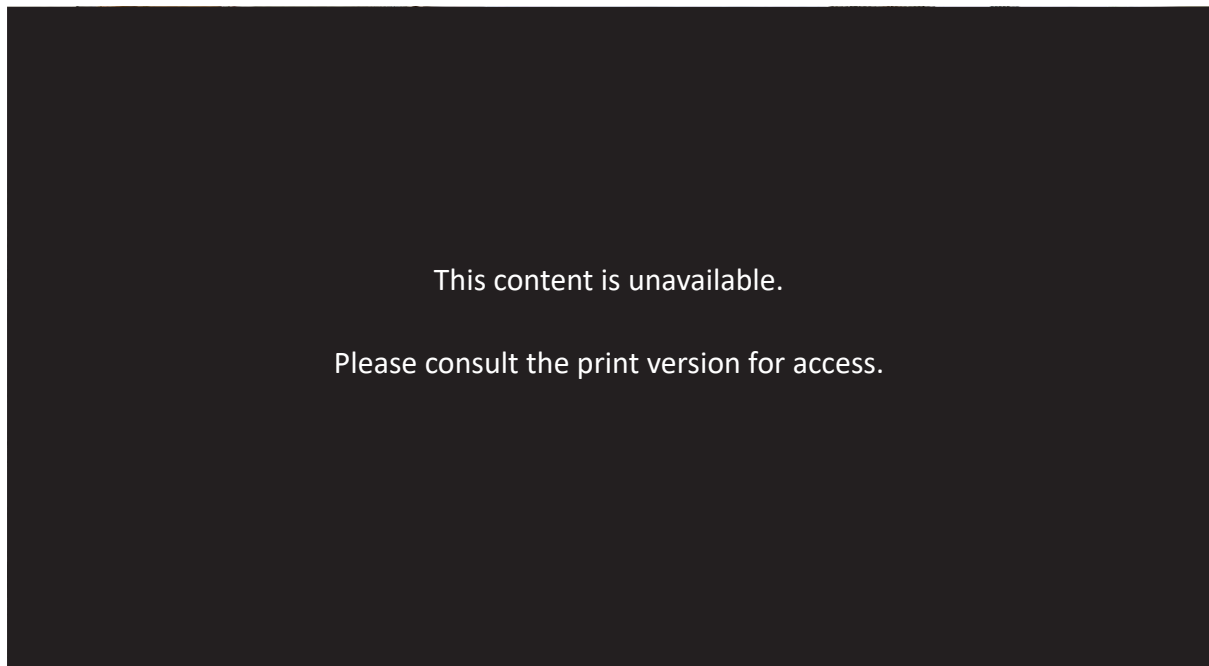
Fig 3.15 *Street view of E3*

Architect(s) – Kaden Klingbeil Architekten
Location – Berlin, Germany
Gross floor area – 950 m^2
Project year – 2008
Population density of Berlin – 3809 people per km^2
Occupancy density per person in E3 – 49 m^2 (based on the interior unit plan analysed however unit sizes vary within the building)

Project background

E3 is a seven-storey timber building situated between concrete high-rises in inner-city Berlin. The purpose of the project was to create an energy efficient high-rise residence building which provided a healthy living environment. Unlike the other case studies, E3 was developed with a "client collective because issues like individual decision making, sustainability and special urban design features could only be called for by a critical client as opposed to a developer whose primary interest are the expected financial return" (Moore, 2016, p. 3). The building consists of seven apartments ranging in sizes from 120m^2 to 160m^2.

Analysis at the unit scale

Understanding the functionality of the units in E3 is difficult because of the limited information of unit without furniture. Therefore, to test how E3 provides for family-friendliness, furniture was placed into one of the units to test if it meets the criteria (Fig 3.16). Through doing this, it was found that most of the bedroom sizes in the unit did provide sufficient space for the required furniture, storage, and play space. In other areas of the unit, such as the bathroom, it was found that these spaces provided insufficient space because the main bathroom was 1m^2 below the minimum bathroom size. Interestingly, the en-suite in the master bedroom was 4.4m^2 larger than the minimum requirements, therefore, with a change in plan this issue could be resolved. Each unit is also provided with some private outdoor space (balcony), although they vary in size, each one meets the criteria, with the smallest private outdoor space being 6.1m^2. There is no defined storage in the private outdoor space, however, each unit is provided with an external storage located on the ground floor (Fig 3.18).

The unit also has a flexible floor plan, which is achieved through few interior load bearing walls. The only exception to this is the two concrete ductwork shafts. The benefit of this is that it provides residents with the freedom to change the layout of their apartment. To help with this, an architectural practice is located on the ground floor.
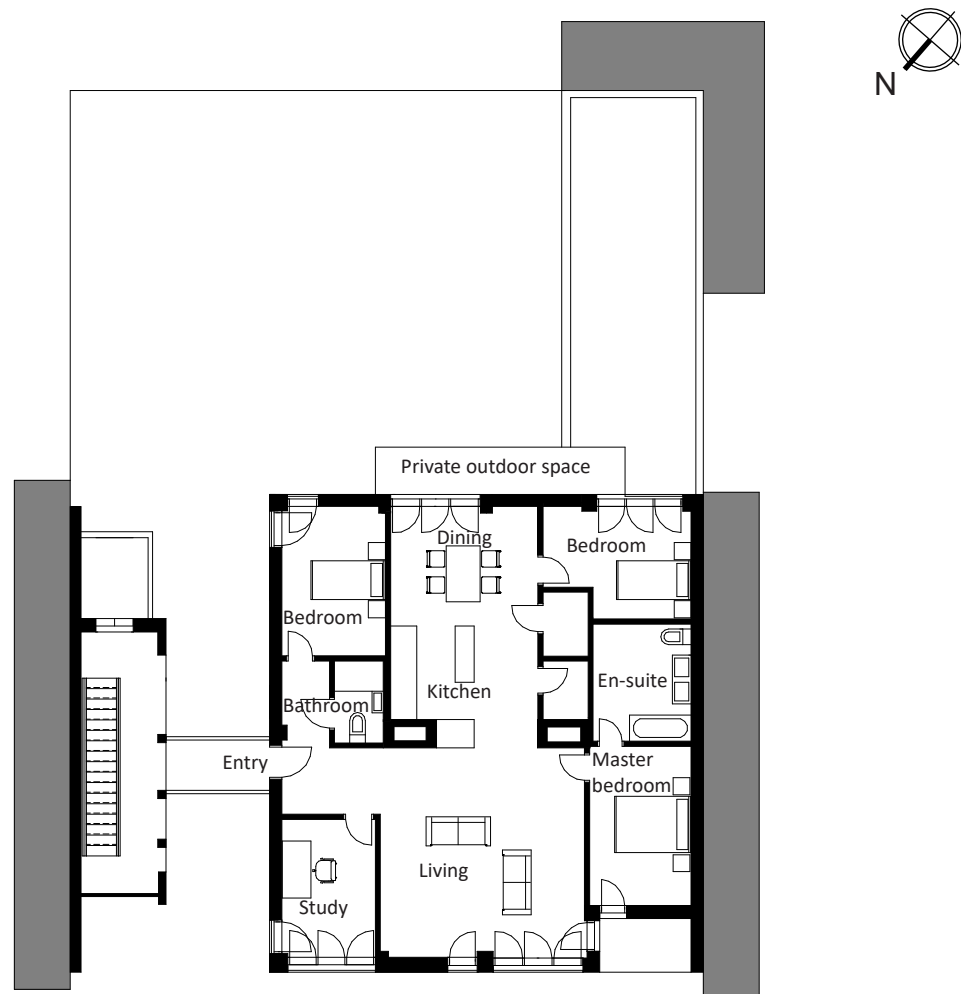
Fig 3.16 *Floor plan of housing unit in E3 (scale 1:200)*

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Fig 3.17 *Concrete piping ductwork shafts*

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Fig 3.18 *External storage on ground floor*

Fig 3.19 *No barrier on the boundary for security*

Analysis at the building scale

E3 does little to provide a child-friendly play area for children living in the building. Although there is a communal green space on the ground level, it does little to encourage play of different types and for different age groups (Fig 3.20). The building provides natural surveillance over this space with views onto it from each of the units, however, this area has no barrier on the boundary between the complex and neighbouring properties to keep children within the grounds of the complex (Fig 3.18). E3 provides good security over the main entrance and communal space because all units are able to watch over these areas, however, natural surveillance from other units on the entrances of each unit is not provided (Fig 3.19). Soundproofing between units is provided by the concrete duct shafts, because they are enclosed in a dense material like concrete.

N

Ground level

Esmarchstraße

Level one

Level two

Level three

Level four

Level five

Level six

☐ Unit analysed in unit analysis

■ Dense concrete wall, creating acoustic privcay

Fig 3.20 *Floor plan of building in E3 (scale 1:500)*

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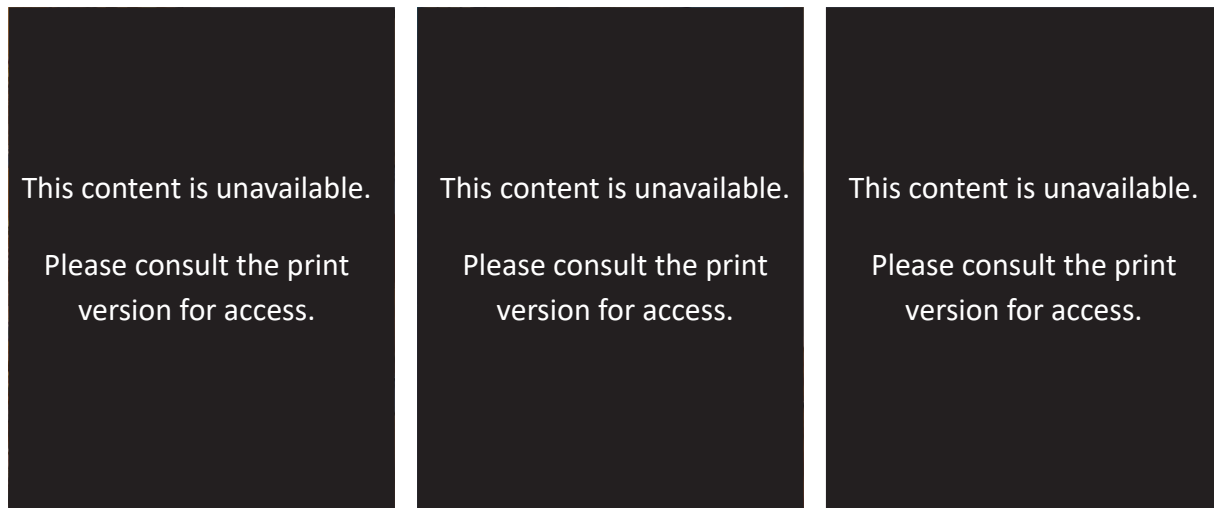
Fig 3.21 *Entrance to E3*

Fig 3.22 *Circulation in E3*

Fig 3.23 *Private outdoor space*

Analysis at the urban scale

E3 is located in a residential area, that is within close proximity to public transport, a super-market, and a school, which were all found to be important to have in close proximity of a family-friendly home. Connections to these areas appear safe because the traffic around the building site is at the low end of the scale for traffic speed (Fig 3.24). Also, crossing streets to access these amenities is supported by family-friendly pedestrian crossings on the main streets (Fig 3.25). A significant issue with E3 and the urban context it is located in, is that it lacks spaces for children to play. Therefore, consideration of child-friendly play areas needs to be considered, for this building and neighbourhood, in order to make it more family-friendly.

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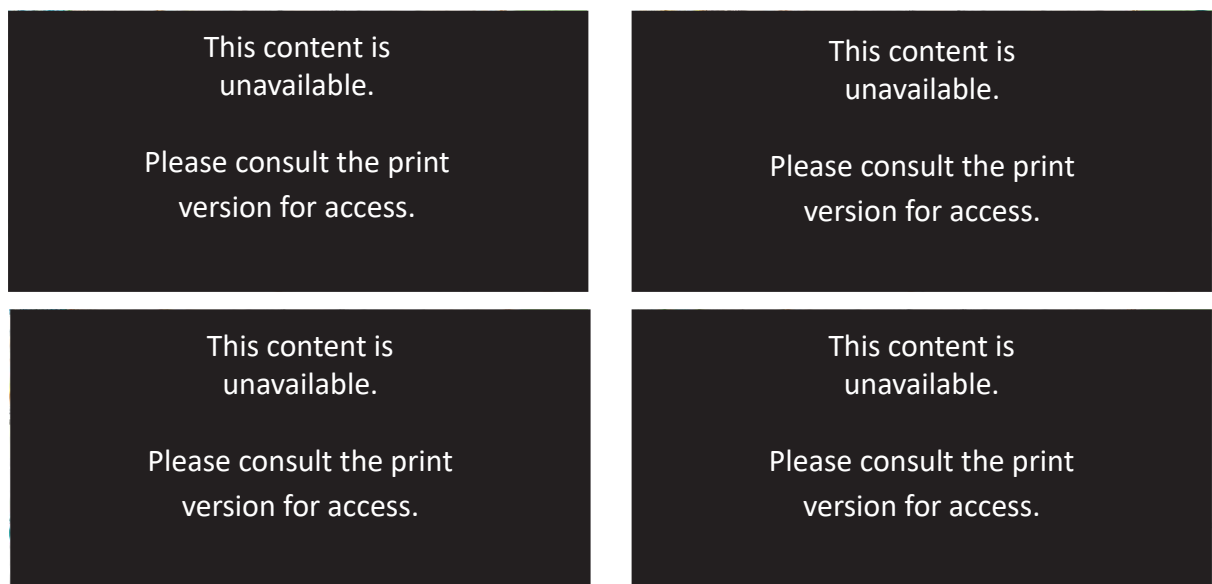
Typical traffic: *Fast* ■■ ■■ *Slow*

Fig 3.24 *Typical traffic on streets surrounding E3*

Fig 3.25 *Urban plan of E3 (scale 1:2000)*

Summary of E3

The E3 case study identified interesting ways of designing units in high-density to accommodate family-friendliness. These included the concrete ducting which helps to reduce sound travel between units. It also supports the adaptability of the units through providing few interior load bearing walls allowing residents to change the layout of their apartment to meet their needs. Provision for residents to store items normally put in a garage or shed, operates at the scale of the building. Some important amenities are located close to E3 and the access to these is safe.

Case Study 3: Wilton Close / Cymon Allfrey Architects

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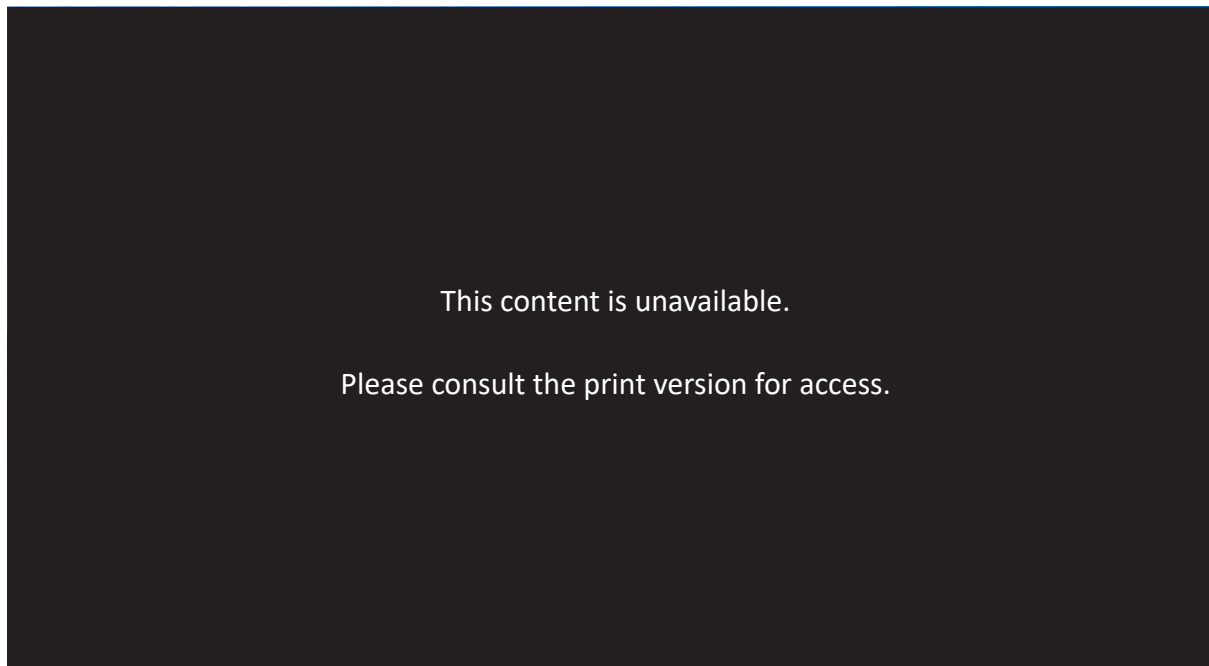
Fig 3.26 *Street view of Wilton Close*

Architect(s) – Cymon Allfrey Architects
Location – Christchurch, New Zealand
Gross floor area – 3200 m^2
Project year – 2008
Population density of Christchurch – 241 people per km^2
Occupancy density per person in Wilton Close – 46 m^2 (based on interior unit plan analysed however unit sizes vary within the building)

Project background
The brief for this project was to "create a high density, low rise, apartment complex which provides an 'entry level', contemporary living environment for the inner-city dweller" (ArchDaily, 2014). It aimed to create a sense of community and privacy for residents of the building, as well as a sense of individuality.

Analysis at the unit scale

The plans located of the units in Wilton Close provided information of what function each room had, however they did not provide information regarding the placement of the furniture for these rooms. Therefore, to understand how these rooms met the criteria, furniture was placed in them (Fig 3.27). Through doing this, it was found that the rooms provided sufficient space because they exceeded the minimum space outlined in the criteria.

In comparison to the other case studies, Wilton Close provides residents with a large private outdoor space. The main private outdoor space is located along the boundary of the site, facing away from the internal courtyard space (Fig 3.30). The benefit of this is that it provides residents with a space to personalize as well as a space away from other residents in the building. A smaller private outdoor space is also provided at each entrance of the ground floor units. Raised garden beds are used to define the separation between private outdoor space and the communal courtyard (Fig 3.29).

Fig 3.27 *Floor plan of housing unit in Wilton Close (scale 1:100)*
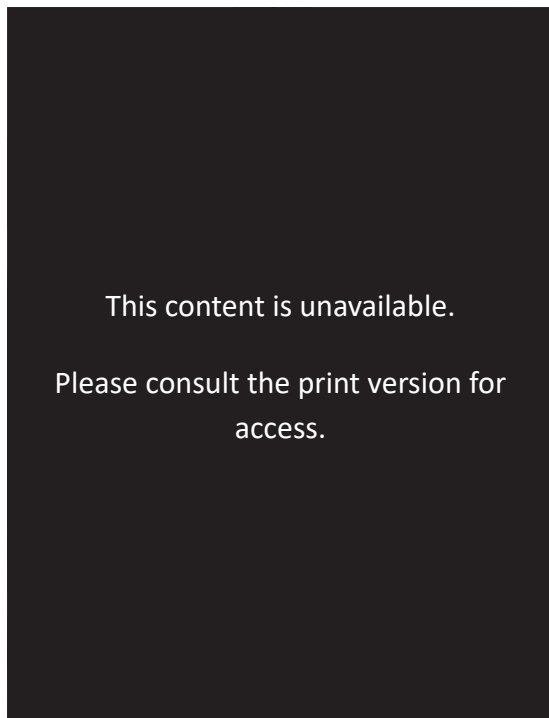
Fig 3.28 *Entrance to ground floor unit*
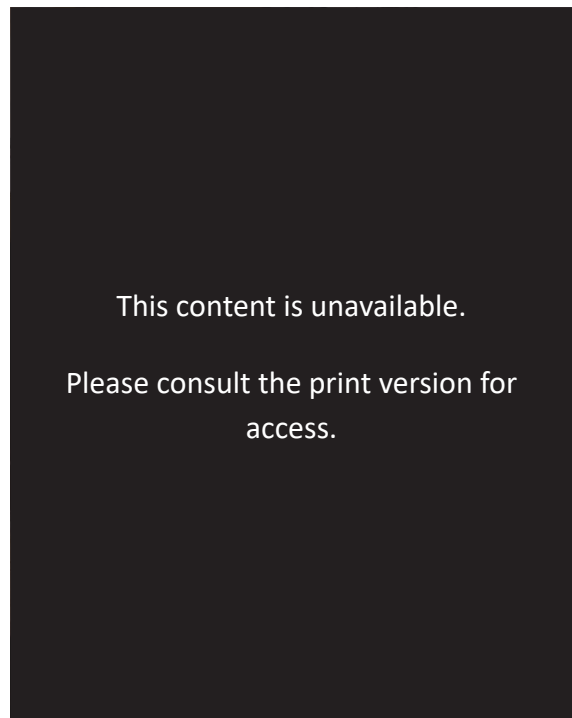
Fig 3.29 *Raised garden to separate communal area from units*

Analysis at the building scale

Using a central courtyard design, a sense of community is created in Wilton Close because it provides a space where residents can openly interact, and host events with one another. Although there is no designed children's play area, there is space for children to play. Also, there are seats in this area for parents to sit down and watch their children play, or to socialize with other parents. Furthermore, this design scheme allows parents to supervise their children playing in this area from the comfort of their home. Security is provided to the building because of the passive surveillance provided by the units in the building onto entrance ways into the building, as well as gates at the entrances providing another level of security.

Soundproofing and privacy of units in the building is achieved through planning, locating the more public areas of the home away from private areas of the neighbouring units. As seen in Figure 3.30, private areas of the units are close to each other with the less private areas being further apart from each other. Another feature of the central courtyard that helps to provide privacy and ownership of space is the raised garden beds directly in front of the ground level units. This design feature helps distinguish communal from private space.

N

Sailsbury Sreet

☐ Unit analysed in unit analysis
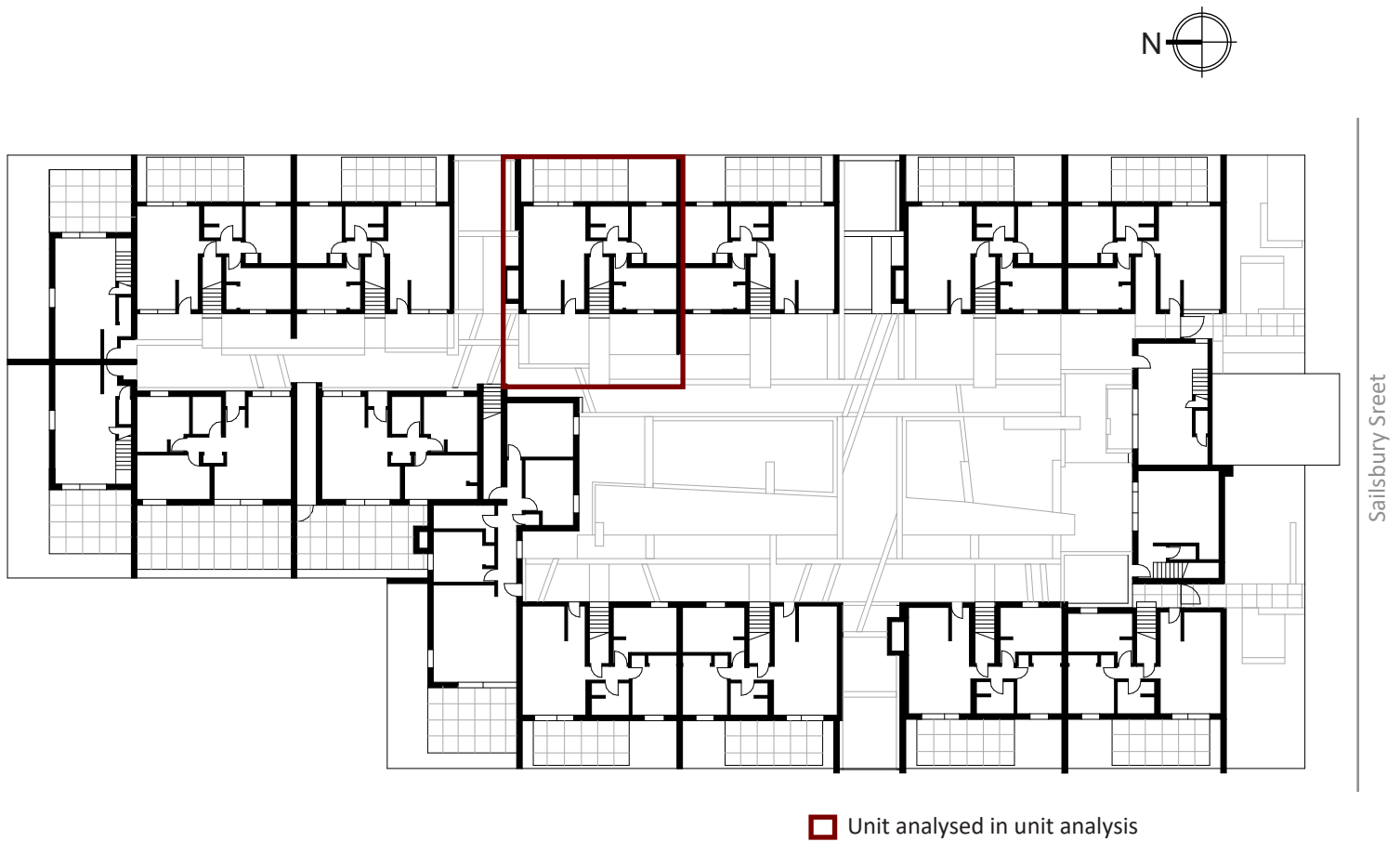
Fig 3.30 *Floor plan of building in Wilton Close (scale 1:500)*

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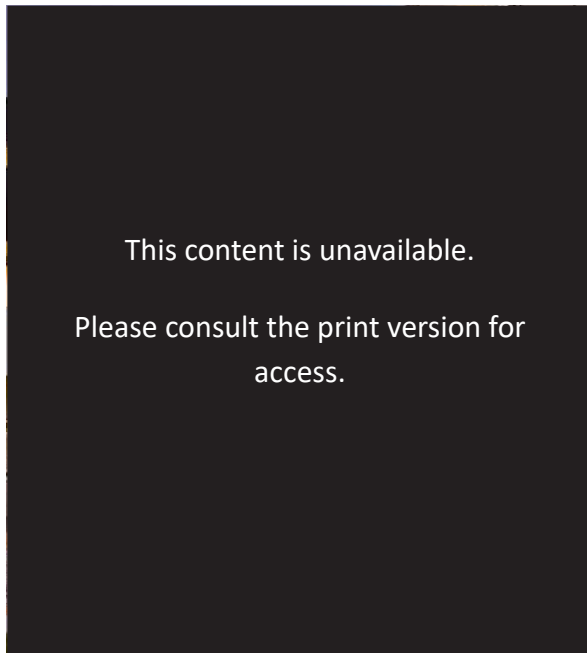
Fig 3.31 *Gate at entrance providing security*   **Fig 3.32** *Gate at entrance providing security*
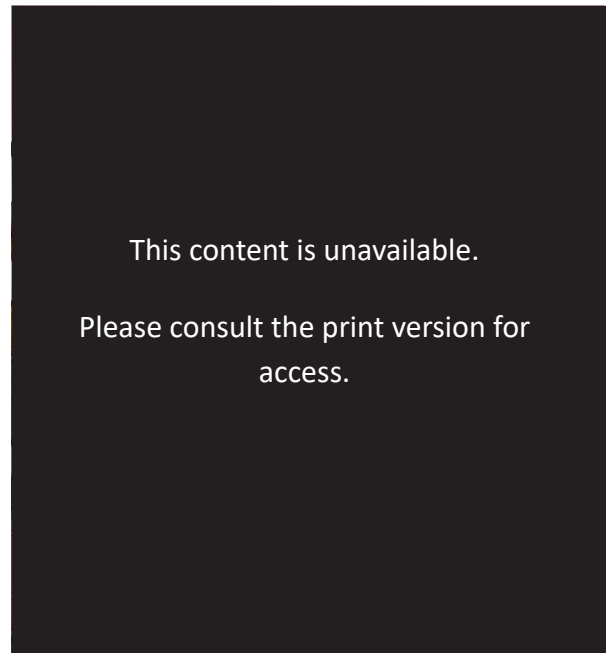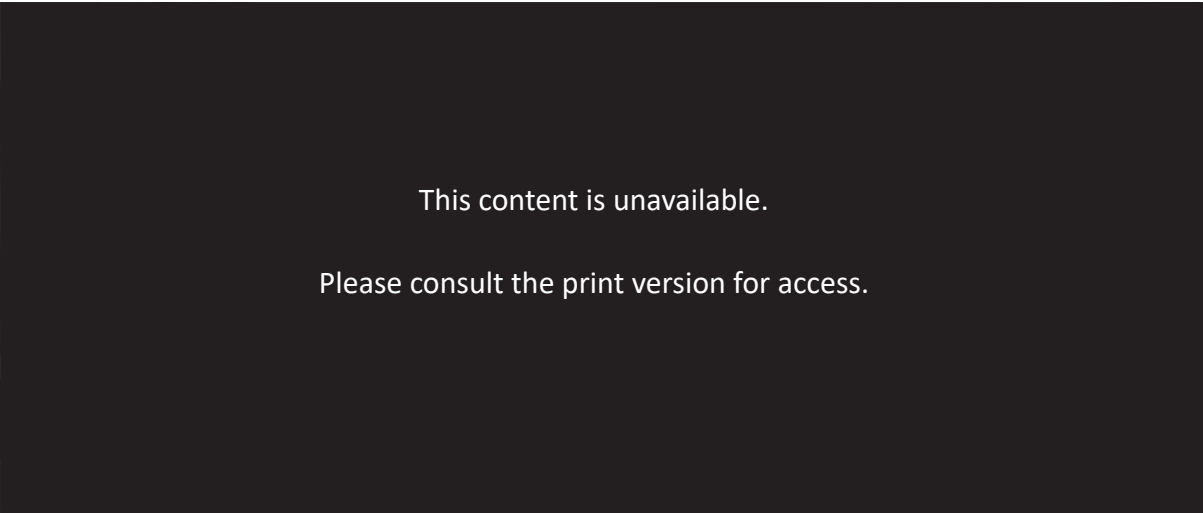
Fig 3.33 *Internal courtyard*

Analysis at the urban scale

Wilton Close is situated in a residential area in close proximity to a number of amenities such as shops, healthcare, and public transport. Connections to these areas appear safe because the traffic around the building site is at the low end of the scale for traffic speed (Fig 3.34). Also, crossing streets to access these amenities is supported by family-friendly pedestrian crossings on the main streets (Fig 3.35). The main issue with the location of Wilton Close is the lack of child-friendly play spaces. There are none in close proximity, and the building does little to encourage play.

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Typical traffic: *Fast* ■ ■ ■ ■ *Slow*
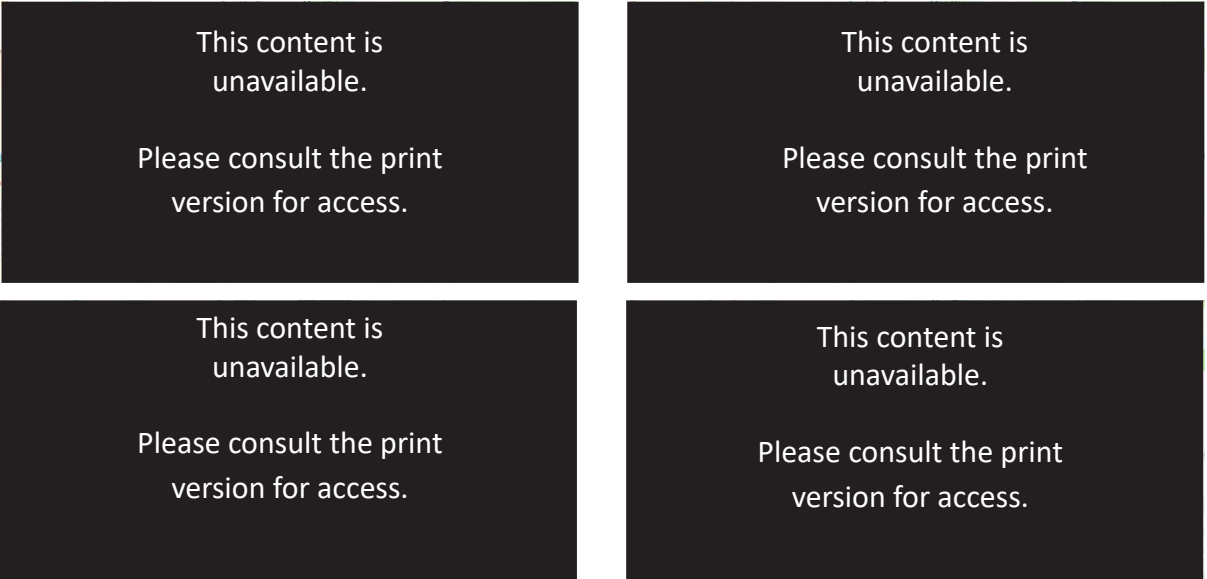
Fig 3.34 *Typical traffic on streets surrounding Wilton Close*

Fig 3.35 *Urban plan of Wilton Close (scale 1:2000)*

Summary of Wilton Close

The Wilton Close case study identifies ways of providing individual and personal space in high-density dwellings. Raised garden beds in the internal courtyard area define private and communal space, and spaces located along the exterior of the building provides additional outdoor private space. At the urban scale, Wilton Close is in close proximity to a number of amenities which are safe to travel to. Although lacking in specific attributes to encourage play, there is a playground located nearby.

Case Study 4: Main East Side Lofts / 1100 Architects

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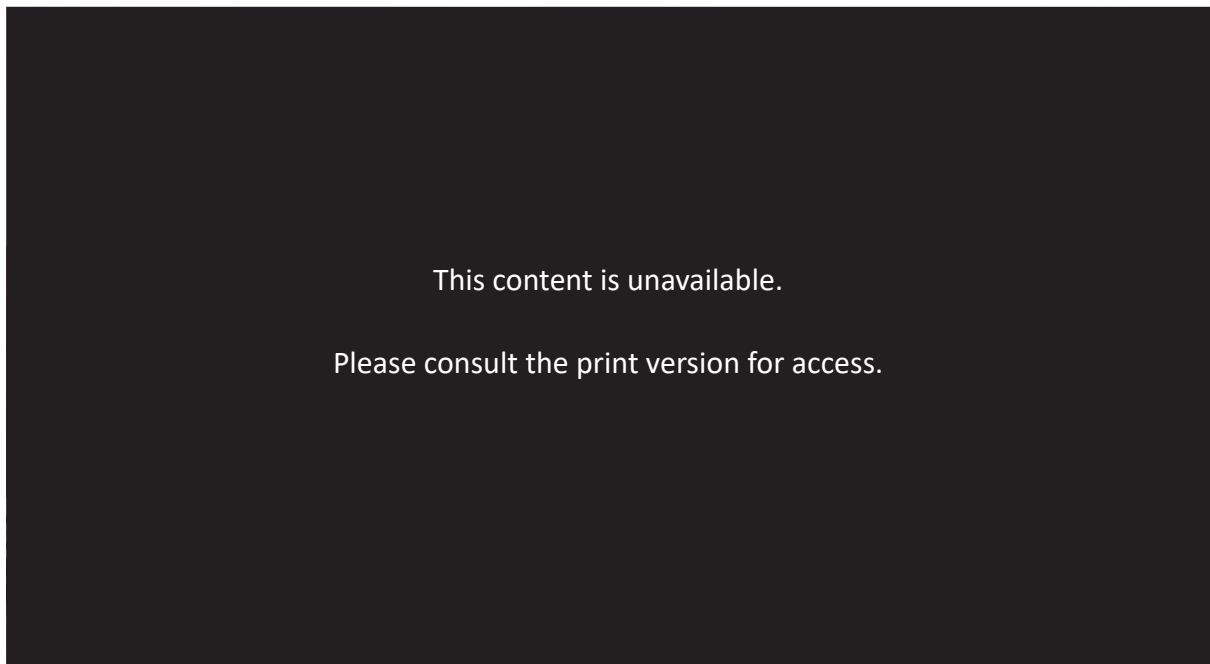
Fig 3.36 *Street view of Main East Side Lofts*

Architect(s) – 1100 Architect
Location – Frankfurt, Germany
Gross floor area – 14800 m^2
Project year – 2015
Population density of Frankfurt – 3000 people per km^2
Occupancy density per person in Main East Side Lofts – 93 m^2 (based on the interior unit plan analysed however unit sizes vary within the building)

Project background
Pre-war, this building's intended use was a factory, however, after World War l the design was never fully realized, and the building was instead used as a hospital, and later as housing for workers (ArchDaily, 2017). This adaptive reuse project was composed of two parts: the renovation of the existing building, and a contemporary addition which "interprets the volume, rhythm, and proportions of the original building, but reimagines them in a contemporary language with new materials" (1100, n.d.).

Analysis at the unit scale

Evaluation of the interior units from the Main East Side Lofts was limited to the available information on one, one-bedroom unit. The plan (Fig 3.37) shows how this unit provides for some of the selection criteria at this scale. In terms of sufficient space, this unit is inadequate. While the bedroom is large enough to accommodate a bed, storage and play space, the bathroom is larger than the minimum bathroom requirements, and there is storage next to the entrance of the unit and extra storage in the kitchen. The private outdoor space does not meet the space requirements outlined in the criteria. A feature of Main East Side Lofts is the large floor to ceiling heights. This was recognized when adapting the building and was used effectively to create a mezzanine floor in some of the units, creating more rooms in a unit (Fig 3.38 and Fig 3.39). In terms of soundproofing and privacy, this was largely provided through the deep and dense building exterior. The benefit of this building construction was that it has the ability to reduce sound transmission and reduce visibility into the units (Fig 3.40 and Fig 3.41).
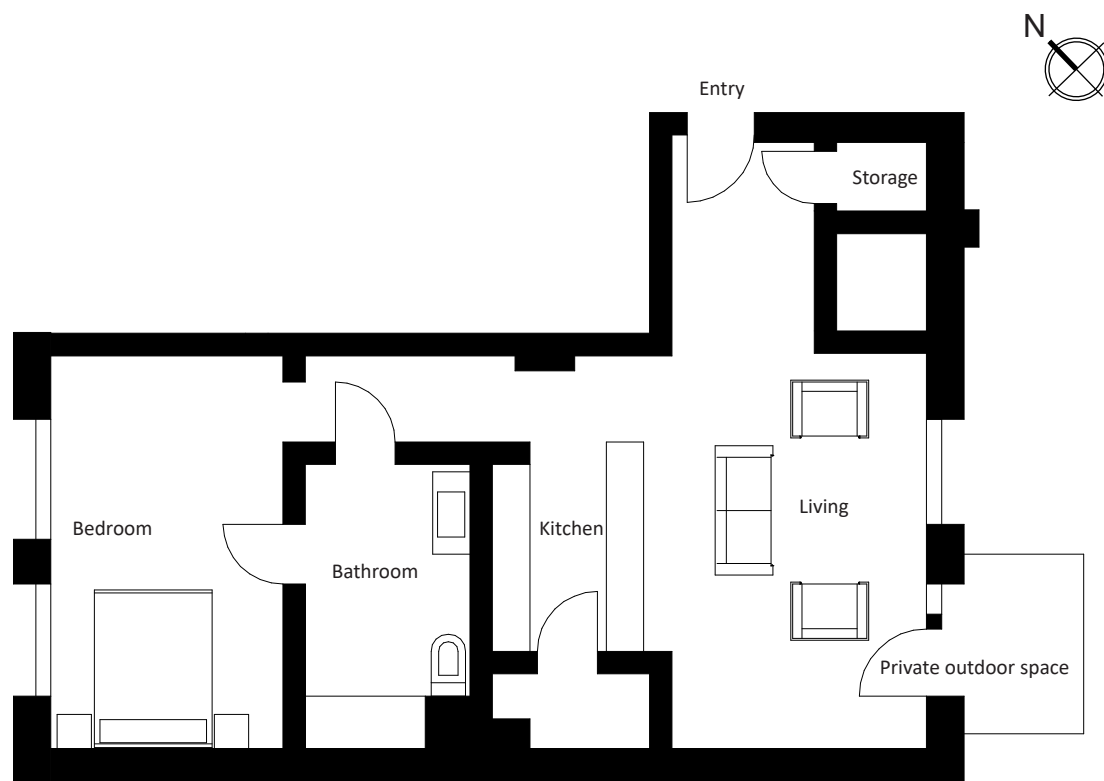
Fig 3.37 *Floor plan of housing unit in Main East Side Lofts (scale 1:100)*
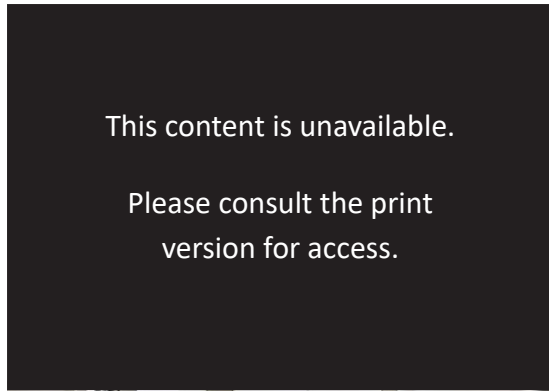
Fig 3.38 *Double height space for future development*
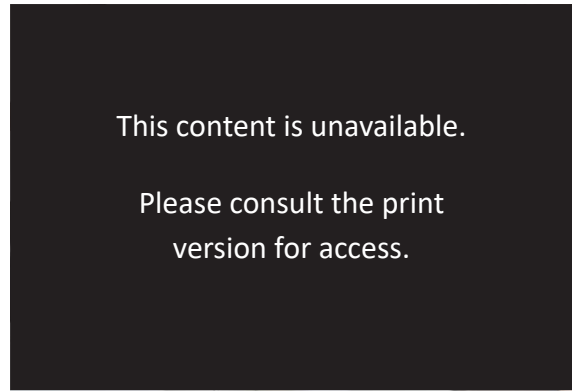
Fig 3.39 *Mezzanine floor to create more usable space*
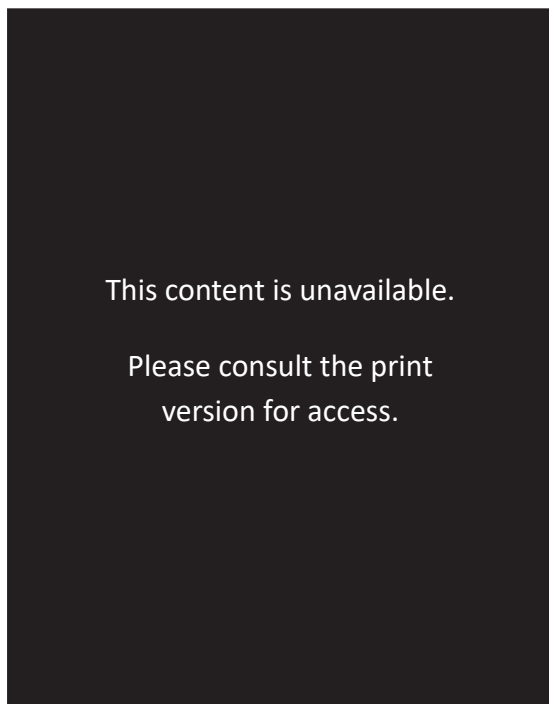
Fig 3.40 *Elevation showing deep, dense building exterior providing privacy and soundproofing*
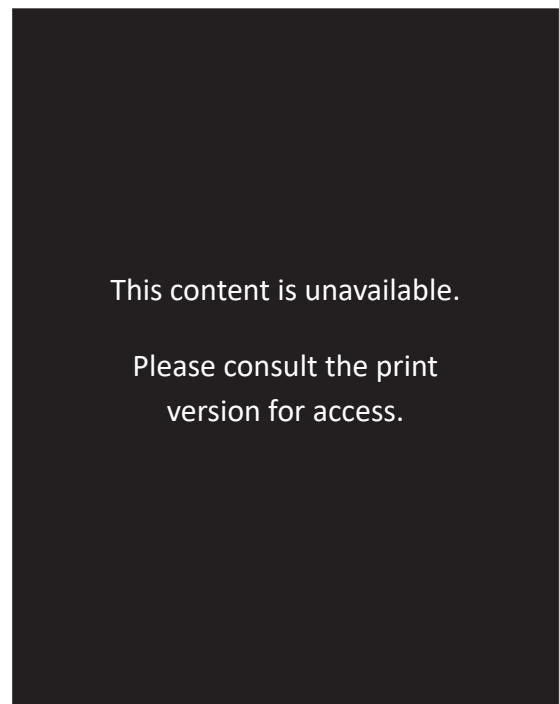
Fig 3.41 *Section showing deep, dense building exterior providing privacy and soundproofing*

Analysis at the building scale

Evaluating this building in terms of the relationships between the housing units was difficult because of the sparse information that could be found. The information available demonstrated that the building does create a sense of community through the central courtyard space, promoting interaction between residents. Amenities, such as offices and a bakery, that create a sense of a village in the building are also provided. To control the number of people entering the building some of the amenities have entrance ways from the street, so that people do not have to go through the building to use these amenities, therefore, providing greater control of non-residents' access to the building.

N

Lindleysraße

Osthafepl
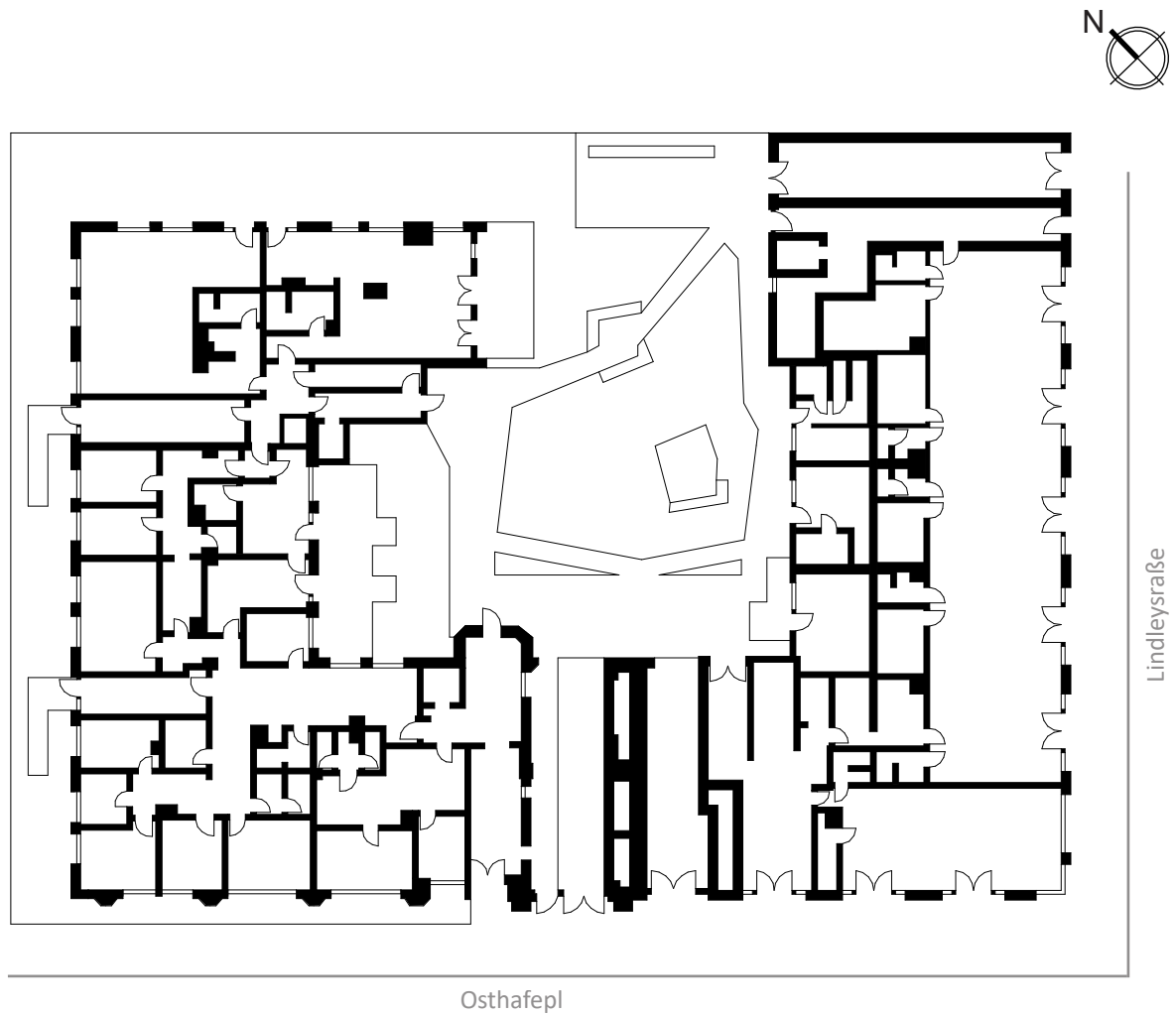
Fig 3.42 *Floor plan of building in Main East Side Lofts (scale 1:500)*

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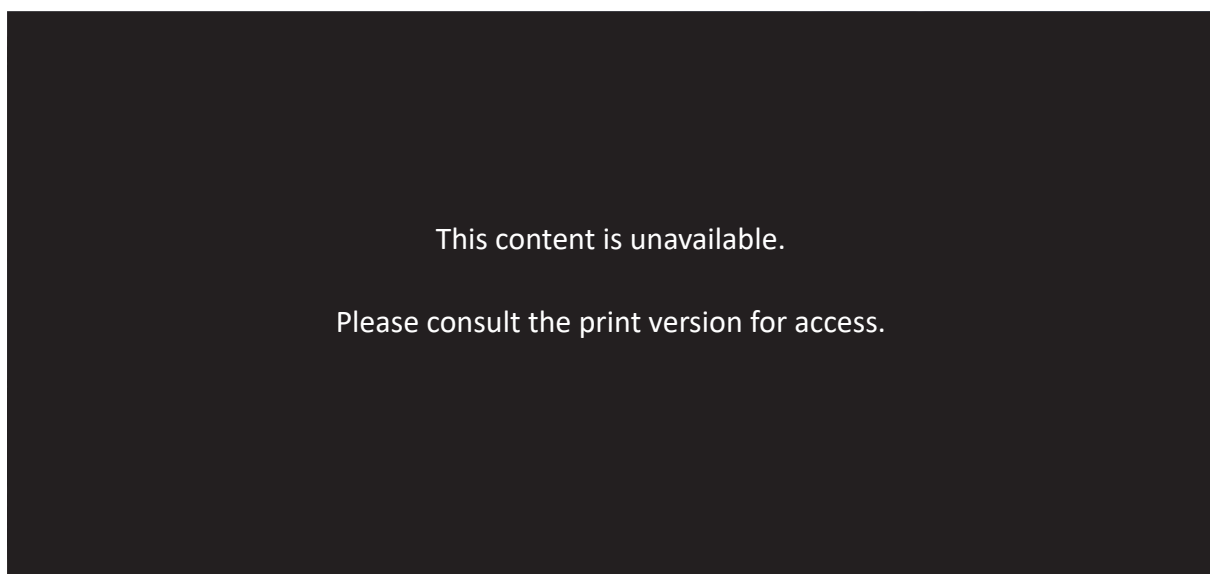
Fig 3.43 *Elevation of Main East Side Lofts*
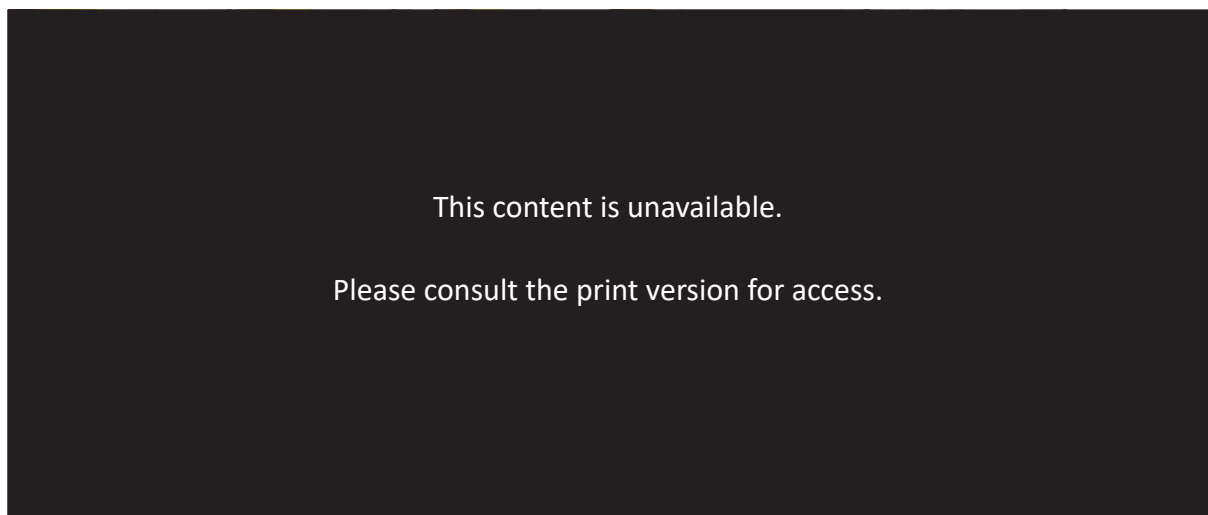
Fig 3.44 *Deep, dense building exterior providing privacy and soundproofing*

Analysis at the urban scale

Main East Side Lofts is situated in an area surrounded by residential and industrial buildings. It is within close proximity to nature (promenade), public transport, and general stores. Connections to these areas appear safe because the traffic around the building site is at the low end of the scale for traffic speed (Fig 3.45). Also, crossing streets to access these amenities is supported by family-friendly pedestrian crossings on the main streets (Fig 3.46). The issue with the location of Main East Side Lofts is the lack of child-friendly play spaces. There are none in close proximity, and the building does little to encourage play.

Typical traffic: *Fast* 🟩🟧🟥🟥 *Slow*
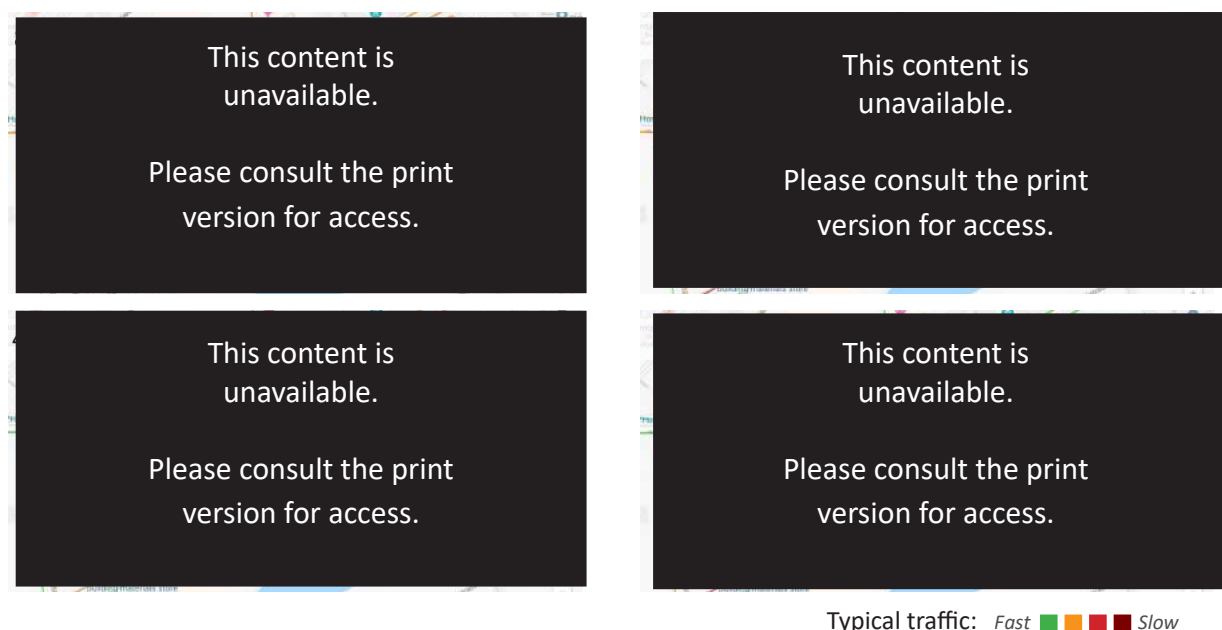
Fig 3.45 *Typical traffic on streets surrounding Main East Side Lofts*

Fig 3.46 *Urban plan of Main East Side Lofts (scale 1:2000)*

Summary of Main East Side Lofts

Main East Side Lofts highlights a possible solution for an adaptive reuse strategy by retaining the old and adding in the new through referencing the old building form and features. Although analysis of the unit and building was difficult because of the limited information available, it did highlight possible strategies of privacy/soundproofing. At the urban scale, Main East Side Lofts was found to be in close proximity to a number of family-friendly amenities and the access to these also appeared to be safe, however it did not provide areas of play for children.

Chapter conclusion
This chapter has highlighted ways that other case studies have achieved aspects of fami-

strated how adaptability can be achieved through an open plan layout and minimizing the

spaces such as bathrooms and bedroom should be separated from the public spaces such as the living, dining and kitchen.

to provide character. A sense of community can be created through the provision of com-

studies also revealed how child-friendly play areas could be provided through a playground, as

how they choose. To be successful, however, a child-friendly play area needs to meet certain criteria, by providing views from the housing units, allowing parents to watch over their children while they play.

Finally, at the urban scale the case studies showed that if the surrounding area does not pro-

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Chapter introduction

A main driver of this research is to propose a higher-density living environment that families can enjoy and want to live in. To do this however, it is important to understand what families

their current stage in life. Therefore, in order to provide a viable higher-density family-friendly

believe makes a dwelling and a neighbourhood family-friendly, and, furthermore, if it is provided, how likely they would consider moving there. Consequently, a survey was created to

in Appendix B.

Method

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ple from various backgrounds would increase the ability of the research to explore whether

responses from people of various backgrounds, as the following shows.

Survey structure

Section A: Participants were asked to answer questions about the dwelling they live in.

This comprised various household typologies including and excluding children. Because of recruitment methods used for this survey, there was some bias of younger, university students.

Household types

Household of young adults (e.g. university students) (50.47%)

Couple with child(ren) living at home (17.45%)

Other (14.62%)

Single parent/caregiver with child(ren) living at home (6.60%)

Couple with child(ren) not living at home (4.25%)

Household with child(ren) and extended family (3.30%)

Other household with child(ren) (1.89%)

Single parent/caregiver with child(ren) not living at home (1.42%)

■ Percentage

Neighbourhood types

Neighbourhood with predominantly low-rise buildings (1-2 storeys) (75%)

Neighbourhood with predominantly mid-rise buildings (3-4 storeys) (14.15%)

Neighbourhood with predominantly high-rise buildings (5+ storeys) (10.85%)

■ Percentage

Dwelling types

	Percentage
Standalone (46.39%)	46.39
Duplex, townhouses, units or apartments (1-2 storeys) (26.81%)	26.81
Unit or apartment joined to one or more, units or apartments (5+ storeys) (12.95%)	12.95
Unit or apartment joined to one or more, units or apartments (3-4 storeys) (10.84%)	10.84
Mobile dwelling (2.41%)	2.41
Other (0.6%)	0.6

Dwelling ownership

	Percentage
Own (68.9%)	68.9
Rent (31.1%)	31.1

Family-friendly attributes of a dwelling

move into low-rise high-density housing than mid-rise or a high-rise high-density dwellings

Section C: The third section of the survey asked participants to identify what amenities were important in a family-friendly neighbourhood.

Section B: The second section of the survey focused on finding what participants considered to be important aspects for a dwelling which is family-friendly.
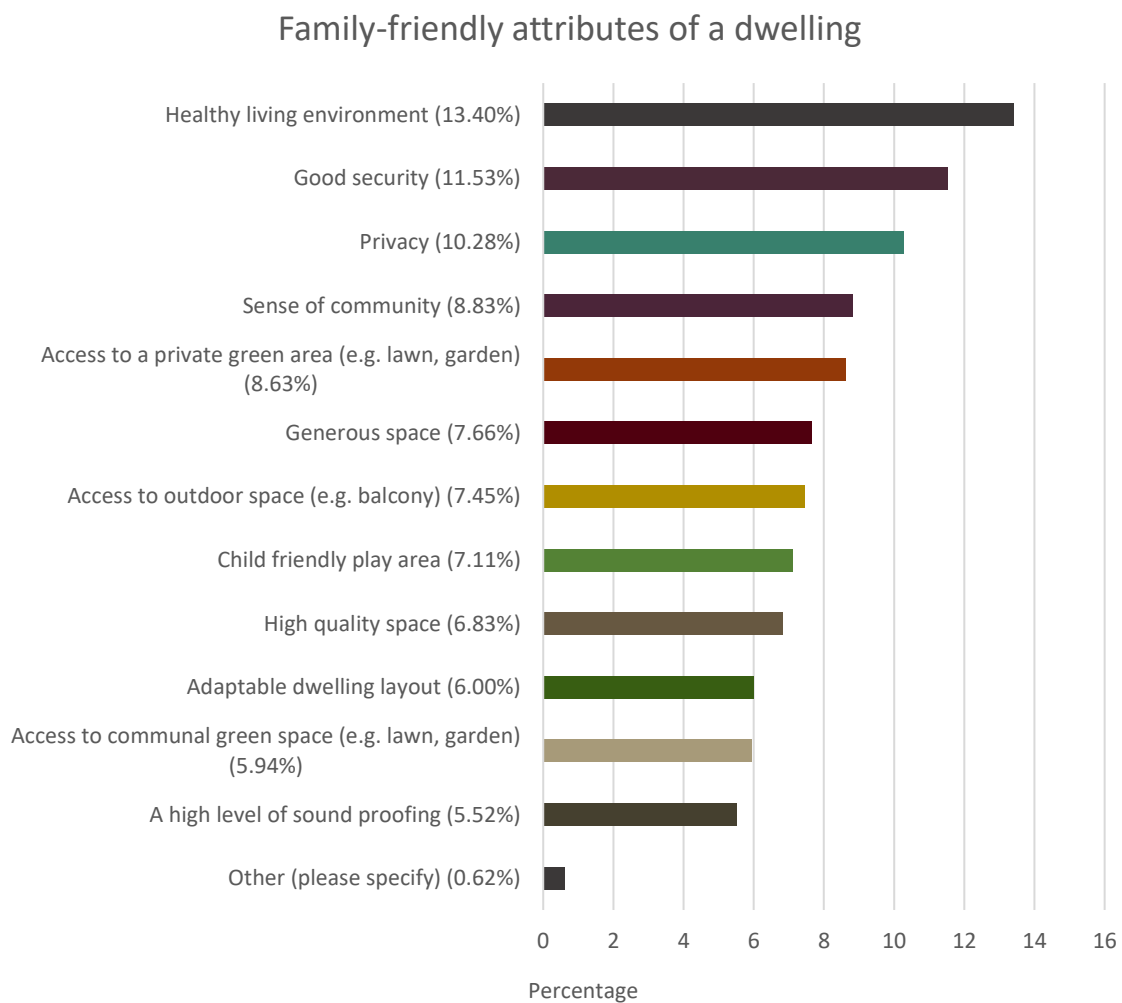
Family-friendly attributes of a dwelling

- Healthy living environment (13.40%)
- Good security (11.53%)
- Privacy (10.28%)
- Sense of community (8.83%)
- Access to a private green area (e.g. lawn, garden) (8.63%)
- Generous space (7.66%)
- Access to outdoor space (e.g. balcony) (7.45%)
- Child friendly play area (7.11%)
- High quality space (6.83%)
- Adaptable dwelling layout (6.00%)
- Access to communal green space (e.g. lawn, garden) (5.94%)
- A high level of sound proofing (5.52%)
- Other (please specify) (0.62%)

Percentage

move into low-rise high-density housing than mid-rise or a high-rise high-density dwellings

Section C: The third section of the survey asked participants to identify what amenities were important in a family-friendly neighbourhood.

Amenities for a family-friendly neighbourhood
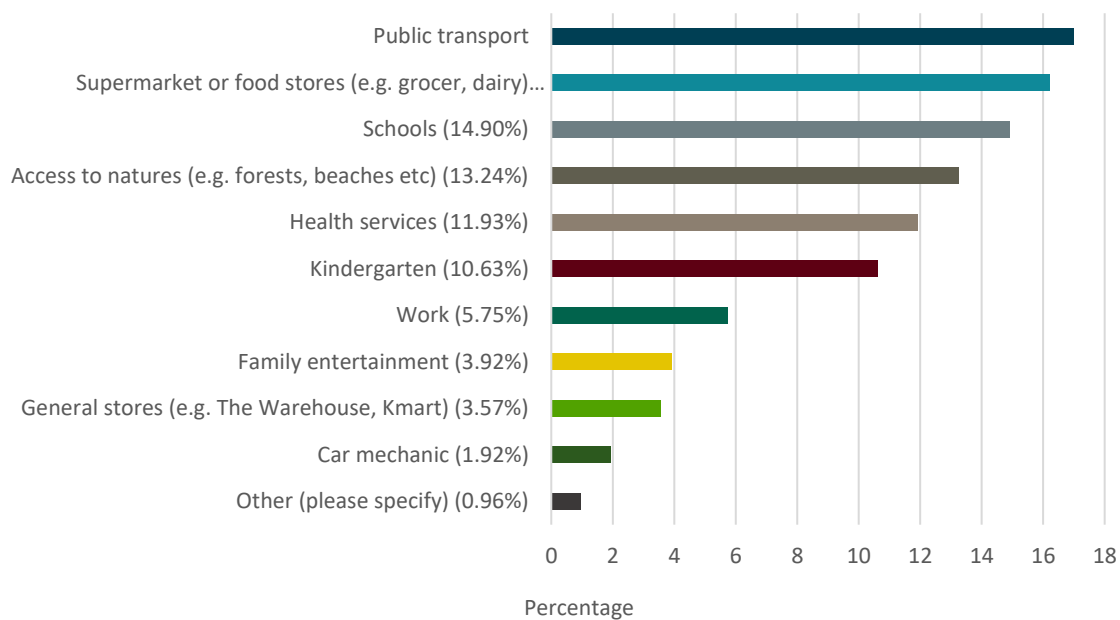
Section D: The final section of the survey asked for demographic information from the participants.

Age

Gender

Female (66.51%)

Male (31.13%)

Other/unknown (2.36%)

■ Percentage

Ethnicity

NZ European (75.11%)
Maori (10.04%)
Unknown (4.78%)
Chinese (2.87%)
Indian (2.39%)
Samoan (0.96%)
Vietnamese (0.96%)
Tongan (0.48%)
Filipino (0.48%)
Fijian (0.48%)
Irish (0.48%)
French (0.48%)
Korean (0.48%)

■ Percentage

Neighbourhood types

Category	Percentage
Both inner city and suburbs (46.70%)	
Suburbs (37.26%)	
Central Business District (CBD)/inner city (13.21%)	
Other (2.83%)	

■ Percentage
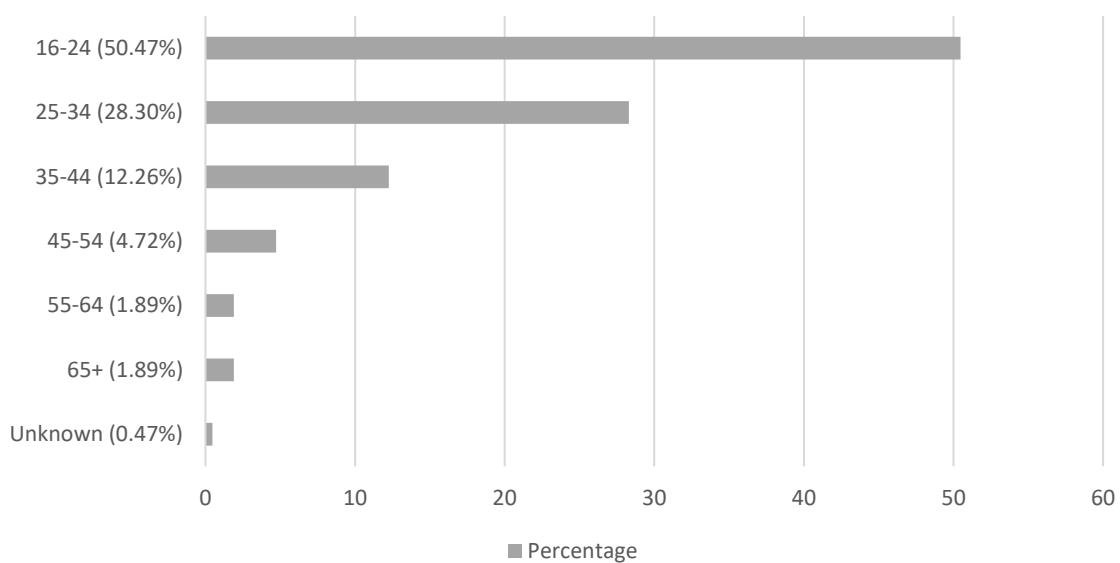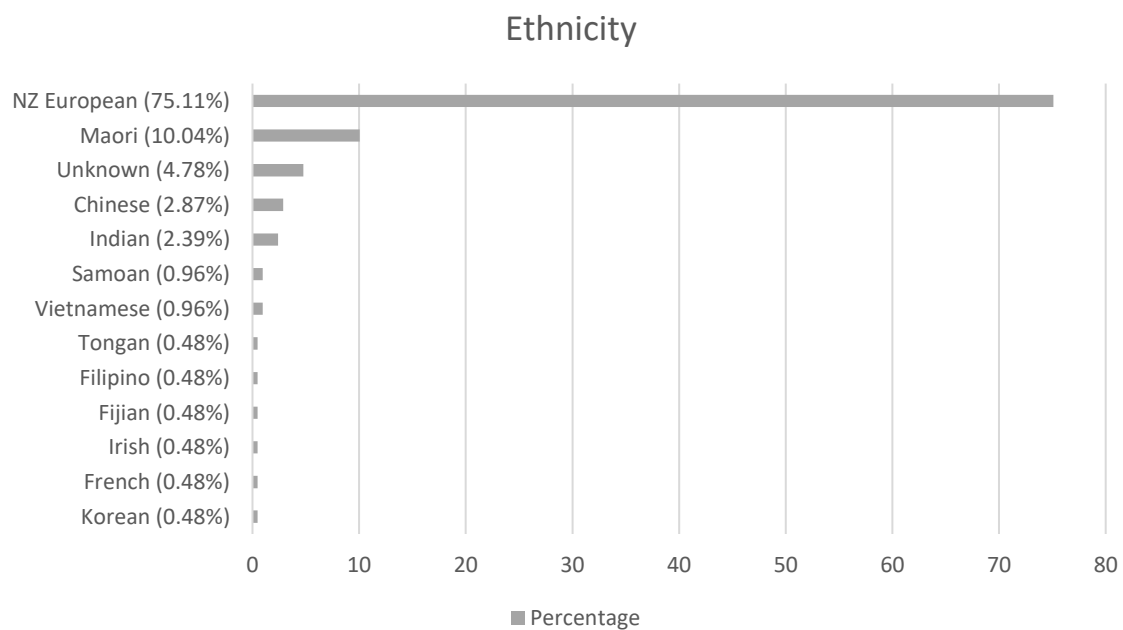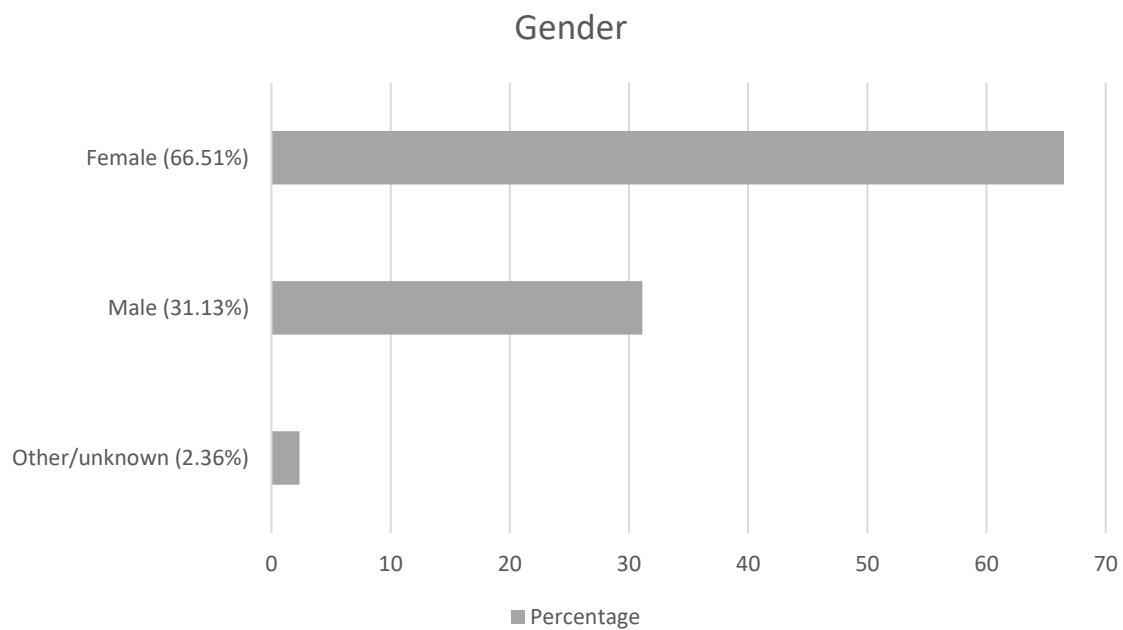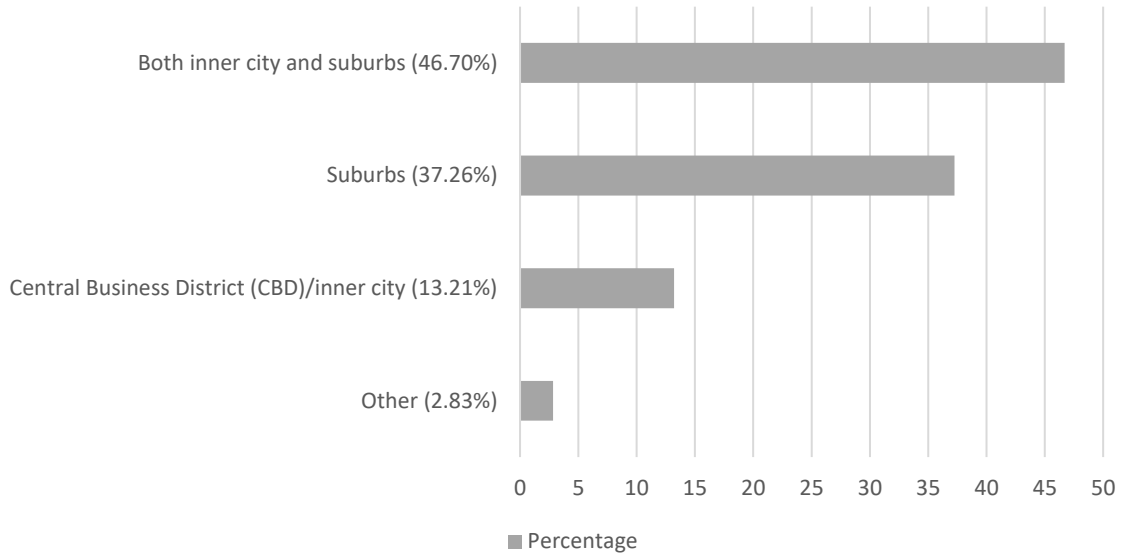
Individual annual income before tax

Category	Percentage
$30,000 or less (44.34%)	
$30,001-$50,000 (16.04%)	
$50,001-$70,000 (9.91%)	
$70,001-$100,000 (9.91%)	
$100,001-$150,000 (5.19%)	
$150,001 or more (1.42%)	
Unknown (6.6%)	

■ Percentage
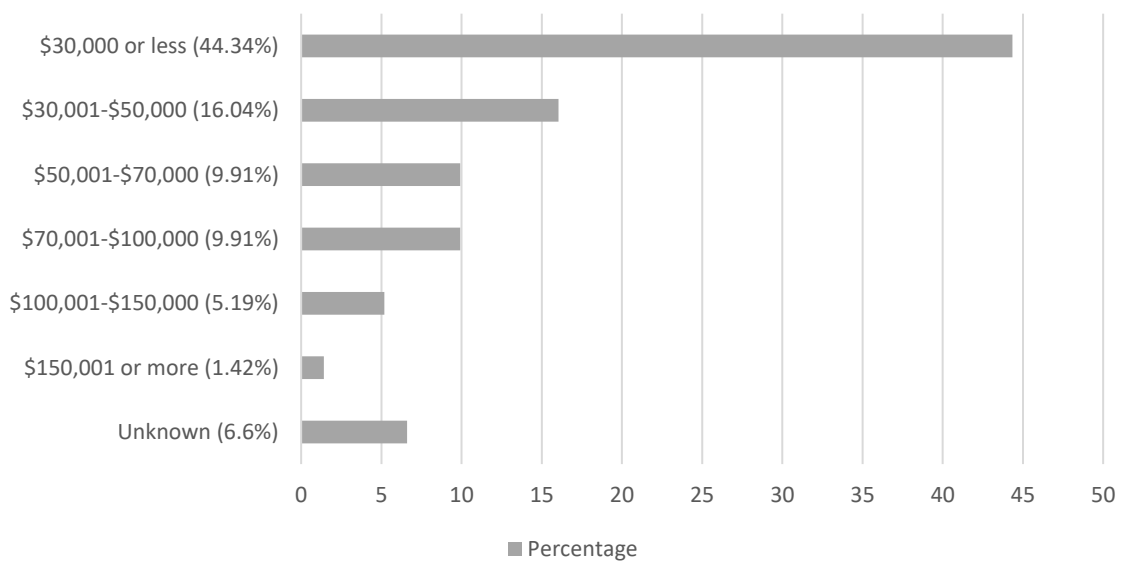
Chapter conclusion

-

good security which are considered important design features for a child friendly play area.

-

as the standalone house which promotes privacy compared to higher-density dwellings with

public transport, food stores, and schools.

Most household types, but especially those with children, had experience living in a stand-

-

is more family-friendly than medium or high-rise high-density housing. The reason for this

and family-friendliness passed down through history.

-

lighted the importance of understanding the people you are designing for, in order to design a home that responds to their needs. Because of this, it would be considered important to

survey does not.

Chapter introduction

This chapter presents the site for this thesis, the Tramway Hotel. Analysis of the site is con-

-

reuse of this building has been proposed for sustainability and heritage reasons.

Adelaide Road Framework

-

-

-

- Ensuring new development is of high quality and supports the aims of the long-term vision

-
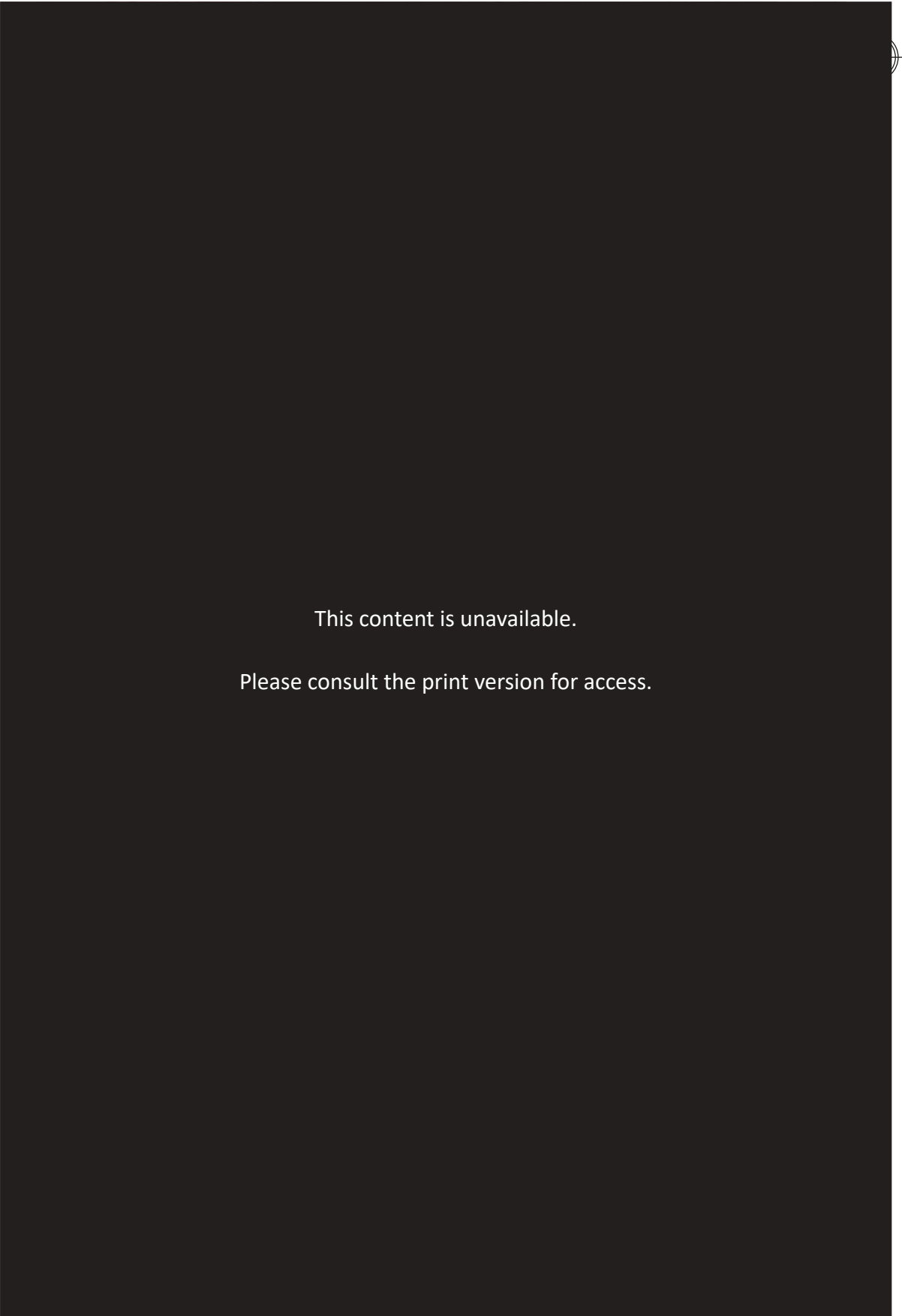
Fig 5.1 *(Previous) Current photograph of site*

Framework suggest a future environment that promotes family friendliness.

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Please consult the print version for access.

Fig 5.2 *Map of New Zealand outlining the Wellington Region (scale 1:8,000,000)*
Fig 5.3 *Map of suburbs in Wellington Region outlining Mt Cook (scale 1:1,000,000)*

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Please consult the print version for access.

Fig 5.4 *Map of Mt Cook outlining Adelaide Framework area*

Site

Fig 5.5 *Urban analysis of 'The Tramway Hotel'*

Legend:
- SITE
- SCHOOL
- HEALTHCARE
- KINDERGARTEN
- GROCER
- PUBLIC TRANSPORT

Fig 5.6 *Photograph of Wellington Regional Hospital in the area*

Fig 5.7 *Photograph of supermarket in the area*

Fig 5.8 *Photograph of a school in the area*

Fig 5.9 *Photograph of public transport in the area*

Fig 5.10 *Photograph of car mechanic in the area*

Fig 5.11 *Photograph of play area in the area*

Fig 5.12 *Photograph of safe pedestrian crossing directly outside 'The Tramway Hotel'*

Fig 5.13 *Photograph of family safely walking in the area*

Fig 5.14 *Photograph of pedestrian crossings in areas with higher traffic levels for safe crossing*

Fig 5.15 *Map of public transport routes*
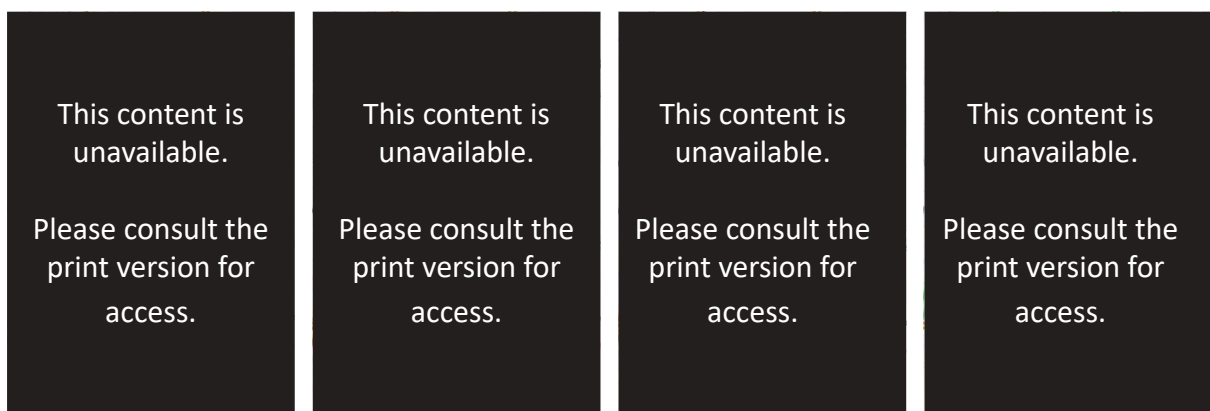
Fast ■■■■ Slow

Fig 5.16 *Typical traffic on streets surrounding The Tramway Hotel*

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Fig 5.17 *Street view photograph of the 'Tramway Hotel'*

Original building materials

-

Current condition of building
Currently, the building is not in use because it has been listed as an earthquake prone building

building for the site of this thesis.

Fig 5.18 *Street view photograph of site currently*

Value of the building

-

cause they,

-

have been and where we are now, and gives us the opportunity to shape our future.

The Tramway Hotel holds great value because it is a rare example of a typical late Victorian

Adapting the original building

- retains the main determinants of the style and character of the building or object

-

- respects the scale of the original building or object. The Council seeks to ensure

-

posed.

the building.

Ground level plan

N

Drummond St

Dining room

Private room

UP

Bar

Kitchen

Hall

UP

Yard

Bar parlour

Commercial room

Adelaide Rd

Level one plan

Bed-room

Bed-room

Bed-room

Bed-room

Bed-room

Bed-room

Bedroom

Bed-room

Bed-room

Bed-room

Bath-room

DN

Bedroom

DN

Bedroom

Bedroom

Bedroom
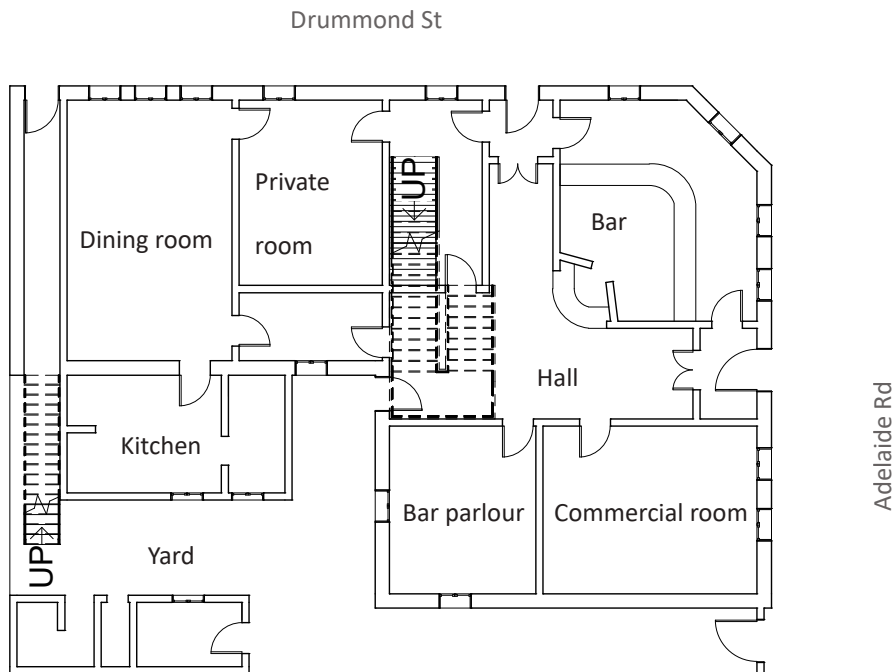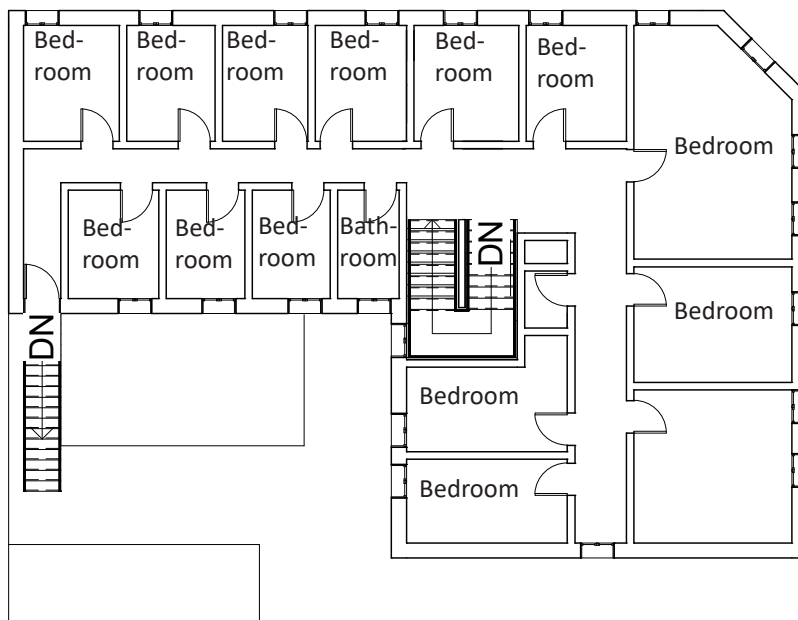
Fig 5.19 *Plans of the 'Tramway Hotel' (scale 1:200)*

Sun study

important to achieve a successful family-friendly dwelling. Sun is an important aspect of this.

space.

Summer solstice
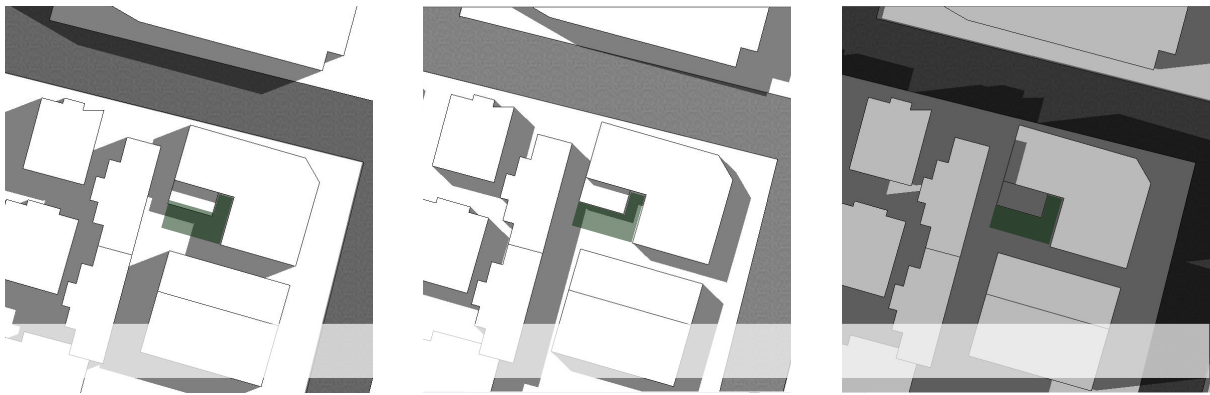
Winter solstice
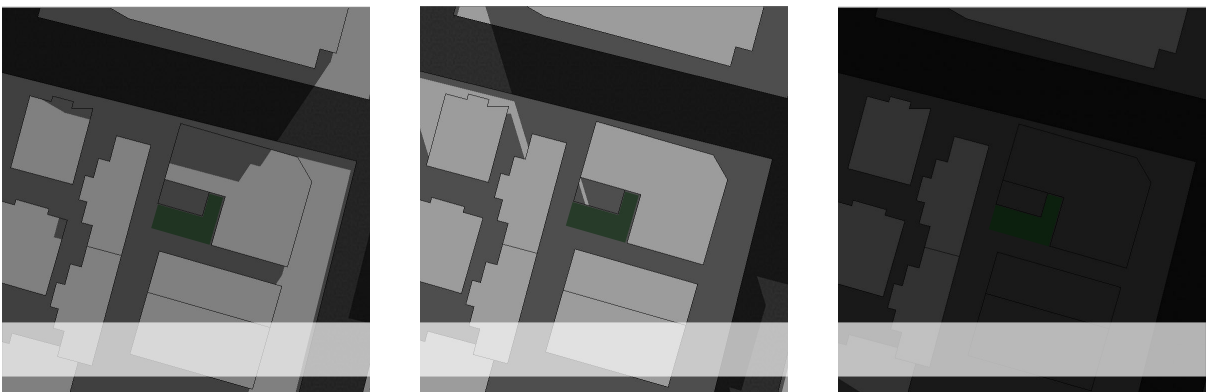
Fig 5.20 *Sun and shading analysis of building currently on site*
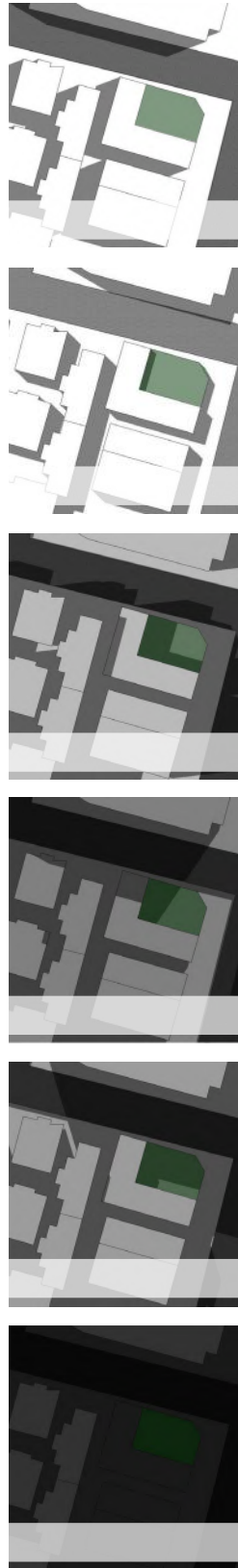
STUDY 1   STUDY 2   STUDY 3
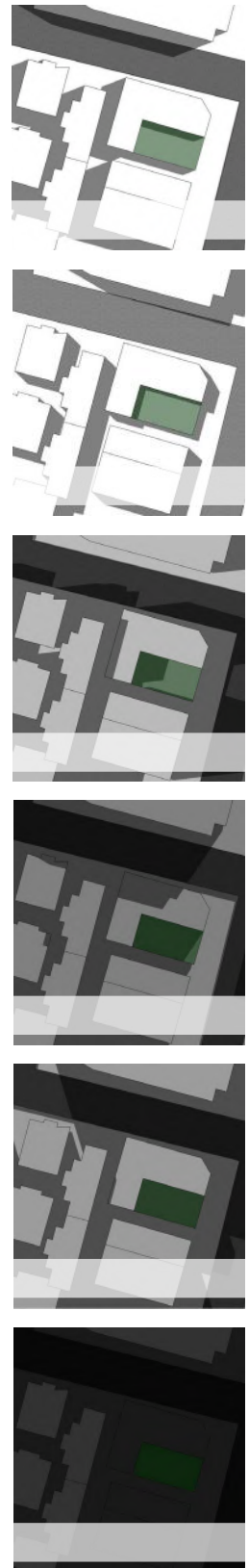
Fig 5.21 *(Above + Opposite) Sun and shading analysis massing forms*
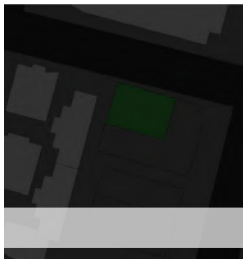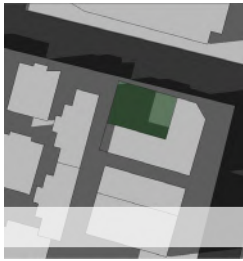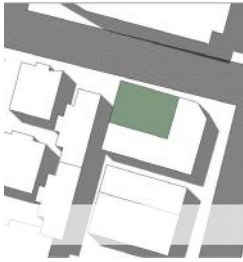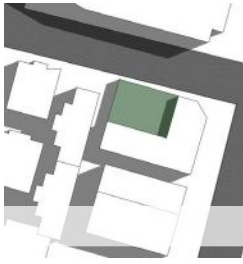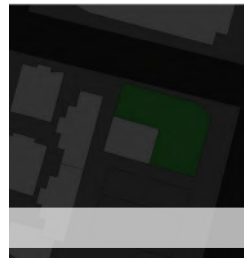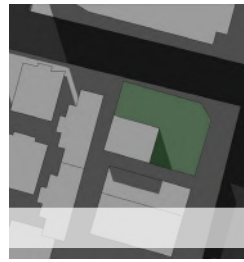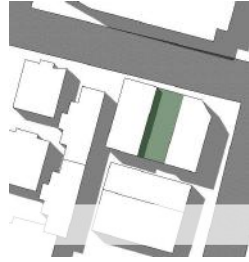
Sun shading test

outdoor space. This test found that the outdoor space facing north received the most daylight

than ran through the building from north to south might work to provide maximum daylight,

-

ed areas of daylight and shade.

Chapter conclusion

development in the area that will make it a family-friendly place to live. The only issue, with

that a child-friendly play space is incorporated into the design in the following chapter.

Introduction
This chapter considered how the Tramway Hotel could be adapted into family-friendly high-

develop the design criteria used in this chapter. These criteria considered the importance of each criterion and the building scale of the Tramway Hotel, which is a smaller scaled building

-

-

studies of play areas were also analysed because earlier case studies did not provide examples of play.

Design criteria at the unit scale
Sufficient space

Child-friendly play area

-

play space in elementary and teen aged children's bedrooms

Privacy

Fig 6.1 *(Previous) Interior view from Unit three overlooking play area*

Design criteria at the building scale
Child friendly play area

-
-

-

- Pre-school children under the age of six should be provided with a small play space

Communal space/sense of community
- Communal space should be easily accessible from the units to increase use by the

- Communal space should be provided for children and parents where individual

Good security
- Locate entrances to maximise casual surveillance from units, semi-private and

Privacy
-

Soundproofing

-

-

Design phase one

out of the unit forms would best provide for good security through natural surveillance from the units onto the entrances into the building. They also considered how they would provide surveillance over the communal areas. Good security was considered to be one of the most

Iteration one

considered how each unit could be provided with their own entrance using the entrances of the current building. However, it was found that Unit three had no natural surveillance from other units in the building and did not provide surveillance over the level one communal space.

Iteration two

which can be viewed from other units in the building. However, none of the units provide surveillance over all of the communal spaces.

Iteration three

entrances to the building, and surveillance over all of the communal spaces.

Ground level plans
Scale 1:500
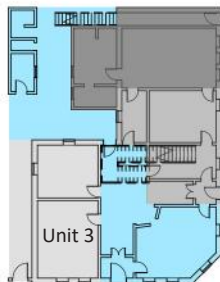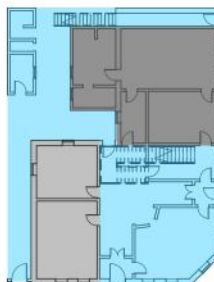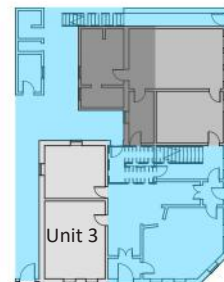
Level one plans
Scale 1:500
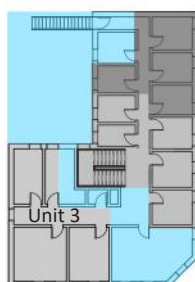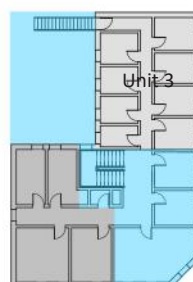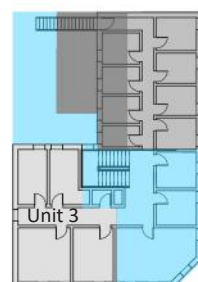
Fig 6.2 *Exploration of unit placement in the Tramway Hotel*

Design phase two

Iteration one

a home are more frequently used during the day, these spaces were placed on level one to maximise daylight and provide greater surveillance over the communal space.

Iteration two

-

surveillance onto the communal space increased.

Iteration one

Ground level plan
Scale 1:200

Drummond Sreet

A

B

N

Adelaide Road

Unit 3

A

B

Level one plan
Scale 1:200

A

B

Unit 3

A

B
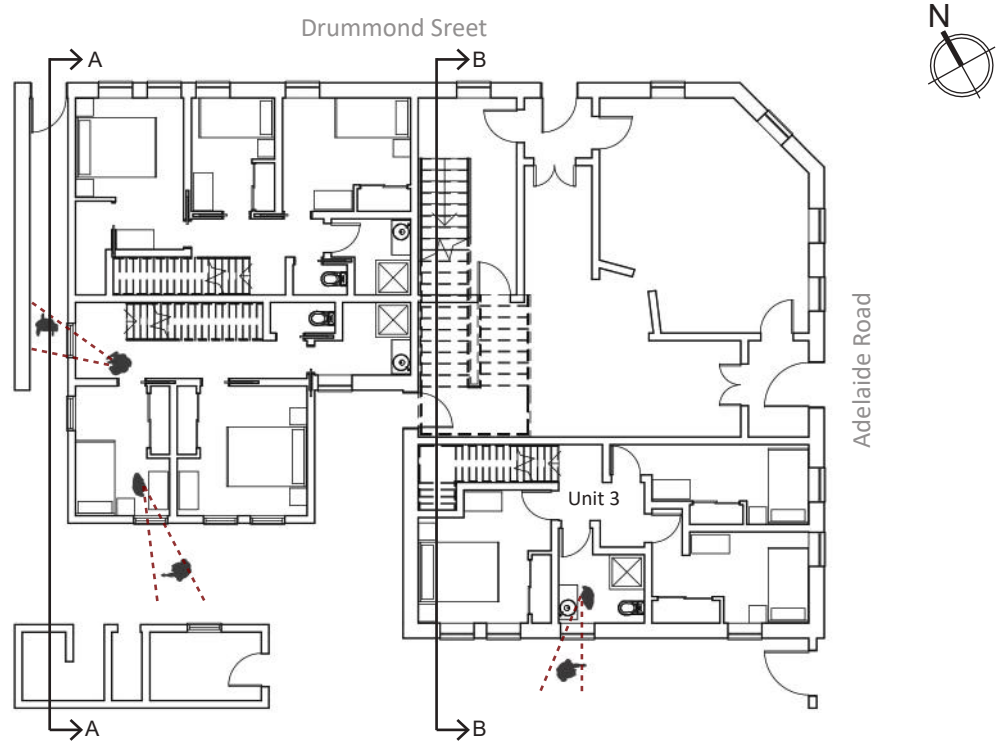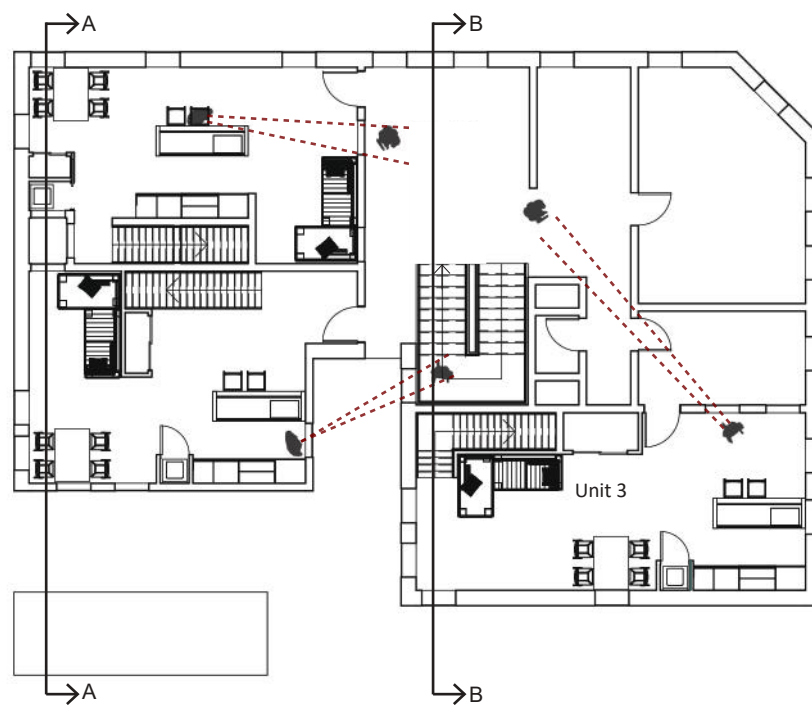
Fig 6.3 *Test planning of unit interiors*

Level 1
3900m

Ground level
0m
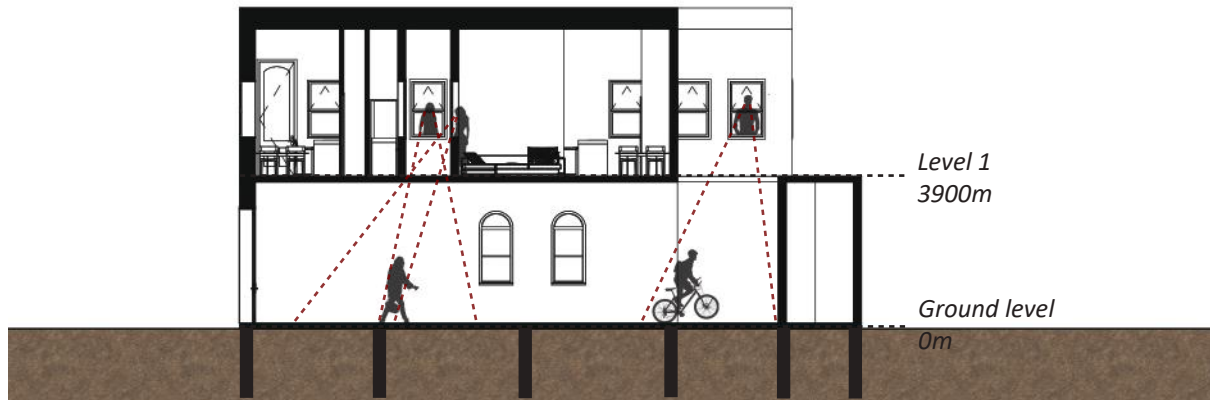
Level 1
3900m
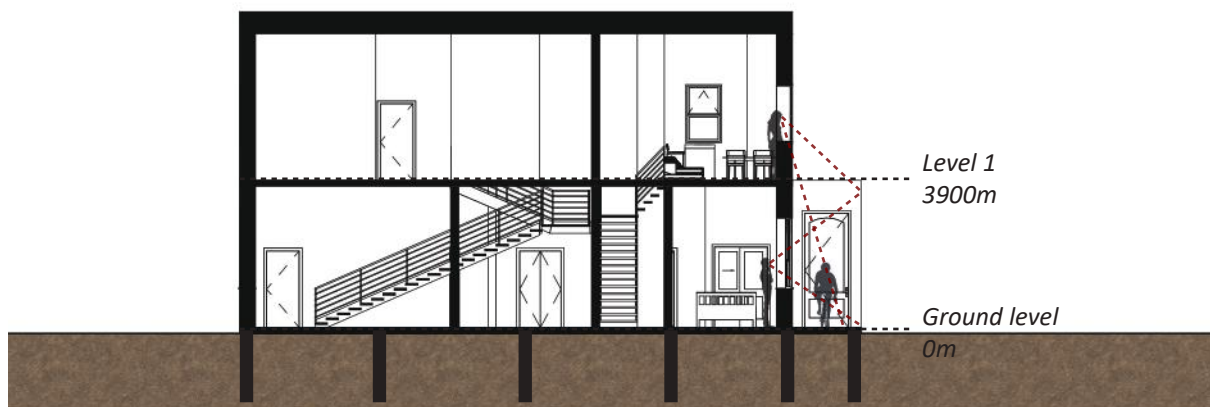
Ground level
0m

Fig 6.4 *Testing the natural surveillance provided by units onto building entrances*

Iteration two

Ground level plan
Scale 1:200

Drummond Sreet

A

B

N

Adelaide Road

Unit 3

A

B

Level one plan
Scale 1:200

A

B

Unit 3

A

B
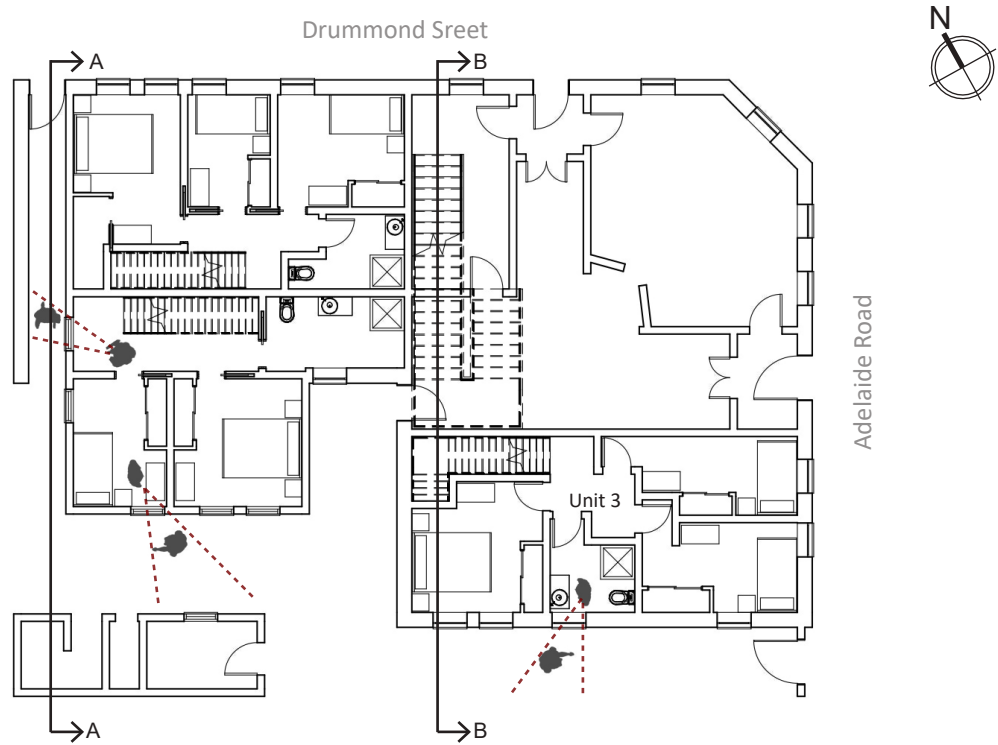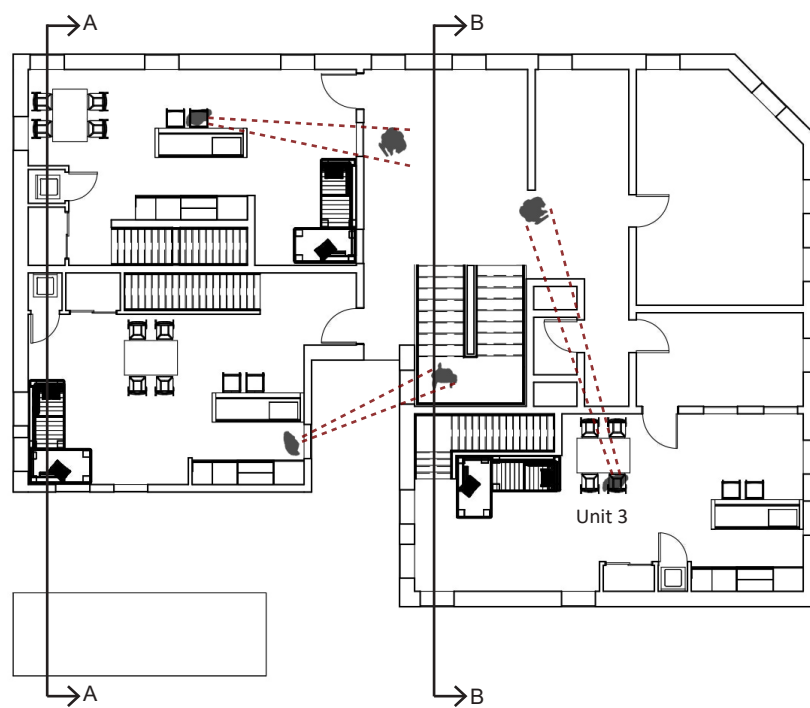
Fig 6.5 *Developed plan of unit interiors*

Level 1
3900m

Ground level
0m

Level 1
3900m

Ground level
0m
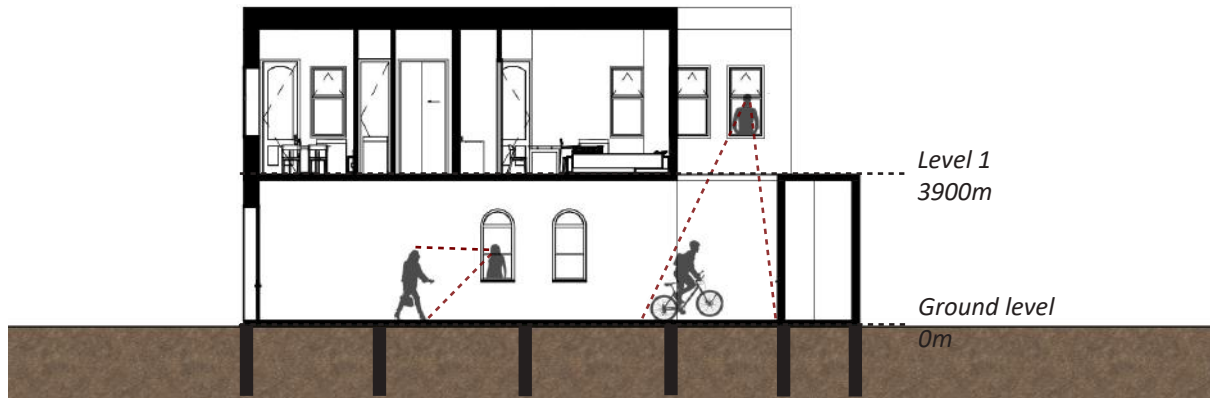
Fig 6.6 *Natural surveillance provided by units onto building entrances*
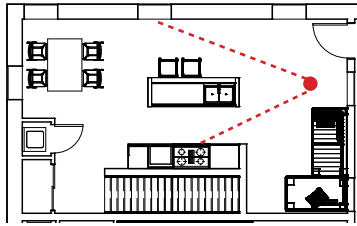
Fig 6.7 *Interior perspective of Unit 2*
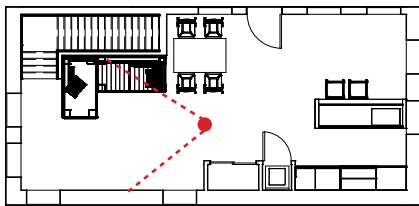
Fig 6.8 *Interior perspective of Unit 3*

Design phase three
The third phase of the design process examined case studies that address child-friendly play

-

- **Individual play**

- **Social play**

- **Active play** can include ball games, running, sliding, jumping, winging, rolling, hop-

- **Cognitive and creative play**

Case study 1: OB Kindergarten and Nursery / HIBINOSEKKEI + Youji no Shiro
Architect(s)
Location
Project year

OB Kindergarten and Nursery was designed to explore the way children move through space,

Firstly, it provides a quiet space with a large chalk board for child for children to draw on, al-

for children to move between spaces.

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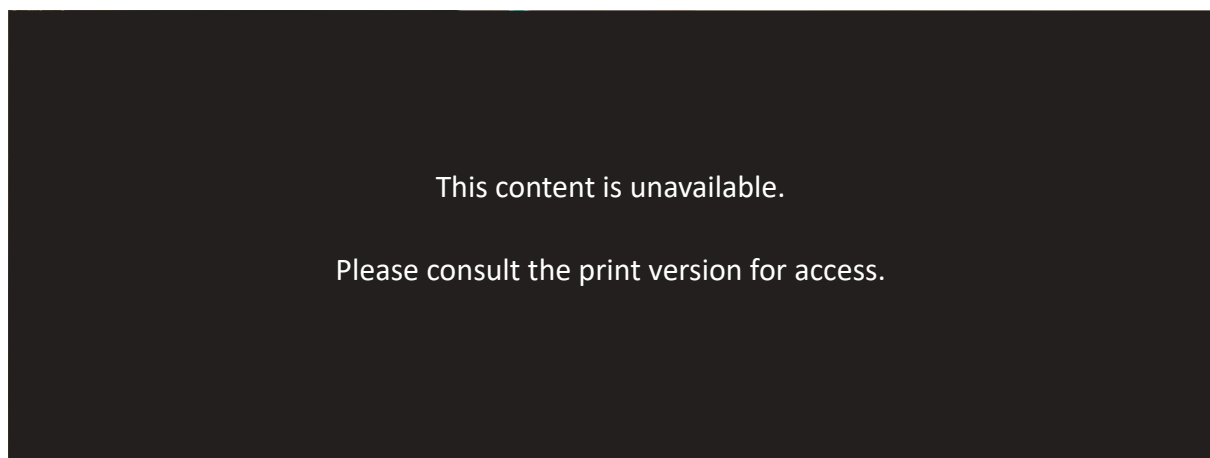
Fig 6.9 *Large chalk board for independent and creative play*

Fig 6.10 *Netted vertical tube providing creative and playful movement vertically between spaces*

Fig 6.11 *Sliding pole providing creative and playful movement vertically between spaces*

Case study 2: Swarovski Kristallwelten / Snøhetta
Architect(s)
Location - Austria
Project year

Swarovski Kristallwelten explored people's senses, and how their design could impact dif-

ten incorporated the idea of movement and how movement through space can be playful. Play elements that were included were, hanging ropes that allowed people to playfully move

Fig 6.12 *Hanging ropes for playful horizontal movement*

Fig 6.14 *Colourful seating for observing*

Fig 6.13 *Netted tower for playful vertical movement between spaces*

Fig 6.15 *Trampoline like features for jumping*

Case study 3: Woods of Net / Tezuka Architects
Architect(s) - Tezuka Architects
Location -
Project year

-

space that provides for play on both levels as well as play between the levels where children

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Fig 6.17 *Adult observing*

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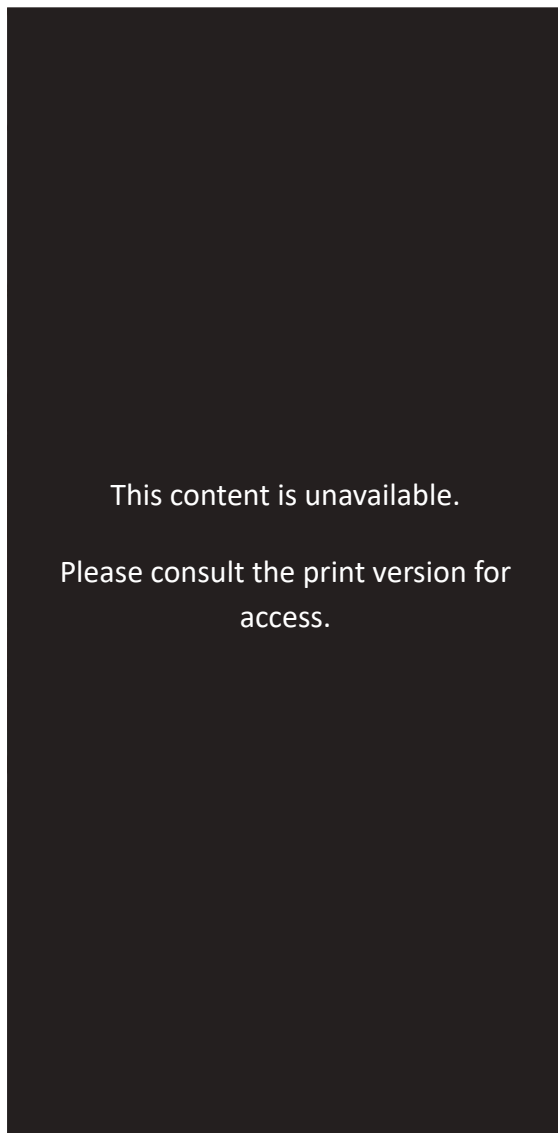
Fig 6.16 *Netted structure for play and wooden structure for observing*
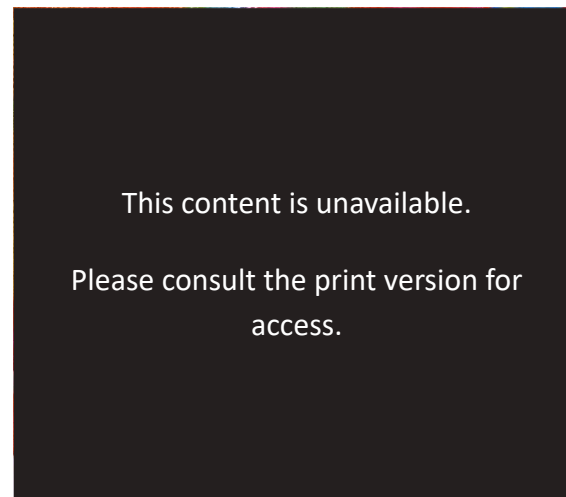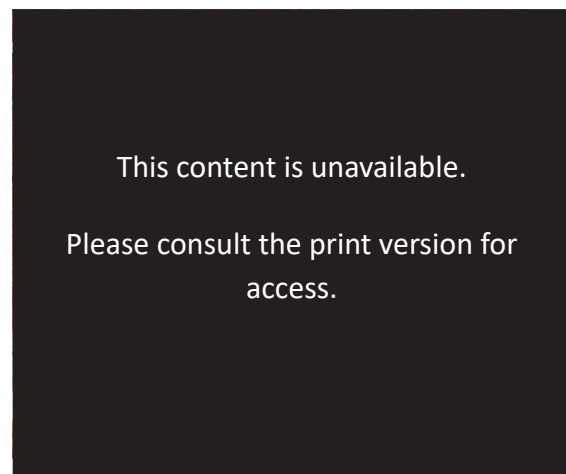
Fig 6.18 *Holes in netted structure for vertical movement between spaces*

Design phase three

hammock.

Social play explored spaces that could encourage social play between residents. This included a grassed area for ball games, and a small tower where children could role-play and provide a space away from the main play area to socialize.

-

-

forms using the sand.

Individual play
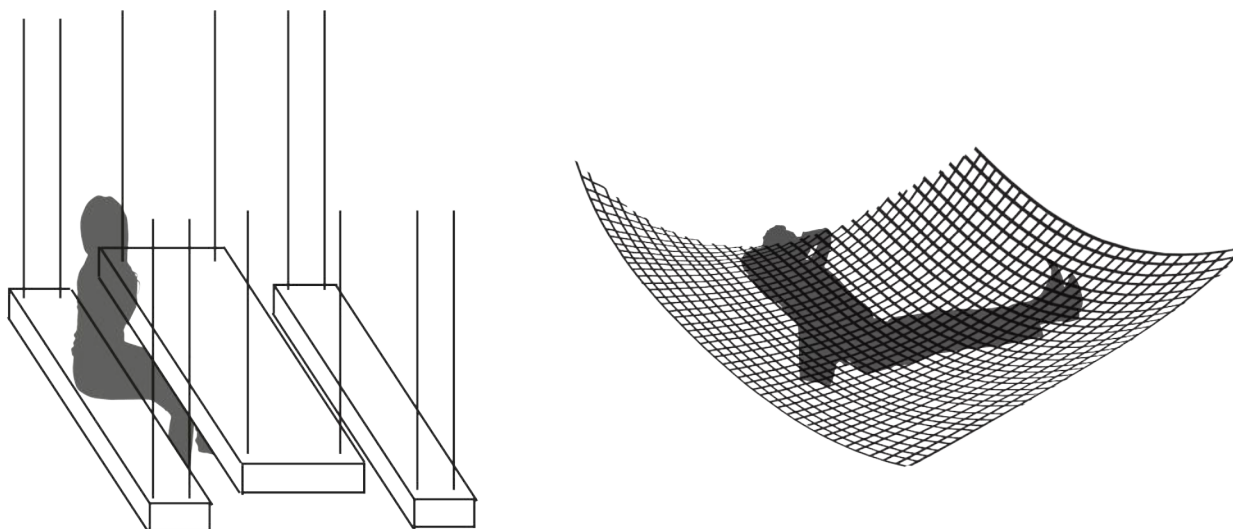
Fig 6.19 *Exploration of design elements for individual play*

Social play

Fig 6.20 *Exploration of design elements for social play*

Active play
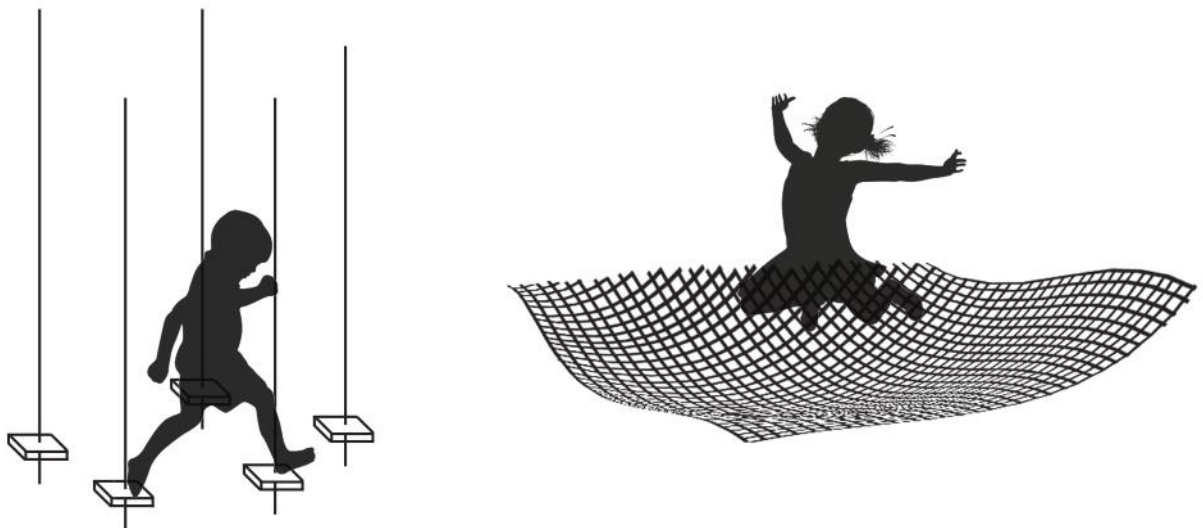
Fig 6.21 *Exploration of design elements for active play*

Cognitive and creative play
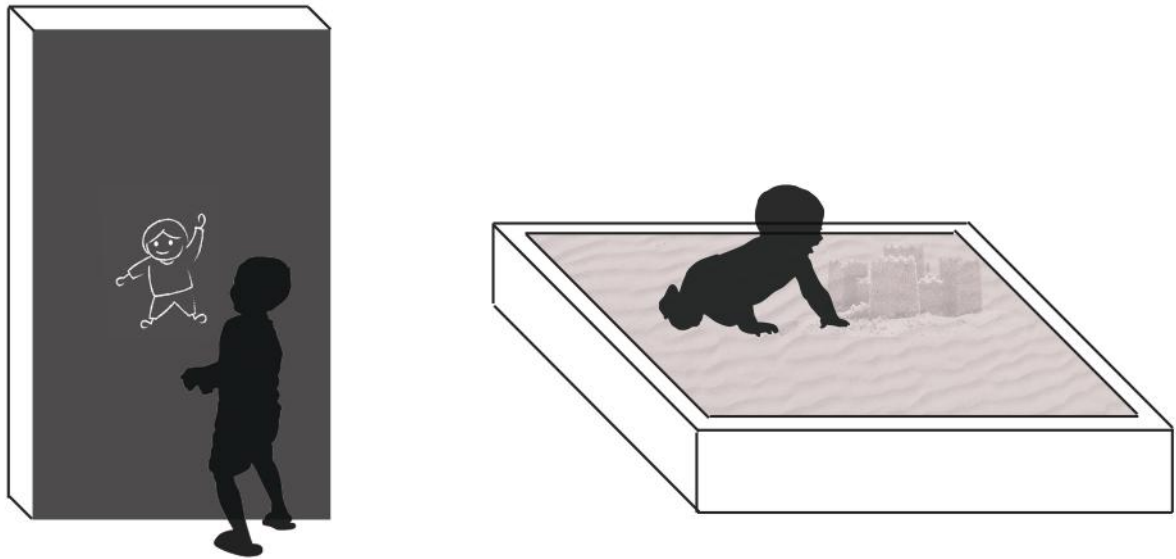
Fig 6.22 *Exploration of design elements for cognitive and creative play*

Design phase four

-

Ground level plan
Scale 1:200

Drummond Sreet

Adelaide Road

N

Level one plan
Scale 1:200

CIRCULATION

CAFE

PLAY SPACE FOR CHILDREN OLDER THAN 10

PRE-SCHOOL PLAY SPACE

PARENT OBSERVATION AREA

Fig 6.23 *Mapping areas in communal space*

Ground level plan
Scale 1:200

Drummond Sreet

N

Adelaide Road

Level one plan
Scale 1:200

CIRCULATION

CAFE

PLAY SPACE FOR CHILDREN OLDER THAN 10

PRE-SCHOOL PLAY SPACE

PARENT OBSERVATION AREA

Fig 6.24 *Mapping areas in communal space*

Design phase five

cal that this space was retained. However, it was important that this space was family-friendly, and because of this, the space was adapted into a café opposed to a bar.

Iteration 1

Ground level plan
Scale 1:200

Drummond Sreet

A

N

Adelaide Road

A
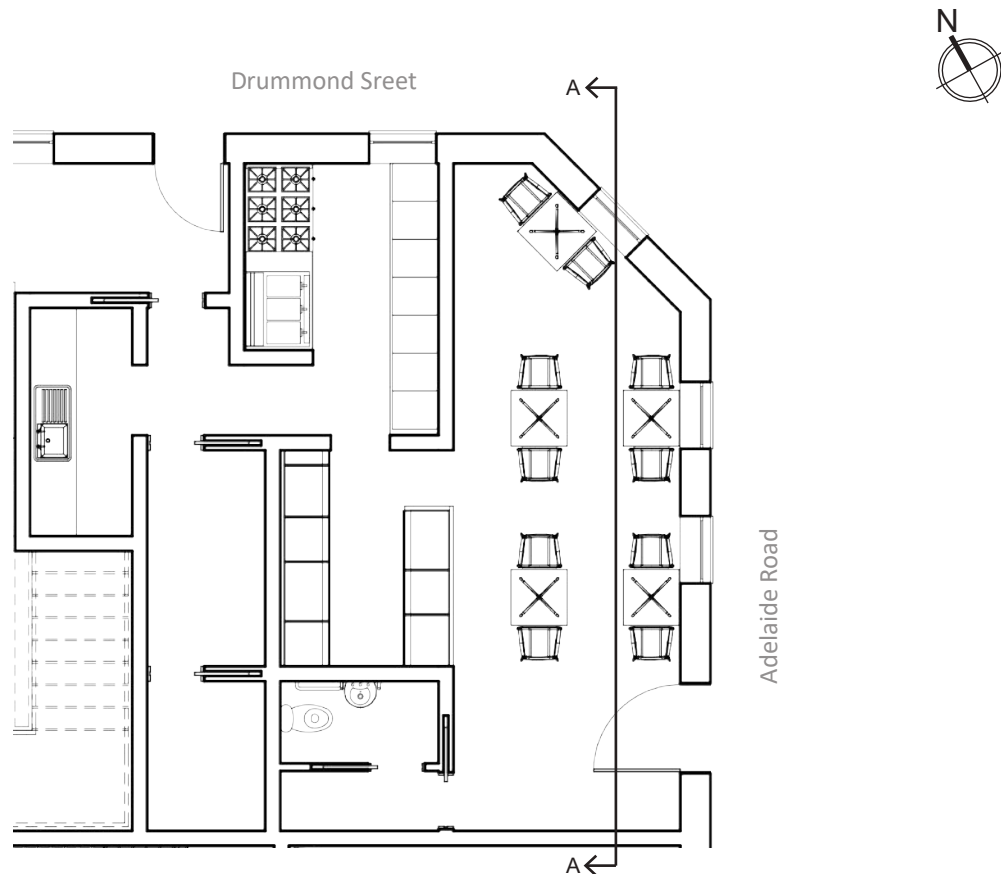
Fig 6.25 *Plan of cafe*

Section AA
Scale 1:100

Level 1
3900m

THE
TRAMWAY
CAFE
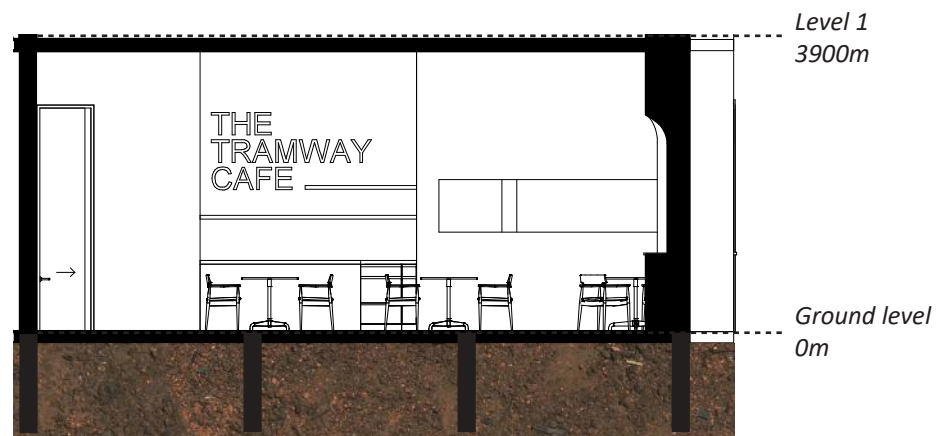
Ground level
0m

Fig 6.26 *Section of cafe*
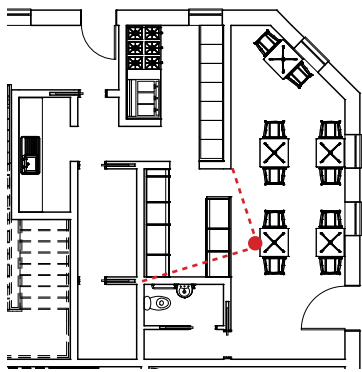
Fig 6.27 *Interior perspective of cafe*
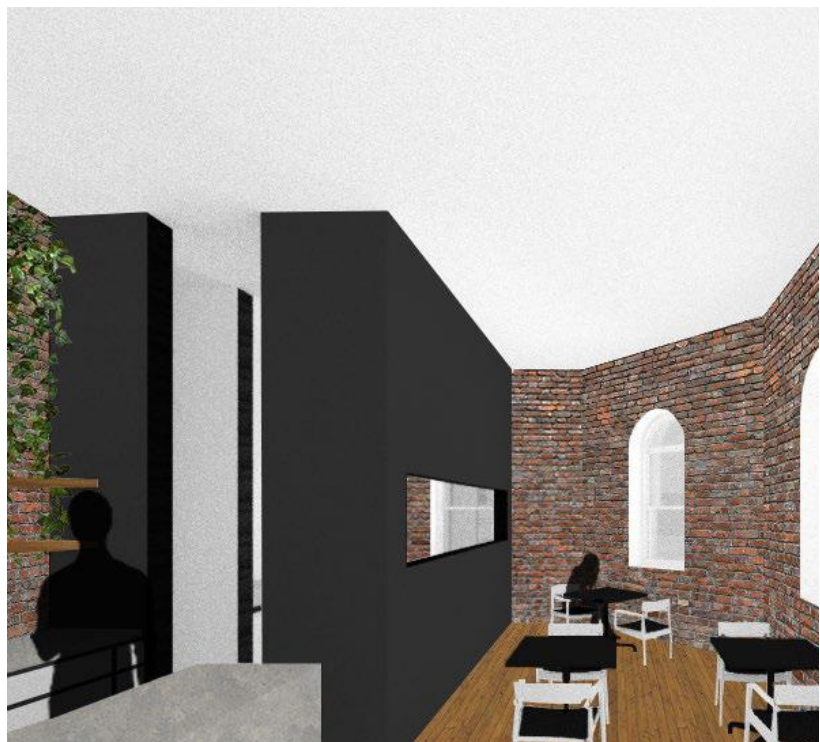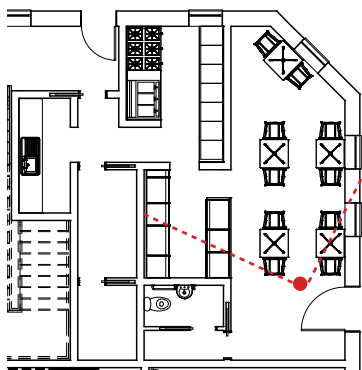
Fig 6.28 *Interior perspective of cafe*

Iteration 2

Ground level plan
Scale 1:200

N

Drummond Sreet

A

Adelaide Road

A
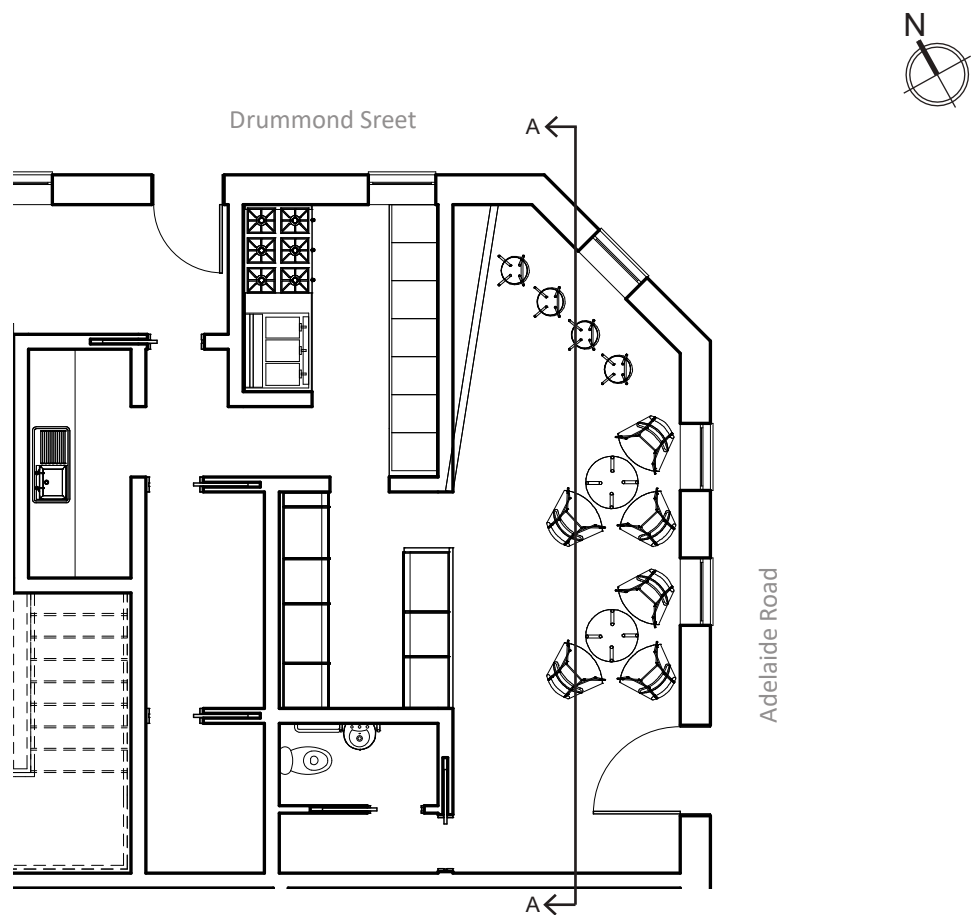
Fig 6.29 *Plan of cafe*

Section AA
Scale 1:100

Level 1
3900m

THE
TRAMWAY
CAFE

Ground level
0m
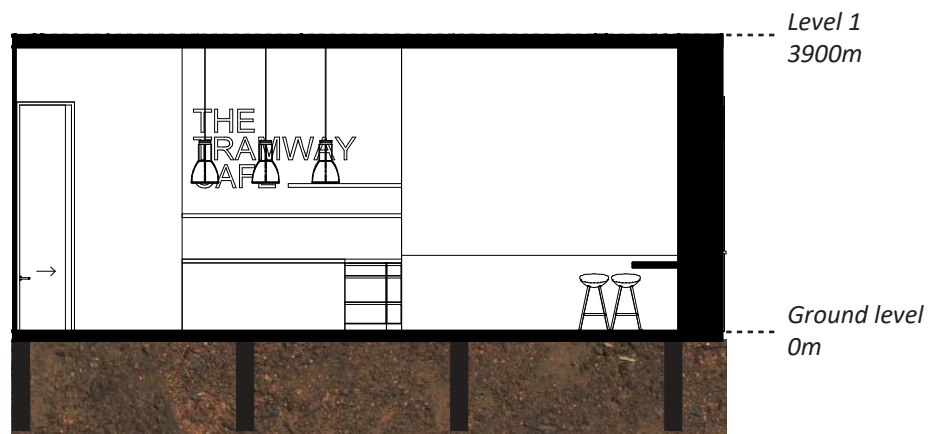
Fig 6.30 *Section of cafe*
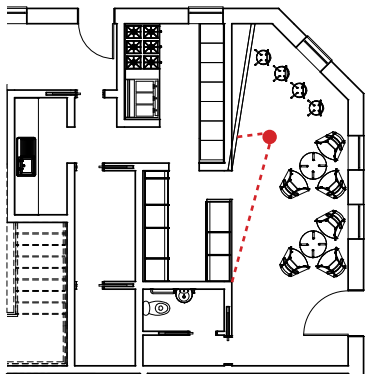
Fig 6.31 *Interior perspective of cafe*
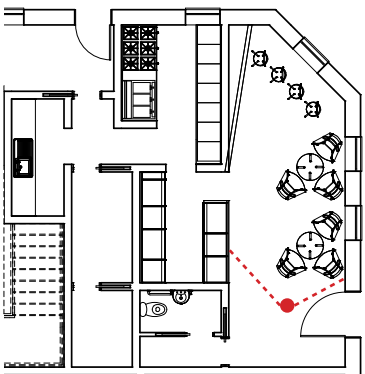
Fig 6.32 *Interior perspective of cafe*

Design proposal

design was created. Further, comments received from the reviews was taken into consider-

environment. Divided into a café, three units, and a communal space, this design provides a strategy of how unused buildings can be adapted into higher-density family-friendly housing,

Site plan *(scale 1:200)*

N

Drummond Sreet

Adelaide Road
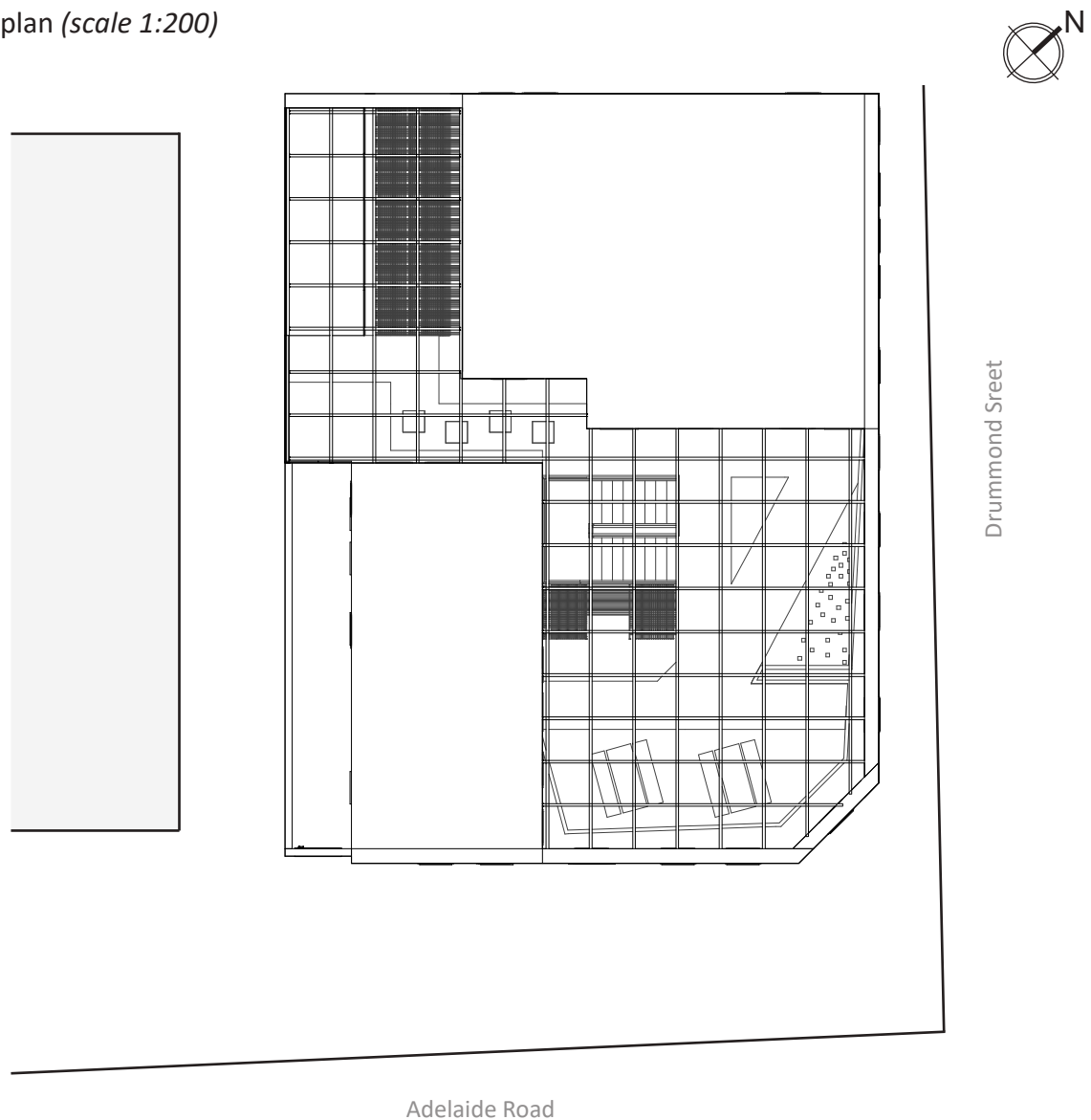
Fig 6.33 *Site plan*

Ground level plan *(scale 1:100)*

N
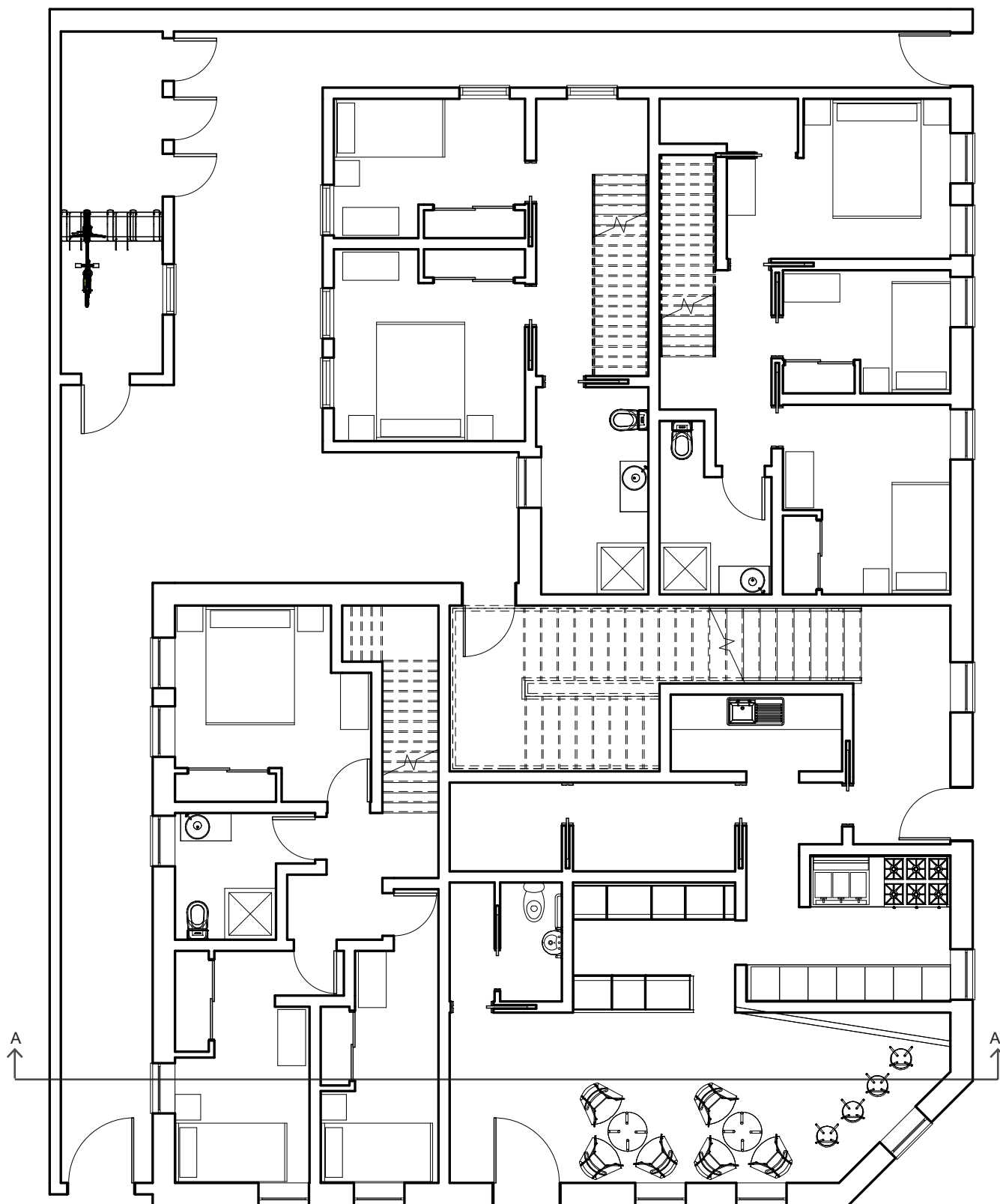
Fig 6.34 *Ground level plan of final design proposal*

Level one plan *(scale 1:100)*

N

A   A
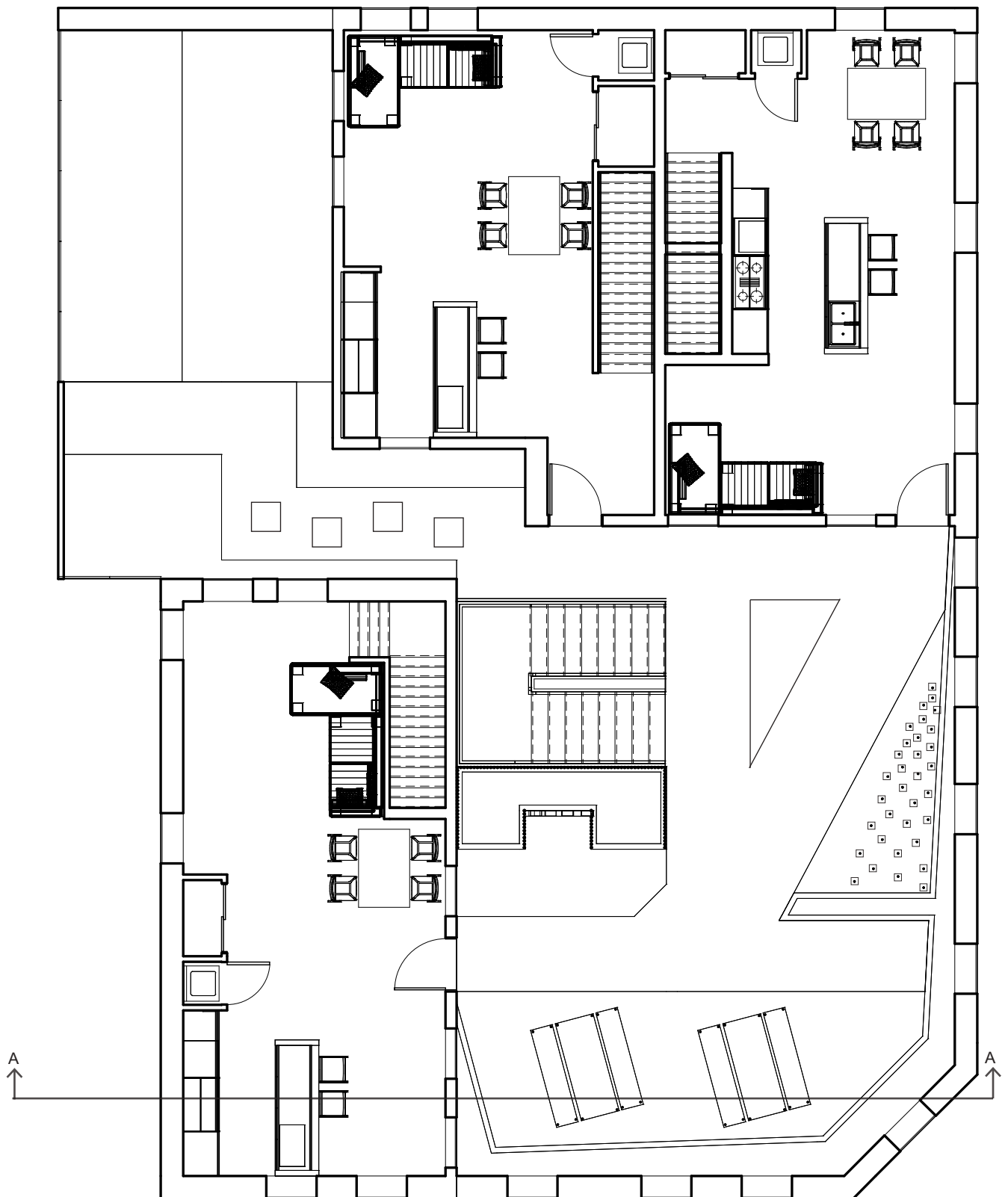
Fig 6.35 *Level one plan of final design proposal*

Level one plan *(scale 1:100)*
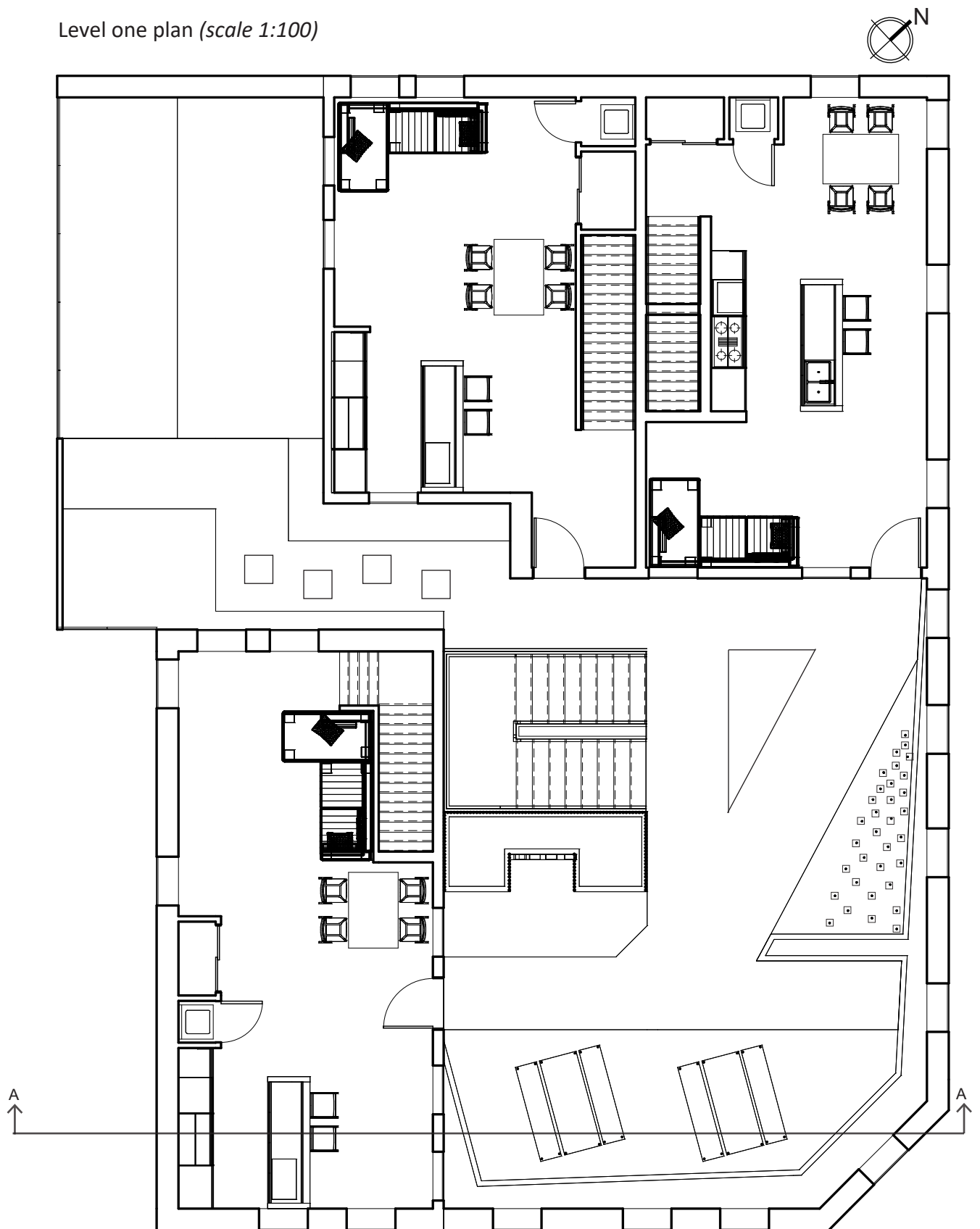
Fig 6.35 *Level one plan of final design proposal*

Section AA *(scale 1:100)*

Level 1
3900m

Ground level
0m
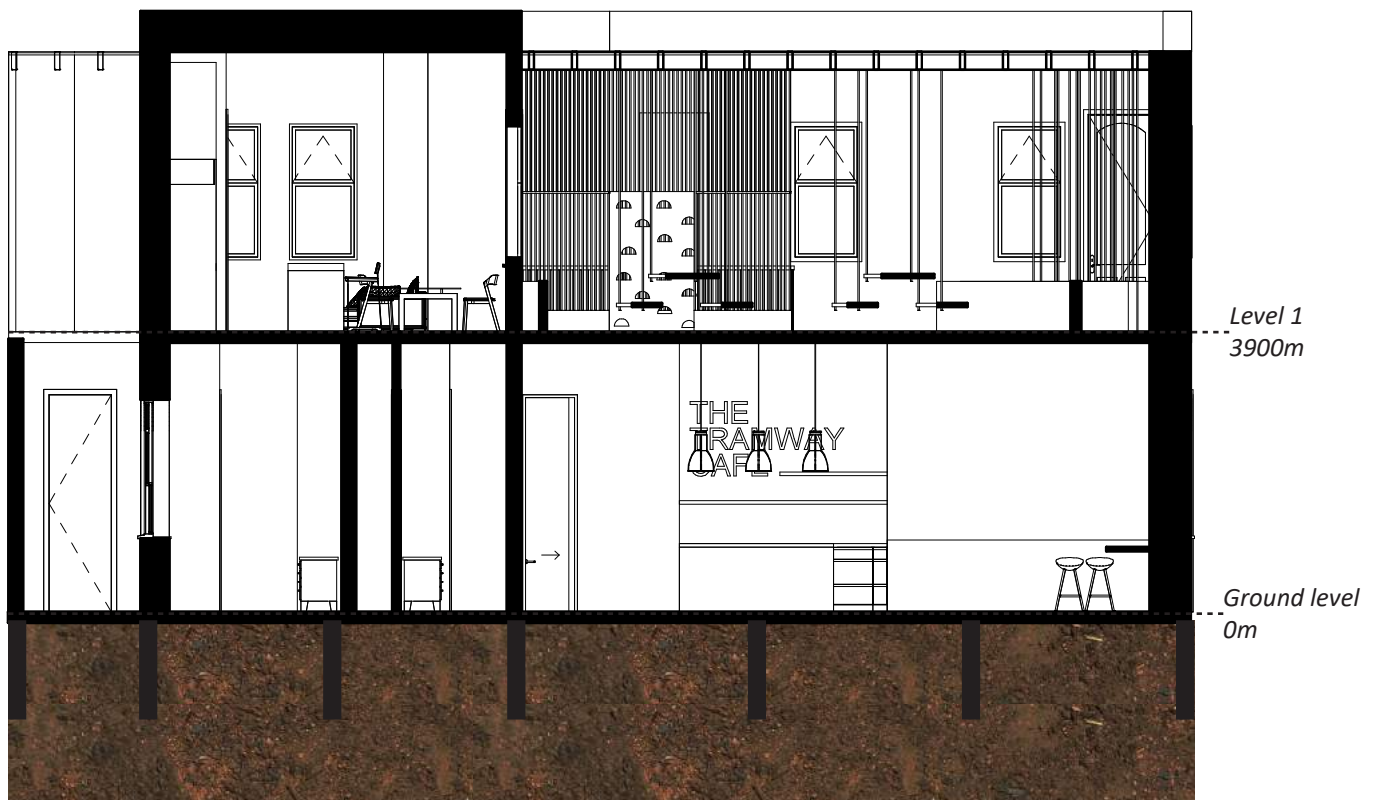
Fig 6.36 *Section AA of final design proposal*
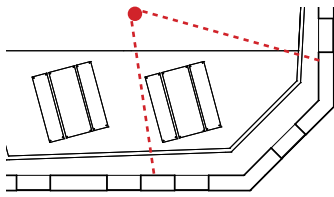
Fig 6.37 *Perspective of adult communal area*
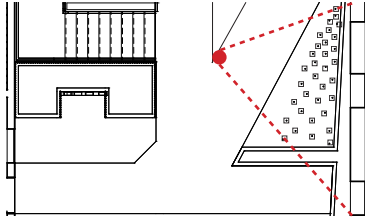
Fig 6.38 *Perspective of pre-school play area*
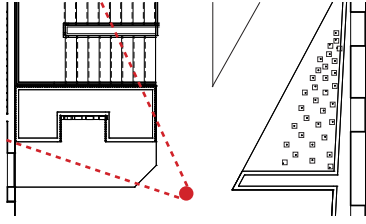
Fig 6.39 *Perspective of pre-school play area*
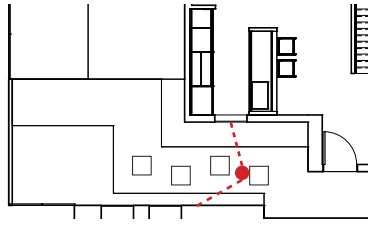
Fig 6.40 *Perspective of circulation in communal area*
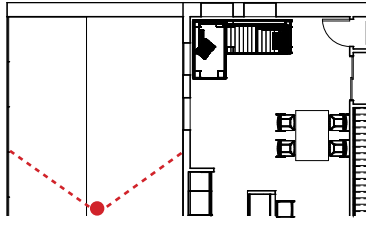
Fig 6.41 *Perspective of mature play area*

Summary
This thesis aimed to propose a higher-density housing strategy that families in the Wellington Region, and similar contexts could enjoy. The literature review in Chapter 2 highlighted issues that families living or who had lived in high-density had experienced from there time there. This included:

      - Sufficient space
      - Child-friendly play area
      - Private outdoor space
      - Privacy
      - Adaptable dwelling
      - Child friendly play area
      - Communal space/sense of community
      - Good security
      - Privacy
      - Soundproofing
      - Child-friendly access to amenities
      - Low traffic volumes

It also highlighted the need to understand who you are designing for, and the impact it can have when this is not done. The survey of the Wellington population found that peoples' perceptions were influenced by their experiences. What they perceived to be family-friendly was influenced by this. The survey also highlighted that Wellingtonians prefer to live in low-rise high-density environments opposed to medium or high-rise environments. The most important family-friendly dwelling attribute is a healthy living environment, and public transport is the most important amenity to have in a family-friendly neighbourhood. This information helped to create design criteria for the design proposal and site selection. The Tramway Hotel is an unused building on Adelaide Road in Mount Cook which provides access to most of the key amenities that were found to be important in a family-friendly neighbourhood, namely public transport, supermarket/grocer, and schools. In addition, it provided safe walkways for children to independently commute to places they required like schools and public transport. The case studies in Chapter 3 along with the literature review in Chapter 2 informed the development of design criteria as it provided possible solutions to the issues identified and the attributes required for a family-friendly home.

Evaluation of design proposal
At the unit scale, the design proposal provides sufficient space because it allows for the required furniture in each of the rooms, as well as storage and play space. Additionally, each unit is provided with extra storage on the ground level for other equipment, or as a space to work on small projects. There is also a bicycle shed located on the ground level for bike storage. Privacy is achieved by separating the private areas (e.g. bedrooms, bathroom) from the common areas (e.g. kitchen, living, dining).

At the building scale, the design proposal provides a child-friendly play area through multiple play spaces that accommodate the needs of pre-school and mature children, as well as a space for adults to interact. The pre-school play area is located in view of all the units, while the mature play area is in view of two of the units. Security was provided in the building by locating units to maximise natural surveillance over entrances into the building and units, and over common areas. Privacy and soundproofing were achieved by corresponding similar spaces of the units to neighbouring units.

At the urban scale, the site provides safe access to public transport, supermarkets, and schools. Traffic in the area is at the low end of the scale for traffic speed making commuting for children safe. Traffic analysis derived from Google is limited however as this information is based on typical traffic surrounding the site and it can change. The main issue of the site is the lack of play spaces, therefore, it was critical that this was provided for in the building.

As part of the adapting the Tramway Hotel, it was vital to recognize the building's historical significance. The bar was significant to the building therefore, it was important to retain this. However, because this building needed to be family-friendly, it was decided that this space would be adapted into a café.

Future research
The design proposal for this thesis started to identify the idea of the body in relationship to space, and how it can become playful. The design proposal has started to explore this in the communal areas of the building, however, it would be interesting to see how this could be adapted into the units as well.

Reference list

1100 Architect. (n.d.). Main: East Side Lofts. Retrieved from http://www.1100architect.com/portfolio-items/main-east-side-lofts/

Appold, S., & Yuen, B. (2007). Families in Flats, Revisited. Urban Studies, 44(3), 569-589.

ArchDaily. (2012). Savonnerie Heymans / MDW Architecture. Retrieved from https://www.archdaily.com/220116/savonnerie-heymans-mdw-architecture

ArchDaily. (2014). Wilton Close / Cymon Allfrey Architects. Retrieved from https://www.archdaily.com/518334/wilton-close-cymon-allfrey-architects

ArchDaily. (2015). OB Kindergarten and Nursery/HIBINOSEKKEI + Youji no Shiro. Retrieved from https://www.archdaily.com/635225/ob-kindergarten-and-nursery-hibinosekkei-youji-no-shiro

ArchDaily. (2015). Swarovski Kristallwelten/Snøhetta. Retrieved from https://www.archdaily.com/625188/swarovski-kristallwelten-snohetta

ArchDaily. (2017). Main East Side Lofts / 1100 Architect. Retrieved from https://www.archdaily.com/869809/main-east-side-lofts-1100-architect

Basulto, D. (2009). Woods of Net/Tezuka Architects. Retrieved from https://www.archdaily.com/39223/woods-of-net-tezuka-architects

Beer, A. R., Delshammar, T., & Schildwacht, P. (2003). A Changing Understanding of the Role of Greenspace in High-density Housing: A European Perspective. Built Environment, 29(2), 132-143. Retrieved from https://www-jstor- org.helicon.vuw.ac.nz/stable/pdf/23288812.pdf

Bullen, P. A. (2007). Adaptive reuse and sustainability of commercial buildings. Facilities, 25(1/2), 20-31. Retrieved from http://www-emeraldinsight-com.helicon.vuw.ac.nz/doi/pdf-plus/10.1108/02632770710716911

Buys, L., Vine, D., & Miller, E. (2013). What Makes Inner City High Density Liveable? Insight from Residents in Brisbane, Australia. Environmental Management and Sustainable Development, 2(1), 14-33. doi: 10.5296/emsd.v2i1.3099

Carroll, P., Witten, K., & Kearns, R. (2011). Housing Intensification in Auckland, New Zealand: Implications for Children and Families. Housing Studies, 26(3), 353-367. Retrieved from https://www-tandfonline-com.helicon.vuw.ac.nz/doi/pdf/10.1080/02673037.2011.542096?needAccess=true

Cho, I. S., Trivic, Z., & Nasution, I. (2017). New high-density housing developments in Asia: qualities, potential and challenges. Journal of Urban Design, 22(5), 613-636.

City of Vancouver. (1992). High-Density Housing for Families with Children Guidelines. Vancouver: Retrieved from https://guidelines.vancouver.ca/H004.pdf

Degnon, D. K. (2017). Adaptive reuse trending in industry. Northeast Pennsylvania Business Journal, 32(2), 27. Retrieved from http://search-proquest-com.helicon.vuw.ac.nz/docview/1869472747?rfr-id=info%3Axri%2Fsid%2Aprimo

Department of Building and Housing. (2011). Compliance Document for New Zealand Building Code Clause G1 Personal Hygiene. Retrieved from https://www.building.govt.nz/assets/Uploads/building-code-compliance/g-services-and-facilities/g1-personal-hygiene/asvm/G1-personal-hygiene-2nd-edition-amendment-6.pdf

Devlin, C. (2018). Wellington to make concrete plans for 'affordable' CBD apartments. Retrieved from https://www.stuff.co.nz/business/102476263/wellington-to-make-concrete-plans-for-affordable-cbd-apartments

Dixon, J., & Dupuis, A. (2003). Urban Intensification in Auckland, New Zealand: A Challenge for New Urbanism. Housing Studies, 18(3), 252-268. Retrieved from https://www.research-gate.net/publication/248960615_Urban_Intensification_in_Auckland_New_Zealand_A_Challenge_for_New_Urbanism

Donovan, J. (2016). Enabling play friendly places. Environment Design Guide, 1-18. Retrieved from https://www.jstor.org/stable/26152194?seq=1#page_scan_tab_contents

Easthope, H., & Tice, A. (2011). Children in Apartments: Implications for the Compact City. Urban Policy and Research, 29(4), 415-434. doi: 10.1080/08111146.2011.627834

Ferguson, G. (1994). Building the New Zealand dream. Palmerston North, New Zealand: Dunmore Press with assistance of the Historical Branch, Dept. of Internal Affairs.

Fleming, I., Baum, A., & Weiss, L. (1987). Social Density and perceived Control as Mediators of Crowding Stress in High-Density Residential Neighborhoods. Journal of Personality and Social Psychology, 52(5), 899-906.

Groc, I. (2007). Family Friendly. Planning; Chicago, 73(6), 8-13.

Haigh, F., Ng Chok., & Harris, P. (2011). Housing density and health: A review of the literature and Health Impact Assessments. University of New South Wales: Sydney. Retrieved from http://hiaconnect.edu.au/wp-content/uploads/2013/04/housing_density_HIA_review1.pdf

Hart, R. (2002). Containing children: some lessons on planning for play from New York City. Environment and Urbanization, 14(2), 135-148. Retrieved from https://journals.sagepub.com/doi/abs/10.1177/095624780201400211#articleCitationDownloadContainer

Kerr, S. M., Gibson, C., & Klocker, N. (2018). Parenting and neighbouring in the consolidating city: The emotional   geographies of sound in apartments. Elsevier, 26, 1-8.

.id. (2013). Family Types. Retrieved from https://profile.idnz.co.nz/wellington/family?We-bID=380

.id. (2016). Welcome to Wellington City population forecasts. Retrieved from https://fore-cast.idnz.co.nz/wellington

.id. (2016). Wellington City: Population and age structure map. Retrieved from https://fore-cast.idnz.co.nz/wellington/population-age-structure-map

.id. (2016). Wellington City: Population, households and dwellings. Retrieved from https://forecast.idnz.co.nz/wellington/population-households-dwellings

MacDonald, J. (2015). Community Design and Crime: The Impact of Housing and the Built Environment. Crime and Justice, 44(1), 333-383. Retrieved from http://www-journals-uchi-cago-edu.helicon.vuw.ac.nz/doi/full/10.1086/681558

Marcus, C. C., & Sarkissian, W. (1986). Housing as if people mattered: Site design guidelines for the planning of medium-density family housing. Retrieved from https://books.google.co.nz/books?hl=en&lr=&id=M7YwDwAAQBAJ&oi=fnd&pg=PA1&dq=post+occupancy+study+of+families+living+in+high+density+housing&ots=RmFmamGRue&sig=_Cqxyzlivpe3m-OxsmKVjsTwDJZM#v=onepage&q=post%20occupancy%20study%20of%20families%20living%20in%20high%20density%20housing&f=false

Marriage, G. (2010). Minimum vs Maximum: size and the New Zealand House. Paper pre-sented at the Australian Housing Researchers Conference, Auckland, New Zealand. Retrieved from https://www.academia.edu/3712795/Minimum_vs_Maximum_size_and_the_New_Zealand_House_-_first_published_in_the_Australasian_Housing_Researchers_Conference_Auckland_2010

Mertens, S., & Iraguha, T. (2016). 2015 Housing assignment. Retrieved from https://issuu.com/spandandas/docs/2015-mixed_use_housing_assignment

Ministry of Business, Innovation and Employment. (2019). Register of earthquake-prone buildings (EPB Register). Retrieved from https://epbr.building.govt.nz/

Moore, C. (2016). E3 Berlin Europe's first wooden high-rise. Buildings Guide, 1-9.

Prezza, M., Pilloni, S., Morabito,C., Sersante, C., Alparone, F. R., & Giuliani, M. V. (2001). Jour-nal of Community and Applied Social Psychology, 11, 435-450. doi: 10.1002/casp.643

Raynor, K. (2018). Social representations of children in higher density housing: enviable, inevitable or evil? Housing Studies, 1466-1810. doi: 10.1080/02673037.2018.1424807

Remøy, H., & Van Der Voordt, T. (2014). Adaptive reuse of office buildings into housing op-portunities ad risks. Building Research & Information, 42(3), 381-390.

Rudner, J., Kennedy, M., Holland, W., Wilks, J., Donovan, J., Neville, D., Shaw, M., Budge, T., & Butt, A. (2011). The place of our children in community building: Turning theory into practice. Children's and young people's Engagement Report. Bendigo: La Trobe University: Retrieved from https://www.researchgate.net/publication/274253757_The_place_of_our_children_in_community_building_Turning_theory_into_practice_Policy_review_report_Vol_1

Schrader, B. (2013). Housing. Retrieved from https://teara.govt.nz/en/housing/print

Shepard, T., & Matthews, T. (2016). Auckland Design Manual: High density Family Housing. Auckland: Auckland Council. Retrieved from http://www.aucklanddesignmanual.co.nz/resources/articles/high density family housing

Towers, G. (2005). An Introduction to Urban Housing Design at Home in the City. Oxford, Burlington: Architectural Press.

Vancouver City Council. (1992). High-Density Housing for Families with Children Guidelines. Vancouver: Retrieved from https://guidelines.vancouver.ca/H004.pdf

Wellington City Council (2008). Adelaide Road – Planning for the Future. Wellington, New Zealand: Retrieved from https://wellington.govt.nz/~/media/your-council/plans-policies-and-bylaws/plans-and-policies/a-to-z/adelaiderd/files/adelaiderd-framework.pdf

Wellington City Council (2012). Heritage (Wellington City District Plan No. 20). Wellington, New Zealand: Retrieved from https://wellington.govt.nz/~/media/your-council/plans-policies-and-bylaws/district-plan/volume01/files/v1chap20.pdf?la=en

Wellington City Council (n.d.). Heritage Rules (Wellington District Plan No. 21). Wellington New Zealand: Retrieved from https://wellington.govt.nz/~/media/your-council/plans-policies-and-bylaws/district-plan/volume01/files/v1chap21.pdf?la=en

Wellington City Council (2015). Wellington Urban Growth Plan. Wellington, New Zealand: Retrieved from https://wellington.govt.nz/~/media/your-council/plans-policies-and-bylaws/plans-and-policies/a-to-z/wgtn-urban-growth/wgtn-urban-growth-plan2015.pdf

Wellington City Council (2017). Tramway Hotel (Former). Retrieved from http://www.wellingtoncityheritage.org.nz/buildings/301-450/397-tramway-hotel

Whitzman, C., & Mizrachi, D. (2012). Creating Child-Friendly High-Rise Environments: Beyond Wastelands and Glasshouses. Urban Policy and Research, 30(3), 233-249. doi: 10.1080/08111146.2012.663729

Part one

Before the final design criteria was defined, a series of initial design explorations were done to explore how the Tramway Hotel could be adapted into family-friendly higher-density housing. Part one of the initial tests were done prior to the first review.

Iteration one:

Ground level plan *(scale 1:200)*
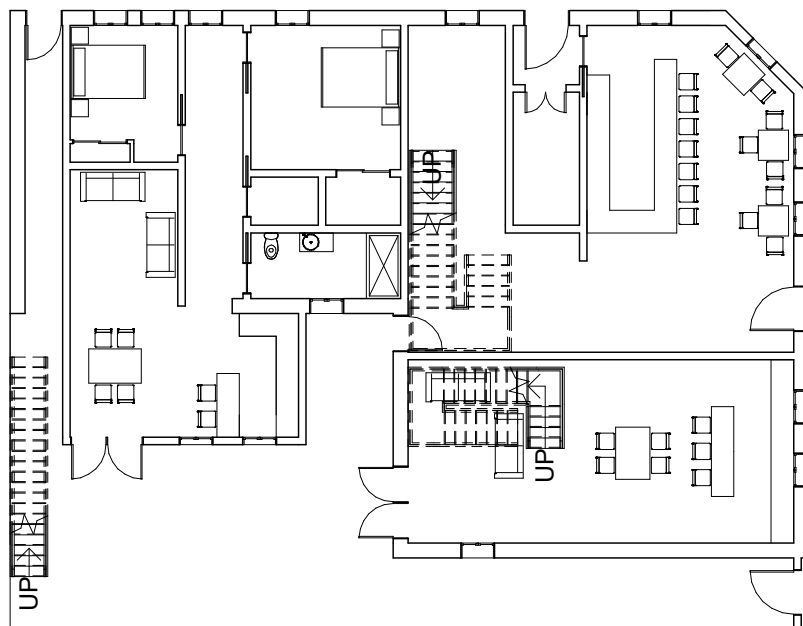
Level one plan *(scale 1:200)*
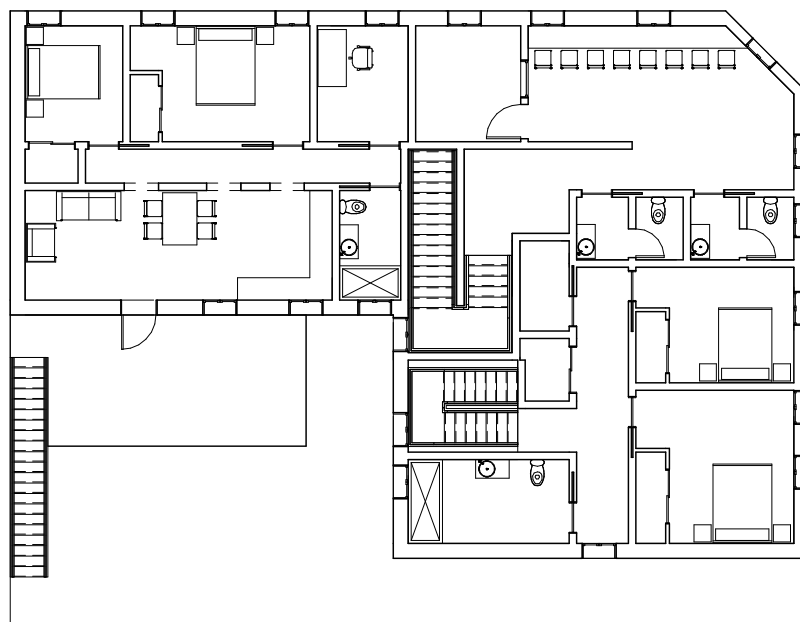
Iteration two:
Ground level plan *(scale 1:200)*
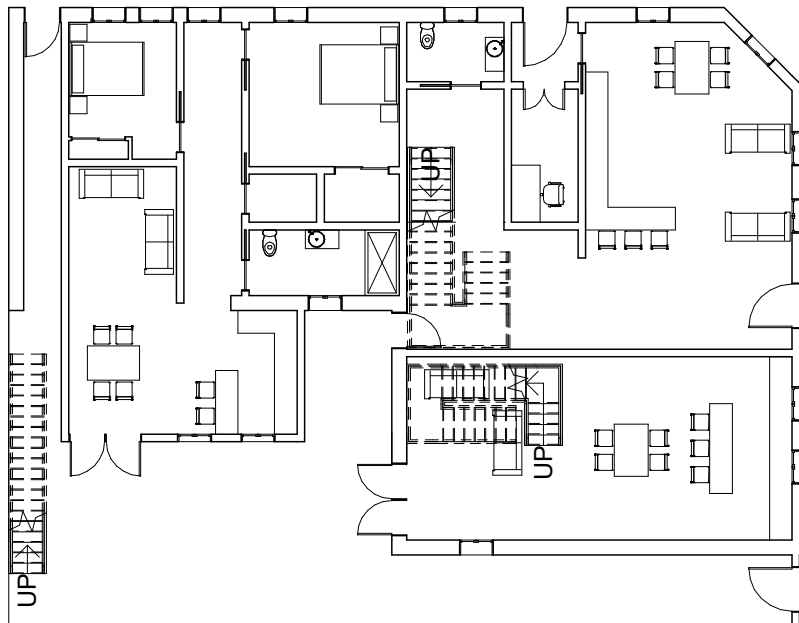
Level one plan *(scale 1:200)*

Iteration three:
Ground level plan *(scale 1:200)*
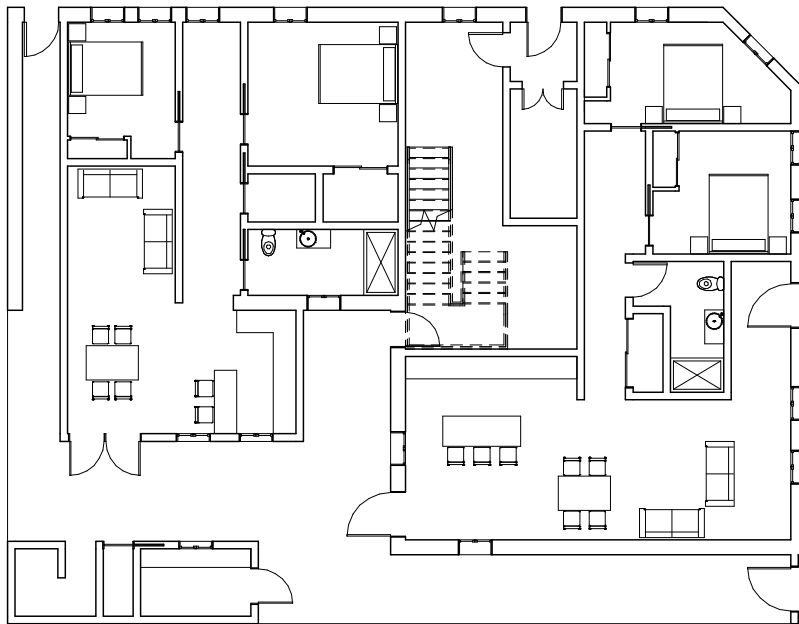
Level one plan *(scale 1:200)*
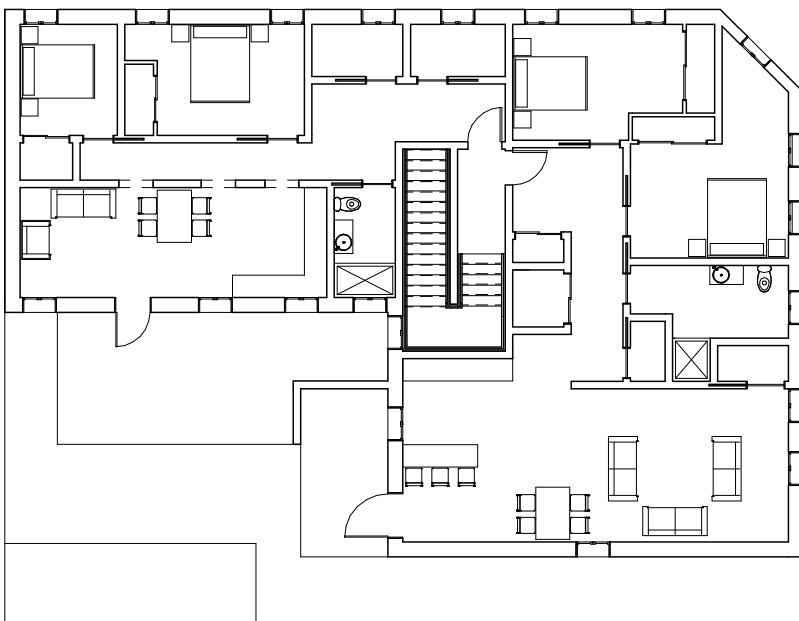
Iteration four:
Ground level plan *(scale 1:200)*
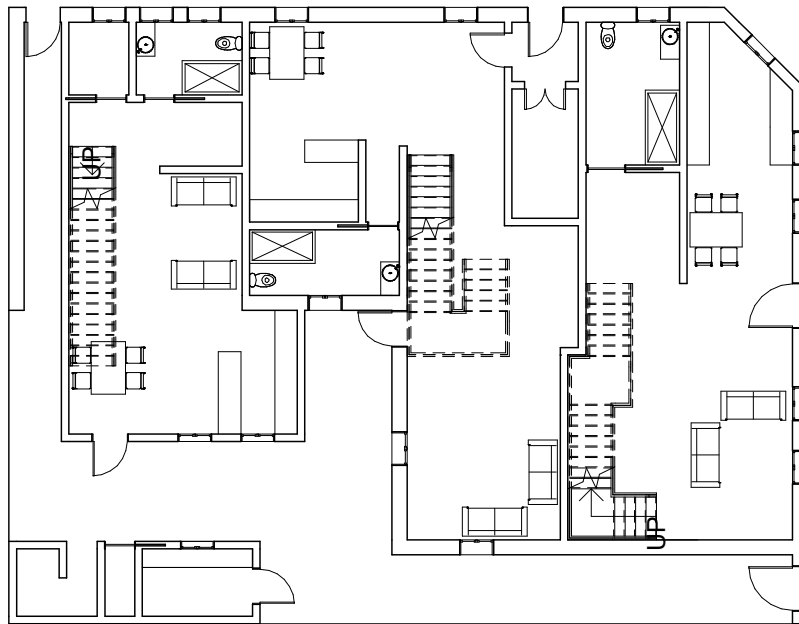
Level one plan *(scale 1:200)*
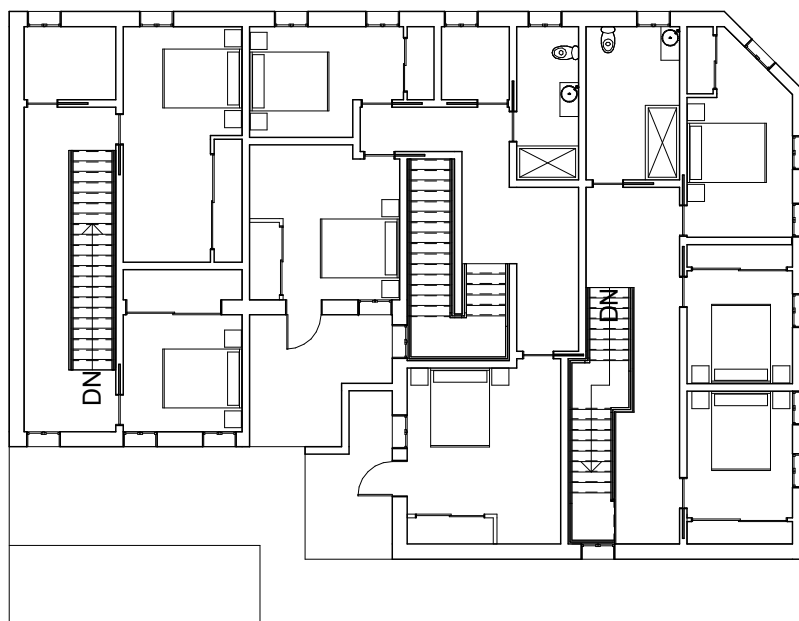
Iteration five:
Ground level plan *(scale 1:200)*
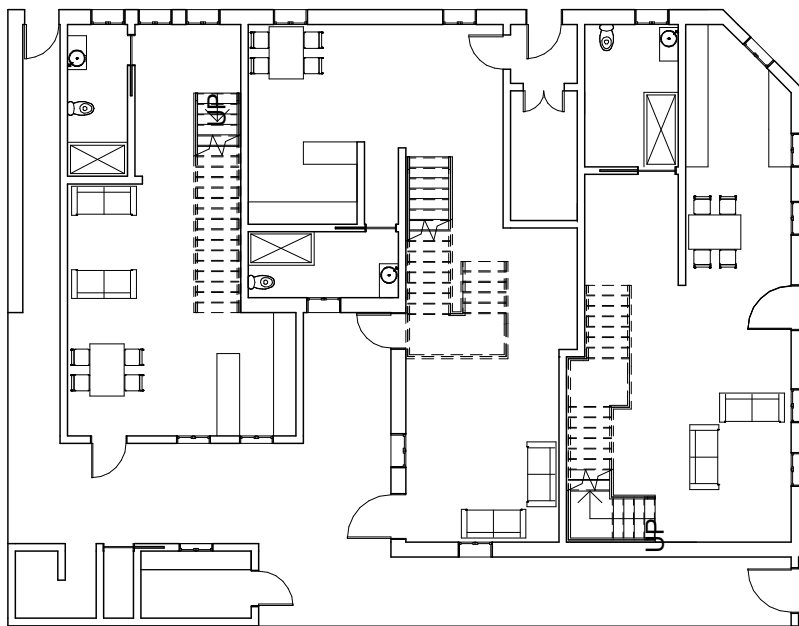
Level one plan *(scale 1:200)*
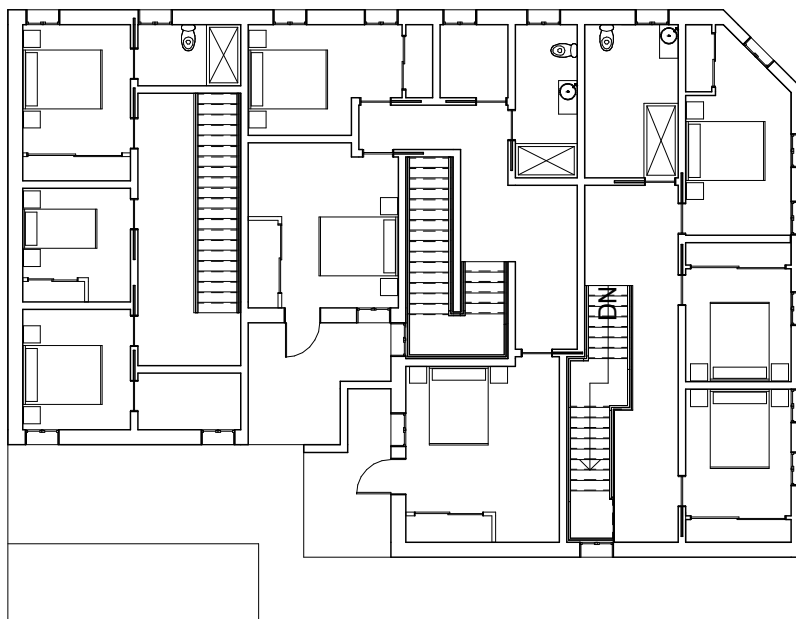
Part two

After the first review, some of the issues identified regarding the design were that by trying to build units in the existing building form, it was restricting the design. Therefore, the following iterations consider what happens if only the street façade is retained. Another issue that was raised was privacy. Because the building is adjacent to a footpath privacy was a significant issue. It was suggested that the units could be set back from the building exterior to improve privacy. By doing this bedrooms could be located on the gound floor, allowing common areas to recieve more daylght by locating them on level one.

Iteration one: retaining only the street façade
Ground level plan *(scale 1:200)*
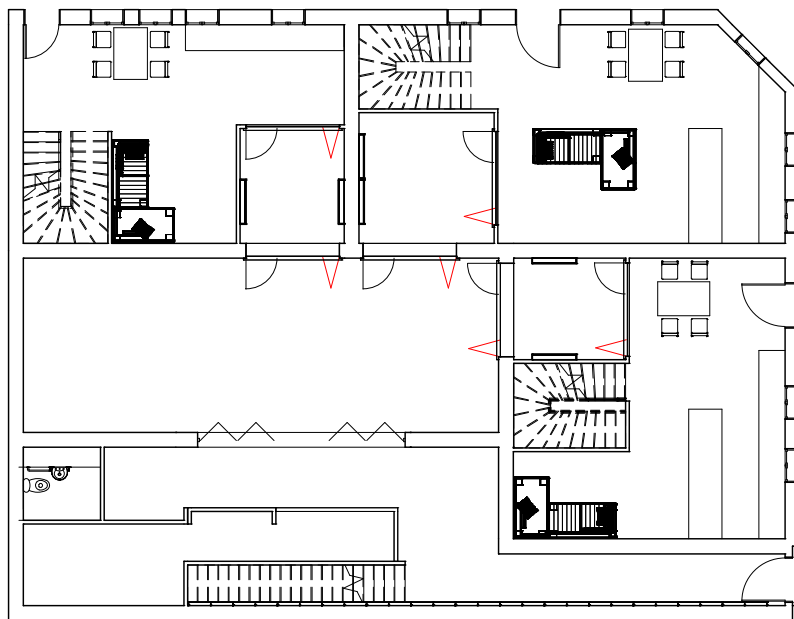
Level one plan *(scale 1:200)*
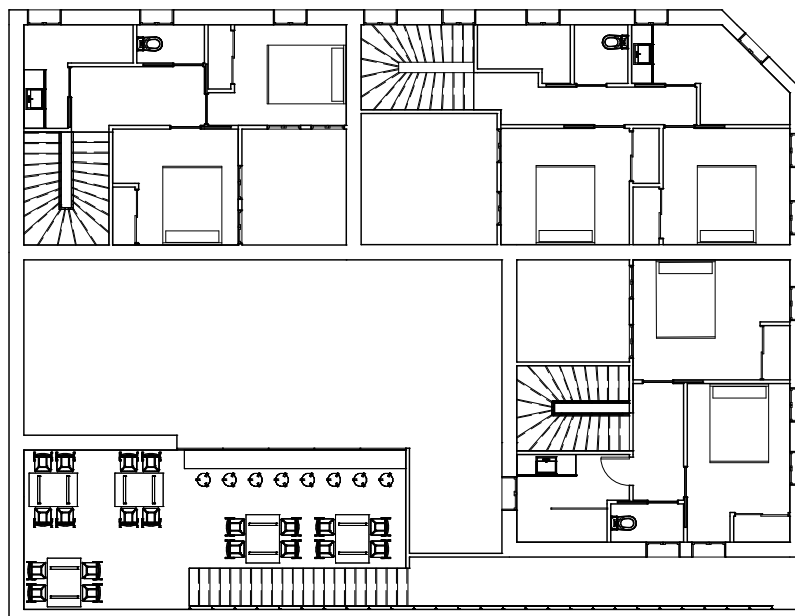
Iteration two: setting back the units from the building exterior
Ground level plan *(scale 1:200)*
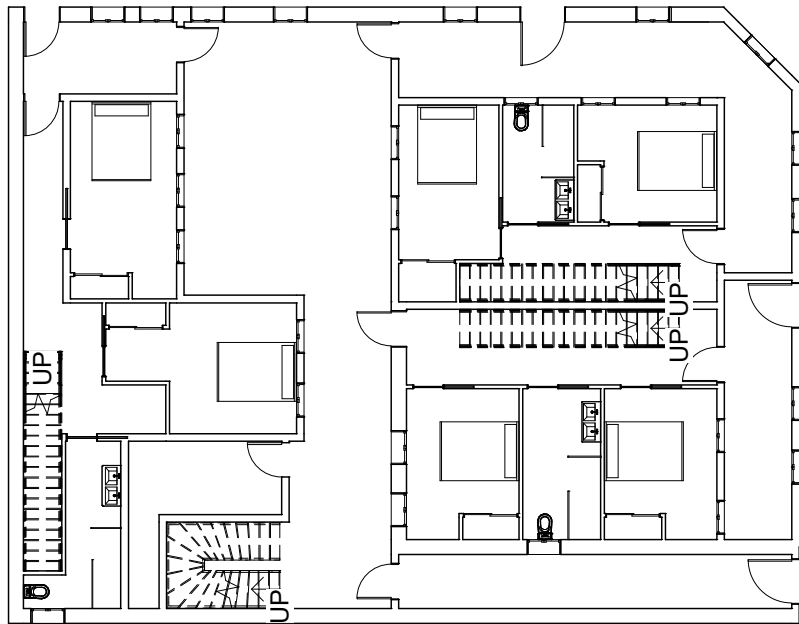
Level one plan *(scale 1:200)*
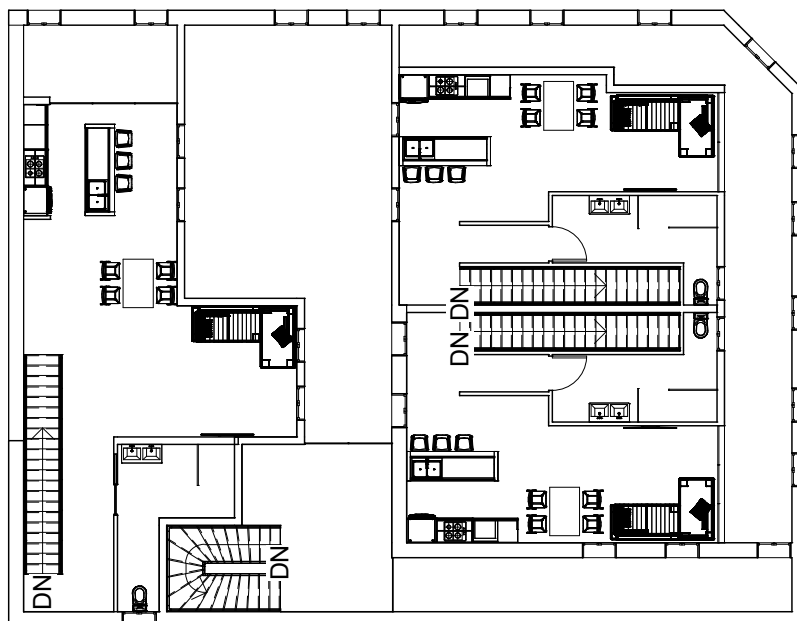
Exploration of play elements
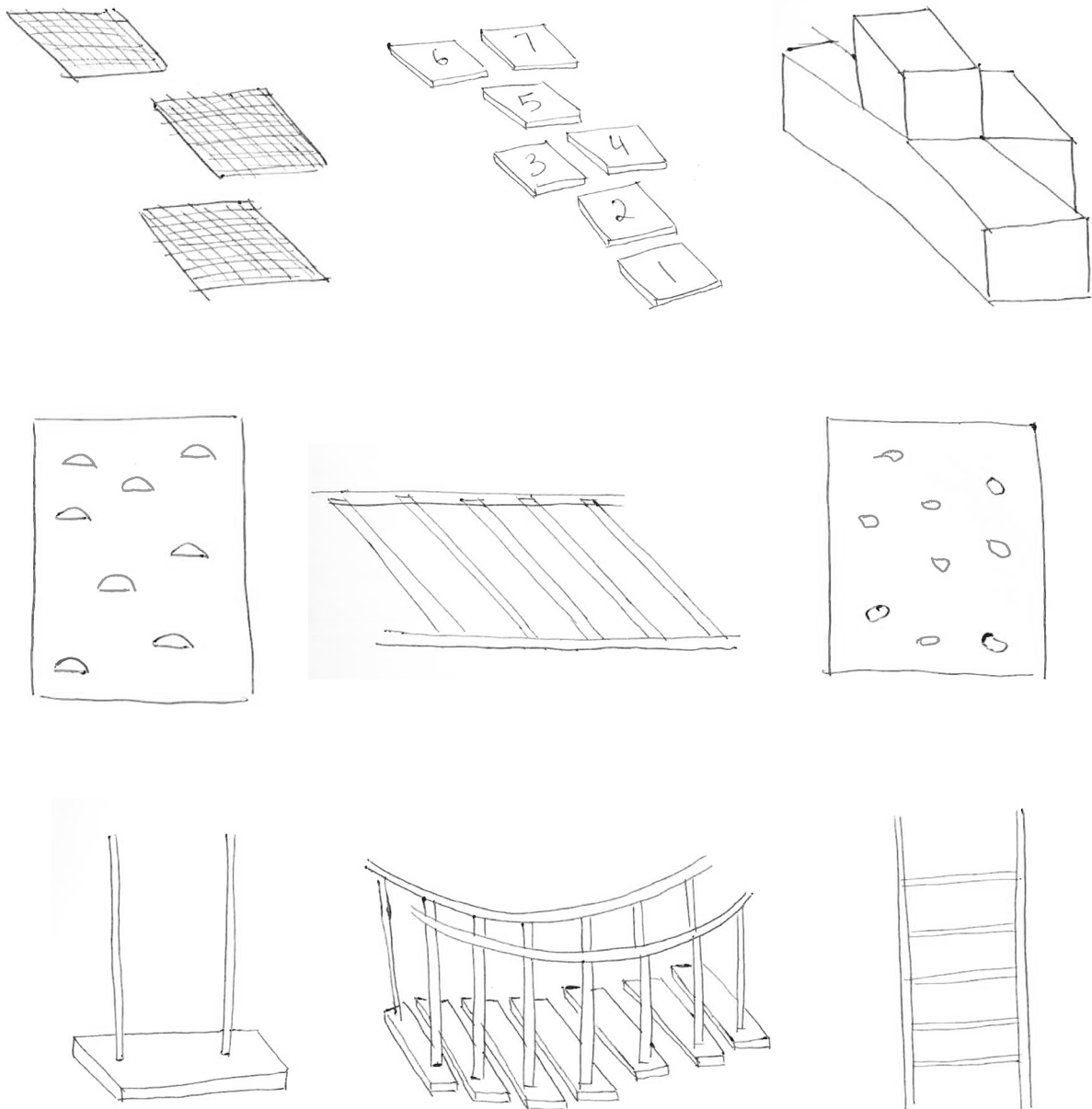
Having explored a couple iterations using the comments received in the first review, as well as a quick exploration of play elements that could be used in the play area, these were presented at the second review. At this review critics stated that locating bedrooms on the ground level was a good idea to maximise daylight in common areas of the units, and that locating bedrooms on the ground level adjacent to the footpath was not a major issue for privacy because design elements such as curtains can provide privacy for these rooms. A suggestion that was made, was to challenge the design to work with the current building structure. Additionally, suggestions were made to design the building around the play area, allowing it to flow between units.

Question 1 - Are you 16 years old or over?

Bar chart showing responses to Question 1:
- Yes: ~212
- No: ~2

(x-axis: 0, 50, 100, 150, 200, 250)

Question 2 - Which of the following best describes your household?

Bar chart showing responses to Question 2:
- Couple with child(ren) living at home: ~38
- Couple with child(ren) not living at home: ~9
- Single paretn with child(ren) living at home: ~14
- Single parent/caregiver with child(ren) not living at…: ~4
- Household with child(ren) and extended family: ~7
- Other household with child(ren) (please specify): ~5
- Household of young adults (e.g. univeristy students): ~107
- Other (please specify): ~31

(x-axis: 0, 20, 40, 60, 80, 100, 120)

Question 3 - Which of the following best describes your neighbourhood?

Predominantly low-rise buildings (1 - 2 storeys) — ~160

Predominantly mid-rise buildings (3 - 4 storeys — ~30

Predominantly high-rise (5+ storeys) — ~25

(x-axis: 0, 20, 40, 60, 80, 100, 120, 140, 160, 180)

Legend:
- Predominantly high-rise (5+ storeys)
- Predominantly mid-rise buildings (3 - 4 storeys
- Predominantly low-rise buildings (1 - 2 storeys)
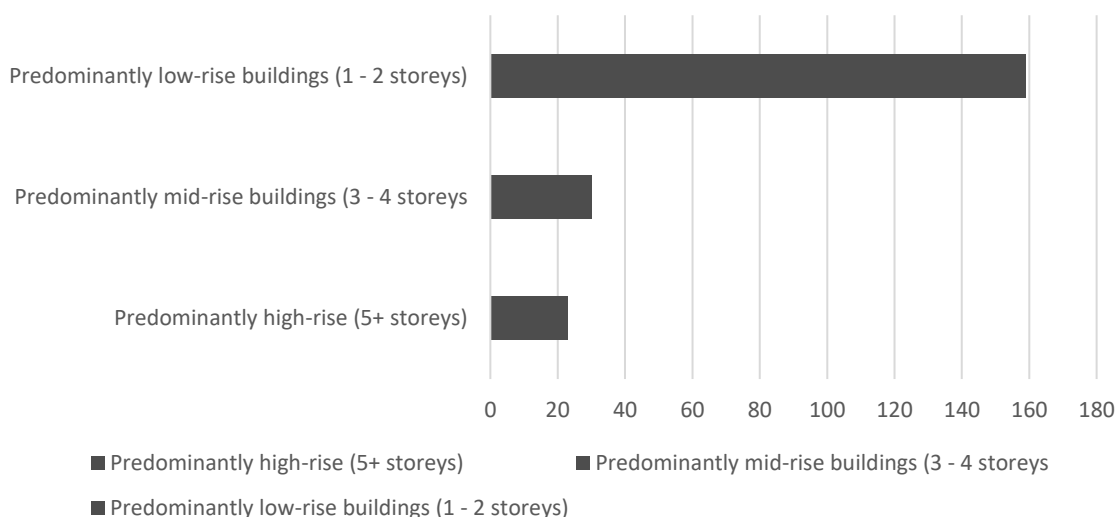
Question 4 - Which of the following describes dwelling types that you live in and have lived in? (tick all that are applicable)

Standalone house — ~155

Duplex, townhouse, unit or apartment joined to one or more other houses, townhouses, units or apartments (1 - 2 storeys) — ~90

Unit or apartment joined to one or more, units or apartments (3 - 4 storeys) — ~35

Unit or apartment joined to one or more, units or apartments (5+ storeys) — ~42

Mobile dwelling, for example caravan, boat etc — ~5

Other (please specify) — ~1

(x-axis: 0, 20, 40, 60, 80, 100, 120, 140, 160, 180)
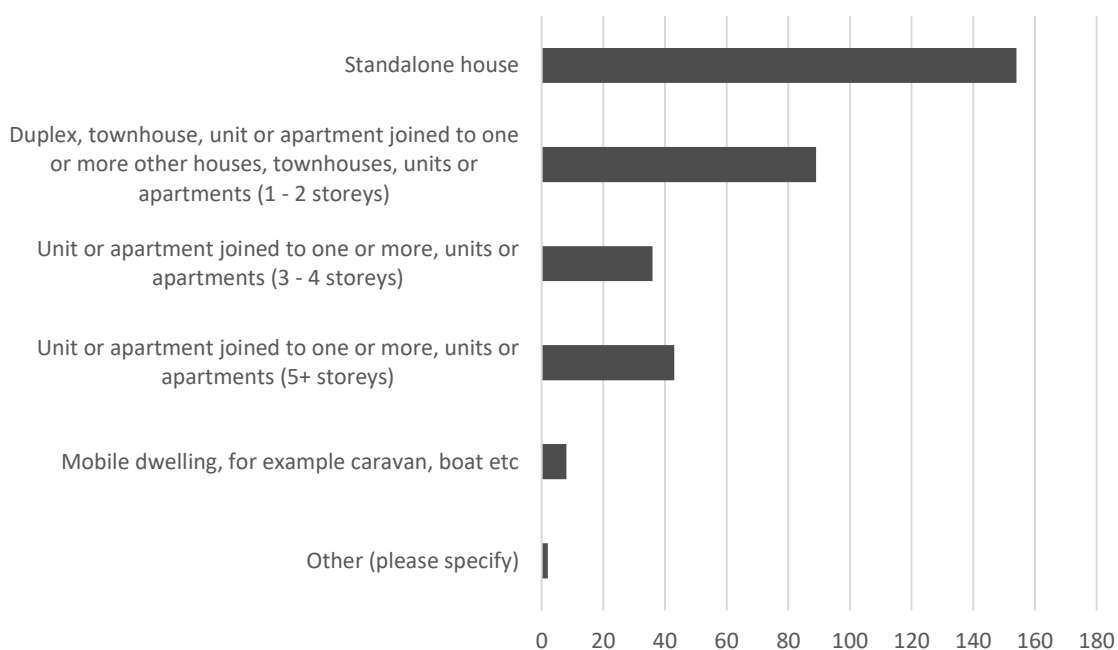
Question 5 - Do you rent or own your own home? (select 'Rent' if another household member pays the rent for your home, and 'Own' if another household member owns the home

Question 6 - Which of the following do you think makes a home family-friendly? (tick all that are applicable)

Question 7 - If a home provided GENEROUS SPACE, how likely would you live there if it was...

[a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 8 - If a home provided QUALITY SPACE, how likely would you live there if it was...

[a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 9 - If a home provided an ADAPTABLE DWELLING LAYOUT, how likely would you live there if it was…

Question 10 - If a home provided a HEALTHY LIVING ENVIRONMENT, how likely would you live there if it was…

Question 11 - If a home provided a GOOD LEVEL OF PRIVACY, how likely would you live there if it was...

- [a] in a LOW-RISE building (1 - 2 storeys)? ■ [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 12 - If a home provided a HIGH LEVEL OF SOUND PROOFING, how likely would you live there if it was...

- [a] in a LOW-RISE building (1 - 2 storeys)? ■ [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 13 - If a home provided a CHILD FRIENDLY PLAY AREA, how likely would you live there if it was...

[a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 14 - If a home provided ACCESS TO A PRIVATE GREEN AREA (e.g. lawn, garden), how likely would you live there if it was...

[a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 15 - If a home provided ACCESS TO PRIVATE OUTDOOR SPACE (e.g. balcony), how likely would you live there if it was...

Question 16 - If a home provided ACCESS TO COMMUNAL GREEN SPACE (e.g. lawn, garden), how likely would you live there if it was...

Question 17 - If a home provided a SENSE OF COMMUNITY, how likely would you live there if it was...

Legend:
- [a] in a LOW-RISE building (1 - 2 storeys)?
- [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 18 - If a home provided GOOD SECURITY, how likely would you live there if it was...

Legend:
- [a] in a LOW-RISE building (1 - 2 storeys)?
- [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 19 - Is there anything else which you think would POSITIVELY affect the family-friendliness home?

Category	Value
Shading	1
Visibility	3
Good ventilation	6
Sense of personal space	1
Connection to nature	1
Amount of bedrooms	2
Durable materials	1
Separate toilet from bathroom	1
Accessibility in and out of building	5
Easy maintenance	1
Safety features	7
Storage space	4
Option for living spaces to to open plan or separated	1
Designated play area	2
Community initiatives (e.g. parks, bbq area)	1
Mixed choice of housing options/layouts	1
Sheltered from high winds	1
Communal vegetable garden	1
Warm neutral/natural colours and textures	3
Natural light	11
Energy efficient	9
Pet friendly	8
Family-friendly neighbours	13

Question 20 - Is there anything else which you think would NEGATIVELY affect the family-friendliness of a home?

Category	Value
No access to outdoors	1
Poor accessibility	1
Poor visibility to child play areas	1
Proximity to non family-friendly amenities	3
Inadequate ventilation	2
No sense of ability to personalize	1
Windows you cannot see out of (e.g. too high)	1
Inability to adapt to family's changing requirements	2
Poor natural lighting and minimal sunlight hours	7
No place to work	1
Difficulty identifying the entrance	1
Fast moving traffic near green space or children's...	1

Question 21 - What amenities are important to have within close proximity to a home which is family friendly? (tick all that are applicable)

Category	Value
Public transport	195
Kindergarten	122
Schools	170
Supermarket or foodstores (e.g. grocer, dairy)	185
General stores (e.g. The Warehouse, Kmart)	40
Health services	138
Car mechanic	22
Family entertainment	44
Work	68
Access to nature (e.g. forests, beaches etc)	153
Other (please specify)	13

Question 22 - If a neighbourhood provided PUBLIC TRANSPORT, how likely would you live there...

Question 23 - If a neighbourhood provided KINDERGARTENS, how likely would you live there...

Question 24 - If a neighbourhood provided SCHOOLS, how likely would you live there...

- [a] in a LOW-RISE building (1 - 2 storeys)?
- [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 25 - If a neighbourhood provided SUPERMARKETS OR FOOD STORES (e.g. grocer, dairy), how likely would you live there...

- [a] in a LOW-RISE building (1 - 2 storeys)?
- [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 26 - If a neighbourhood provided GENERAL STORES (e.g. The Warehouse, Kmart), how likely would you live there...

[a] in a LOW-RISE building (1 - 2 storeys)?   [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 27 - If a neighbourhood provided HEALTH SERVICES, how likely would you live there...

[a] in a LOW-RISE building (1 - 2 storeys)?   [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 28 - If a neighbourhood provided CAR MECHANIC, how likely would you live there...

[a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 29 - If a neighbourhood provided FAMILY ENTERTAINMENT, how likely would you live there...

[a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
[c] in a HIGH-RISE building (5+ storeys)?

Question 30 - If a neighbourhood provided WORK, how likely would you live there...

- [a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 31 - If a neighbourhood provided ACCESS TO NATURE (e.g. forests, beaches etc), how likely would you live there...

- [a] in a LOW-RISE building (1 - 2 storeys)? [b] in a MID-RISE building (3 - 4 storeys)?
- [c] in a HIGH-RISE building (5+ storeys)?

Question 32 - Are there any other amenities which POSITIVELY affect whetehr or not a neighbourhood is family-friendly?

Question 33 - Are there any other amenities which NEGATIVELY affect whetehr or not a neighbourhood is family-friendly?

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Question 34 - Which of the following age groups best describes you?

Age group	Value
16 - 24	~106
25 - 34	~60
35 - 44	~27
45 - 54	~11
55 - 64	~4
65+	~4
I do not wish to answer this	~1

Question 35 - Which gender do you identify with?

Gender	Value
Male	~67
Female	~141
Transgender	0
Other	~2
I do not wish to answer this	~3

Question 36 - Which ethnic group(s) do you identify with?
(tick all that are relevant?
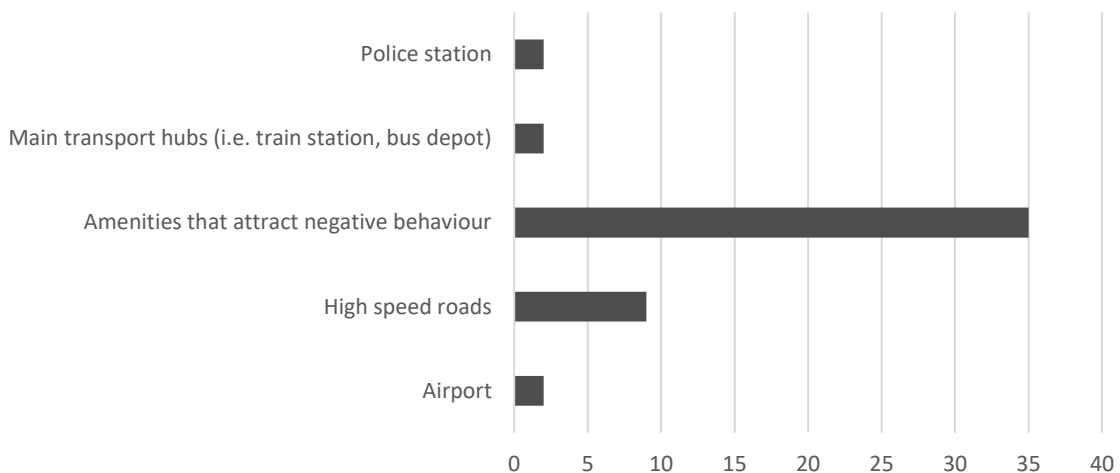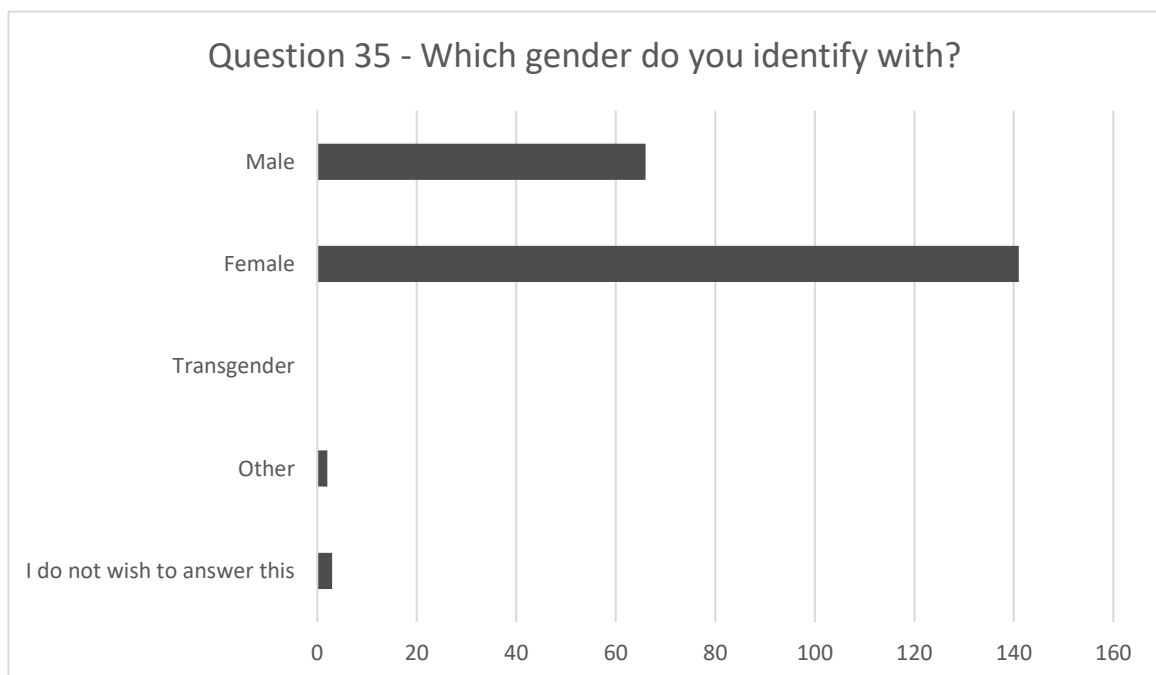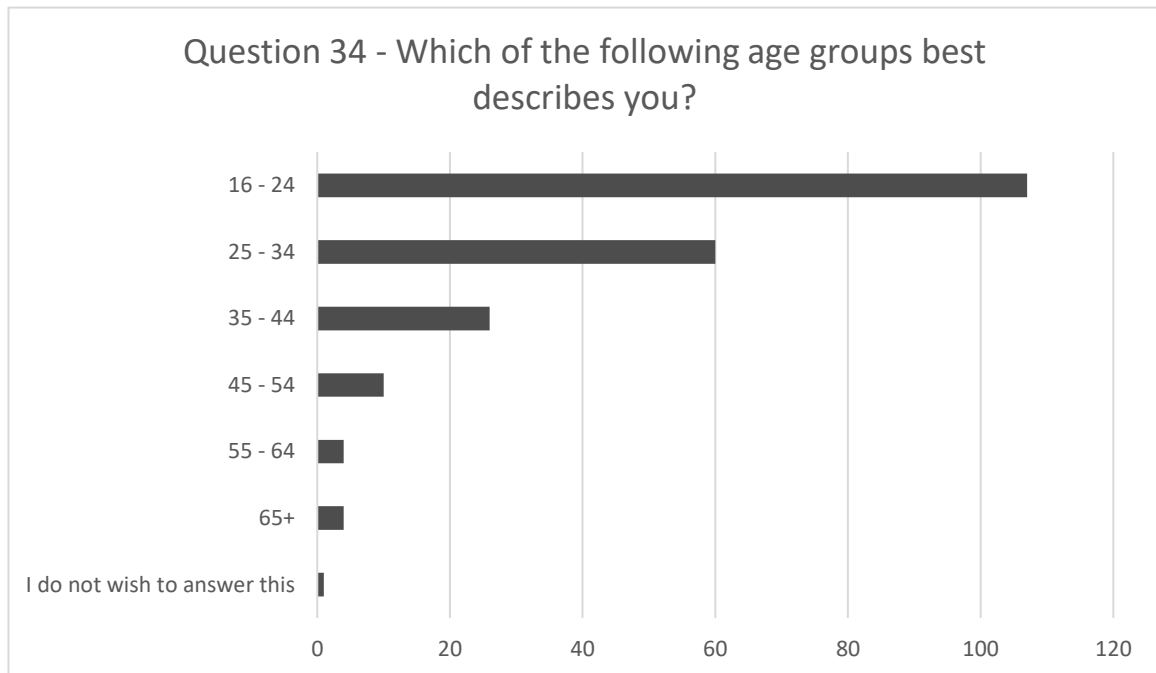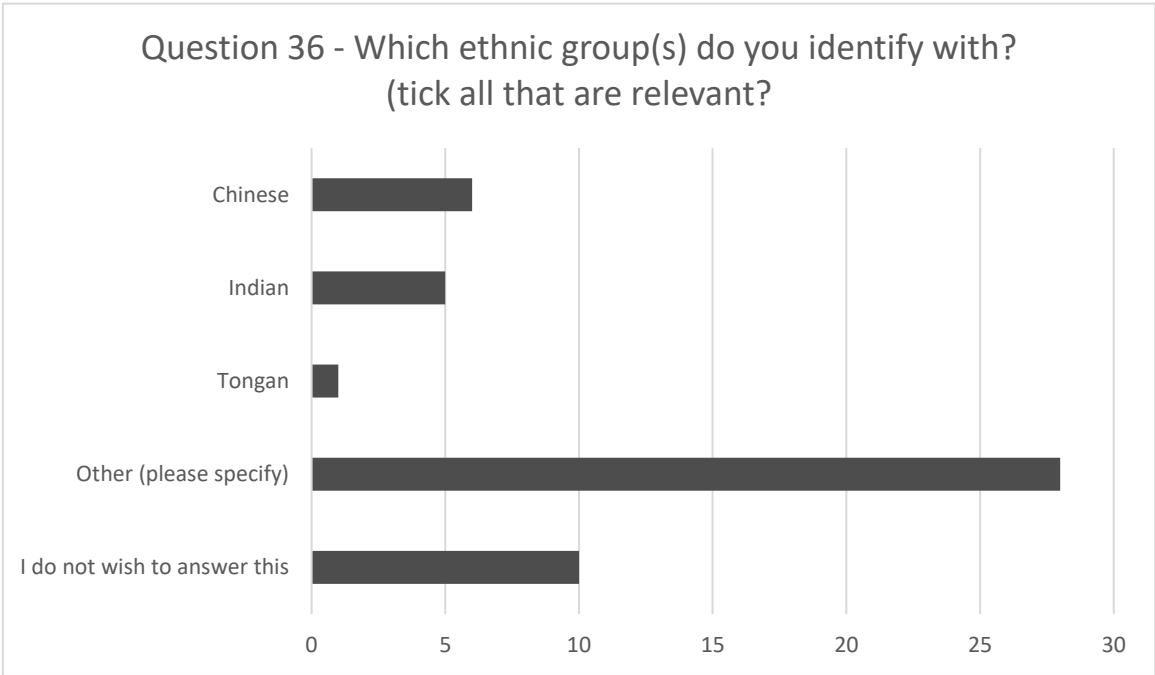
Question 37 - Which area of the Wellington Region do you live in?

Area	Value
Aro Valley	10
Berhampore	3
Broadmeadows	0
Brooklyn	4
Churton Park - Glenside	0
Crofton Downs	3
Grenada North - Tawa - Takapu Valley	2
Grenada Village - Paparangi - Woodridge - Horokiwi	0
Haitaitai	5
Island Bay - Owhiro Bay	4
Johnsonville	4
Kaiwharawhara - Khandalla	2
Karori	14
Kelburn	11
Kilbirnie	2
Kingston - Morington - Vogeltown	4
Lyall Bay	4
Maupuia	0
Melrose	0
Miramar	3
Mt Cook	17
Mt Victoria	11
Newlands - Ngauranga	2
Newtown	15
Ngaio	1
Northland	3
Ohariu - Makara - Makara Beach	1
Oriental Bay	0
Rongotai - Moa Point	1
Roseneath	1
Seatoun - Karaka Mays - Breaker Bay	0
Southgate - Houghton Bay	0
Strathmore Park	1
Te Aro	29
Thorndon - Pipitea	5
Wellington CBD	14
Wadestown	1
Wilton	3
Other (please specify)	32

Question 38 - Which of the following types of neighbourhoods do you currently live or have lived in previously (tick all that are appropriate?

Neighbourhood type	Value
Central Business District (CBD)/inner city	~28
Suburbs	~79
Both inner city and suburbs	~99
Other (please specify)	~6
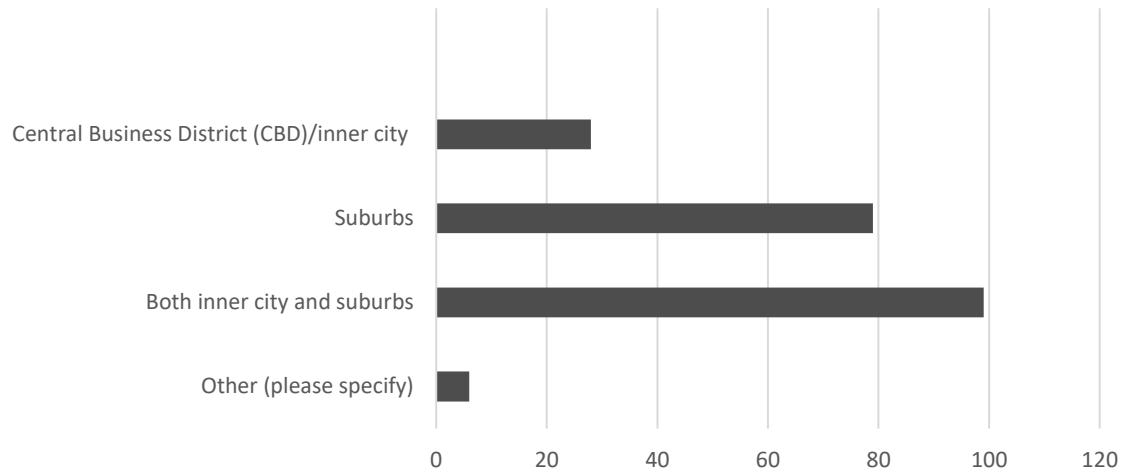
Question 39 - What is your annual income before tax?

Income range	Value
$50,001 - $70,000	~35
$70,001 - $100,000	~21
$100,001 - $150,000	~11
$150,001 or more	~3
I do not wish to answer this	~14
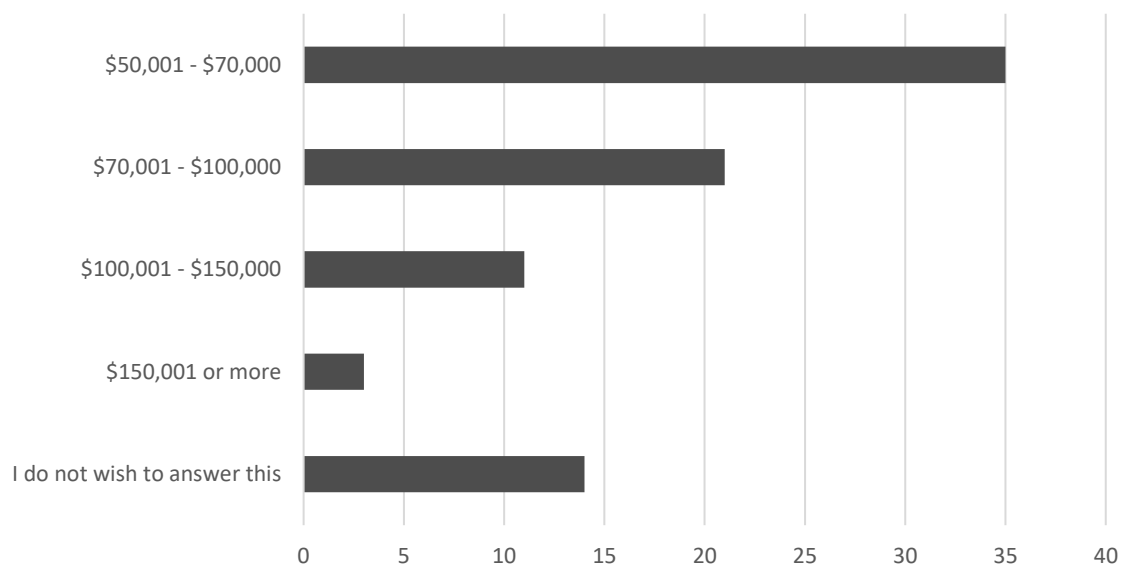
APPENDIX C: *Survey analysis*

Relationship between household type and what attributes that make a home family-friendly

		Which of the following best describes your household?							
		Couple with child(ren) living at home	Couple with child(ren) not living at home	Single parent/caregiver with child(ren) living at home	Single parent/caregiver with child(ren) not living at home	Household with child(ren) and extended family	Other household with child(ren) (please specify)	Household of young adults (e.g. university students)	Other (please specify)
Which of the following do you think makes a home family-friendly? (tick all that are applicable)	Generous space	30	7	8	1	7	3	89	26
	High quality space	26	11	6	1	2	2	84	20
	Adaptable dwelling layout	22	10	6	1	3	2	66	20
	Healthy living environment	53	14	16	3	8	4	156	45
	Privacy	38	12	14	3	6	3	112	34
	A high level of sound proofing	18	6	7	2	4	3	65	24
	Child friendly play area	37	7	9	1	6	2	79	18
	Access to a private green area (e.g. lawn, garden)	38	8	11	2	4	2	100	32
	Access to outdoor space (e.g. balcony)	22	9	9	1	5	4	78	31
	Access to communal green space (e.g. lawn, garden)	19	6	5	1	2	2	76	20
	Sense of community	33	8	10	3	5	2	98	34
	Good security	49	11	15	3	8	1	129	38

For all household types, the housing attribute that was considered to be most important for all was a healthy living environment. However, the other attributes were considered more important than others across the different household types. For couples with child(ren) living at home, good security (n=53), privacy (n=38), and access to a private green area (n=38) were considered important. For couples with child(ren) not living at home privacy (n=12), high quality space (n=11), and good security were important (n=11). For single parents/ caregivers with child(ren) living at home good security (n=15), privacy (n=14), and access to a private green area (n=11) were important. For single parents/caregiver with child(ren) not living at home privacy (n=3), sense of community (n=3), and good security (n=3) were important. For households with child(ren) and extended family good security (8), generous space (n=7), child friendly play area (6), and privacy (n=6) were important. For households of young adult's good security (n=129), privacy (n=112), and access to private green area (n=100) were important. What this information reveals is that what household types require is reflective of their household type. For example, families with child(ren) living at home, they require housing attributes that give them privacy, which was found to be an important attribute for families living in high-density. Furthermore, the importance of having space for children to play safely. Although participants may not have explicitly identified 'child friendly play area' they identified the need for outdoor space and good security which are considered important design features for a child friendly play area.

Relationship between experience living in different dwelling types and what attributes make a home family-friendly

For all participants who had experience living in the different dwelling types listed, it was found that again a healthy living environment was considered to be most important. However, the other attributes were considered more important than others across the different dwelling types. For people who had experience living in a standalone house, good security (n=193), privacy (n=174), and access to private green area (n=154) were important. For people who had experience living in a duplex, townhouse, unit or apartment joined to one or more other houses, townhouses, units or apartments (1-2 storeys), good security (n=100), privacy (n=85), and sense of community (n=83) were important. For people who had experience living in a unit or apartment joined to one or more, units or apartments (3-4 storeys), good security (n=48), privacy (n=47), access to outdoor space (n=36), and sense of community (n=36) were important. For people who had experience living in a unit or apartment joined to more, units or apartments (5+ storeys), good security (n=51), privacy (n=46), and sense of community (n=39) were important. Finally, for people who had experience living in a mobile dwelling, privacy (n=10), access to private green area (n=9), and good security (n=9) were important. What this information reveals is that depending on what dwelling type people had experience living, the housing attributes they considered important for a family-friendly home were reflective of the lifestyle these dwelling typologies promote such as the standalone house which promotes privacy compared to higher-density dwellings with multiple dwellings in the one building that try to provide a sense of community.

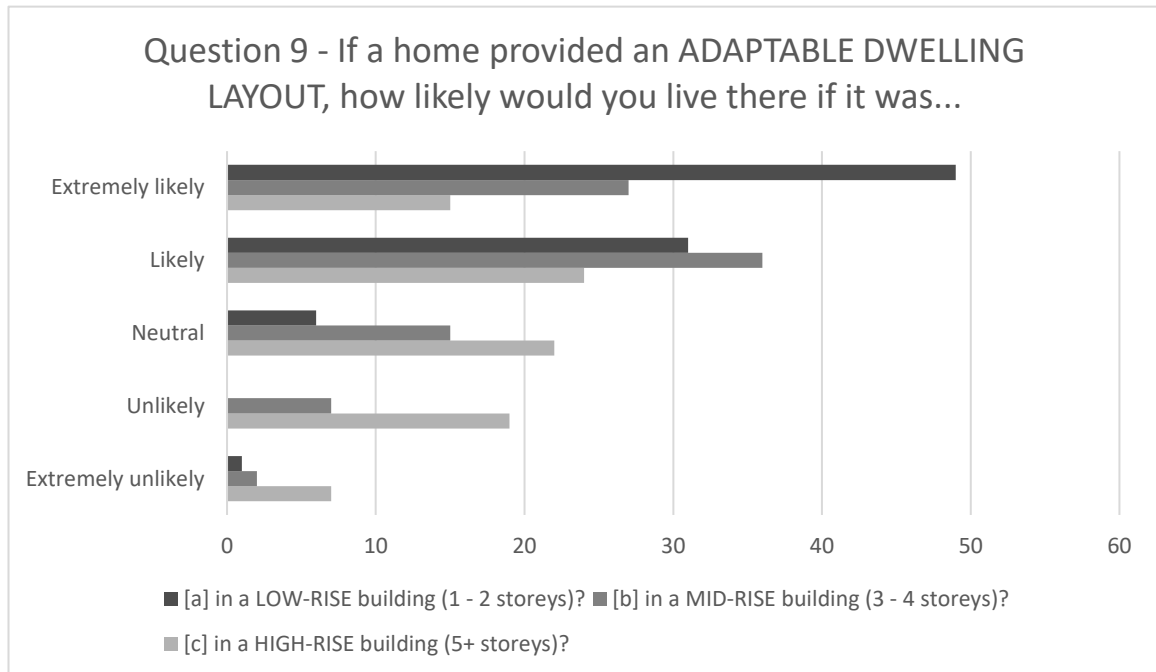|		Which of the following describes dwelling types that you live in and have lived in? (tick all that are applicable)					
		Standalone house	Duplex, townhouse, unit or apartment joined to one or more other houses, townhouses, units or apartments (1-2 storeys)	Unit or apartment joined to one or more, units or apartments (3-4 storeys)	Unit or apartment joined to more, units or apartments (5+ storeys)	Mobile dwelling, for example caravan, boat etc	Other (please specify)
Which of the following do you think makes a home family-friendly? (tick all that are applicable)	Generous space	130	64	25	32	5	1
	High quality space	118	72	28	35	4	1
	Adaptable dwelling layout	106	57	28	24	7	3
	Healthy living environment	224	124	58	62	10	3
	Privacy	174	85	47	46	10	3
	A high level of sound proofing	93	63	29	30	6	1
	Child friendly play area	125	62	25	26	4	3
	Access to a private green area (e.g. lawn, garden)	154	77	35	37	9	3
	Access to outdoor space (e.g. balcony)	123	70	36	33	8	3
	Access to communal green space (e.g. lawn, garden)	109	53	27	30	6	2
	Sense of community	152	83	36	39	8	3
	Good security	193	100	48	51	9	2
	Other (please specify)	13	9	0	2	2	1

Relationship between dwelling ownership and what attributes make a home family-friendly
In terms of house ownership and whether people owned or rented where they were living, it was found that the two groups through a healthy living environment was most important, followed by good security, then privacy. However, what followed this was slightly different across the two groups. For people who rented, access to a private green area (n=130), sense of community (n=126), and generous space (n=114) were important. For people who owned the place they were living in, access to private green space (n=64), sense of community (n=64), and child friendly play area (n=57), were important. What this information reveals is that there was little difference between peoples perceptions of family-friendly housing attributes.

		Do you rent or own your own home? (select 'Rent' if another household member pays the rent for your home, and 'Own' if another household member owns the home)		
		Rent	Own	Other (please specify)
Which of the following do you think makes a home family-friendly? (tick all that are applicable)	Generous space	114	53	4
	High quality space	102	45	5
	Adaptable dwelling layout	82	43	5
	Healthy living environment	205	88	6
	Privacy	143	75	4
	A high level of sound proofing	90	34	5
	Child friendly play area	98	57	4
	Access to a private green area (e.g. lawn, garden)	130	64	3
	Access to outdoor space (e.g. balcony)	99	55	5
	Access to communal green space (e.g. lawn, garden)	87	40	4
	Sense of community	126	64	3
	Good security	171	79	4
	Other (please specify)	7	7	3

Relationship between age and what attributes make a home family-friendly
For people aged 16 to 24, a healthy living environment (n=98) was considered most important, followed by good security (n=91), then privacy (n=83). For people aged 25 to 34, healthy living environment (n=57) was considered most important, followed by good security (n=46), then privacy (n=43). For people aged 35 to 44, a healthy living environment (n=25) was considered most important, followed by by sense of community (n=17) and good security (n=17), then access to a private green area (n=16). For people aged 45 to 54, a healthy living environment (n=9) was considered most important, followed by sense of community (n=8), then child friendly play area (n=7), and access to a private green area (n=7). For people aged 55 to 64,

a healthy living environment (n=4), adaptable dwelling layout (n=4), privacy (n=4), sense of community (n=4), and good security (n=4) were equally important. Finally, for people aged 65 and over, a healthy living environment (n=3), privacy (n=3), access to a private green area (n=3), and good security (n=3), were equally important. What this reveals is that a healthy living environment was the most important housing attribute for a family friendly home according to the younger half of the sample, and it was considered equally important to other attributes for the older half of the sample. For people aged 16 to 34, they had roughly similar perceptions of what attributes make a family friendly home. For the other age groups, they had similar perceptions of what attributes were required for a family-friendly home, but were rated differently in terms of importance.

		Which of the following age groups best describes you?						
		16 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65+	I do not wish to answer this
Which of the following do you think makes a home family-friendly?	Generous space	57	34	12	5	1	1	1
	High quality space	51	27	11	4	3	2	1
	Adaptable dwelling layout	45	21	10	5	4	1	1
	Healthy living environment	98	57	25	9	4	3	1
	Privacy	83	43	10	5	4	3	1
	A high level of sound proofing	37	25	11	3	1	2	1
	Child friendly play area	50	31	10	7	2	2	1
	Access to a private green area (e.g. lawn, garden)	62	33	16	7	3	3	1
	Access to outdoor space (e.g. balcony)	52	31	13	6	3	2	1
	Access to communal green space (e.g. lawn, garden)	40	28	10	4	3	0	1
	Sense of community	59	37	17	8	4	2	1
	Good security	91	46	17	5	4	3	1
	Other (please specify)	4	2	1	1	0	0	1

Relationship between gender and what attributes make a home family-friendly

For males, a healthy living environment (n=62) was considered most important, followed by good security (n=47), then privacy (n=46). For females, a healthy living environment (n=130) was considered most important, followed by good security (n=116), then privacy (n=98). What this reveals is that gender does not have a significant influence of peoples perceptions of what housing attributes make a home family-friendly.

		Which gender do you identify with?				
		Male	Female	Transgender	Other	I do not wish to answer this
Which of the following do you think makes a home family-friendly? (tick all that are applicable)	Generous space	34	75	0	2	0
	High quality space	34	62	0	2	1
	Adaptable dwelling layout	27	56	0	1	3
	Healthy living environment	62	130	0	2	3
	Privacy	46	98	0	2	3
	A high level of sound proofing	30	48	0	1	1
	Child friendly play area	28	73	0	1	1
	Access to a private green area (e.g. lawn, garden)	37	85	0	2	1
	Access to outdoor space (e.g. balcony)	30	75	0	2	1
	Access to communal green space (e.g. lawn, garden)	28	54	0	2	2
	Sense of community	36	88	0	2	2
	Good security	47	116	0	2	2
	Other (please specify)	1	7	0	1	0

Relationship between ethnicity and what attributes make a home family-friendly

For NZ Europeans, a healthy living environment (n=134) was considered most important, followed by good security (n=120), then privacy (n=103). For Māori, a healthy living environment (n=17) was considered most important, followed by sense of community (n=12), then privacy (n=11) and good security (n=11). For the one Samoan who did the survey, they considered generous space, privacy, child friendly play area, access to outdoor space, access to communal green space, and sense of community important. For Chinese, they considered a healthy living

environment (n=5) and good security (n=5) as most important, followed by generous space (n=4) and privacy (n=4). For Indians, they considered generous space (n=5), a healthy living environment (n=5), and access to a private green area (n=5) to be most important, followed by sense of community (n=4) and good security (n=4). For the one Tongan who answered the survey, they considered a healthy living environment, privacy, access to a private green area, access to communal green space, sense of community, and good security to be equally important. What this information reveals is that different ethnic groups perceive what makes a family friendly home differently. However, the reason for this is unclear and requires further research.

		Which ethnic group(s) do you identify with? (tick all that are relevant)							
		NZ European	Māori	Samoan	Chinese	Indian	Tongan	Other (please specify)	I do not wish to answer this
Which of the following do you think makes a home family-friendly? (tick all that are applicable)	Generous space	68	8	1	4	5	0	18	7
	High quality space	72	4	0	3	3	0	13	4
	Adaptable dwelling layout	60	6	0	0	1	0	13	7
	Healthy living environment	134	17	0	5	5	1	25	10
	Privacy	103	11	1	4	2	1	20	7
	A high level of sound proofing	48	7	0	5	2	0	13	5
	Child friendly play area	68	9	1	2	3	0	15	5
	Access to a private green area (e.g. lawn, garden)	81	13	0	2	5	1	16	7
	Access to outdoor space (e.g. balcony)	72	9	1	3	3	0	14	6
	Access to communal green space (e.g. lawn, garden)	62	5	1	0	0	1	11	6
	Sense of community	83	12	1	3	4	1	16	8
	Good security	120	11	0	5	4	1	19	7
	Other (please specify)	5	1	0	1	0	0	2	0

Relationship between annual income before tax and what attributes make a home family-friendly

		What is your annual income before tax?						
		$30,000 or less	$30,001-$50,000	$50,001-$70,000	$70,001-$100,000	$100,001-$150,000	$150,001 or more	I do not wish to answer this
Which of the following do you think makes a home family-friendly? (tick all that are applicable	Generous space	51	22	12	10	3	3	10
	High quality space	42	12	22	8	6	1	8
	Adaptable dwelling layout	34	15	11	8	6	1	12
	Healthy living environment	89	30	33	20	10	3	12
	Privacy	71	28	20	13	6	0	11
	A high level of sound proofing	32	11	17	12	3	1	4
	Child friendly play area	47	16	13	13	5	0	9
	Access to a private green area (e.g. lawn, garden)	55	21	15	13	8	3	10
	Access to outdoor space (e.g. balcony)	41	22	19	9	6	1	10
	Access to communal green space (e.g. lawn, garden)	40	9	15	12	3	1	6
	Sense of community	54	22	21	14	4	3	10
	Good security	75	27	28	15	7	3	12
	Other (please specify)	5	0	1	2	0	0	1

For people earning $30,000 or less annually before tax, a healthy living environment (n=89) was considered most important, followed by good security (n=75), then privacy (n=71). For people earning $30,001 to $50,000 annually before tax, a healthy living environment (n=30) was considered most important, followed by privacy (n=28), then good security (n=27). For people earning $50,001 to $70,000 annually before tax, a healthy living environment (n=33) was considered most important, followed by good security (n=28), then high quality space (n=22). For people earning $70,001 to $100,000 annually before tax, a healthy living environment (n=20) was considered most important, followed by good security (n=15), then sense of community (n=14). For people earning $100,001 to $150,000 annually before tax, a healthy

living environment (n=10) was considered most important, followed by access to a private green area (n=8), then good security (n=7). For people earning \$150,001 or more annually before tax, generous space (n=3), a healthy living environment (n=3), access to a private green area (n=3), sense of community (n=3), and good security (n=3) were considered equally important. What this information reveals is that for people of all income types, a healthy living environment and good security are important.

Relationship between household type and amenities required in a family-friendly neighbourhood

		Which of the following best describes your household?							
		Couple with child(ren) living at home	Couple with child(ren) not living at home	Single parent/caregiver with child(ren) living at home	Single parent/caregiver with child(ren) not living at home	Household with child(ren) extended family	Other household with child(ren) (please specify)	Household of young adults (e.g. university students)	Other (please specify)
What amenities are important to have within close proximity to a home which is family friendly? (tick all that are applicable)	Public transport	40	11	14	2	7	4	110	38
	Kindergarten	33	7	6	1	7	2	65	26
	Schools	43	11	12	1	6	3	93	35
	Supermarket or food stores (e.g. grocer, dairy)	38	10	14	3	7	4	102	39
	General stores (e.g. The Warehouse, Kmart)	6	3	2	0	3	1	26	5
	Health services	33	10	8	2	7	1	71	30
	Car mechanic	8	2	0	2	2	1	9	6
	Family entertainment	10	1	2	0	2	2	30	10
	Work	14	5	4	1	3	2	36	10
	Access to nature (e.g. forests, beaches etc)	35	10	7	2	5	4	87	28
	Other (please specify)	4	0	1	0	0	0	4	2

Relationship between household type and amenities required in a family-friendly neighbour-hood

For couple's with child(ren) living at home, access to kindergartens (n=43) was considered to be most important, followed by public transport (n=40), then supermarkets or food stores (n=38). For Couples with child(ren) not living at home, access to public transport (n=11) and schools (n=11) were considered most important, followed by access to supermarkets or food stores (n=10), health services (n=10), and access to nature (n=10). For single parents/care-givers with child(ren) living at home, access to public transport (n=14) and supermarkets or food stores (n= 14) were considered most important, followed by access to schools (n=12), then health services (n=8). For single parents/caregivers with child(ren) not living at home, access to supermarkets or food stores (n=3) was considered most important, followed by pub-lic transport (n=2), health services (n=2), car mechanic (n=2), and access to nature (n=2). For households with child(ren) and extended family, access to public transport (n=7), kindergar-tens (n=7), supermarkets or food stores (n=7), and health services were considered equally important. For other household types with child(ren), access to public transport (n=4), super-markets or food stores (n=4), and access to nature (n=4), were considered equally important. Finally, for households of young adults, access to public transport (n=110) was considered most important, followed by access to supermarkets or food stores (n=102), then schools. What this information reveals is that all household types had similar perceptions of what amenities were important to have in a family-friendly environment, although the rating of the amenities were different, the amenities they identified were similar.

Relationship between age and amenities required in a family-friendly neighbourhood

For participants aged 16 to 24, access to public transport (n=98) was considered most import-ant, followed by supermarkets or food stores (n=93), then schools (n=84). For those aged 25 to 34, access to public transport (n=57) was considered most important, followed by super-markets or food stores (n= 52), then schools (n=50). For those aged 35 to 44, access to super-markets or food stores (n= 24) was considered most important, followed by public transport (n=23), then schools (n=21). For those aged 45 to 54, access to public transport (n=10) was considered most important, followed by schools (n=9) and supermarkets or food stores (n=9). For those aged 55 to 64, access to public transport (n=4), schools (n=4), supermarkets or food stores (n=4), health services (n=4), and access to nature (n=4) were considered equally important. Finally, for those aged 65 and over, access to supermarkets or food stores (n=4) and health services (n=4) was considered most important, followed by public transport (n=3), schools (n=3), work (n=3), and access to nature (n=3). What this information reveals is that all age groups have similar perceptions on what amenities are most important to have in a family-friendly neighbourhood. What was interesting to note however, was that for the par-ticipants aged 55 and over, health services were something they considered important more so than the participant under the age of 55.

		Which of the following age groups best describes you?						
		16 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65+	I do not wish to answer this
What amenities are important to have within close proximity to a home which is family-friendly	Public transport	98	57	23	10	4	3	0
	Kindergartens	58	39	15	7	3	0	0
	Schools	84	50	21	9	4	3	0
	Supermarket or food stores (e.g. grocer, dairy)	93	52	24	9	4	4	0
	General stores (e.g. The Warehouse, Kmart)	22	14	3	1	0	1	0
	Health services	67	40	15	7	4	4	0
	Car mechanic	10	5	3	1	1	2	0
	Family entertainment	22	18	3	2	0	0	0
	Work	32	17	9	3	2	3	0
	Access to nature (e.g. forests, beaches etc)	75	41	21	7	4	3	1
	Other (please specify)	5	1	3	1	0	0	1

Relationship between gender and amenities required in a family-friendly neighbourhood
In terms of gender, it was found that males considered access to public transport (n=62) to be the most important, followed by supermarkets or food stores (n=56), then access to schools (n=50). For females, access to public transport (n=129) was considered most important, followed by supermarkets or food stores (n=126), then schools (n=118). What this information reveals is that gender has little influence on people's perceptions of what make a neighbourhood, family-friendly.

		Which gender do you identify with?				
		Male	Female	Transgender	Other	I do not wish to answer this
What amenities are important to have within close proximity to a home which is family friendly?	Public transport	62	129	0	1	3
	Kindergarten	36	83	0	1	2
	Schools	50	118	0	1	2
	Supermarket or food stores (e.g. grocer, dairy)	56	126	0	1	3
	General stores (e.g. The Warehouse, Kmart)	14	26	0	1	0
	Health services	34	100	0	1	2
	Car mechanic	5	16	0	0	1
	Family entertainment	16	28	0	1	0
	Work	24	42	0	0	0
	Access to nature (e.g. forests, beaches etc)	49	99	0	1	3
	Other (please specify)	0	10	0	1	0

Relationship between ethnicity and amenities required in a family-friendly neighbourhood
For NZ Europeans, access to public transport (n=133) was considered most important, followed by supermarkets or food stores (n=126), then schools (n=119). For Māori, access to schools (n=17) was considered most important, followed by public transport (n=16), then supermarkets or food stores (n=15). For the one Samoan who did the survey, access to public transport, schools, supermarkets or food stores, health services, and access to nature were important. For Chinese, access to supermarkets or food stores (n=6) was considered most important, followed by work (n=5), then public transport (n=4). For Indians, access to public transport (n=4), schools (n=4), supermarkets or food stores (n=4), health services (n=4), and access to nature (n=4) were all equally important. Finally, for the one Tongan who did the survey, access to public transport, schools, supermarkets or food stores, health services, and access to nature were all important. What this information reveals is that for most ethnic groups amenities like supermarkets or food stores, public transport, and schools was important. However, what was interesting was that Chinese participants did not consider access to school or even kindergartens important and were in fact considered least important.

		Which ethnic group(s) do you identify with? (tick all that are relevant)							
		NZ European	Māori	Samoan	Chinese	Indian	Tongan	Other (please specify)	I do not wish to answer this
What amenities are important to have within close proximity to a home which is family friendly? (tick all that are applicable)	Public transport	133	16	1	4	4	1	26	10
	Kindergarten	82	14	0	0	3	0	20	3
	Schools	119	17	1	1	4	1	21	7
	Supermarket or food stores (e.g. grocer, dairy)	126	15	1	6	4	1	24	9
	General stores (e.g. The Warehouse, Kmart)	23	4	0	3	1	0	6	4
	Health services	92	12	1	3	4	1	17	7
	Car mechanic	11	3	0	1	1	0	4	2
	Family entertainment	33	2	0	0	1	0	7	2
	Work	42	6	0	5	2	0	10	1
	Access to nature (e.g. forests, beaches etc)	104	9	1	3	4	1	21	9
	Other (please specify)	8	0	0	0	0	0	3	0

Relationship between types of neighbourhoods people live and have lived in, and amenities required in a family-friendly neighbourhood

For participants who had experience living in the CBD/inner, access to supermarkets or food stores (n=26), was considered most important, followed by public transport (n=25), then schools (n=18) and health services (n=18). For those who had experience living in the suburbs, access to public transport (n=73) was most important, followed by supermarkets or food stores (n=69), then schools (n=68). Finally, for those who had experience living in the CBD/ inner city and the suburbs, access to public transport (n=92) was considered most important, followed by supermarkets or food stores (n=87), then schools (n=80). What this information reveals is that whether people have lived in the CBD/inner city or the suburbs, their perceptions of amenities to have in a neighbourhood that is family-friendly is relatively the same.

		Which of the following types of neighbourhoods do you currently live or have lived in previously? (tick all that are applicable)			
		Central Business District (CBD) / inner city	Suburbs	Both inner city and suburbs	Other (please specify)
What amenities are important to have within close proximity to a home which is family friendly?	Public transport	25	73	92	5
	Kindergarten	13	48	60	1
	Schools	18	68	80	5
	Supermarket or food stores (e.g. grocer, dairy)	26	69	87	4
	General stores (e.g. The Warehouse, Kmart)	7	14	20	0
	Health services	18	56	60	3
	Car mechanic	1	12	9	0
	Family entertainment	7	16	20	2
	Work	11	22	33	0
	Access to nature (e.g. forests, beaches etc)	17	59	70	6
	Other (please specify)	2	2	6	1

Relationship between annual income before tax and amenities required in a family-friendly neighbourhood

For the participants who earned $30,000 or less annually before tax, access to public transport (n=84) was considered most important, followed by supermarkets or food stores (n=80), then schools (n=69) and access to nature (n=69). For those who earned $30,001 to $50,000 annually before tax, access to public transport (n=30) and supermarkets or food stores (n=30) were considered equally important, followed by schools (n=30). For those who earned $50,001 to $70,000 annually before tax, access to pubic transport (n= 33) and supermarkets or food stores (n=33) was equally important, followed by schools (n=29). For those who earned $70,001 to $100,000 annually before tax, access to public transport (n=20) and schools (n=20) were equally important, followed by supermarkets or food stores (n=18). For those who earned $100,001 to $150,000 annually before tax, access to public transport (n=11) was considered most important, followed by schools (n=9) and supermarkets or food stores (n=9). Finally, for those who earned $150,001 or more annually before tax, access to public transport (n=3), supermarkets or food stores (n=3), health services (n=3), and access to nature (n=3) were all equally important. What this information reveals is that annual income before tax does not have a significant influence on people's perceptions of what amenities make a neighbourhood family-friendly.

		What is your annual income before tax?						
		$30,000 or less	$30,001-$50,000	$50,001-$70,000	$70,001-$100,000	$100,000-$150,000	$150,001 or more	I do not wish to answer this
What amenities are important to have within close proximity to a home which is family-friendly? (tick all that are applicable)	Public transport	84	31	33	20	11	3	13
	Kindergarten	48	19	22	16	7	2	8
	Schools	69	30	29	20	9	2	12
	Supermarket or food stores (e.g. grocer, dairy)	80	31	33	18	9	3	12
	General stores (e.g. The Warehouse, Kmart)	22	4	6	5	0	1	3
	Health services	58	22	22	13	8	3	11
	Car mechanic	10	2	0	5	1	0	4
	Family entertainment	17	8	14	4	0	1	1
	Work	30	10	10	8	2	1	5
	Access to nature (e.g. forests, beaches etc)	69	21	26	16	6	3	11
	Other (please specify)	5	1	2	2	0	0	1