



# Life in Medium Density Housing in Tāmaki Makaurau / Auckland

Kathryn Ovenden and Melanie McKelvie

September 2024

Technical Report 2024/6

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Policy, Planning and Governance

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# Executive summary

## Introduction

Enabling the development of medium density housing (MDH) is an important part of Auckland Council's work to deliver a quality compact urban form, in the face of both ongoing population growth and need for more housing, and a changing climate. The population of Tāmaki Makaurau / Auckland is expected to reach 2,230,800 by 2053, an increase of around 520,800 people from 2023.

Over the last 10 years there has been a shift in the types of housing being consented in Auckland, from predominantly low density typologies (i.e. standalone houses) to large numbers of medium and high density typologies (i.e. apartments, terraced houses and duplexes). For example, in 2023, 62 per cent of new dwellings consented in Auckland were 'townhouses, flats, and units'. This relatively recent, and rapid, supply of medium and high density housing across Auckland is not only increasing housing options for Aucklanders but also transforming the built environment.

Auckland Council is responsible for the review, approval and monitoring of residential housing under the Auckland Unitary Plan (AUP) and the Building Act 2004. The former influences the location and design of housing, and the latter influences the design and construction of housing in Auckland. The *Auckland Design Manual* (ADM) is a companion document to the AUP and provides non-statutory best practice guidance.

During 2023, Auckland Council's Economic and Social Research and Evaluation team and the Tāmaki Makaurau Design Ope (Auckland Council's urban design unit) undertook a comprehensive mixed method study to investigate how Aucklanders are experiencing living in recently built MDH. The purpose of the study was to understand whether MDH is meeting the day-to-day needs of households living in it, what is working well and what could be improved. The results of this study provide a snapshot of Aucklanders' experience living in MDH delivered at a time of rapid intensification, under a particular policy and regulatory setting.

The study considered how households use the rooms and spaces in their home, as well as how they experience aspects such as the size of rooms, temperature of their home, the amount of storage, and perceptions of their privacy. The findings of the study also build on Auckland Council's monitoring of the AUP, which looks at whether the Plan is enabling quality outcomes for residential development.

The results of this study will be shared with everyone in the MDH sector, from regulators to developers, to bring about improvements to the future delivery of MDH in Tāmaki Makaurau/Auckland, so that this form of housing better meets the diverse needs of a growing population, including the needs of households with children.

## Key research findings

**Medium density housing is meeting some of the needs of some households.** Smaller households of one or two adults were more likely to report aspects of their home are ‘meeting’ or ‘more than meeting’ their needs than were larger households with children. This pattern of more positive responses from smaller households without children is found across many of the aspects considered in this study (e.g. storage, size of spaces, privacy). To better meet the needs of a wider range of households, the study found that greater diversity in MDH is needed.

**The average size of homes was found to be smaller than best practice guidelines.** Over half of the 110 consented plans analysed as part of this study had internal floor areas smaller than the ADM recommended minimums (which themselves are smaller than other New Zealand and Australian best practice guidance). Nor was the allocation of floor area to different spaces always aligned with best practice guidelines. The floor area of living spaces tended to be smaller, while the floor area for bathrooms was greater than ADM recommendations.

The ADM and AUP apply the same minimum unit areas to all housing typologies including standalone houses, duplexes, terraced houses and apartments. This is not a good indicator of usable space, due to differences in circulation requirements. For example, 2- and 3-level homes require stairs and hallways, whereas single-level homes (often apartments) do not.

**Storage is inadequate for many households.** Over half of all the participants reported that they had insufficient storage for general household items (e.g. vacuum cleaner), linen, kitchen equipment and food, and occasional items (e.g. suitcases). For example, some kitchens were not fit for purpose because they did not have a pantry, which resulted in participants adding cupboards to dining spaces or garages. In turn, this can restrict the use of the dining spaces for dining and garages for carparking. The study also found that the functionality of outdoor living spaces as spaces for living activities (e.g. dining, play, socialising) can be reduced when they are used for storage of items that are not able to be stored within the home.

**Lounges were found to be 10m<sup>2</sup> smaller than best practice guidance.** The arrangement of furniture in lounges can be restricted in terraced houses and duplexes due to a narrow room width, the location of power points, doors and windows, and a need to leave space for people to move around furniture or access other spaces in the home. This is compounded when lounges are also used for storage.

The flow-on effects of insufficient built-in storage and inflexible lounges has a greater impact on larger households, which tend to be those with children. Smaller households have greater ability to mitigate these effects through using ‘spare bedrooms’ for storage and living activities.

**Nearly a quarter of participants have more bathrooms than they need.** Over half of the consented plans for 2- and 3-bedroom homes analysed showed one bathroom and/or WC (a separate toilet) per bedroom, which is one more bathroom or WC than is recommended by the ADM. It was also found that these ‘spare bathrooms’ were often being used for storage or drying laundry.

**Upper levels of terraced houses and duplexes are too hot in summer.** The combination of large windows, small window openings, solar orientation,<sup>1</sup> reduced natural ventilation and minimal shade provision (e.g. eaves, established trees) are resulting in homes that are too hot in summer. Participants were dissatisfied with hot temperatures as they cause uncomfortable sleeping conditions, and this could have heat-related health implications. Participants reported making changes to cool their homes such as keeping curtains closed and windows open, purchasing free-standing fans and air-conditioning units, and installing ceiling fans, heat pumps and air-conditioning units. These changes have a financial cost (installation cost as well as ongoing running costs) and they can also take up storage space which prevents other uses (e.g. ducting for air conditioning in wardrobes prevents storage of clothes). Such units may also be contributing to an urban heat island effect.<sup>2</sup> The occurrence of hot homes may increase as our climate changes and Auckland experiences warmer temperatures.

**Nearly half of all the participants living in terraced houses and duplexes have made changes to improve privacy within their home.** This included keeping curtains and blinds closed during the day, using furniture to block views and adding film or frosting to windows. Such changes can diminish the positive safety benefits of people overlooking public and semi-public spaces.

**Outdoor living spaces are highly valued but are often too small.** The participants placed high value on having an outdoor living space but almost half of those with an outdoor space reported the size of their space was not meeting their needs. Some participants had made changes to their outdoor spaces to increase functionality, to improve privacy and to provide more shade and greenery.

**Many households have more cars than is provided for in their off-street parking spaces.** Due to a lack of parking spaces within a property, cars are often parked on streets (including illegally on berms and footpaths), at very specific angles and positions on driveways, and in front yards. This results in properties and neighbourhoods that participants reported as being unsafe for pedestrians, a security concern for cars, and as generally unpleasant. Some participants reported needing to use a car as non-car transport modes do not meet their needs.

**Only half of households with a garage use it for carparking and garages are important multi-functional spaces.** For those households with a garage and at least one car, half used it for purposes other than parking their car including storage, exercise, as a study and for other living activities.

**Some households were not able to have friends and whānau visit or do other things that were important to them.** Having friends or whānau visit, hosting parties and doing hobbies were important activities for many participants. However, due to a lack of space (including storage for hobby equipment) and visitor carparking, many households reported that they were not able to do these activities comfortably, or at all.

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<sup>1</sup> Solar orientation is the direction windows face in relation to the sun. For example, north-facing windows will receive sun all day and will, therefore, contribute to heating of a room significantly more than a south facing window.

<sup>2</sup> The urban heat island effect refers to when a city (or parts of a city) experiences warmer temperatures than nearby rural areas, due to the ability for surfaces in each environment to absorb and hold heat.

## Method

The study has six components:

1. A rapid literature review of relevant housing literature.
2. Geospatial analysis of Auckland Council consents and rating data to identify recently built MDH:
  - a. 17,789 MDH properties that had received a Code Compliance Certificate (CCC) between November 2016 and September 2022 were identified.
3. Online surveys completed by participants living in MDH in Auckland:
  - a. 8978 households were invited to participate in a 20-minute online survey in early 2023. We received 1337 responses from 1243 households.
4. Analysis of consented plans:
  - a. 57 design attributes were analysed from consented plans for 110 properties whose households had participated in the survey.
5. 2-hour in-home immersions:<sup>3</sup>
  - a. 41 participants across 20 households.
6. Collation of selected best practice guidance from New Zealand and Australia to benchmark research results as well as legislative context of MDH delivery.

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<sup>3</sup> In-home immersions are a research technique that draws from ethnographic methods of active participant observation and participant-led interviewing.

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

# Chapter 1

## Introduction





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

### Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

### Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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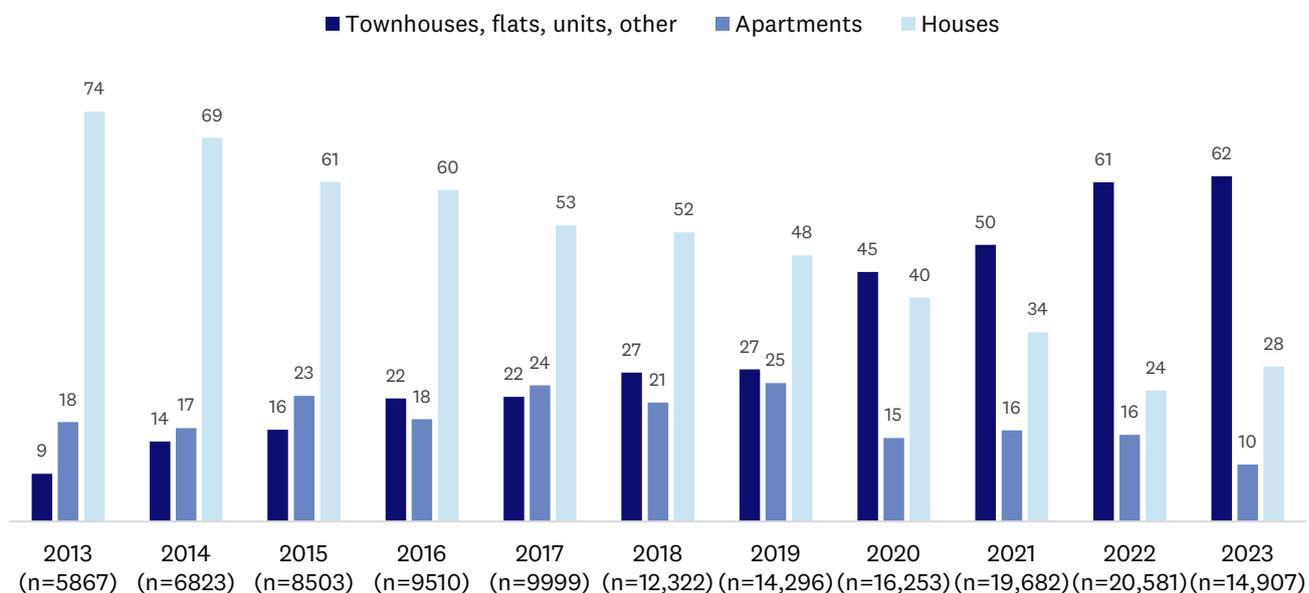
# 1 Background

Tāmaki Makaurau / Auckland has an ongoing need for more housing as the population continues to grow. Auckland’s population is expected to reach 2,230,800 by 2053, an increase of around 520,800 people from 2023.<sup>1</sup>

Auckland Council is committed to a quality compact approach, which enables development in areas easily reached by public transport, walking and cycling, and nearby services and facilities including employment and open spaces. Through the Future Development Strategy, Auckland Council directs future development in locations that means Auckland can protect its natural environment, be adaptive to climate change, and reduce greenhouse gas emissions. Increasing housing density is a key land use planning tool with which we can support the delivery of housing to meet the needs of our growing and diverse population, while also achieving the benefits of a compact urban form.

Over the past 10 years, Auckland has seen a shift in the types of housing that are being consented, and until just recently a year-on-year increase in the numbers of dwellings consented. The chart below in Figure 1 demonstrates a considerable increase in consents for ‘townhouses, flats, units, other’ (as defined by Stats NZ) and a decrease in consents for ‘houses’ during that time. This trend is anticipated to continue, due to demand for housing from a growing population and associated policy changes that direct Auckland Council to enable intensification (e.g. National Policy Statement on Urban Development (NPS-UD)).

**Figure 1: Proportion of different building typologies consented in each year (%)**



Source: Stats NZ Building consents data

Much of the housing being constructed is in existing urban areas that could be classified as ‘brown field’. This involves replacing existing standalone houses with terraced housing, duplexes and low-

<sup>1</sup> Source: <https://knowledgeauckland.org.nz/publications/auckland-council-population-projections-total-auckland-march-2023/>

to mid-rise apartment buildings (i.e. medium density housing). The homes being constructed tend to have a smaller floor area than those being replaced and less outdoor space.

There is, however, a significant knowledge gap in terms of how well recently built medium density housing (MDH), approved under the Auckland Unitary Plan (AUP), is meeting the needs of residents, and if the expectations outlined in the AUP of a ‘quality built environment’ are being realised.

Auckland Council is responsible for the review, approval and monitoring of residential housing under the AUP and Building Act 2004, which influences the location, design and construction of MDH in Auckland. Given the increasing amount of MDH being developed in Auckland, it is important to ensure that it is providing living environments that are functional, meets people’s everyday needs and support their wellbeing.

Auckland Council’s Section 35 monitoring<sup>2</sup> report, undertaken in 2022, noted a range of issues and identified that a key limitation in their ability to assess how effective the AUP is in delivering ‘a quality built environment’ in respect of people’s health, safety, wellbeing, choices, accessibility and travel was the lack of resources to conduct resident surveys. Their report stated such surveys “would have revealed residents’ lived experiences and attitudes towards perceptions of quality and (would) help quantify what is a reasonable benchmark for ‘high quality built environment’”.

As discussed in Section 2 of this chapter, research completed to date on MDH has included specific geographic locations (such as post-occupancy evaluations at Hobsonville Point and Stonefields), attitudes towards MDH from surrounding neighbours, and some smaller scale and limited research into the satisfaction of residents. However, we found no research that explored how residents experience daily life in their homes.

This research, undertaken by Auckland Council’s Economic and Social Research and Evaluation team in partnership with Auckland Council’s Urban Design Unit (known as the Tāmaki Makaurau Design Opener (TMDO)), aims to contribute towards filling this knowledge gap.

## **1.1 Defining ‘medium density housing’**

There is no agreed definition in Aotearoa New Zealand for the term ‘medium density housing’.

One way to define housing density is by measuring the number of dwellings in a geographical area. The definition of ‘medium density’ when taking this approach varies throughout New Zealand. For example, in the Waipa District, medium density is defined as 12 to 15 dwellings per hectare, but in Wellington this number of dwellings per hectare would be considered low density (Bryson & Allen, 2017).

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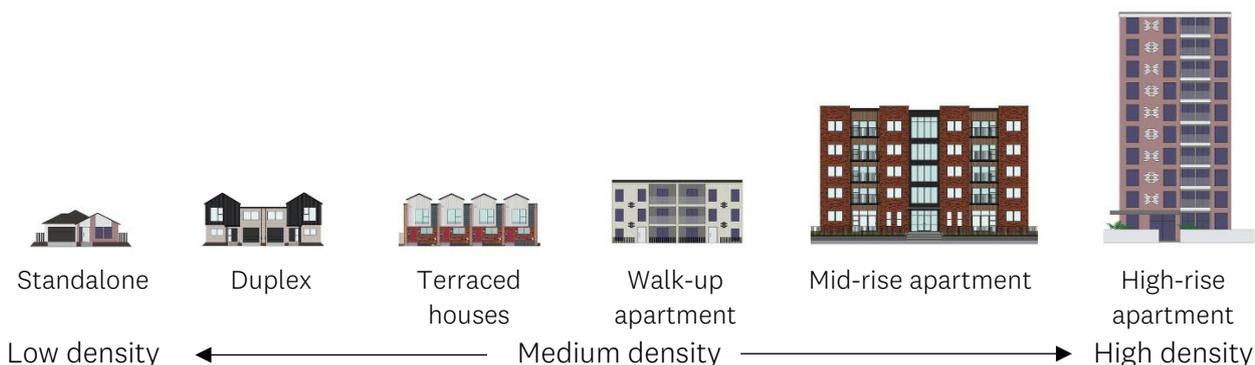
<sup>2</sup> Under Section 35(2)(b) of the Resource Management Act, every local authority is required to monitor the effectiveness and efficiency of the policies, rules or other methods in its regional policy statement or its plan, and to publish the results every five years. This requirement applied to the Auckland Unitary Plan from November 2021. Refer to Chapter 2 of this report for details on the Auckland Unitary Plan and s35 monitoring.

<https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/docsunitaryplanmonitoringtechnical/b2.3-quality-built-environment-technical-report.pdf>

Taking another approach, the Building Research Association of New Zealand (BRANZ) defines medium density housing as “multi-unit dwellings (up to 6 storeys)” (Bryson & Allen, 2017).

For this study, we adopted a typology-based definition. This determines ‘low density’ as including standalone dwellings, and ‘high density’ as including apartments over seven storeys, with medium density being everything in between (e.g. 2-4 storey terraced houses, 2-3 storey duplexes, 2-6 storey apartments) (Figure 2).

**Figure 2: Housing typologies across different densities**



## 1.2 Research objectives

The primary aim of this study is to assess how well recently built MDH is meeting the day-to-day needs of households who reside there and to assess satisfaction with a range of design attributes (e.g. temperature, amount of storage and perceptions of privacy).

More specifically, this research aims to:

- identify recently built medium density homes across the Auckland region
- assess household satisfaction with a range of design elements, and reasons for and impacts of satisfaction
- investigate design elements that work well, and not so well, for different household compositions, household sizes, and demographic groups (e.g. life stages, different abilities)
- explore participants’ likes/dislikes of their homes and modifications to improve shortcomings
- explore activities that can/cannot be accommodated within the home and why
- identify any differences in satisfaction and design attributes across housing typology and areas in the Auckland region
- compare actual design attributes, household experiences, design best-practice guidelines (e.g. Auckland Design Manual) and design requirements in the AUP.

The results of this study will be used by Auckland Council to investigate ways in which MDH can better meet Aucklanders’ changing needs and achieve a quality compact urban form that supports their wellbeing. This could be achieved in several ways including advocacy with the design community, updated design guidance on the Auckland Design Manual, and supporting changes to the AUP and other legislation.

This study does not explore households' options and choices about where they choose to live, in what housing typology, or whether they buy, lease or rent. Nor does it explore aspects of housing markets such as the role of landlords, investors or development companies in the lived experience of MDH. It is acknowledged that these aspects provide important context to these findings.

## 2 Complementary literature

Previous research on medium density housing in Aotearoa New Zealand has included post-occupancy evaluations/surveys (POE/POS) of developments in Tāmaki Makaurau such as Hobsonville Point (Haarhoff et al., 2019) and Stonefields (Mein et al., 2012). POE studies tend to focus on liveability of the neighbourhood (in contrast to the dwellings) by including indicators such as sense of place, safety and walkability (Boarin et al., 2018). Research has also been undertaken by Auckland Council on a master planned housing development at Addison in Auckland (Reid et al., 2019).

A series of publications by BRANZ reports on the liveability of MDH in New Zealand (Allen et al., 2020; Allen & O'Donnell, 2020b, 2020a, 2020c). The research behind these reports included a survey of 500 New Zealand residents (172 lived in Auckland), a literature review, and focus groups with staff from Auckland Council, Wellington City Council and Christchurch City Council. The research concludes that the survey participants' satisfaction with their medium density home is high and that they perceive their home to be as equally as liveable as a standalone home – but that there are opportunities to improve. The small sample size of the survey is only able to provide high-level insights about the experience of living in MDH in Auckland.

Attitudinal studies of people living in MDH have also been undertaken in New Zealand (such as Bryson, 2017; Nuth, 2020; Opit et al., 2020). These studies focused on perceptions among people residing, and not residing, in MDH. These studies show that acceptance of MDH as a viable housing form in New Zealand is increasing, although concerns surrounding MDH developments persist (Allen, 2016). Concerns include MDH not accommodating the needs of 'Kiwi families' and becoming 'slums' as a result of only attracting short-term occupants (Opit et al., 2020). These negative perceptions are reflected in media articles about housing intensification (e.g. 1 News, 2023; Hassan, 2016; Killick, 2022).

Investigating how people choose where to live is out of scope for this study; however, it is acknowledged that many factors impact where and how people live. In New Zealand, standalone homes continue to be reported as the preferred housing typology but interest in higher-density living is increasing (Bryson, 2017; Gjerde & Kiddle, 2022; Opit et al., 2020). Housing location that affects access to urban amenities (e.g. transport options, green spaces, services) plays a large role in housing choice (Allen, 2016; see also, Yeoman and Akehurst, 2015). Housing intensification is seen to provide benefits such as housing affordability, greater access to urban amenities, and facilitating a lifestyle with little reliance on cars (Carroll et al., 2011).

Research in Australia has explored cultural norms of households with children living in high-density typologies (i.e. apartments) and the prejudice they can experience for living in an 'inappropriate' form of housing (Kent et al., 2024; Kerr et al., 2021; Raynor, 2018). This norm is also present in New Zealand and research by Opit et al. (2021) reports that households with children can have positive experiences living in MDH. However, apartments in Australia, and in Tāmaki Makaurau, are reported to not be designed to accommodate the needs of households with children, both by architects and through policy (Andrews et al., 2019; Carroll et al., 2011; Cook et al., 2023; Tucker et al., 2021).

Research focused on understanding the lived experience of households in MDH in locations comparable with Auckland, that considered design details of the home and had sufficient rigour to draw conclusions (e.g. representative sample size) was not found in the literature. This research aims to contribute towards filling this gap.

## 3 This report

This report is aimed at a wide audience, including housing developers, architects, planners, urban design professionals, housing researchers and public policy professionals, as well as the wider Auckland public. It presents results from a comprehensive mixed-method study that included the identification of MDH across Auckland, a survey of 1413 Aucklanders living in MDH, 20 in-home immersions with households who had completed the initial survey, and a desktop exercise to extract specific design attributes from the consented plans of 110 homes.

Following this introductory chapter, Chapter 2 provides a detailed overview of the complex legislative context within which MDH is delivered in Auckland. Relevant urban design guidelines from New Zealand and Australia are also introduced and are referred to throughout the report. Some further details are provided in Appendix 2.

Chapter 3 outlines the broad research method and sample characteristics, particularly housing typology, household composition and household size. The chapter includes a series of maps showing the distribution of estimated MDH across the Auckland region, who was invited to participate in the survey, and who participated. Further information is available in Appendices 3 to 10.

Chapters 4 to 9 present results from the research. These research results are accompanied by AUP requirements, s35 monitoring, best practice design guidelines, and the specialist urban design and landscape architecture observations from staff in Auckland Council. Each chapter ends with a summary. Chapter 4 is the largest as it discusses indoor spaces for living – namely, kitchens, dining areas, lounges and bedrooms. Chapter 5 explores storage, laundries and bathrooms. Chapter 6 focuses on outdoor living spaces. Chapter 7 considers aspects of the indoor environment such as temperature, ventilation and privacy. Chapter 8 is about the storage of vehicles – namely, carparking and bike storage. Chapter 9 discusses aspects of homes shared with neighbours such as rubbish collection and communal outdoor living spaces, as well as perceptions of safety.

The report ends with a discussion and recommendations chapter (Chapter 10).

### 3.1 Presentation of study results

As mentioned above, Chapters 4 to 9 present results from a survey, in-home immersions and analysis of 110 consented plans. These are presented separately, by topic. Some further details on how these results are presented in this report are outlined below.

#### Survey results

Results from the survey are presented by three bases of analysis:

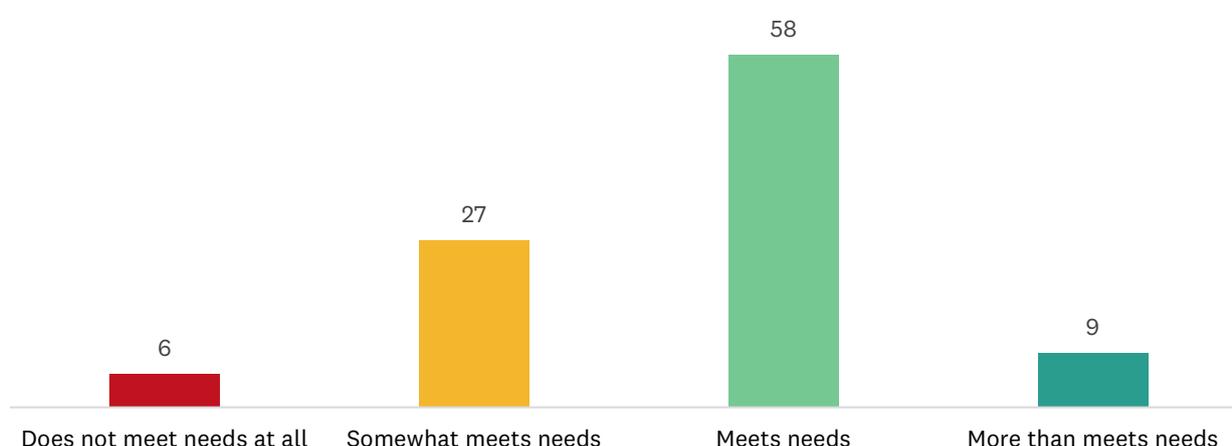
1. participants
2. properties

3. household composition.<sup>3</sup>

We used all the participants as the base of analysis when reporting on participant perceptions, such as satisfaction with, or rating of the impact of, aspects of their home, their feelings of safety, etc. As discussed in Chapter 3, some properties returned more than one survey response, as was encouraged in the invitation letter. All responses are included when results are presented at the participant level (see Figure 3 for an example).

Charts tend to exclude ‘not applicable’ or ‘missing’ responses for ease of readability. Percentages displayed in charts are calculated excluding ‘not applicable’ or ‘missing’ responses, and the values sum to 100 per cent (except for multiple response questions). As shown in the example chart below (Figure 3), percentages are calculated from 1335 survey responses, as two participants did not answer the question or chose ‘not applicable’.

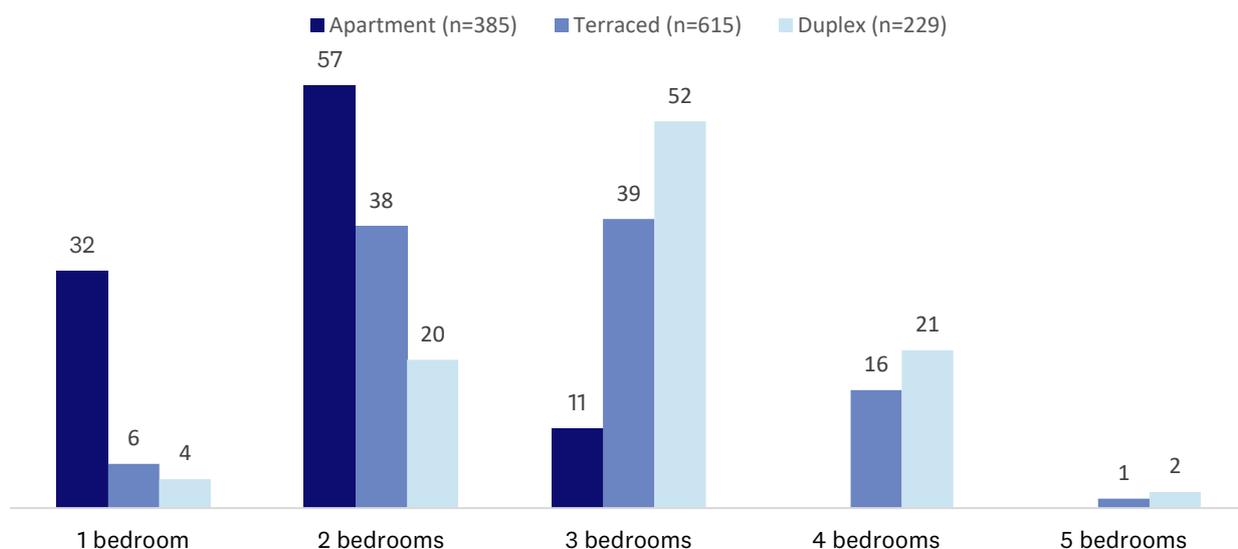
**Figure 3: Example chart displaying results by participant (n=1335) (%)**



Other results that relate to aspects of the property, such as the number of cars owned by members of the household or the number of bedrooms in a home, are reported at the property level (Figure 4). Survey responses were received from a total of 1243 properties, of which 91 returned two survey responses, two returned three responses, and one returned four responses (totalling 1337 survey responses). For those properties that returned more than one survey response, responses from one participant only were chosen at random to represent the property. These charts also tend to exclude ‘not applicable’ or ‘missing’ responses. The chart below excludes responses from 14 properties which have missing data for the number of bedrooms in the home.

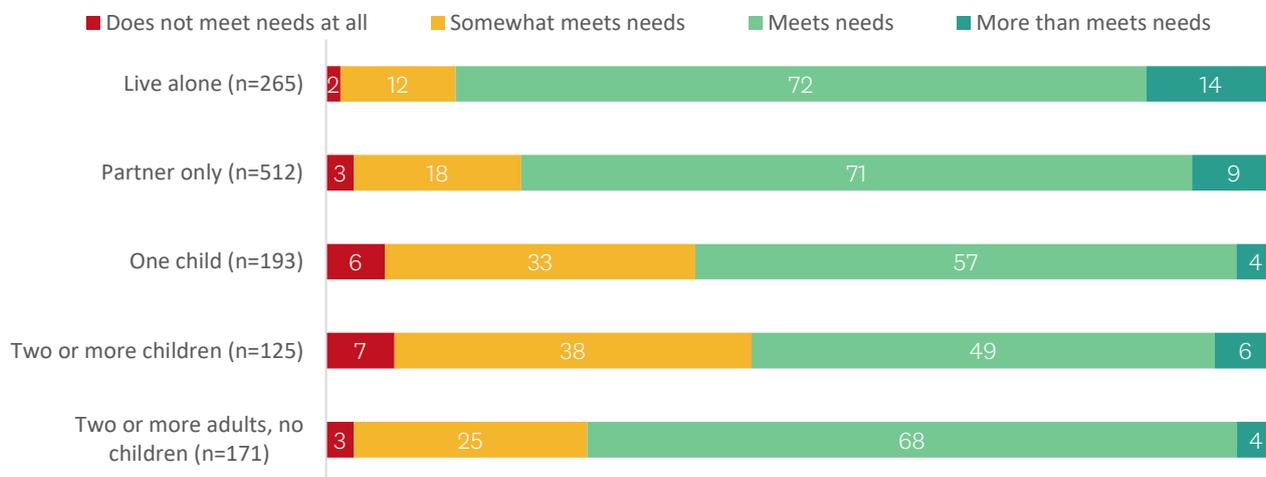
<sup>3</sup> See Chapter 3, Section 4 Household composition.

Figure 4: Example chart displaying results by property (%)



In some instances we present results by ‘household composition’. Using participants’ responses to questions related to who they lived with, we constructed five household types: live alone; partner only; one child (with one or more adults); two or more children (with one or more adults); and two or more adults, no children. Each type is described in more detail in Chapter 3, and an example chart of these different household compositions is given in Figure 5.

Figure 5: Example chart displaying results by household composition (%)



## Quotes

Verbatim quotes from survey responses are shown throughout the report to provide further context. These comments were in response to open-ended questions that asked participants to describe what they liked and disliked about their home, and what makes it comfortable and uncomfortable to do activities of importance to them at home. Percentages referred to are of all those who made a comment for each relevant question.

Some quotes are presented alongside floor plans (drawn based on the consented plans of the home) or Google Street View imagery collected in a way that does not identify the exact location of participants.

## **In-home immersions**

Preliminary results from the in-home immersions are presented in this report. A comprehensive report with complete results is forthcoming. We have used verbatim quotes, photos and annotated floor plans from participants' homes. The floor plans were constructed by members of the Tāmaki Makaurau Design Ope, using a combination of consented plans, photos of the home and research notes. Floor plans are often presented alongside photos to provide broader context of the space.

All photos included in this report have been reviewed by participants and edited to protect participant confidentiality (e.g. pixilating licence plates, photos on walls). We have their full permission to use them.

## **Photos**

In addition to photos from the in-home immersions, this report contains photos from different sources including real estate listings, Google Street View imagery, Nearmap satellite imagery, and photos taken by Auckland Council staff in TMDO. All images are from the Auckland region and were taken within the last two years.

## **Floor and site plans**

The report also includes floor and site plans. In some cases, these are from the consented floor plans that we analysed and may be accompanied by images and quotes from participants living in the home. In other cases, plans are demonstrating best practice design guidelines and may be fictional.

Figure 6 is an example floor plan. The colours for different spaces and rooms are consistent across all plans in the report. Some plans show floor areas and/or dimensions, whereas others that show only a portion of a home may exclude these dimensions. All floor plans are drawn to scale and use standard-sized furniture (including queen beds) and appliances.

The example floor plan does not include all the spaces and facilities present on floor plans presented throughout this report. In addition to what is shown on the floor plan below are balconies, ground-level outdoor living spaces (and landscaping details), garages and WCs (water closets; i.e. separate toilets).

Figure 6: Example floor plan



Note: WD = wardrobe, F = fridge, P = pantry (not included in example above), HWC = hot water cylinder (not included in example above)

The next chapter in this report explores the legislative context within which MDH is delivered in Auckland.

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 2

# Legislation and policy context





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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**Glossary of acronyms**

ADM	Auckland Design Manual
AUDP	Auckland Urban Design Panel
AUP	Auckland Unitary Plan
BRANZ	Building Research Association of New Zealand
FDS	Future Development Strategy
IHP	Auckland Unitary Plan Independent Hearings Panel
LGATPA	Local Government (Auckland Transitional Provisions) Act 2010
MDH	medium density housing
MDRS	Medium Density Residential Standards
MHS	Mixed Housing Suburban zone
MHU	Mixed Housing Urban zone
NPS-UD	National Policy Statement on Urban Development
PAUP	Proposed Auckland Unitary Plan
RMA	Resource Management Act 1991
RMEHS	Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021
RPS	Regional Policy Statement
THAB	Terraced Housing and Apartment Buildings zone
TMDO	Tāmaki Makaurau Design Ope (Auckland Council's Urban Design Unit)

## Introduction to this chapter

This chapter outlines the legislative context within which medium density housing (MDH) is delivered in Tāmaki Makaurau / Auckland.

MDH is a relatively recent form of housing in Aotearoa New Zealand, compared with many other places around the world such as Europe, Asia, America and Australia. The standalone house on a quarter-acre section has been the predominant housing form in New Zealand, and as a result, the necessary skills to design and build MDH are still maturing (see Marriage, 2022).

The location, design and construction of MDH is influenced by both central and local government legislation. Auckland Council is a Building Consent Authority under the Building Act 2004 and is a unitary authority under the Local Government Act, which means it is a territorial authority that has the responsibilities, duties and powers of a regional council conferred on it. As a unitary authority, Auckland Council is responsible for both district and regional resource consents under the Resource Management Act 1991 (RMA). Accordingly, Auckland Council reviews, approves and monitors both building and resource consent applications for MDH. Private developers and social housing providers who design and construct MDH are required to obtain the necessary building and planning approvals for MDH through Auckland Council.

The RMA and the Building Act 2004 direct Auckland Council consenting processes. Resource consents are applied for under the Auckland Unitary Plan (AUP). When the council is considering resource consent applications, section 104 of the RMA requires it to have regard to National Policy Statements, including the National Policy Statement on Urban Development 2020 (NPS-UD; Ministry for the Environment, 2020). This combination of legislation, and resulting policy and processes, influences the location, design and construction of homes that Aucklanders live in. These are discussed further in Sections 1, 2 and 3 of this chapter.

In addition to legislation and policies, a collection of best practice guidelines can be used to inform the design of homes. In the Auckland context, the *Auckland Design Manual (ADM)*, the Ministry for the Environment (2022) *National Medium Density Design Guide*, the Ministry of Housing and Urban Development (2023) *Public Housing Design Guidance for Community Providers and Developers*, and Kāinga Ora (2024) *Ngā Paerewa Hoahoa Whare Design Requirements* provide non-statutory design guidance.

There is also a wealth of non-statutory design guidance for MDH across the world. This report refers to three design guidelines from Australia: the *Low Rise Housing Diversity Design Guide (2020)* and *Apartment Design Guide (2015)* from New South Wales, and the State of Victoria's *Apartment Design Guidelines for Victoria (2021)*. There are many guidelines in Australia and these three have been selected as they apply to similar contexts, including levels of intensification. They carry additional weight as statutory design guidelines under state planning legislation in Australia. Section 5 below provides more detail on these guidelines.

As well as a complex legislative and policy context, the quality, location, design and construction of MDH is also influenced by external factors beyond the control of Auckland Council including:

- market demand, trends and patterns
- population changes
- development funding
- mortgage lending criteria
- insurance
- construction industry skills, capacity and competency
- construction costs
- supply chains
- taxation penalties and incentives.

Section 6 summarises a collection of MDH design observations by the Design Review team within Tāmaki Makaurau Design Ope (TMDO) at Auckland Council.

# 1 Legislation and policy

Two ‘streams’ of legislation are of relevance to housing in New Zealand, one resulting from the Resource Management Act (RMA) 1991 and the other from the Building Act 2004. These are discussed in turn below. The Local Government (Auckland Transitional Provisions) Act 2010 (LGATPA) required Auckland Council to prepare an Auckland combined plan as defined in s122 of the LGATPA. The AUP (or the Proposed Auckland Unitary Plan (PAUP) when notified on 30 September 2013) is the Auckland combined plan, which includes a Regional Policy Statement, Regional Plan, Regional Coastal Plan and District Plan for the Auckland region that manages how land and the coastal marine area is used.<sup>1</sup> Through national direction, such as the NPS-UD, central government requires local authorities to amend their policy statements and plans. The RMA is the legislation under which local authorities make decisions on resource consents via RMA-plan rules and requires local authorities to monitor the outcomes of their plans (s35).

The Building Act 2004 sets the ‘rules’ for buildings and is the legislative basis of building consents, which are administered by Auckland Council, a building consent authority for the purpose of that Act. The Building Act 2004 is supported by the Building Code, non-prescriptive performance-based regulations, intended to allow innovation in design.

## 1.1 The Resource Management Act 1991 and the Auckland Unitary Plan

The RMA is a key piece of legislation that sets out how the environment should be managed and establishes the framework by which land uses, including MDH, are permitted or considered by local authorities when assessing resource consent applications. The RMA has been subject to substantive amendment since its enactment 33 years ago and the need for reform is widely acknowledged. Its repeal was recently reversed, with more amendments signalled during 2024 by central government following which its replacement is anticipated.<sup>2</sup>

Until replaced by alternative legislation, central and local government have responsibilities to administer the RMA. While central government provides national direction, local government implements the RMA and national direction through mandatory RMA policy documents in each region or district.

As mentioned above, Auckland Council is a unitary authority, so the Auckland Unitary Plan (AUP) is a combined planning document containing a Regional Policy Statement (RPS), Regional Plan, Regional Coastal Plan and District Plan for the Auckland region.<sup>3</sup> The RPS specifies the key resource management issues for the region and the high-level policy approach to them, which are addressed in greater detail, including rules, by the other RMA-plans within the AUP.

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<sup>1</sup> Excluding the Hauraki Gulf Islands, which is subject to the Auckland Council District Plan – Hauraki Gulf Islands section.

<sup>2</sup> Further information on what the repeal means can be found on the Ministry for the Environment website: <https://environment.govt.nz/news/nba-spa-repeal/>

<sup>3</sup> Excluding the Hauraki Gulf Islands, which is subject to the Auckland Council District Plan – Hauraki Gulf Islands section.

The AUP has three key roles:

1. to describe how the people and communities of the Auckland region will manage Auckland's natural and physical resources while enabling growth and development and protecting the things people and communities value
2. to provide the regulatory framework to help make Auckland a quality place to live, attractive to people and businesses, and a place where environmental standards are respected and upheld
3. to be the principal statutory planning document for Auckland.<sup>4</sup> Other relevant documents, each with a particular statutory function, include the Auckland Plan 2050, the Auckland Long-Term Plan and the Auckland Regional Land Transport Plan.

## **1.2 National Policy Statement on Urban Development (2020) and Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021**

Issued under the RMA, national policy statements provide direction for matters of national significance relevant to sustainable management. The NPS-UD directs Auckland Council to enable greater building height and density of urban form within and around Auckland's city centre zone, metropolitan centre zones and new and existing rapid transit stops such as eligible train and busway stations as well as neighbourhood, local and town centres.

The Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (RMEHS) amended the RMA to require the councils of New Zealand's largest and rapidly growing cities – Auckland, Hamilton, Tauranga, Wellington and Christchurch – to incorporate new Medium Density Residential Standards (MDRS) in relevant residential zones.<sup>5</sup> Many of the core aspects of the MDRS were derived from the AUP, in particular the Residential: Mixed Housing Urban Zone standards, and then amended.

Through the use of MDRS, the government requires Auckland Council to enable MDH across most of Auckland's residential suburbs, as most residential land is in a 'relevant residential zone'. Three dwellings of up to three storeys, including terraced housing and apartment buildings, are to be permitted where they comply with MDRS unless a 'qualifying matter' applies; that is, a matter that may reduce the required height and density of built form where there is a feature or value that should be protected or avoided, but only to the extent necessary to protect that feature/value. Four or more dwellings are to be enabled through a non-notified resource consent (i.e. without the need for neighbours' approval) where they comply with the MDRS density standards (except for the standard in clause 9AA – no more than three residential units per site). Applications for one, two or three dwellings with any infringement(s) to MDRS rules cannot be publicly notified (but affected neighbours can make submissions if applications are limited notified).

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<sup>4</sup> Excluding the Hauraki Gulf Islands, which is subject to the Auckland Council District Plan – Hauraki Gulf Islands section.

<sup>5</sup> Further information on the MDRS can be found here: <https://environment.govt.nz/assets/publications/Files/Medium-Density-Residential-Standards-A-guide-for-territorial-authorities-July-2022.pdf>

The NPS-UD directs Auckland Council to use a 30-year planning horizon in providing at least sufficient capacity to meet expected demand, although zoned capacity needs only to be sufficient to meet the next 10 years' growth. Future Development Strategies (FDSs) are a key requirement of the NPS-UD and must show how councils are planning to meet these requirements for sufficient capacity. As well as these quantitative requirements, a FDS must set a strategy to achieve more qualitative outcomes, and most importantly a wide range of elements that contribute to a 'well-functioning urban environment'.

Auckland's FDS 2023-2053 promotes key principles that direct future planning for the city, and the direction of growth, in order to achieve a well-functioning urban environment.<sup>6</sup> The FDS advocates a 'quality compact' approach, continuing a well-established theme of strategic planning at Auckland Council, dating back to the first Auckland Plan (2010). A fundamental element of this approach is to plan for quality medium- and high-density development in 'good' locations. For Auckland, good locations are ones that have access to public transport services, employment and wider services.

Although low-density development is still provided for to some extent through this planning framework, recognising some discrete constraints that exist in some locations, the overarching direction is towards medium- and high-density redevelopment. This is especially relevant in Auckland's existing urban area. However, even in new greenfield developments, a large proportion of housing is being developed at medium density.

In addition to the specific FDS requirements, the NPS-UD also requires Auckland Council, among other things, to make planning decisions that contribute to well-functioning urban environments. This is an ongoing requirement, distinct from the requirement to implement MDRS via a special planning process. Integration of a well-functioning urban environment is proposed in the RPS through Proposed Plan Change 80 (PC80) to the AUP. Many aspects of what constitutes a well-functioning urban environment are already set out in the AUP, although the term itself was introduced by the NPS-UD. A review of the literature was undertaken by Auckland Council's Research and Evaluation Unit (RIMU) in 2020 to investigate the term 'well-functioning urban environment' in response to the NPS-UD (Joynt, 2021). The NPS-UD objectives and policies of relevance to this research, and Proposed Plan Change 80's response to these objectives and policies, are set out in Appendix 2. The Council's decision of independent hearing commissioners on Plan Change 80 is currently subject to appeal in the Environment Court,<sup>7</sup> and as such, greater weight is afforded to the operative RPS objectives and policies (refer Appendix 2) at the time of publication.

Auckland Council notified a series of AUP changes in response to the NPS-UD and RMEHS, including (but not limited to):

- Plan Change 71: Removal of car parking minimums
- Plan Change 78: Intensification
- Plan Change 79: Amendments to the transport provisions

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<sup>6</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/development-strategy/Pages/default.aspx>

<sup>7</sup> Beachlands South Limited Partnership v Auckland Council -ENV-2023-AKL000181.

- Plan Change 80: RPS well-functioning urban environment, resilience to the effects of climate change and qualifying matters.

In early 2024, the New Zealand Government proposed making the MDRS rules optional for councils, with the need for councils to ratify any use of MDRS, including existing zones.<sup>8</sup> While this change is yet to be legislated, the Minister of Housing and RMA Reform has confirmed that: “We will be allowing Councils to opt out of the Medium Density Residential Standards if they wish. The government position is that the MDRS tools were too blunt and one-size-fits all.”<sup>9</sup> At the time of publication, Auckland Council is working with the Ministry for the Environment and Government ministers to determine the scope and time frames for completing the mandatory intensification process. Until legislation is enacted, the mandatory requirements for councils in high growth areas to give effect to the NPS-UD and to incorporate the MDRS remains, including Auckland.

More recently, the central government has indicated as part of their ‘Going for Housing Growth’ programme that the ability for councils to specify minimum floor areas or balconies for residential dwellings will be removed.<sup>10</sup> These changes will be implemented through amendments to the RMA and the NPS-UD with the requirements expected to be in place by mid-2025. Formal consultation on the detailed design of the changes will occur in early 2025.

### 1.3 Auckland Unitary Plan

The Auckland Unitary Plan (AUP) is the ‘rule book’ that shapes the way Auckland grows. It guides the use of Auckland’s natural and physical resources, including land development,<sup>11</sup> by determining:

- what can be built and where, and what activities may be undertaken
- what discharges to, or disturbances of, the natural environment may occur
- what uses are appropriate in the coastal marine environment.

A higher quality and more compact Auckland is the desired urban form, with fewer opportunities for greenfields growth.

The RPS is the component of the AUP that provides an overview of the resource management issues across the Auckland region, and the policies and methods available to achieve integrated management of regional natural and physical resources.

Of relevance to this study are RPS Chapters B2.2 Urban growth and Form and B2.3 A quality built environment, which set out the expectations for quality compact urban development across the region for all types and scales of development. Proposed Plan Change 80 expands the RPS objectives

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<sup>8</sup> Source: <https://www.hud.govt.nz/assets/Uploads/Documents/Cabinet-papers/Cabinet-Paper-Fixing-the-Housing-Crisis.pdf>

<sup>9</sup> Hon Chris Bishop. (2024, 21 March). *Speech to the Property Council of New Zealand Residential Development Summit*. <https://www.beehive.govt.nz/speech/speech-property-council-new-zealand-residential-development-summit>

<sup>10</sup> Source: [Factsheet 2 - Detailed information .pdf \(beehive.govt.nz\)](#)

<sup>11</sup> With the exception of land development in the Hauraki Gulf Islands, which is subject to the Auckland Council District Plan – Hauraki Gulf Islands section.

and policies to give effect to the well-functioning urban environment directive of the NPS-UD, which are set out in Appendix 2 of this report.

The RPS sets the framework for the role of the natural and built environment to support people's lives – their health, safety, wellbeing, choices, accessibility and travel – then flows down into the residential zones and associated standards in the AUP's district plan section. Standards (rules) provide for activities (such as residential development) as either permitted, controlled, restricted discretionary, discretionary, non-complying or prohibited activities. The standards set out limits, such as maximum height and minimum yards and height in relation to boundary, to guide the form of development. Non-compliance with a standard often results in a more onerous resource consent process.

A resource consent is a planning approval for an activity that is not allowed 'as of right', meaning a permitted activity. Gaining a resource consent is a separate process from building consent approval which is required under the Building Act 2004, which sets out the rules for the construction of buildings.

## 1.4 History of the Auckland Unitary Plan

Auckland Council was established on 1 November 2010, following the amalgamation of Auckland's seven city and district councils, and the Auckland Regional Council. The Proposed Auckland Unitary Plan (PAUP) was notified for public submissions on 30 September 2013, replacing 13 legacy district and regional plans.

Matters relevant to this research that were initially proposed in the notified PAUP residential zone standards include:

- minimum lot sizes per dwelling and minimum frontage lengths;<sup>12</sup> (relates to overall intensity of MDH developments)
- minimum dimension of principal living rooms (3m) and principal bedrooms (3.5m x 3m);<sup>13</sup> (relates to size, flexibility and functionality of internal living spaces and bedrooms)
- minimum storage areas for waste for 10 or more dwellings, based on number of bedrooms;<sup>14</sup> (relates to day-to-day needs of residents and functionality of MDH)
- minimum general storage areas of 4m<sup>3</sup> excluding wardrobes and kitchen cupboards;<sup>15</sup> (relates to day-to-day needs of residents and functionality of MDH)
- minimum standards to enable universal access for people of all ages and abilities;<sup>16</sup> (relates to flexibility of MDH to provide for a range of different housing needs).

The Auckland Unitary Plan Independent Hearings Panel (IHP) was appointed to hear submissions and evidence on the PAUP in accordance with LGATPA. The IHP was independent of Auckland

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<sup>12</sup> *Proposed Auckland Unitary Plan*, Residential Standard 3.1 Maximum density.

<sup>13</sup> *Proposed Auckland Unitary Plan*, Residential Standard 7.18 Minimum dimension of principal living rooms and principal bedrooms.

<sup>14</sup> *Proposed Auckland Unitary Plan*, Residential Standard 7.19 Servicing and waste.

<sup>15</sup> *Proposed Auckland Unitary Plan*, Residential Standard 7.21 Storage.

<sup>16</sup> *Proposed Auckland Unitary Plan*, Residential Standard 7.22 Universal access.

Council and made recommendations to the council about any changes considered necessary to the PAUP.

In response to submissions on the PAUP, questioning from the IHP, and further evaluation, the council's expert witnesses supported further amendments to density provisions, proposing no density limits for sites in the Residential – Mixed Housing Urban (MHU) and Residential - Terraced Housing and Apartment Buildings (THAB) zones, and sites of 1000m<sup>2</sup> or more in the Residential – Mixed Housing Suburban (MHS) zone.<sup>17</sup> For sites in MHS zones less than 1000m<sup>2</sup>, a minimum 200m<sup>2</sup> density standard was proposed. Council witnesses recommended deletion of notified development standards relating to storage, universal access, minimum dimension of principal living rooms and principal bedrooms, servicing and waste.<sup>18</sup> The remaining PAUP proposed standards were supported by council's expert witnesses as being appropriate for all residential development.

While submitters generally supported this revised approach to minimum density provisions, concerns remained that the development standards for compliance were complex and were not the most appropriate method to achieve the urban and economic growth goals of the RPS.<sup>19</sup> Submitters, including the then Housing New Zealand Corporation, recommended that there should be:

... a reduction in the currently proposed extensive suite of quantitative development controls, such that a limited number of quantitative controls are retained to address the key matters which have the potential to create adverse effects external to a site ... with the remainder of controls which relate to potential effects internal to a site being addressed in a more flexible way through the use of design-related matters of discretion and assessment criteria.<sup>20</sup> (emphasis added)

The IHP generally agreed with evidence supporting this position and recommended removal of the density provisions and provided for up to four dwellings as a permitted activity. The IHP recommended for developments of five or more dwellings, only building height, height in relation to boundary, alternative height in relation to boundary and yards to be applicable permitted standards. The IHP further recommended compliance with all other standards (such as building coverage, landscaped area, outdoor living space and outlook) become matters of discretion and assessment

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<sup>17</sup> Auckland Unitary Plan Independent Hearings Panel. *Report to Auckland Council Hearing Topics 059-063, Residential zones, Section 5.1* (July 2016). <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/history-unitary-plan/ihp-designations-reports-recommendations/Documents/ihp059to063residentialzones.pdf>

<sup>18</sup> Auckland Council. (2015, November 17). *Closing statements and points of clarification on behalf of Auckland Council in relation to Topics 059 residential objectives and policies; 060 residential activities; 061 retirement and affordability (in part); 062 residential development controls; and 063 residential controls and assessment. Topics 059-063, Annexure D – proposed mark ups. 059, 060, 062 and 063- Hrg - Auckland Council - CLOSING STATEMENT (2).pdf*

<sup>18</sup>Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/history-unitary-plan/Pages/history-auckland-unitary-plan.aspx>

<sup>19</sup> Auckland Unitary Plan Independent Hearings Panel. *Report to Auckland Council Hearing Topics 059-063. Residential zones. July 2016. Sections 2.1 & 2.2. Source: https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/history-unitary-plan/ihp-designations-reports-recommendations/Documents/ihp059to063residentialzones.pdf*

<sup>20</sup> Ibid. Section 2.2, page 12.

criteria for restricted discretionary activity applications.<sup>21</sup> Among other standards, the minimum dwelling size standard was recommended to be deleted in its entirety. The IHP stated that the removal of the density standards along with “a number of development standards and consenting processes (generally restricted discretionary activity) ... would ensure good living environments and good environmental outcomes”.<sup>22</sup> Part of the IHP’s reasoning for recommending deletion of standards such as minimum dwelling size, minimum room dimensions and storage was a view that “minimum standards are required pursuant to the Building Act 2004, and these will ensure functionality is considered, as well as health and wellbeing”.<sup>23</sup> Section 18 of the Building Act 2004 prevents the imposition of additional or more restrictive performance criteria than in the Building Code. The IHP did not accept the position advanced in the council’s legal submissions “that section 18 of the Building Act does not limit the ability to include rules in the PAUP that may require buildings to achieve higher performance standards than the Building Code where the rules meet the statutory tests of the RMA (and have a legitimate resource management purpose)”.<sup>24</sup>

The Auckland Unitary Plan (AUP) became operative in part in November 2016, and the residential provisions of the AUP became operative in April 2018.<sup>25</sup>

## 1.5 Medium density housing under the AUP

The residential zone standards in the AUP provide for unlimited density (i.e. no minimum lot size) for land use led development (as opposed to vacant lot subdivision) in the three main residential zones—MHS, MHU and THAB. This was a significant shift away from the legacy district plan approaches of minimum lot sizes, with MDH developments of four or more dwellings now only constrained by the building envelope, which is controlled by standards such as the building height, height in relation to boundary and minimum yards.

For residential development in the MHS and MHU zones, any development of four or more dwellings requires a resource consent application, and all residential development in the THAB zone requires a restricted discretionary activity resource consent (with the exception of 1-3 dwellings as provided for under Plan Change 78: Intensification, where the development complies with s86BA of the RMA),

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<sup>21</sup> E.g. Auckland Independent Hearings Panel Recommendations. Chapter H4 Residential – Mixed Housing Suburban Zone. H4.8.1(2)(b) Matters of Discretion and H4.8.2(2).

<https://unitaryplan.aucklandcouncil.govt.nz/Images/AUPIHP%20Recommended%20Plan-July%202016/Chapter%20H%20Zones/H4%20Residential%20-%20Mixed%20Housing%20Suburban%20Zone.pdf>

<sup>22</sup> Auckland Unitary Plan Independent Hearings Panel. July 2016. Report to Auckland Council Hearing Topics 059-063. Residential zones. Section 5.2, page 16. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/history-unitary-plan/ihp-designations-policies-reports-recommendations/Documents/ihp059to063residentialzones.pdf>

<sup>23</sup> Ibid, Section 6.2, page 21.

<sup>24</sup> Counsel for Auckland Council. 17 November 2015. Closing Statements and Points of Clarification on Behalf of Auckland Council In relation to Topics 059 Residential Objectives and Policies; 060 Residential Activities; 061 Retirement and Affordability (In Part); 062 Residential Development Controls; and 063 Residential Controls and Assessment. [059, 060, 062 and 063- Hrg - Auckland Council - CLOSING STATEMENT \(2\).pdf](#)

<sup>25</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/history-unitary-plan/Pages/history-auckland-unitary-plan.aspx>

recognising that as the scale of development increases, so does the need for a quality design response including:<sup>26</sup>

- achieving the planned built character of the zone
- achieving attractive and safe streets and public open spaces
- managing the effects of development on adjoining sites, including visual amenity, privacy and access to daylight and sunlight
- achieving high quality on-site living environments.

All resource consent applications for four or more dwellings in MHS and MHU and all dwellings in THAB are assessed in terms of their compliance with the following standards:

- height
- height in relation to boundary
- yards.

Other standards for consideration (but not standards for compliance) in the assessment of a resource consent application include (but are not limited to):

- building coverage
- landscaped area
- impervious area
- outlook space
- outdoor living space
- daylight
- outdoor living space
- fence and wall heights
- minimum dwelling size
- vehicle and pedestrian access and parking design.

Other matters that must be considered in the assessment of a resource consent application for residential development include (but are not limited to):

- building intensity, scale, location, form and appearance
- location and design of parking and access
- attractive and safe streets and public open spaces
- visual dominance
- privacy within and between sites
- natural cross-ventilation within dwellings
- sunlight and daylight access to dwellings
- storage
- waste and recycling facilities
- sunlight access and privacy to outdoor living spaces.

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<sup>26</sup> Auckland Unitary Plan. H4.1 Residential – Mixed Housing Suburban zone – Zone description, and H5.1 Residential – Mixed Housing Urban zone – Zone description.

Chapters 4 to 9 in this report include reference to AUP provisions relevant to each of the aspects of MDH covered in this study. For brevity, this is limited to the MHU zone provisions, which are similar to those within the MHS and THAB zone provisions. It is acknowledged that MDH is also provided for in the Business Mixed Use and Centres zones, subject to certain standards. However, those provisions are generally less focused on residential amenity outcomes, as these zones enable a range of activities in different settings compared with residential zones where housing is the predominant activity.

## **1.6 Auckland Unitary Plan Section 35 monitoring**

Under Section 35(2)(b) of the RMA, all local authorities in New Zealand are required to monitor the effectiveness and efficiency of the policies, rules or other methods in their RPS or plan, and to publish the results every five years. This requirement applied to the AUP from November 2021.

The Section 35 (s35) monitoring considers how effective and efficient the objectives, policies, rules and other methods of the AUP have been in meeting the outcomes intended by the RPS. Key components of monitoring include assessing how the AUP is progressing to deliver the outcomes sought by the RPS and recommendations based on the assessment.

Auckland Council has undertaken monitoring on a range of RPS topics,<sup>27</sup> including Regional Policy Statement B2.3 – A quality built environment. This monitoring focused on the quality of residential developments in the more intensive residential zones: MHS, MHU and THAB zones. It also looked at the quality of residential developments in the Business – Mixed Use zones. The monitoring also assessed other aspects of the RPS, namely B2.1 – Urban Growth and Form and B2.4 – Residential Growth. This monitoring included the extent of intensification to achieve a quality compact urban form as well as attractive, healthy and safe housing with a range of choices to meet the diversity of Aucklanders’ needs. This monitoring provides an important baseline to understand how the AUP enables quality outcomes for residential development, prior to the introduction of changes to the AUP to implement the NPS-UD and MDRS.

In July 2022, Auckland Council published the AUP Section 35 B2.3 – A quality built environment monitoring report which analysed 130 residential developments with a total of 2339 dwellings across the Auckland region in the MHS, MHU, THAB and Business Mixed Use zones.<sup>28</sup> The analysis looked at over 50 aspects of each development and sought to evaluate terms in the AUP such as ‘attractive’ or ‘variation in roof forms’.

The analysis included site visits and assessment of approved resource consent plans in order to determine how effective and efficient the AUP has been in delivering the outcomes expected by the RPS in terms of a quality built environment.

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<sup>27</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/Pages/auckland-unitary-plan-monitoring.aspx>

<sup>28</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment.

The monitoring found that there were several areas where the AUP was not delivering the anticipated outcomes, which have been further investigated in this study, including:

- onsite amenity (for occupants and for neighbouring properties)
- solar access
- privacy (visual and acoustic)
- outlook, privacy and passive surveillance
- private outdoor living space functionality, amenity, visual and acoustic privacy
- landscape treatment (amount and quality)
- pedestrian safety within sites, particularly associated with driveways and grouped parking areas.

Of particular relevance to MDH, council's s35 monitoring found that on average, each existing dwelling is being replaced by up to eight dwellings, with site sizes as small as 50m<sup>2</sup>.<sup>29</sup> The authors commented that:

Sites are becoming so small that functionality and amenity can be compromised (particularly around private outdoor living spaces and outlook spaces) ... Amenity, sunlight access, privacy (visual and acoustic) and other factors that contribute to quality housing and the health and safety of residents within sites as well as adjoining sites are being compromised in favour of housing yield in some developments.

The s35 monitoring did not include interviews or surveys of residents to understand their preferences and the lived experiences of their homes, developments and neighbourhood. The council in its monitoring report concluded that this would provide a more robust assessment of the social, economic, health, safety and wellbeing aspects of housing provision, and was recommended for inclusion in future s35 monitoring for this topic.<sup>30</sup>

Where the s35 monitoring has reported a finding in relation to one of the design attributes considered in this study, these are included in the discussion.

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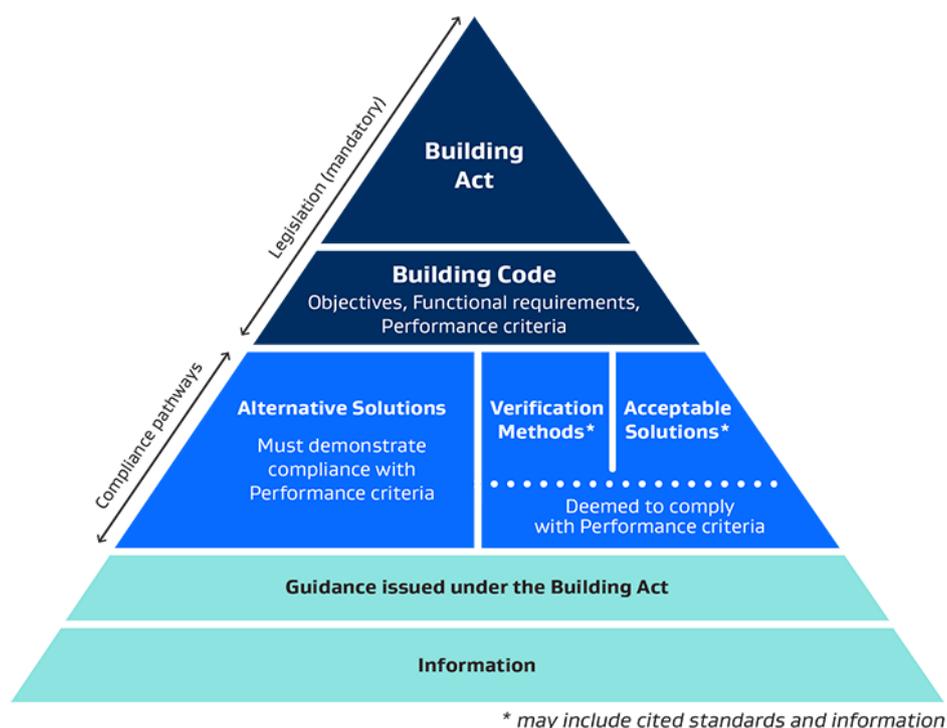
<sup>29</sup> Ibid, pages 57-59.

<sup>30</sup> Ibid, page 122.

## 2 Building Act 2004

The Building Act 2004 sets out rules for the construction, alteration, demolition and maintenance of new and existing buildings. The Building Code (contained within Schedule 1 of the Building Regulations 1992) is a performance-based system, which states how a building must perform, rather than describing how it must be designed and constructed. There are several compliance pathways that can be used to demonstrate compliance with the performance criteria, including verification methods, acceptable solutions and alternative solutions. The figure below illustrates how the various regulations relate to each other.

Figure 1: Building Code regulatory framework



Source: [www.building.govt.nz](http://www.building.govt.nz)

This study does not consider the effectiveness of the relevant building regulations. It is recommended that further work is undertaken to determine if the current building regulations are fit for purpose for MDH, and if changes to building regulations or other legislation is necessary to improve outcomes for people living in MDH.

Further information on the building consent process for MDH can be found on the Building Research Association of New Zealand (BRANZ) website.<sup>31</sup>

<sup>31</sup> Source: <https://www.branz.co.nz/mdh/>

## 3 Housing Improvement Regulations (1947)

The Housing Improvement Regulations 1947 (the ‘Regulations’) were established under the Housing Improvement Act 1945. Their origins reflect perceptions of the 1930s and 1940s about health in housing and contain some outdated requirements,<sup>32</sup> such as persons of the opposite sex not being permitted to sleep in the same room unless they are married.<sup>33</sup> The Housing Improvement Act was repealed in 1979,<sup>34</sup> and the Regulations are now in force under Section 120C of the Health Act 1956.

The Regulations set minimum requirements for housing, and a property used for residential purposes must meet all these requirements unless it complies with equivalent building code requirements. The emphasis of the Regulations is on the housing standard of fitness for human habitation (i.e. the use of the building rather than the process of constructing it), including public health and the prevention of overcrowding, whether the property is owner-occupied or tenanted. Parts of the Regulations are now superseded by more recent legislation such as the Residential Tenancies (Healthy Homes Standards) Regulations 2019, although those regulations only relate to rental accommodation covered by the Residential Tenancies Act 1986. There is also reported uncertainty and inconsistency regarding the application and administration of the Regulations by local authorities.<sup>35</sup>

The purposes of the Building Act 2004 and the Regulations are different but overlapping. The Building Act relates to the construction and alteration of buildings and is performance based, whereas the Regulations relate to the use of buildings for human habitation and occupation and are prescriptive. This can make reconciling their respective requirements difficult in areas where there is overlap, which can result in duplication and additional requirements.

The Regulations must be read as being subject to the Building Act (because of the terms of s120C of the Health Act), and in any area where there is overlap or conflict the requirements of the Building Act (including by necessary implication any provision of the Building Code) will prevail. However, the granting of a building consent or resource consent does not relieve the obligation to comply with all other relevant laws, including the Regulations.

The Regulations include prescriptive metrics for spaces within a home, including kitchens, living spaces and bedrooms as well as requirements for natural ventilation. Part 2 of the Regulations relate to overcrowding, with Schedule 2 setting out the number of persons permitted to sleep in a bedroom, relative to the area of the bedroom. For example, if two people are intended to occupy a bedroom, it should have a floor area of 10m<sup>2</sup> or more but less than 12m<sup>2</sup>. If a bedroom is less than 10m<sup>2</sup> but

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<sup>32</sup> Bierre et al. (2007).

<sup>33</sup> Housing Improvement Regulations 1947, Part 2 Clause 19(4)(a).

<sup>34</sup> The Housing improvement Act 1945 was renamed the Urban Renewal and Housing improvement Act 1945 by the Urban Renewal and Housing improvement Amendment Act 1969. The parts of the Urban Renewal and Housing improvement Act 1945 relating to housing improvement (sections 4-16) were repealed by section 4 of the Health Amendment Act 1979.

<sup>35</sup> Barton, B. (2014).

greater than 8m<sup>2</sup>, then it is only permitted to accommodate 1.5 persons. No persons are permitted to sleep in a room that is less than 4.5m<sup>2</sup> for any new buildings.

Table 1 below sets out the spaces and facilities in a home relating to questions that were included in the survey (survey topics) and any relevant Building Code requirements or Housing Improvement Regulations.

**Table 1: Building Code and Housing Improvement Regulations in relation to survey topics**

<b>Survey topics</b>	<b>Relevant Building Code Requirements</b>	<b>Relevant Housing Improvements Regulations</b>
Overall dwelling size	Not applicable	Clauses 5(2) and (3)
Minimum kitchen size	Not applicable	Clause 7(1)
Kitchen storage	G3 – Food Preparation and prevention of contamination	Clause 7(3)
Dining room size	Not applicable	Not applicable
Lounge size	Not applicable	Not applicable
Bedroom size	Not applicable	Part 1 Clauses 8(1)-(3) Part 2 Clause (4) and Schedule 2
Wardrobe size	Not applicable	Not applicable
Bathroom size	G1 – Personal Hygiene	Part 2 Clause 19(1)
Laundry size	G2 – Laundering	Required to be provided but no design standards
General storage	Not applicable	Not applicable
Garage size	Not applicable	Not applicable
Ventilation and airflow	G4 – Ventilation	Clauses 11(3) and (4)
Temperature control	G5 – Interior Environment H1 – Energy efficiency	Not applicable
Outdoor living spaces	Not applicable	Not applicable
Acoustic privacy	G6 – Airborne and impact sound	Not applicable
Visual privacy	Not applicable	Not applicable
Waste management (refuse & recycling)	G15 – Solid Waste	Not applicable
External lighting	G7 – Natural Light G8 – Artificial Light	Not applicable

While there are some aspects of dwelling design that the Building Code and the Regulations seek to manage, it is not well understood if they are fit for purpose for today's living expectations or the typologies seen in MDH.

## 4 Forms of Property Ownership – Freehold and Unit Title

There are four main types of property ownership in New Zealand: freehold, leasehold, unit title and cross lease. The two most common forms of property ownership for MDH are freehold and unit title.

### Freehold properties

Residential dwellings that are standalone or vertically separated from other dwellings (with a common party wall) are typically held in a freehold or fee simple title. This is the most common (and preferred) type of property ownership type in New Zealand. A freehold title means that the title owner owns the dwelling and the associated land, and typically does not need anyone else's approval for changes, other than compliance with relevant council rules. Terraced houses and duplexes are commonly in freehold ownership, with shared walls held in a common party wall easement.

Shared vehicle or pedestrian accessways serving freehold properties can be provided for through right of way easements (created under the Land Transfer Act 2017), which give the owner of one property rights over another person's property. This allows a landowner to access or use their neighbour's land for a particular purpose such as vehicle or pedestrian access. Easements are also commonly used for services such as water supply. Another increasingly common arrangement is for vehicle and pedestrian accessways and any communal areas to be held in a common or jointly owned access lot (COAL or JOAL) with all owners having an equal share of ownership and responsibilities.

A common entity such as a residents' society/association or incorporated society (hereafter, residents' association) may be established to ensure ongoing maintenance of COALs or JOALs, if required by a condition of subdivision consent or proposed by the developer at the time of resource consent.<sup>36</sup> The constitution of a residents' association can set out rules for things such as pets, gardens, alterations to buildings, parking and how levies are collected to maintain communal assets. These typically have lower ongoing costs than a body corporate. If a residents' association is not established (which is likely for smaller scale developments of fewer than 10 to 15 dwellings), residents may informally work with their neighbours to manage shared areas.

### Unit title properties

The Unit Titles Act 2010 is the law that governs all unit title properties and sets out the rules and regulations so that they can be managed effectively (Unit Titles Regulations 2011).

Apartment units are typically held in a unit title whereby the owners own a defined part of the building, such as their apartment, and share common areas, such as lifts, lobbies, driveways,

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<sup>36</sup> An incorporated society (also known as residents' society) and a residents' association is required to be registered under the Incorporated Societies Act 2022 and is authorised by law to run its affairs. Each society has its own constitution advising of rules, including members' obligations and restrictions, the requirement to pay membership levies, and the requirement for a financial year-end audit. Minimum membership under the Act is 10 members.

carparks, the land the apartment building sits on and any other shared facilities, with other owners. Terraced houses and duplexes can also be held in a unit title where, likewise, owners own their private dwelling and share common areas such as driveways, carparks or outdoor spaces. This combination of individual and shared ownership of land and buildings means owning a unit title property involves a different set of rights and responsibilities than owning a dwelling in a freehold title.<sup>37</sup>

When a unit title property is purchased, the owner automatically becomes a member of the body corporate. All owners in a unit title property make up the body corporate and they must hold an annual general meeting to discuss body corporate matters. The body corporate committee is elected by the members of the body corporate, and has administrative responsibilities, including keeping minutes of all meetings and recording decisions, as well as financial powers and responsibilities, including preparing financial statements and holding a principal insurance policy for all buildings. All owners are required to pay levies set by the body corporate to fund the operation and maintenance of the property, including insurance, cleaning, gardening, fees for any contracted professionals (e.g. lift maintenance) and any ongoing maintenance (e.g. painting the building). A long-term maintenance plan must be established that covers at least 10 years, and larger unit title developments (10 or more units) are required to establish a long-term maintenance plan covering at least a 30-year period. As such, the levies required for a body corporate property are typically higher than that associated with a freehold property that has a residents' association.

There are default operational rules that apply to all unit title properties, such as not damaging common property, not leaving rubbish on common property, not creating noise that interferes with enjoyment of the other property owners/occupiers, and parking arrangements. Any additions to a unit (such as attaching an air conditioning condenser unit to the outside of a dwelling) or common property requires written consent from the body corporate and any affected owners.

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<sup>37</sup> Further information on unit title properties can be found here: <https://www.unittitles.govt.nz/assets/unit-titles/short-guide-to-unit-titles-may-2024.pdf>

## 5 Best practice design guidance

Where relevant, a selection of best practice MDH design guidance is referred to in this report. These have been selected based on dwelling typologies and intensity of development similar to that seen in Tāmaki Makaurau, with a focus on the New Zealand and Australian context. There are other guidelines in New Zealand and Australia and this study does not aim to include all possible guidance.

It is important to note that such guidance is often based on the number of bedrooms in a home as an indicator of the number of people in a household.

The following provides a summary of the design guidance referenced in this report.

### 5.1 Auckland Design Manual

The *Auckland Design Manual* (ADM) is a companion document to the AUP.<sup>38</sup> It provides design guidance that aims to achieve expected outcomes under the AUP. The ADM supports the Auckland Plan 2050, as well as Auckland Council's obligations to the Ministry for the Environment (in particular the *New Zealand Urban Design Protocol*).<sup>39</sup>

The ADM provides non-statutory best practice guidance for a range of design topics including MDH (terraced dwellings and apartment buildings).<sup>40</sup> This includes matters such as minimum floor areas for various spaces within a home, provision for storage and outdoor living spaces, as well as environmental aspects such as temperature.

The ADM is provided digitally and at the time of publication, the website is functioning as an interim website while new content is developed that reflects the changing design approach to MDH and national legislation such as the NPS-UD and MDRS. ADM guidance referenced in this report is therefore available by request.

It is noted that the ADM guidance on minimum room and unit sizes was derived from the legacy Auckland City Council's Auckland Central Area District Plan rules for apartments.<sup>41, 42</sup> The typological differences between terraces and apartments, with terraced dwellings having two to three levels and apartments generally only having one level, means that terraced dwellings have a greater proportion of their floor area dedicated to circulation (e.g. hallways and stairwells). The applicability of these minimum floor areas to terraced dwellings is therefore examined further in this report (see Chapter 4, Section 3: Overall size of the home).

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<sup>38</sup> Auckland Council. (n.d.).

<sup>39</sup> Ministry for the Environment. (2005).

<sup>40</sup> ADM guidance, being non-statutory, cannot therefore be required, monitored or enforced, unlike the statutory Australian guidelines described later in this section.

<sup>41</sup> *Auckland Design Manual*, Residential Design Element R6: Unit layouts and room sizes.

<sup>42</sup> Auckland Council. *City of Auckland – District Plan*, Central Area Section, Operative 2004, Appendix 12 Minimum Residential Apartment Standards, A. Matrix of minimum gross floor areas for components of various residential apartment types.

## 5.2 New Zealand – National Medium Density Design Guide (2023)

The *National Medium Density Design Guide* is focused on three-unit developments of up to three storeys, which are permitted under the MDRS, in order to achieve well-functioning and high-quality housing.<sup>43</sup> The guide notes, however, that these guidelines are also relevant to other scales of residential development.

The guide draws upon kaupapa Māori design and protocols relating to kāinga. Kāinga is a concept within New Zealand housing development that builds on whānau (family) and hāpori (community) values. It also recognises multi-generational and inter-generational housing, which is socially and culturally fit for purpose.

Broad principles of relevance to this research include:

- understanding and responding to the wider housing needs of the community
- designing houses that provide for day-to-day living of all residents and incorporate the needs of an ageing population, young children and disabled people (i.e. universal design)
- contributing to housing solutions that cater for diversity, accessibility and for small and large family and non-family households
- recognising the importance of hauora (health and wellbeing) through multi-generational and intergenerational living, and the need to meet different cultural lifestyles
- supporting the comfort and health of residents by providing warm, dry, well-ventilated and accessible home
- recognising the importance and vitality of whānau (family) and mauri (life force) to cater for overall health, wellbeing and identity
- acknowledging wider climate and other environmental qualities that can support sustainable design, respond to the challenges of climate change and are resilient to natural hazards
- incorporating passive design techniques to reduce energy usage and greenhouse gas emissions, applying water sensitive design, minimising waste, and supporting sustainable transport modes like walking, cycling and public transport
- designing spaces to ensure privacy between neighbouring dwellings
- providing communal spaces (such as gardens) to support more diverse communities and retaining larger trees and vegetated areas for biodiversity and to reduce heat island effects.

## 5.3 New Zealand – Public Housing Design Guidance for Community Housing Providers and Developers (2023)

The Ministry of Housing and Urban Development’s *Public Housing Design Guidance* provides direction on “the desired level of amenity for long-term public housing”.<sup>44</sup> Many of the specific design

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<sup>43</sup> Ministry for the Environment (2022). *National Medium Density Design Guide*.

<sup>44</sup> Ministry of Housing and Urban Development (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web).

details relate to a general, rather than targeted, resident cohort. As such, this guidance provides a useful benchmark by which to compare MDH under the AUP.

The design guidance has an overarching principle of housing being ‘fit for purpose’ including that housing design is high quality, attractive and liveable for its residents, is appropriately sized, and is designed to meet residents’ needs for a safe, warm and dry home.

Guidance, such as the minimum size of dwellings, is based on that considered necessary to provide the best outcomes for a broad resident cohort. The criteria assume an intended occupation of up to two persons per bedroom, which in turn flows through to minimum sizes of bedrooms and other associated living areas. Design guidance of relevance to this research includes:

- living/dining rooms
- kitchens
- bedrooms
- bathrooms
- laundry
- storage
- outdoor living spaces and clothes drying
- housing diversity and accessibility
- car parking.

#### **5.4 New Zealand – Ngā Paerewa Hoahoa Design Requirements (2024)**

*Ngā Paerewa Hoahoa Whare Design Requirements for Public Housing* sets out the minimum requirements for the design of all new public housing developed by, and for, Kāinga Ora – Homes and Communities.<sup>45</sup> The requirements support the objectives of the Kāinga Ora – Homes and Communities Act 2019 through the way in which homes are designed and delivered, aiming to contribute to sustainable, inclusive and thriving communities. It is part of a suite of resources that support successful design outcomes for urban design, landscape and housing within Kāinga Ora developments across the motu/country. The design requirements relate to the site, the building and services.

Many aspects of the design requirements are the same or similar to the Public Housing Design Guidance outlined above. For example, the design requirements also assume an occupancy of two people per bedroom, to ensure that the home is adequately sized and is flexible enough to meet a broad range of occupant needs.

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<sup>45</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Design Requirements* (Version 1.1).

## **5.5 Australia (New South Wales) – Low Rise Housing Diversity Design Guide (2020)**

The *Low Rise Housing Diversity Design Guide* provides planning and design standards for dwellings of up to two storeys in scale, including terraced dwellings, duplexes (referred to as “dual occupancy”) and walk-up apartments (referred to as “manor houses”) and multi dwelling houses (“standalone town houses” and “villas”).<sup>46</sup> Two storey terraced dwellings are common across Tāmaki Makaurau, with New South Wales, and Sydney in particular, facing similar residential intensification challenges including housing supply.

Development is required to comply with the Design Guide in order to achieve a complying development certificate under the Housing State Environmental Planning Policy and the Environmental Planning and Assessment Regulation 2021 (the Housing SEPP). The terraced dwellings design criteria of most relevance to this research include:

- minimum landscaped areas including specimen trees
- minimum sunlight and daylight access to habitable rooms and outdoor spaces
- natural and cross ventilation including minimum ceiling heights
- minimum dwelling size including room sizes
- minimum private outdoor space standards including relationship to internal living spaces
- storage
- bicycle and vehicle parking
- visual and acoustic privacy
- energy efficiency
- waste management
- universal design.

## **5.6 Australia (New South Wales) – Apartment Design Guide (2015)**

The New South Wales *Apartment Design Guide* is used in conjunction with state planning policies (Housing SEPP) and seeks to achieve better design and planning for apartment developments by providing benchmarks for design and assessment.<sup>47</sup> Among other things, the Guide seeks to improve liveability through enhanced internal and external apartment amenity, including better layout, apartment depth and ceiling heights, solar access, natural ventilation and visual privacy. Part 4 – Designing the Building is of particular relevance to this research and addresses the same design criteria to those listed above for the Low Rise Housing Diversity Design Guide, in relation to an apartment typology.

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<sup>46</sup> New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*.

<sup>47</sup> New South Wales Department of Planning and Environment (2015). *Apartment Design Guide*.

## **5.7 Australia (Victoria) – Apartment Design Guidelines for Victoria (2021)**

The *Apartment Design Guidelines for Victoria* support the Better Apartment Design Standards, which were introduced in response to the proliferation of buildings with windowless, tiny bedrooms and unhealthy spaces.<sup>48</sup> The Victorian Government's aim was to ensure that apartments deliver diverse, well-designed housing options to meet the long-term needs of its growing community.

The Design Guidelines aim to achieve quality liveable apartments and includes guidance on site layout, building arrangement and dwelling amenity, including the following design criteria which are relevant to this research:

- functional dwelling layout
- room depth
- windows
- storage
- natural ventilation
- private and communal open space
- landscaping
- accessibility
- energy efficiency
- noise.

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<sup>48</sup> The State of Victoria Department of Environment, Land, Water and Planning (2021). *Apartment Design Guidelines for Victoria*.

## 6 Medium density housing design observations

The Design Review Team within the Tāmaki Makaurau Design Ope (Auckland Council’s Urban Design Unit – ‘TMDO’) provides specialist urban design, architecture and landscape architecture advice to resource consent applications for residential developments, for typically 10 or more dwellings, across the Auckland region. The TMDO also provide expert specialist advice to other statutory processes including AUP changes, notice of requirements and designations.

The Design Review Team provides advice to an average of 1655 resource consent applications, pre-application proposals and compliance monitoring requests each year. The majority of these are for medium and high density residential developments, with an average of 20,500 dwellings reviewed each year by the Design Review Team.

The TMDO also lead and manage the Auckland Urban Design Panel (AUDP) who provide independent design review to a wide range of development projects across the region to improve the quality of the built environment and contribute to the design outcomes sought by the Auckland Plan 2050. Auckland Council established the AUDP Medium Density Residential Panel in 2022 in response to significant growth and emerging trends in MDH.

These panels focus specifically on the design review of medium density projects, providing best practice advice from leading independent experts outside of council to enable healthy environments, places of wellbeing and thriving communities. The AUDP supports the TMDO in their role providing specialist urban design and landscape architecture advice to the resource consent process.

The TMDO is, therefore, uniquely placed to observe and monitor the changing trends in MDH and identify poor design outcomes that may reduce the liveability, functionality, and amenity of MDH for both occupants and neighbouring households. These emerging trends and the associated potential impacts for occupants are detailed in this report in relation to design attributes surveyed.

### 6.1 Evolution of medium density housing in Auckland

Medium density housing is not new to Tāmaki Makaurau and was provided for in the majority of the legacy district plans, albeit not at the level of intensification now seen. Suburbs such as Hobsonville Point (often referred to as ‘density done well’),<sup>49</sup> were development sites with a master planned approach to development.<sup>50</sup> The development of Hobsonville Point (Figure 2) started in 2008 and is

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<sup>49</sup> See <https://kaingaora.govt.nz/en/NZ/urban-development-and-public-housing/industry-hub/te-uru-terraces-exemplifying-density-done-well/>  
<https://www.nzherald.co.nz/nz/paula-bennett-more-planning-needs-to-go-into-high-density-housing-development/6KT74SBPTFGO3OVFJSUJHBPUDA/>

<sup>50</sup> Master planned developments are large scale developments where planning includes the physical configuration and phasing of buildings as well as infrastructure and/or public spaces. Source: [https://www.dia.govt.nz/diawebsite.nsf/wpg\\_URL/Resource-material-Building-Sustainable-Urban-Communities-Glossary?OpenDocument](https://www.dia.govt.nz/diawebsite.nsf/wpg_URL/Resource-material-Building-Sustainable-Urban-Communities-Glossary?OpenDocument)

subject to additional planning requirements, including comprehensive development plans for each of the precincts, and all developments are also required to gain approval from the Hobsonville Point Design Review Panel. Intensification at Hobsonville Point has evolved from detached dwellings to terraces, walk-up apartments and apartment blocks, as market and developer acceptance of more intensive residential development has grown.

Figure 2: Hobsonville Point – a master planned medium density housing development



Source: <https://hobsonvillepoint.co.nz/about/precincts/>

MDH is also provided through infill development, a common development approach where an existing dwelling is removed or relocated within the site to make way for additional dwellings. This smaller-scale type of development is rapidly changing local streets and neighbourhoods within Tāmaki Makaurau, with each existing dwelling in the residential zones being replaced on average with eight new dwellings.<sup>51</sup> Across the s35 monitoring sample (residential and business zones), around 350 dwellings were replaced with 4000 dwellings – an increase in yield of approximately 1000 per cent.<sup>52</sup> Figure 3 shows an example of such infill development.

<sup>51</sup> Auckland Council. (2022). *Auckland Unitary Plan, Section 35 Monitoring*, B2.3 A quality built environment, page 57.

<sup>52</sup> Ibid, page 59.

Figure 3: Infill development in the Terraced Housing and Apartment Building Zone (Example 1)



Note: Infill development replacing one dwelling with up to 11 dwellings per site and no onsite carparking.

Source: TMDO, Auckland Council.

An evolution in the development response to the AUP standards, including most recently with the removal of carparking minimums, is illustrated in Figure 4.

Figure 4: Infill development in the Terraced Housing and Apartment Building Zone (Example 2)



Original standalone detached dwellings with onsite parking and garaging (Lot A 835m<sup>2</sup> and Lot B 812m<sup>2</sup>)



Infill development of Parent Lot A with three standalone dwellings with internal garaging, and average gross lot area of 278m<sup>2</sup>

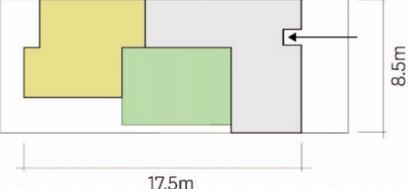
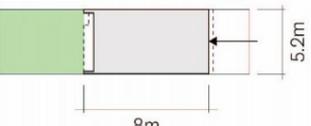


Infill development of Parent Lot B with 13 terraced dwellings with no onsite car parking, and gross lot area of 62m<sup>2</sup>

Table 2 below sets out key spatial elements of five residential sites developed between 2007 and 2022. These are representative of typical residential developments reviewed by the TMDO as part of the resource consent process. The general trends in MDH observed in Auckland over time include:

- a reduction in site/lot size and width
- a reduction in dwelling size but the number of bedrooms remaining relatively constant
- a reduction in dwelling width, and to a lesser extent, dwelling length and an associated reduction in floor area
- outdoor living spaces reducing to minimum standard (20m<sup>2</sup>)
- the reduction of parking provision and shift to more surface parking (e.g. individual carparking pads or communal parking areas) rather than garaging.

Table 2: Sample of typical medium density houses from 2007 to 2022

<b>Building, outdoor space and parking layout</b> 	Code Compliance Certificate issued	Lot size (m <sup>2</sup> )	Lot dimensions width x length (m)	Dwelling size (m <sup>2</sup> )	Outdoor living space (m <sup>2</sup> )	No. of storeys	No. of bedrooms	Carparks
	2007	205	7.5 x 27.3	213	50.8	2	4	2 (detached double garage)
	2011	187	8.5 x 22	179	45	2	3	2 (internal garage)
	2015	132	4.8 x 27.5	104	50	2	3	1 (surface parking)
	2019	88	5.5 x 13.4	108	22	3	3	0
	2021	61	3.6 x 16.9	76.5	22	2	2	1 (communal carparking area)

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 3

# Research method and sample





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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## **Introduction to this chapter**

This chapter outlines the research methods employed in this study and describes who participated. Section 1 describes the four research methods used – the first of which was to identify the location and postal addresses of medium density housing (MDH) in Auckland. Section 2 shares the results of that analysis, and the location of households who participated in the survey are described in Section 3, using a series of maps. The following two sections introduce the household composition of the survey participants (Section 4) and the number of people in the household (Section 5). Section 6 outlines the broad characteristics of the 20 households who participated in the in-home immersion interviews. Further details are provided in appendices, which are referred to throughout.

# 1 Research methods

This project involved a mix of research methods comprising four components: 1) identification of recently constructed medium density housing (MDH) using Auckland Council data, 2) an online survey of residents living in the identified MDH, 3) 20 follow-up in-home immersions with households who had completed the initial survey, and 4) a desktop exercise to extract specific design attributes from the consented plans of 110 homes whose households participated in the survey. Each component is discussed in more detail below.

The first three components of this project were reviewed by Auckland Council's Research Ethics Advisory Group in October 2022 (reference 006-2022). The in-home immersions were reviewed by the Aotearoa Research Ethics Committee in October 2023 (reference 2023\_47).

## 1.1 Identifying properties

Properties that were 'in-scope' for this study were identified using Auckland Council data on consents and rates.<sup>1</sup> In-scope properties needed to have received a Code Compliance Certificate (CCC) after November 2016 (AUP operative in-part date) and estimated to be a medium density typology (i.e. terraced house, duplex, or apartment).<sup>2</sup>

Properties in Auckland's city centre or Hobsonville Point precincts were not included. The city centre provides for a range of activities, including residential dwellings, and is primarily a high-density zone (i.e. apartment buildings over seven storeys). It is subject to planning rules that were generally established under the Auckland City Council Central Area District Plan, rather than the residential zone standards of the Auckland Unitary Plan. Hobsonville Point is a master planned neighbourhood subject to additional layers of design control (including a dedicated design review panel), and has been studied previously (Haarhoff et al., 2019).

The focus for this study was on properties developed by private developers that are owned by individuals. Properties owned by Kāinga Ora (formerly Housing New Zealand), other community housing providers (e.g. Accessible Properties, Community of Refuge Trust, Housing Foundation) or other organisations (e.g. hotels, retirement villages, aged care providers) were not included.

A total of 17,789 properties were identified as meeting the criteria for this study.

Residents of the identified properties were invited to participate in the online survey via the Electoral Roll. An extract of the Electoral Roll was requested from the Electoral Commission and was used to address survey invitations to named occupants. The addresses of properties identified in the rating database were joined with those in the Electoral Roll. A total of 8076 rating database addresses were able to be joined with addresses in the Electoral Roll. The remaining 9713 rating database addresses

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<sup>1</sup> A technical methodology report on how this was done exists as an internal document.

<sup>2</sup> Auckland Council data lacks a variable for housing typology that classifies a property as, for example, an apartment or terraced house. A range of variables were consequently used to estimate the typology of properties.

did not have an address in the Electoral Roll extract to which they could be joined, preventing named invitations being posted to these properties.<sup>3</sup>

## 1.2 Survey

The questionnaire was developed by researchers from Auckland Council’s Economic and Social Research and Evaluation team (ESRE) in consultation with council’s Tāmaki Makaurau Design Open (TMDO). The survey was cognitively tested with 10 Auckland Council staff who live in MDH, prior to finalisation.

Households living in identified MDH were invited to participate in a 20-minute online survey via a posted invitation letter. Participants were given the option to enter a prize draw to win one of three Prezzy cards in acknowledgement of their contribution to the research.

Invitations were sent over two data collection waves. The first data collection wave was undertaken in January 2023, inviting 1713 households. Invitation letters were addressed to named individuals when addresses were able to be joined with the Electoral Roll (811 properties), or to ‘the household’ when addresses were unable to be joined with the Electoral Roll (902 properties).

The response rate from letters addressed to ‘the household’ was lower than the response rate from letters addressed to named individuals (2% compared with 8%). As a result, in the second data collection wave, invitations were only sent to properties that could be addressed to a named individual (from the Electoral Roll).

The second data collection wave followed on 10 March 2023, and 7265 households were invited to participate. All remaining households that had a postal address in the Electoral Roll were invited. A reminder postcard was sent out on 22 March 2023, and a response rate of 16 per cent was achieved.

See Appendix 3 for a copy of the survey invitation letter and reminder postcard, Appendix 4 for a copy of the consent form, and Appendix 5 for the questionnaire.

### 1.2.1 Survey sample

A total of 1431 responses were received across both data collection waves when the survey closed on 1 May 2023.

A small proportion of participants living in standalone houses completed the survey (n=94). The survey responses from those 94 properties have been excluded from the analysis and the sample used in this report is from 1243 properties. See Appendix 6 for more detail.

Multiple survey responses from a single invited property were encouraged in the invitation letter. Most (93%) properties returned one survey response, as shown below in Table 1. A total of 1337 survey responses were received from 1243 properties.

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<sup>3</sup> There are several reasons to explain the large proportion of addresses unable to be matched to the Electoral Roll, including the low frequency with which individuals update their address in the Electoral Roll and that not everyone living in Auckland is eligible to be on the Electoral Roll.

Sections 3, 4 and 5 of this chapter outline in more detail where the participants lived, their household composition and household size. Refer also to Appendix 7 for an overview of the sample’s demographic characteristics.

**Table 1: Number of responses from a property**

<b>Number of responses from a property</b>	<b>Count</b>	<b>Percentage (%)</b>
One	1158	93
Two	83	7
Three	2	0.2
<b>Total properties</b>	<b>1243</b>	<b>100</b>

Survey responses were processed and analysed in SPSS and Excel. Results have not been weighted. Tests for statistical significance have been undertaken and are reported as likelihood.

### **1.3 In-home immersions**

In-home immersions are a research technique that draws from ethnographic methods of active participant observation and participant-led interviewing.

A sample of survey participants were invited by email and screener survey to participate in in-home immersions (see Appendix 8). Recruitment of participants had soft quotas that aimed to produce a sample that included participants from across the Auckland region, a mixture of housing typologies, and a range of household compositions, ethnic groups, genders and ages, as well as variation in satisfaction with aspects of their home. Survey responses to questions about how well the size of the living space meets the needs of the household, satisfaction with temperature in summer, satisfaction with privacy in outdoor living spaces, and rating for the amount of built-in storage in the kitchen were used as an indicator of satisfaction with the home when inviting participation.

All members of the participating household who wished to do so were able to participate. Twenty households participated, comprising 41 individual participants.

Eight households were located in south Auckland, four in west Auckland, one in east Auckland, three in north Auckland and four in central Auckland. Ethnic groups represented in the sample include Chinese New Zealand, Filipino New Zealand, New Zealand Indian, New Zealand Malaysian and British, as well as Māori, Pacific and Pākehā New Zealand. See Section 7 for more details about the in-home immersion participants.

Prior to visiting a household, the research team (comprising a researcher and research assistant) reviewed the consented plans for the home to become familiar with the development and the home (e.g. number and location of bedrooms). Design details of the home were considered against best practice guidance to inform questions asked of participants. For example, if the dimensions of a bedroom were smaller than best practice, a note was made to investigate the impact of this for the participant(s).

The research team arrived ahead of the time scheduled with the participant(s) to make observations of the neighbourhood such as on-street carparking or typologies of other homes. Once entering the

participants' home, the research team and participating household members sat in the dining or lounge space where they had a conversation about who lives in the home, how long they have lived there, where they lived before, and their decision to live here.

Following this initial conversation, the research team asked the participant(s) to take them on a tour of their home. For each space in the home, they were asked how the space was used, what modifications had been made, and what they liked and disliked about that space. Environmental aspects of spaces such as temperature, privacy and airflow were asked about throughout the home. Tours involved going outside the private home to be shown carparking, rubbish bin rooms, mailboxes and other shared facilities like outdoor living spaces for those living in apartments and homes that were part of a complex with facilities shared with neighbours. The research team had a discussion guide, although in practice, the conversation was led by participants and what the researchers observed (see Appendix 9). For example, if researchers observed an additional storage cupboard next to empty shelves in the kitchen, a front door blocked by a chair, or furniture that appeared to be bespoke, they asked participants to tell them about what they had observed.

The visit ended sitting back in the dining or lounge space of the home where the participants gave concluding remarks and described their aspirations for their home in the future.

Several types of data were collected during the visit:

- Photographs were taken throughout the home tour to illustrate how spaces are used.
- The conversation was audio recorded and later transcribed.
- Consented plans were annotated to include furniture and measurements.

Analysis was undertaken through workshops with the project team and transcripts analysed through NVivo. Participants received a koha in acknowledgement of their contribution to the research.

Selected findings from the immersions have been included in this report to provide greater insight to results of the survey and consented plan analysis.<sup>4</sup>

## **1.4 Analysis of consented plans**

A sample of 110 properties from which we had received survey responses were selected for inclusion in this phase of the project. (A total of 117 participants living in these properties responded to the survey.) Each survey response is joined to the property address, which enabled sourcing the consented plans for the home. Participants consented to their survey responses being combined with information from the consented plans (see consent form in Appendix 4).

Properties were selected to be representative of the overall survey sample with respect to household composition, geographic area and overall satisfaction rating. We slightly over-sampled terraced houses. For full details of the sample properties, see Appendix 7.

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<sup>4</sup> A full report exploring the findings of the in-home immersions in more depth is forthcoming.  
Chapter 3: Research method and sample

The 110 sample properties were from 86 unique developments.<sup>5</sup> Three developments had three participating properties, and nine had two participating properties.

The consented plans of selected properties were sourced from Auckland Council records. A selection of design attributes were extracted into spreadsheets from these plans for analysis by a small team of Urban Design Analysts within the TMDO. A full list of design attributes with descriptions is in Appendix 10.

Survey responses were joined with design attributes and are reported together in sections throughout this report.

It is acknowledged that homes can be renovated and modified after they have been consented; for example, to add cupboards or change the kitchen.

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<sup>5</sup> For this purpose, a 'development' is defined as having a shared parent site (the address granted a resource consent). Note that the homes within a development may have no shared facilities and may be freehold.

## 2 Location of MDH in Auckland

The first component of this research study was to identify recently built medium density housing in Auckland. This analysis was undertaken in late 2022 using data available up to September 2022.<sup>6</sup> The primary purpose of this task was to facilitate inviting households to participate in the survey and subsequent in-home immersions.

A total of 17,789 properties were identified as fitting the housing typology and location (i.e. excluding city centre and Hobsonville Point) criteria for participation in the survey. This number includes properties owned by community housing providers and others that were not invited to participate in the survey. Figure 1 shows these properties on a map of Auckland.

For the purpose of this study, we divided Auckland into four broad geographic areas: North, West, South/East and Central (see the maps in this section and also the map in Appendix 11). Our estimates identified a relatively even distribution of MDH across those four broad areas, as shown in Table 2.

**Table 2: Count and proportion of MDH across the Auckland region**

	Count	Proportion (%)
North	3,926	22
West	3,168	18
South/East	5,798	33
Central	4,897	28
<b>Total</b>	<b>17,789</b>	<b>100</b>

As described earlier, a subset of these identified properties was invited to participate in the survey (8978 properties). These properties were determined to be privately owned. Figure 2 shows the spatial distribution of which MDH properties were invited to participate in the survey, and which were not.

Figure 3 shows the spatial distribution of all 8978 MDH properties invited to participate in the survey, by their estimated typology, and Figure 4 shows the same information but focuses on the isthmus area only. Both maps show ‘dwellings NFD’ which are properties estimated to be MDH but which were unable to be further defined with available data (e.g. could be a terraced house or a duplex but which is unknown). These dwellings were estimated to be terraced houses, duplexes or walk-up apartments.

As the maps indicate, apartments are mostly located in central and northern parts of Auckland, whereas terraced houses are located throughout the region. The geographic distribution of different

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<sup>6</sup> Properties that received a Code Compliance Certificate between November 2016 and September 2022 are represented in the analysed data.

housing typologies is attributed to Auckland Unitary Plan zones, as MDH can only be built in some zones (see Chapter 2 for more detail about the Auckland Unitary Plan). The clustering of apartments in Central Auckland, for example, is likely to be explained both by this being the location of most Terraced Housing, Apartment Building (THAB) AUP zoning and higher land values (whereby the higher infrastructure costs of apartment buildings are mitigated by higher land values, and ultimately sale prices).

Figure 1: All MDH identified across Auckland region

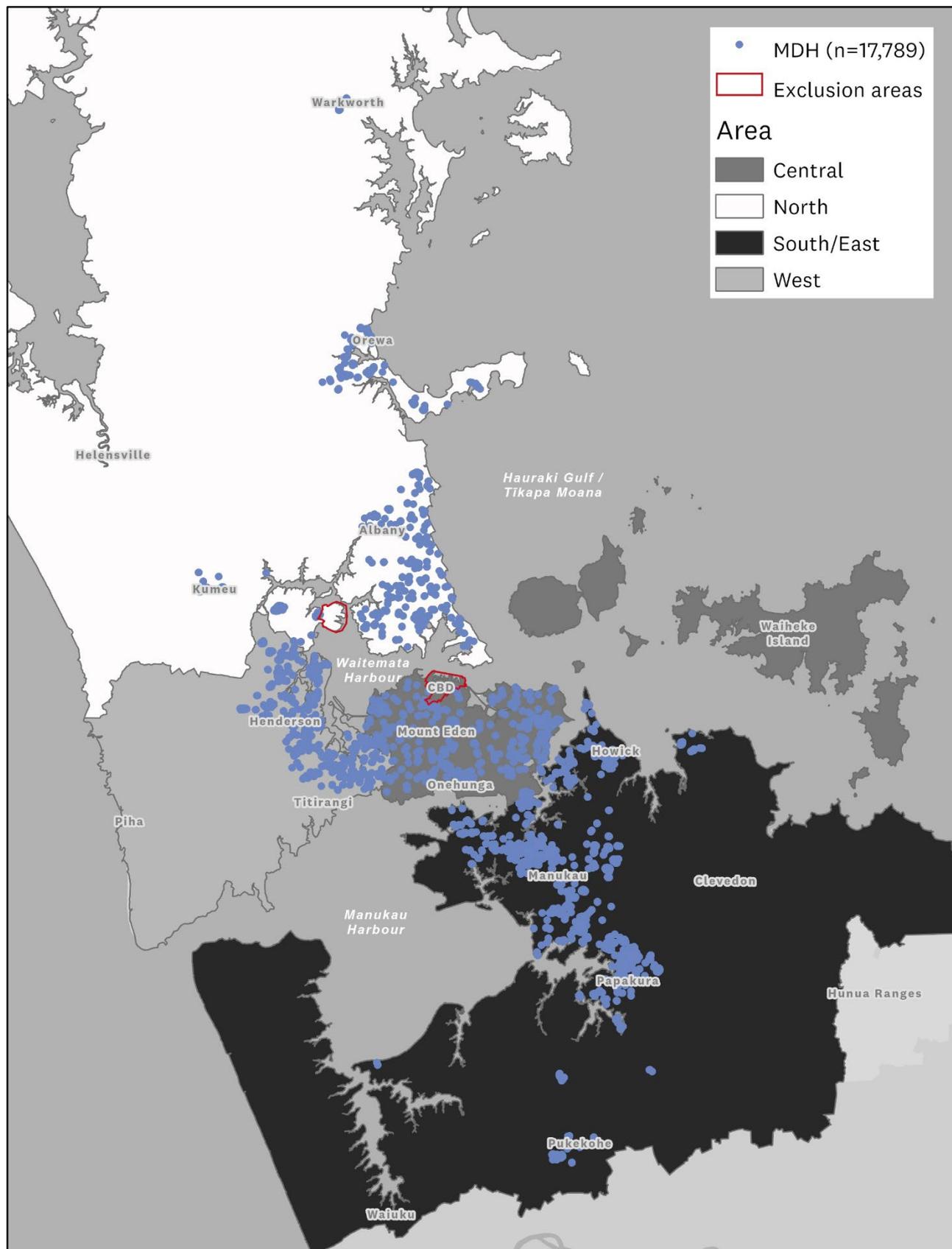


Figure 2: Spatial distribution of MDH identified across Auckland region, by invited or not invited to participate in the survey

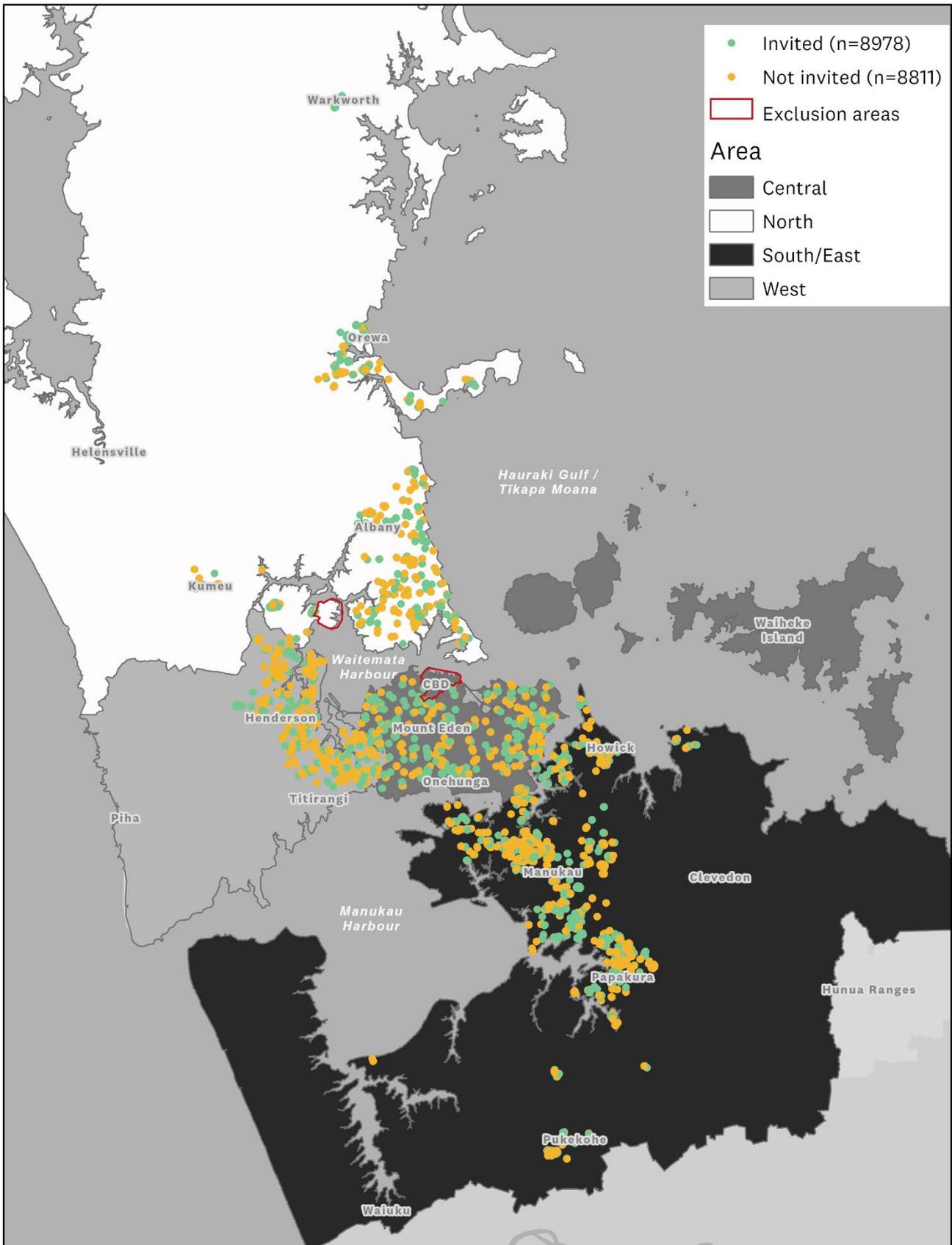
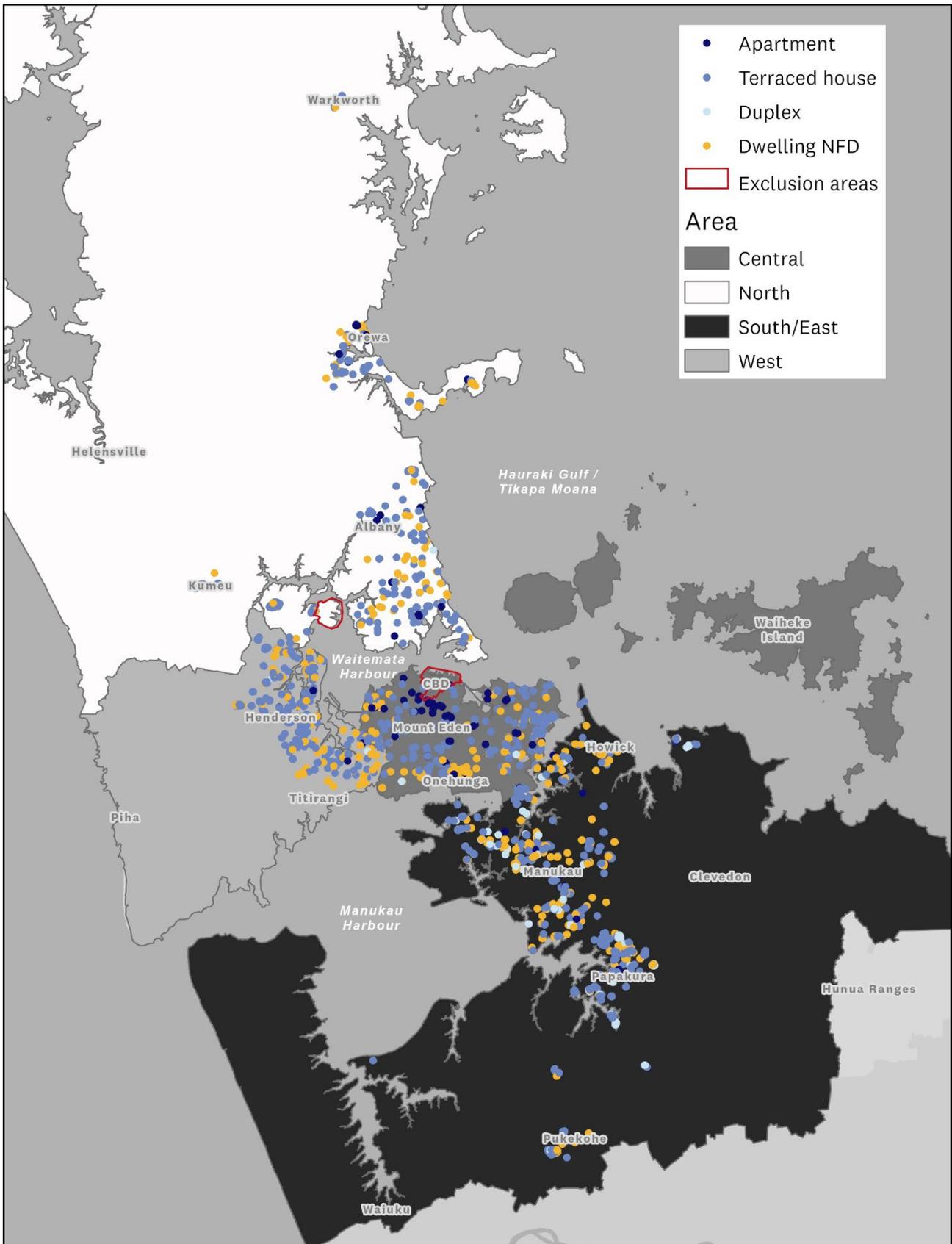
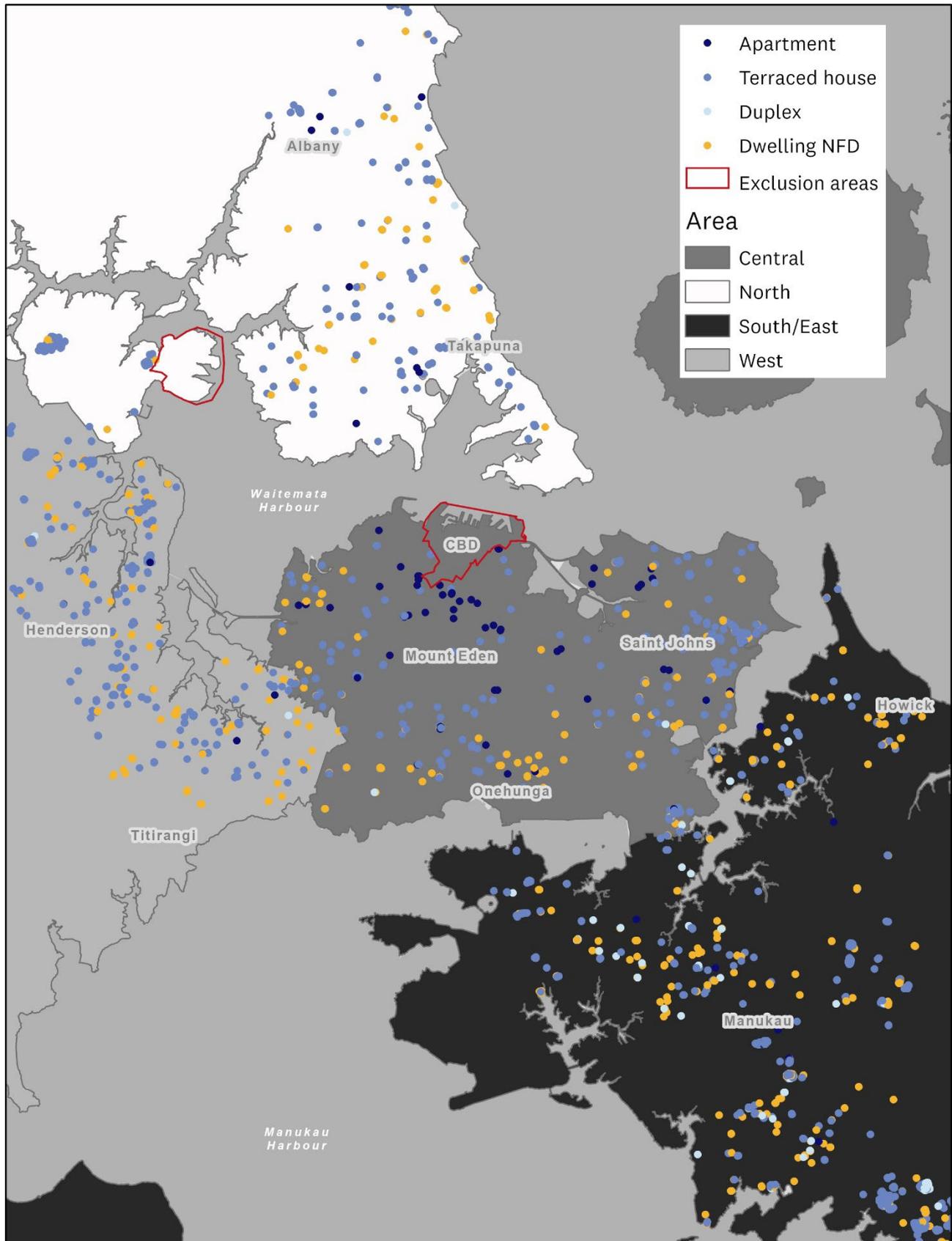


Figure 3: Spatial distribution of MDH invited to participate, by estimated typology (n=8978)



Note: NFD stands for 'not further defined', see description above.

Figure 4: Spatial distribution of MDH invited to participate on the isthmus area, by estimated typology



### 3 Location and typology of participating properties

Medium density homes in this study are one of three housing typologies: apartments, terraced houses and duplexes. Although the preliminary stage of the study (outlined above) identified MDH and estimated housing typology, the study reports on the survey participants' own definition of the home in which they lived.

Over two-thirds (68%) of the 1337 survey participants reported living in a terraced house or duplex, and the remaining 32 per cent live in an apartment (Table 3).

**Table 3: Count and proportion of responses, by housing typology**

Participant-defined typology	Count of responses	Proportion of responses (%)
Apartment	424	32
Terraced	670	50
Duplex	243	18
Total	1337	100

However, as mentioned in Chapter 1, Section 3.1, multiple members of a household were encouraged to participate in the survey. Survey responses were received from a total of 1243 properties, of which 83 returned two survey responses and two returned three responses. For those 85 properties that returned more than one survey response, responses from one participant were chosen at random to represent the property. Using this approach, we found that half (50%) of the 1243 properties were defined by participants as a terraced house, 32 per cent as an apartment and 19 per cent as a duplex. See Table 4 below.

**Table 4: Count and proportion of participating properties, by housing typology**

Participant-defined typology	Count of properties	Proportion of properties (%)
Apartment	391	32
Terraced	622	50
Duplex	230	19
Total	1243	100

Note: due to rounding percentages of responses add to 101 per cent.

Table 5 shows these results by housing typology broken down across the four broad geographic areas mentioned earlier (demonstrated on a map for the Auckland region in Figure 5 and for the isthmus only in Figure 6).

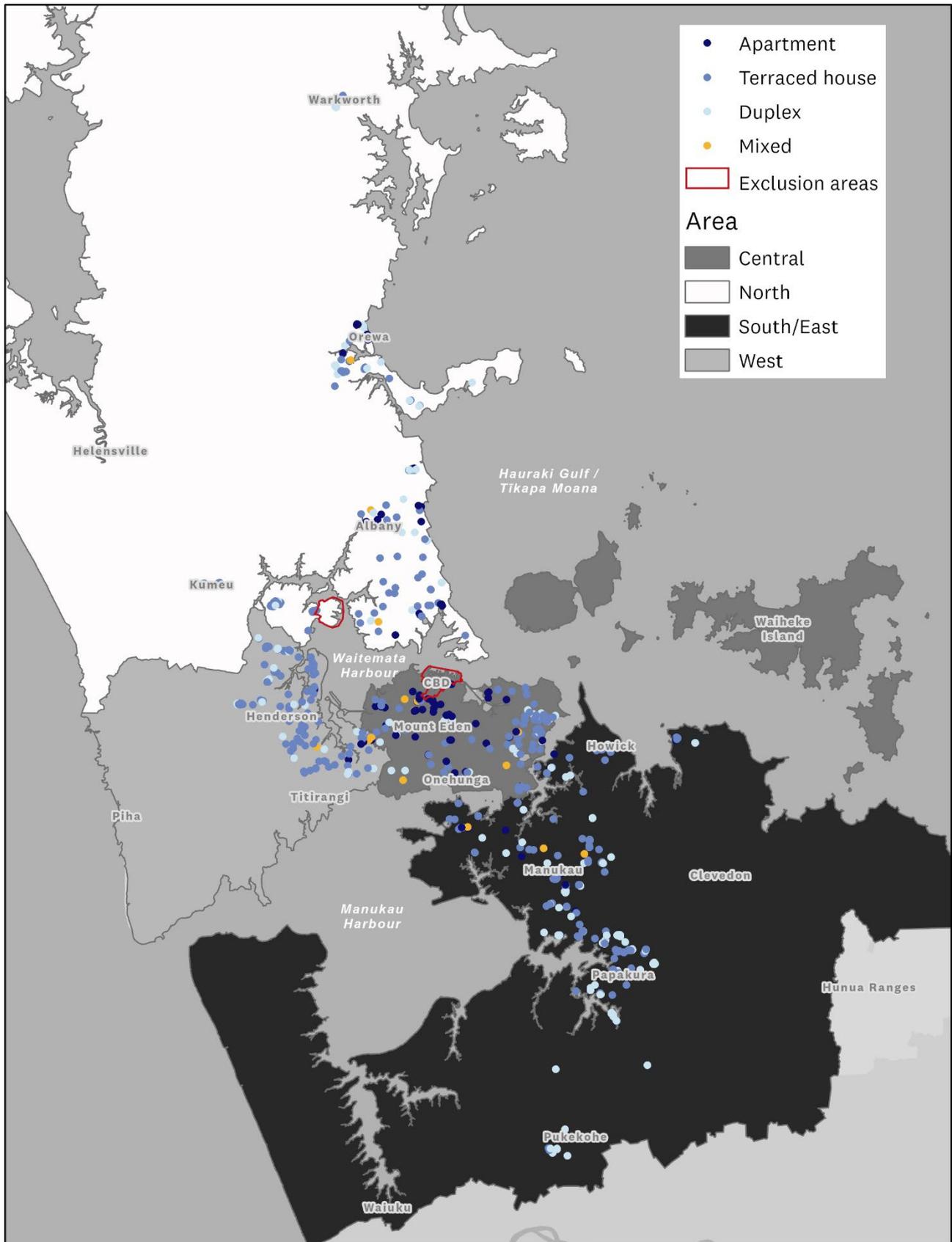
**Table 5: Number of participating properties, by participant-defined typology and area (counts)**

	Terraced	Duplex	<i>Total Attached</i>	Apartment	<i>Total all typologies</i>
North	158	59	217	91	308
West	172	33	205	31	236
South/East	175	109	284	32	316
Central	117	29	146	237	383
<b>Total</b>	622	230	852	391	1243

As Table 5 and the maps show, there was a relatively even distribution of MDH across the four broad geographic areas.

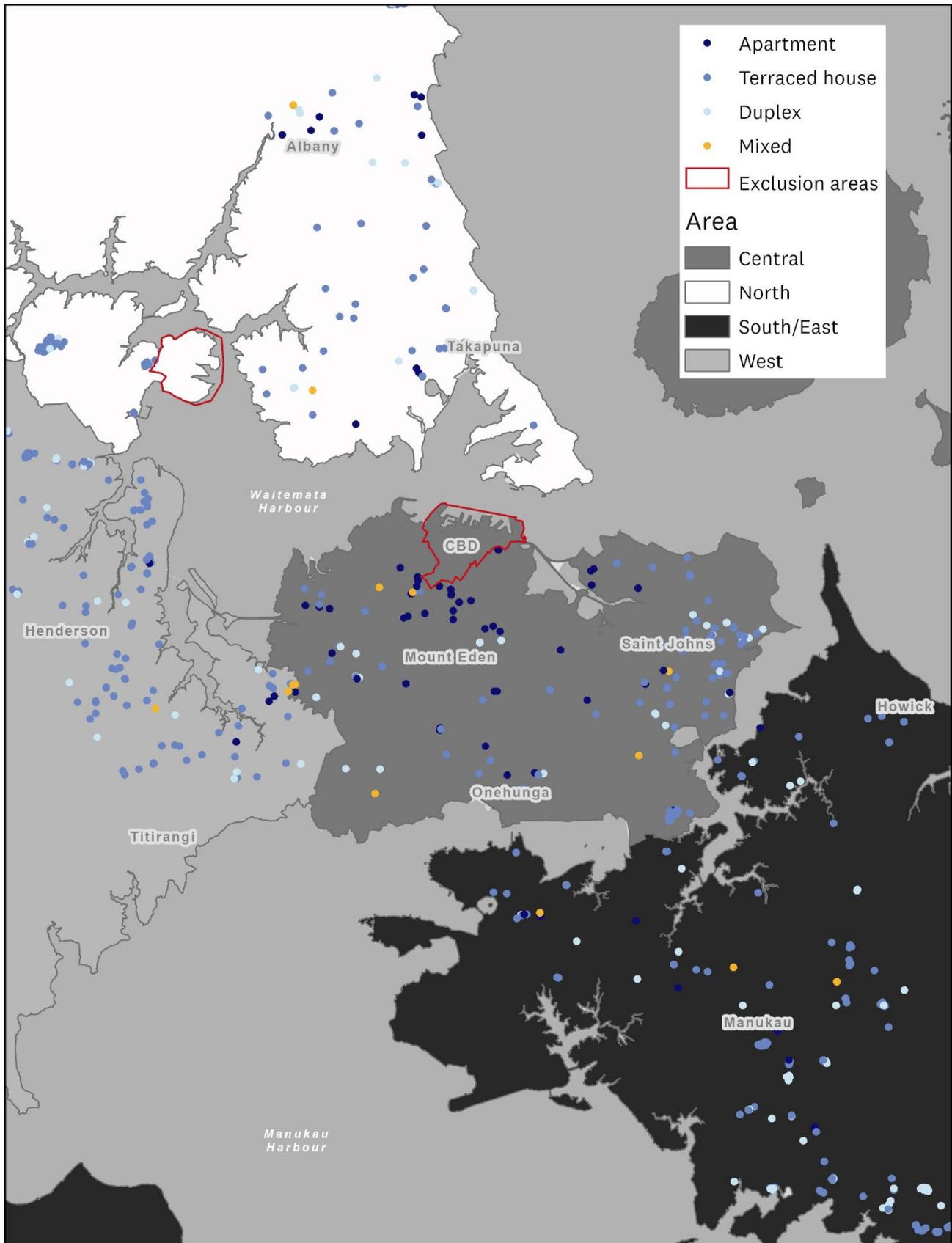
The survey results are from a sample of the wider population of Aucklanders living in MDH and are generally representative of the geographic distribution of MDH.

Figure 5: Spatial distribution of participating MDH across the region, by participant defined typology



Note: 'Mixed' represents properties where participants either in the same household or building/complex reported different typologies for the same building/complex.

Figure 6: Spatial distribution of participating MDH in isthmus, by participant defined typology



Note: 'Mixed' represents properties where participants either in the same household or building/complex reported different typologies for the same building/complex.

## 4 Household composition

The survey asked participants about their living arrangements, which were used to construct a household composition variable. We were able to use the results from 1272 participants for this exercise. Sixty-five participants were unable to be assigned to a household composition due to their answering ‘prefer not to say’ to the questions or giving conflicting responses (e.g. responding that they lived with a child only in one question, and then answering that there are five adults in the household in another question). A further 29 participants shared their household with at least one other survey participant.

We calculated a total of 1178 households that span five distinct household compositions. Over a third were ‘partner only’ households (39%) and a quarter were households with children living in them (15% with one child and 10% with two or more children). The classifications are described further in Table 6.

Note that the questionnaire asked participants to indicate who “usually” lives in their home, including children for whom they were “one of the people who has primary responsibility for their care and welfare”.

**Table 6: Household composition (n=1178) (%)**

Classification	Illustration	Proportion of households (%)
<b>Live alone</b> Participants who are living alone.		22
<b>Partner only</b> Two adults who are partners.		39
<b>One child (with one or more adults)</b> Households with one child (in secondary school or younger), and any number of adults. This could include, for example, single parent households, two parent households, or grandparents and a grandchild. It could also include adult children, and a younger child.		15
<b>Two or more children (with one or more adults)</b> Households with two or more children (in secondary school or younger), and any number of adults. This could include, for example, two parents and two children; a parent, grandparent and three children; or adult friends/siblings living together with their children.		10

<p><b>Two or more adults, no children</b></p> <p>This includes a wide range of situations such as flatting with related or unrelated adults, and multigenerational households; for example, adult children living with their parent(s) and/or grandparent(s).</p>		<p>14</p>
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The household compositions constructed from the survey responses are unique to this study, preventing comparison with the population overall.

Household composition correlates with age, and this can be interpreted as household compositions changing across life stages (Figure 7). Starting with younger participants, the most common household composition for participants aged 18-24 years is ‘two or more adults, no children’. This is likely to be representing young adults living with their parents or in flatting situations.

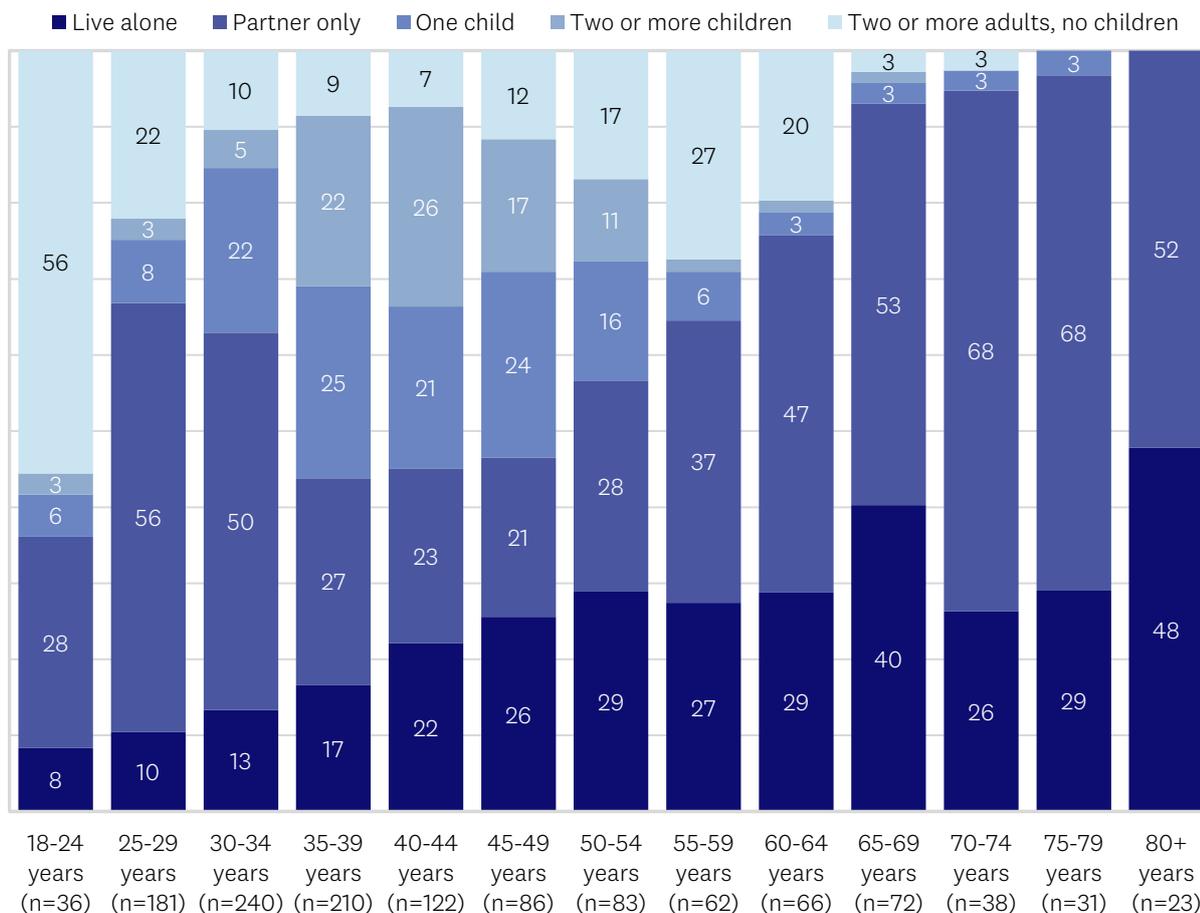
For participants in the age brackets 25-29 and 30-34 years, the most common household composition is ‘partner only’. From 25-29 years, the proportion of households with one child starts to increase while the proportion of those living with a partner only begins to decrease. This represents a transition in this age group of starting to have children.

Households with two or more children increases in proportion from the 30-34 years age group. The age groups between 35-39, 40-44 and 45-49 years have near equal proportions of households comprising one child, two or more children, or living with a partner only.

From 50-54 years, households with children start to decrease in proportion and those living with a partner only or living alone start to increase. This is likely representing children moving out of the family home. For those aged 60-64 years and older, very small proportions of households have children and those living with only a partner or on their own are the most common household compositions.

The diverse manifestations of households represented by the category ‘two or more adults, no children’ changes across different age groups. This category decreases in proportion sharply for the age groups 25-29 and 30-34 years. It remains the smallest proportion of household compositions between the age groups of 35-39 to 45-49 years. From 50-54 years, it begins to increase and continues to be the third most common composition until 65-69 years. This may be due to children growing into young adults as their parent(s) reach 50-54 years and continue to live together, or elderly parents coming to live with their adult child(ren).

Figure 7: Household composition, by age (%)



Notes: 1. Base is all participants who gave their age.  
 2. Data labels for values less than 3 not shown.

The next section in this chapter introduces the relationship between housing typology and household composition. Throughout the report, participant responses to the survey questions about their satisfaction or how well different design aspects are meeting the needs of the household are reported for each of these household compositions. From this analysis, we can see aspects of MDH are working well for some household compositions and not so well for others.

### 4.1 Household composition by housing typology

There were noticeable differences in the demographic characteristics and household composition of participants who live in attached homes (i.e. terraced houses and duplexes) compared with those living in apartments.

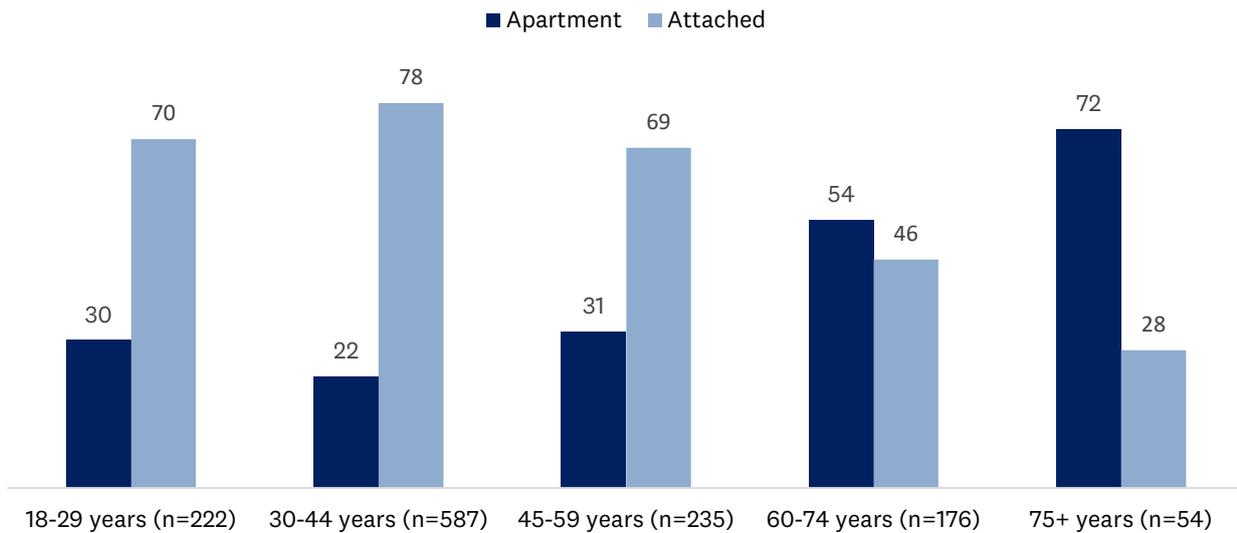
The most common household composition among those living in apartments were partner only (48 per cent) or living alone (40%). Meanwhile, the household compositions of those living in attached homes were most commonly one child, with one or more adults (20%), two or more children, with one or more adults (14%), or two or more adults and no children (17%).

Attached homes are more likely to have larger households compared with apartments. Sixty per cent of one person households live in apartments, 74 per cent of two person households live in attached

homes, 90 per cent of three person households live in attached homes, and 95 per cent of 4 or more person households live in attached homes.

Figure 7 above shows the relationship between participant age and household composition. A relationship is also found between participant age and housing typology. The proportion of participants living in apartments increases with age as the proportion living in attached homes decreases with age (Figure 8).

**Figure 8: Housing typology, by age groups (%)**

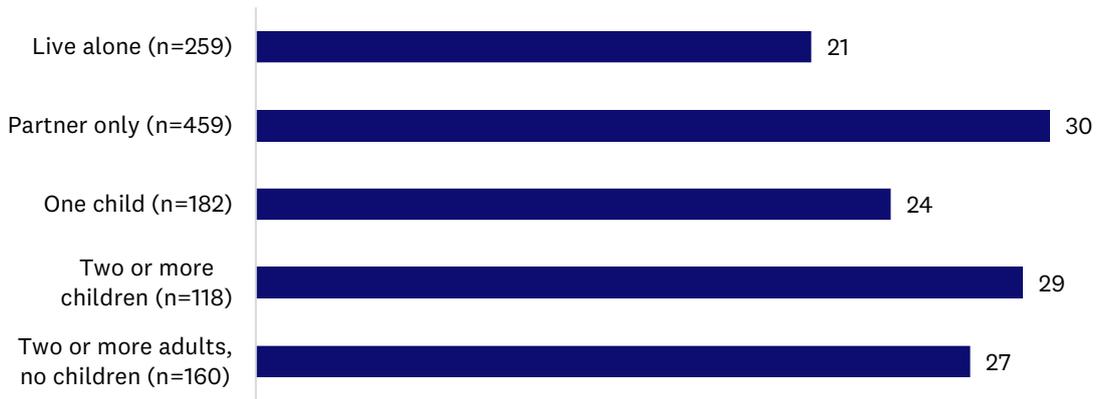


This data suggests different housing typologies appeal to different life stages. Designing homes with these life stages in mind may assist in delivering homes with the right components to facilitate a good lived experience. For example, as attached homes are more frequently occupied by younger households, often with children, these homes require affordances for the activities of interest to them. In contrast, apartments are more commonly occupied by older households, who tend to be living alone or with a partner only, and so cater to different needs.

## 4.2 Households with pets

Over a quarter (26%) of participants reported that they have a pet in their households. The survey did not ask participants to describe the type or numbers of pets they owned. No significant differences in having pets are seen across household composition. The proportion of participating households with a pet ranged from 21 to 30 per cent (Figure 9).

Figure 9: Households with pets, by household composition (%)



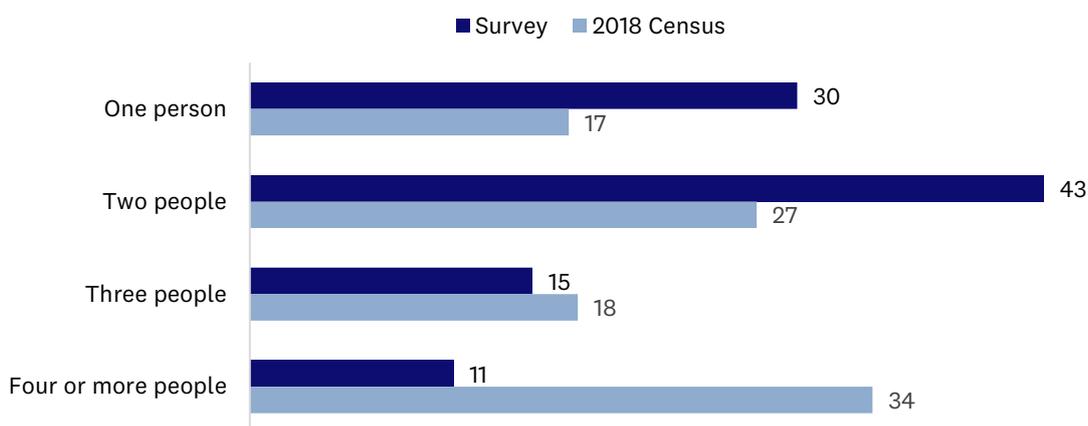
Pets are more common in attached homes with a third (32%) of households living in an attached home reporting that they owned a pet; this compares with 13 per cent of participants living in an apartment. This difference could be in part due to body corporate rules regarding pets in apartments.

## 5 Number of people in a household

Participants were asked how many people live in their household (number of adults and number of children). Their responses can be compared with the Auckland population in the 2018 Census to suggest how similar or different households of MDH may be to the population overall.

Compared with the number of people in households from the 2018 Census, we see a larger proportion of those reported to be in a household of one or two people are living in MDH (30% compared with 17%, and 43% compared with 27%, respectively), whereas those in households of three people or four or more people are less likely to be living in MDH (15% compared with 18%, and 11% compared with 34%, respectively). This comparison demonstrates that households living in MDH tend to be smaller than the population overall.

Figure 10: Number of people in the household (survey households n=1240, census n=496,458) (%)



The average size of participating households across all MDH typologies is 2.1 people (43 per cent of households who participated in the survey comprise of two people, 30 per cent have one person, and the remainder have three or more people). The 2018 Census reports an average household size for Auckland overall of 3.0 people.

These figures could be interpreted to suggest MDH are accommodating (or are perceived at the point of choosing housing, to accommodate) the needs of small households, and not those of larger households.

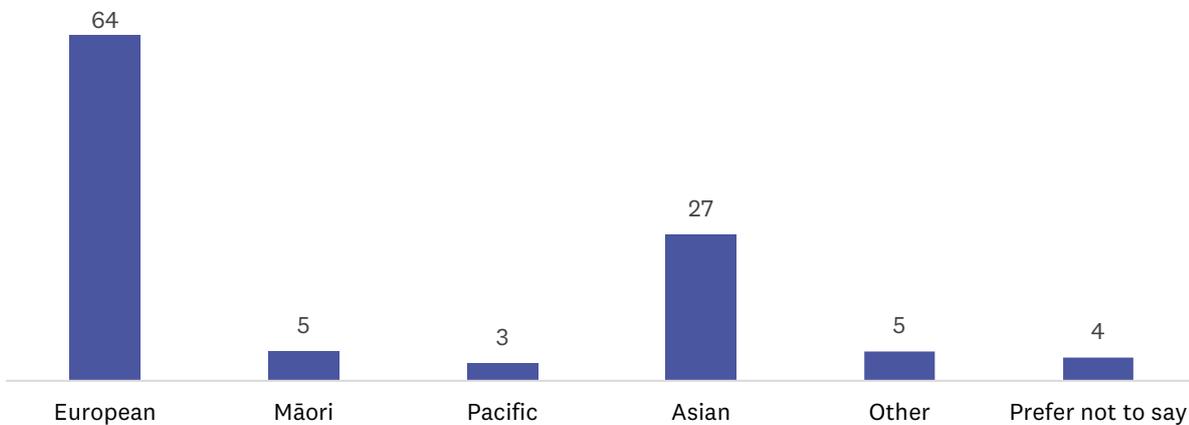
## 6 Sample characteristics

The figures below illustrate the broad characteristics of the sample, including ethnicity, gender, age and tenure. Further details are available in Appendix 7.

### 6.1 Ethnicity

Nearly two-thirds (64%) of participants who answered the question on ethnic identity identified with a European ethnicity and 27 per cent identified with Asian ethnicity. Māori, Pacific ethnicities and other ethnic groups comprise smaller proportions of the sample (5%, 3% and 5%, respectively).

Figure 11: Proportion of participants in broad ethnic groups (n=1269) (%)

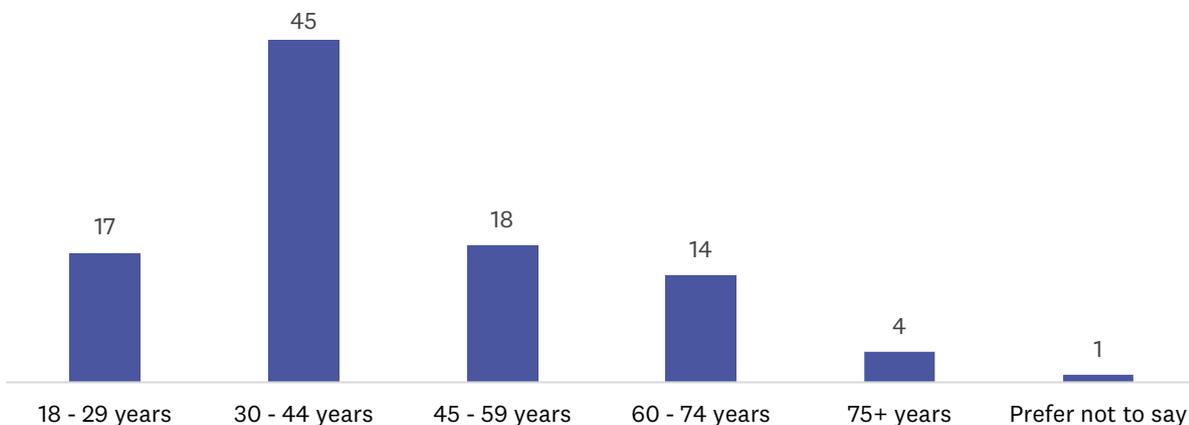


Note: Multiple responses allowed; therefore, total does not sum to 100.

### 6.2 Age

Forty-five per cent of participants were aged 30-44 years. There were much smaller proportions of participants in the other age groups: 17 per cent aged 18-29 years, 18 per cent aged 45-59 years, 14 per cent aged 60-74 years, and 4 per cent aged 75 years and older.

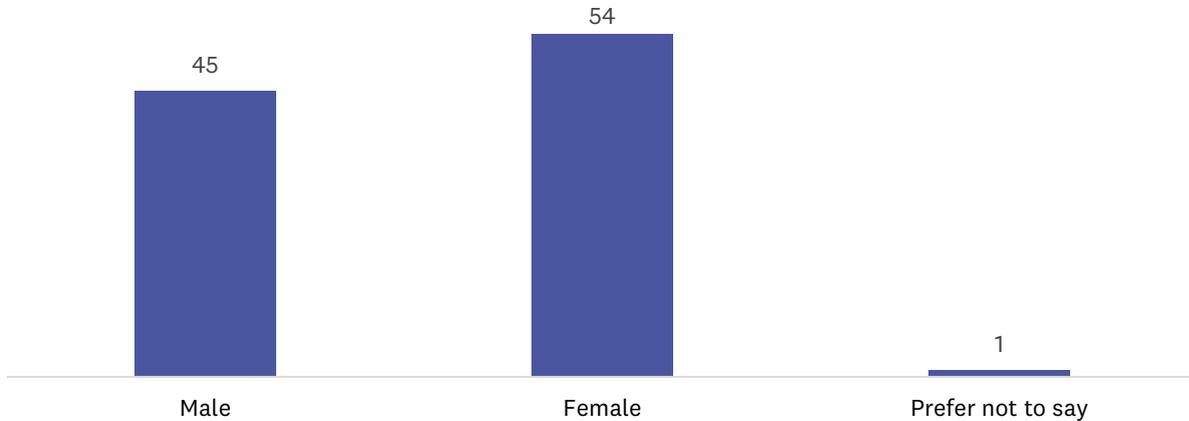
Figure 12: Participant age (n=1292) (%)



### 6.3 Gender

Slightly more than half (54%) the participants identified as female and 45 per cent as male.

Figure 13: Participant gender (n=1291) (%)

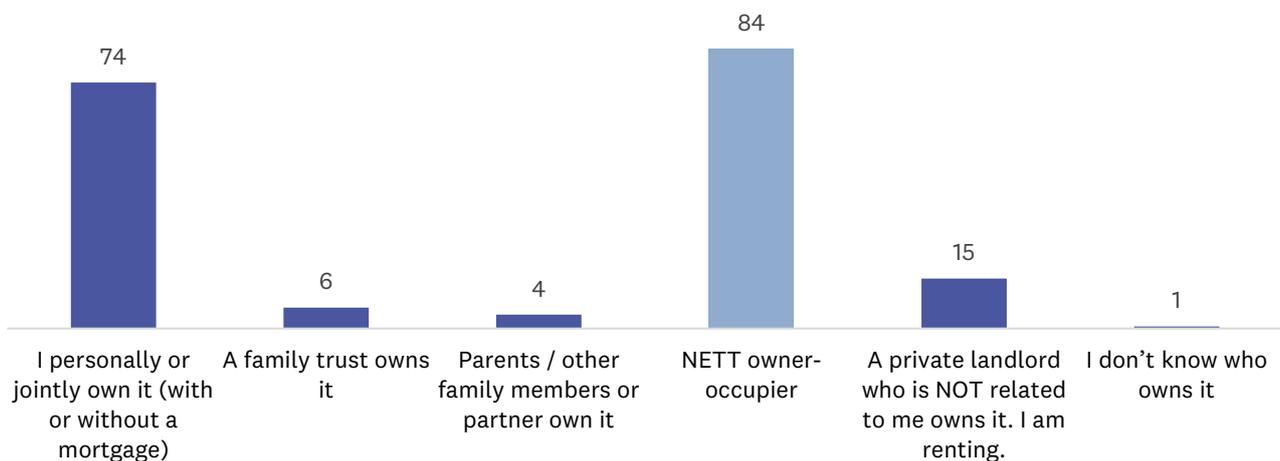


Note: Six participants answered as ‘another gender’ (less than 1 %) and are not shown on the chart.

### 6.4 Tenure

Eight-four per cent of participants reported living in an owner-occupier home and the largest proportion within this group (74%) said they personally or jointly owning their home. Fifteen per cent were renting from a private landlord and the remaining 1 per cent did not know who owned their home.

Figure 14: Housing tenure (n=1337) (%)



Note: NETT owner-occupier includes those who answered their home is personally or jointly owned, owned by a family trust, or owned by parents/other family members.

## 7 In-home immersions participants

Twenty households were recruited to participate in the in-home immersions. The sample was carefully chosen to ensure a mix of housing typologies, household compositions, and satisfaction with aspects of the home. All participating households were owner-occupied so that participants had autonomy to make modifications to their home and did not need to seek consent from property owners to participate.

All members of the household who wished to do so were able to participate. Twenty households participated, comprising 41 individual participants. Six of the participating households lived in apartments, 12 in terraced housing, and two in a duplex. One of the 12 households living in terraced housing also had a minor dwelling above their detached garage as part of their property.

Participants were classified as being generally satisfied, dissatisfied, neutral or having a mixture of satisfied and dissatisfied responses. This was based on selected survey questions used in recruitment (how well the size of the living space meets the needs of the household, satisfaction with temperature in summer, satisfaction with privacy in outdoor living spaces, and rating for the amount of built-in storage in the kitchen). Five participants were classified as being satisfied with their home, four as dissatisfied, four as neutral and seven as mixed.

Table 7 below describes the households and their homes in more detail.

**Table 7: Property characteristics of in-home immersions**

Typology	Number of bedrooms	Number of bathrooms /WC	Carparking	Household description	Household composition	Age of primary participant	Generalised satisfaction from survey
Ground floor walk-up apartment	1 bedroom 1 guest bedroom	1 (bath, shower, toilet)	Outdoor carpark (1 car)	1 adult	Live alone	45-49 years	Satisfied
3rd floor walk-up apartment	3 bedrooms	2 (1 shower, 1 shower and toilet)	No carpark (2 cars parked on street)	Couple and twin 16-year-old sons	Two or more children	50-54 years	Mixed
3rd floor apartment	1 bedroom 1 flexi-room (study)	2 (shower and toilet in each)	No carpark (1 car parked in nearby carpark)	1 adult	Live alone	Preferred not to say	Dissatisfied
5th floor apartment	1 bedroom 1 spare bedroom (study)	1 (shower and toilet)	No carpark (no car)	Couple	Partner only	35-40 years	Satisfied
3rd floor walk-up apartment	2 bedrooms 1 spare bedroom (study/storage)	1 (shower and toilet)	Outdoor carpark (1 car)	Couple, 3-year-old and 6-month-old children	Two or more children	25-29 years	Neutral
2nd floor walk-up apartment	1 bedroom 1 spare bedroom (study/storage)	2 (shower and toilet in each)	Outdoor carpark (1 car)	Couple and 18-month-old daughter	One child	30-34 years	Satisfied
2-storey terraced house	1 bedroom 1 guest bedroom	1 (shower and toilet)	Car pad (1 car)	1 adult	Live alone	30-34 years	Neutral
2-storey terraced house	1 bedroom 1 spare bedroom (laundry) 1 flexi-room (study)	1 (shower and toilet) 1 WC	Outdoor carpark (1 car)	1 adult	Live alone	50-54 years	Satisfied
2-storey terraced house	3 bedrooms	2 (1 bath and toilet, 1 shower and toilet)	Single garage (car parked on driveway)	Couple, 14-year-old son, grandmother	One child	35-39 years	Mixed

Typology	Number of bedrooms	Number of bathrooms /WC	Carparking	Household description	Household composition	Age of primary participant	Generalised satisfaction from survey
2-storey terraced house	2 bedrooms 1 flexi-room (teenager space)	1 (shower and toilet) 1 WC	Car pad (2 cars)	Couple, 14-year-old daughter, 8-year-old son, grandmother	Two or more children	40-44 years	Dissatisfied
2-storey terraced house	2 bedrooms 1 spare bedroom (study/laundry)	2 (1 bath, shower and toilet in each) 1 WC	Car pad (2 cars, 2nd car parked on street)	Couple	Partner only	40-44 years	Mixed
2-storey terraced house	2 bedrooms 1 spare bedroom (study)	1 (bath, shower, toilet) 1 WC	Car pad (2 cars, 2nd car parked on footpath)	2 adults (couple)	Partner only	35-39 years	Neutral
2-storey terraced house	2 bedrooms 1 spare bedroom (hobby) 1 flexi-room (teenager space)	2 (shower and toilet in each) 1 WC	Single garage (car parked on street)	Couple and 14-year-old daughter	One child	45-49 years	Mixed
2-storey terraced house with standalone garage and minor dwelling	Main house: 3 bedrooms	1 (bath, shower, toilet) 1 WC	Double garage (1 car parked in garage, 3 cars parked on street)	Couple, 2 adult daughters (20 and 27 years), 16-year old daughter	One child	25-29 years	Mixed
	Minor dwelling: 1 bedroom	1 (shower and toilet)					
2-storey terraced house	3 bedrooms	1 (shower and toilet) 1 WC	Outdoor carpark (3 cars, 2 parked on street)	Couple and 2 flatmates	Two or more adults, no children	40-44 years	Dissatisfied
2-storey terraced house	2 bedrooms 1 spare bedroom (study)	1 (bath, shower, toilet) 1 WC	Car pad (2 cars, 1 street parking)	Couple	Partner only	25-29 years	Neutral

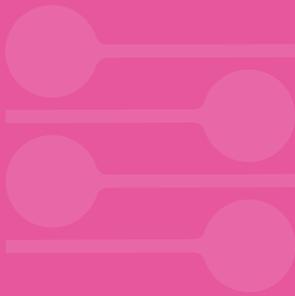
Life in Medium Density Housing in Tāmaki Makaurau / Auckland

Typology	Number of bedrooms	Number of bathrooms /WC	Carparking	Household description	Household composition	Age of primary participant	Generalised satisfaction from survey
2-storey terraced house	2 bedrooms 2 spare bedrooms (study, exercise/media room)	2 (1 bath, shower and toilet in each) 2 WC	Single garage (1 car parked in garage)	Couple and adult daughter	Two or more adults, no children	55-59 years	Satisfied
3-storey terraced house	2 bedrooms 1 flexi-room	3 (2 with showers and toilet, 1 with bath and toilet)	Single garage (2 cars, 1 parked on driveway)	2 flatmates	Two or more adults, no children	35-39 years	Dissatisfied
2-storey duplex	2 bedrooms 1 spare bedroom (study)	1 (bath, shower and toilet) 1 WC	Single garage (car parked on driveway)	Couple and 18-month-old daughter	One child	30-34 years	Mixed
2-storey duplex	1 bedroom 1 spare bedroom (hobby/laundry) 1 flexi-room (study)	2 (shower and toilet in each) 1 WC	Car pad and front lawn parking (1 car)	1 adult	Live alone	35-39 years	Mixed

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 4

# Indoor spaces for living





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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## **Introduction to this chapter**

Generally speaking, homes can be divided into spaces where people live and spaces where people sleep. ‘Living’ spaces are where people cook, eat, socialise, undertake hobbies, work and play. Many medium density homes in Auckland are characterised by an open plan area that has ‘zones’ for a lounge, kitchen and dining space. Some homes have additional spaces intended for living, such as family or rumpus rooms, a study or a media room (these are often in the form of a flexi-room).

Section 1 presents results for spaces that are intended for living, such as kitchens, dining spaces and lounges. The critical function of garages and ‘spare bedrooms’ in the homes that have them is also explored in this section.

Section 2 presents results related to bedrooms, and Section 3 addresses the overall size of homes.

Each section begins by describing regulations and best practice guidance, followed by results from the research. Survey results are generally discussed first, followed by findings from the analysis of 110 consented plans and the 20 in-home immersions (refer to Chapter 3 for more detail on the research methods and sample). The order in which research results are discussed varies, with Section 1 following this approach, and the following sections organised slightly differently.

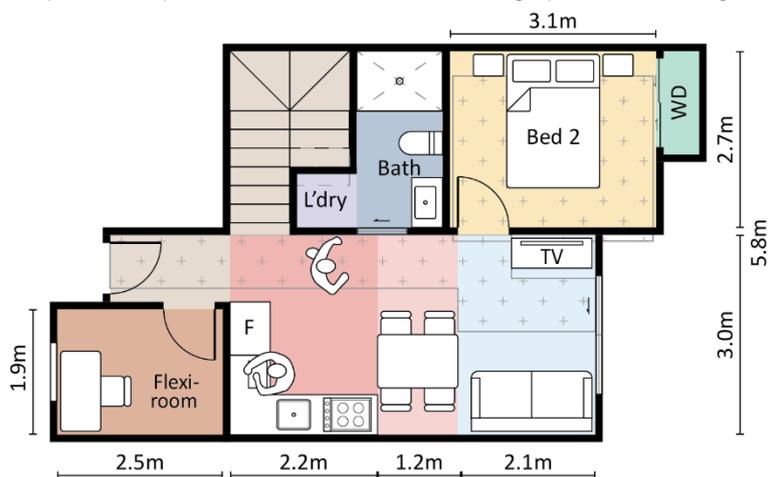
Section 4 is a summary, drawing together the research results presented in this chapter.

# 1 Indoor spaces intended for ‘living’

Spaces inside a home that are intended for ‘living’ include kitchens, dining spaces, lounges and any additional spaces such as flexi-rooms or studies.<sup>1</sup> Garages, while not intended to be living spaces, are found to act as important spaces for living, storage and household tasks such as laundry.

Open plan living spaces that include a kitchen, dining space and lounge are common in New Zealand homes. However, not all homes have one open plan living space. Kitchens, dining spaces and lounges can be physically separated by walls and doors. The two floor plans below illustrate the difference between an open plan kitchen, lounge, dining space (Figure 1) and a home that has these spaces separated by walls (Figure 2). Both open plan and separated layouts are defined as one living space in this study.

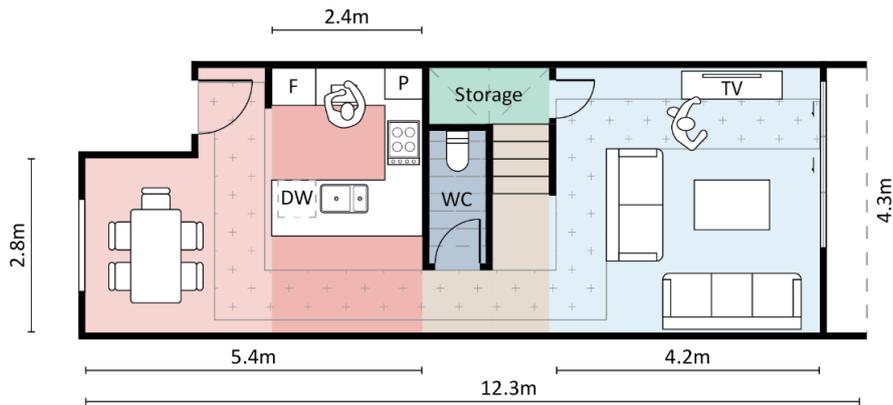
Figure 1: Example of an open floor plan where the kitchen, dining space and lounge are in one space



Note: The lounge area (blue) is not physically separated from the kitchen (red) and dining space (pink). This home also includes a flexi-room. This flexi-room would be classified as a secondary living space that could be used for a range of activities including computer work (as a study/office), for hobbies, for storage or for play.

<sup>1</sup> In this report, the term ‘lounge’ is used instead of ‘living room’ to distinguish this space from other spaces in the home where living activities can occur, such as spare bedrooms, flexi-rooms, family rooms, garages, etc.

Figure 2: Example of a floor plan that has the kitchen and dining space separate from the lounge



Note: The lounge area (blue) is physically separated from the kitchen (red) and dining space (pink) by the stairs (brown) and associated walls.

## 1.1 Regulations and best practice guidance

There is variation in guidance and regulations within New Zealand and Australia on indoor spaces for living depending on whether and how these spaces are combined. Combined kitchen, dining and lounge spaces guidance is considered first. This is followed by guidance related to kitchens (which are sometimes combined with dining spaces), dining spaces (which are sometimes combined with lounges), and lounges. As an alternative to space size, some guidelines focus on functional requirements of spaces such as the length of a kitchen bench (see Section 1.1.2 on kitchens).

Guidelines for sizes of rooms or spaces in a home are often determined by the number of bedrooms as this is used as a proxy for the number of people in a household. Consequently, the recommended size of spaces tends to increase with the number of bedrooms.

The Auckland Unitary Plan (AUP) does not specify minimum room sizes, so is excluded from this section. It is worth noting, however, that the AUP includes policies, standards and assessment criteria to “ensure that dwellings are functional and of a sufficient size to provide for the day to day needs of residents, based on the number of occupants the dwelling is designed to accommodate”.<sup>2</sup>

Likewise, Section 35 monitoring of the AUP did not undertake analysis of internal rooms and spaces, and so is not included in this section.

### 1.1.1 Kitchen, dining and lounges

Open plan spaces that include a kitchen, dining space and lounge are common in medium density housing (MDH). Best practice guidance varies on how these spaces are defined and therefore how guidance is applied, as outlined below.

#### Auckland Design Manual (ADM) and best practice guidance

The table below sets out best practice guidance for the total combined living spaces in a home, where relevant. The *Auckland Design Manual* (ADM) specifies a ‘target occupancy’ of two people per bedroom.<sup>3</sup> The Ministry of Housing and Urban Development’s *Public Housing Design Guidance* and

<sup>2</sup> E.g. AUP Mixed Housing Urban Policy H5.3(5)(a) and Minimum Unit Size H5.6.16 Purpose Statement.

<sup>3</sup> *Auckland Design Manual*. Terraced Housing Design. Section 7.6.1. Living and Dining Spaces.

Kāinga Ora *Ngā Paerewa Hoahoa Whare Design Requirements* (hereafter referred to as the Kāinga Ora Design Requirements) also assume an occupancy of two people per bedroom.<sup>4, 5</sup>

The ADM uses a net internal floor area measure (exclusive of internal and external walls), which corresponds to usable floor area. However, the Kāinga Ora Design Requirements and the Ministry's Public Housing Design Guidance both use gross floor area (inclusive of walls), but exclusive of halls, entry lobbies and corridors. It is therefore difficult to make a direct comparison between the figures (Table 1).

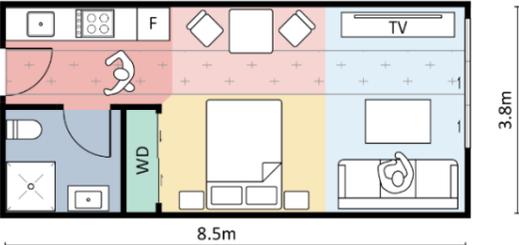
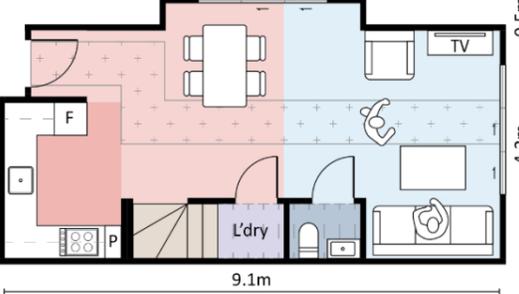
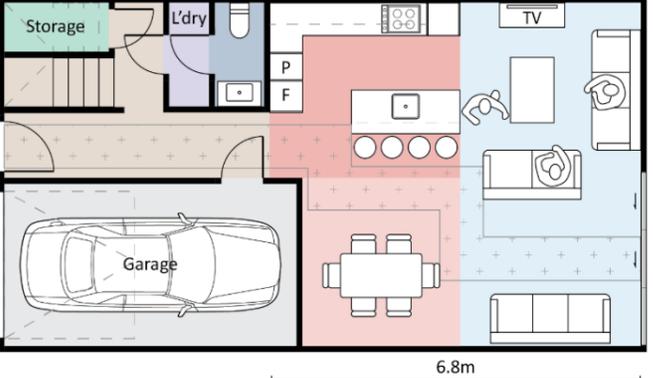
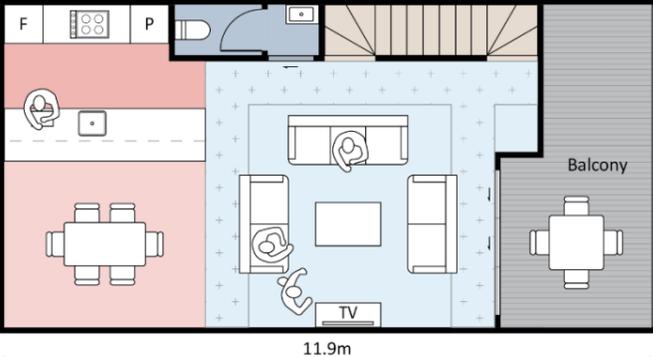
Australian guidelines take a different approach, providing minimum widths and dimensions only for lounge and dining spaces (exclusive of kitchens) and so is excluded from Table 1; see Table 4 for Australian guidelines on lounges and dining spaces.

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<sup>4</sup> Ministry of Housing and Urban Development (2023). *Public Housing Design Guidance for Community Housing Providers and Developers*.

<sup>5</sup> Kāinga Ora Homes and Communities (2024). *Ngā Paerewa Hoahoa Whare Design Requirements for Public Housing*.

Table 1: Recommended minimum floor areas for kitchen, dining, and lounge floor areas

Number of bedrooms and intended occupancy	Example floor plans to illustrate minimum recommended net ADM floor area for kitchen, dining and lounge (These example floor plans are included in effort to assist the reader in visualising the ADM’s minimum recommended floor areas and room widths)	Auckland Design Manual (minimum net floor area and minimum width)	Public Housing Design Guidance (minimum gross floor area)	Kāinga Ora Ngā Paerewa Hoahoa Whare Design Requirements (minimum gross floor area)
Studio 1-person occupancy	 <ul style="list-style-type: none"> <li>Lounge - 9.8m<sup>2</sup></li> <li>Kitchen - 5.6m<sup>2</sup></li> <li>Dining - 4.2m<sup>2</sup></li> <li>Total Net Kitchen, Dining &amp; Lounge Space - 19.6m<sup>2</sup></li> </ul>	16.1m <sup>2</sup> and 3.8m	N/A	N/A
1 bedroom 2-person occupancy	 <ul style="list-style-type: none"> <li>Lounge - 15.7m<sup>2</sup></li> <li>Kitchen - 6.1m<sup>2</sup></li> <li>Dining - 12.4m<sup>2</sup></li> <li>Total Net Kitchen, Dining &amp; Lounge Space - 34.2m<sup>2</sup></li> </ul>	30.8m <sup>2</sup> and 3.8m	27m <sup>2</sup>	27m <sup>2</sup> (excluding halls, entry lobbies and corridors)
2 bedrooms 4-person occupancy	 <ul style="list-style-type: none"> <li>Lounge - 21.0m<sup>2</sup></li> <li>Kitchen - 11.3m<sup>2</sup></li> <li>Dining - 8.9m<sup>2</sup></li> <li>Total Net Kitchen, Dining &amp; Lounge Space - 41.2m<sup>2</sup></li> </ul>	37.2m <sup>2</sup> and 3.8m	36m <sup>2</sup>	36m <sup>2</sup> (excluding halls, entry lobbies and corridors)
3 bedrooms 6-person occupancy	 <ul style="list-style-type: none"> <li>Lounge - 27.4m<sup>2</sup></li> <li>Kitchen - 10.0m<sup>2</sup></li> <li>Dining - 11.3m<sup>2</sup></li> <li>Total Net Kitchen, Dining &amp; Lounge Space - 48.7m<sup>2</sup></li> </ul>	44.2m <sup>2</sup> and 3.8m	46m <sup>2</sup>	46m <sup>2</sup> (excluding halls, entry lobbies and corridors)

Note: ‘Net’ floor area is defined in the AUP as the floor space between the finished surfaces of internal walls between rooms and excludes the width of walls, balconies or decks, parking and garages. ‘Gross’ floor area is defined as the sum of the area of all floors measured from the exterior faces of the exterior walls, or from the centre line of walls separating two activities, but excluding carparking and voids. ‘Studio’ describes a home in which the bed is in the same space as the kitchen, lounge and dining areas; i.e. there is no separate bedroom.

Sources:

- Auckland Design Manual, R6: Residential Design Element Unit Layout and Room Sizes.
- Ministry of Housing and Urban Development. (2022). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Table 2.
- Kāinga Ora Homes and Communities (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Table B2.1-1.

### 1.1.2 Kitchens

Kitchens should provide sufficient space for cooking, cleaning, food preparation and storage. Where dining is included within a kitchen (e.g. a breakfast bar), adequate bench space should also be provided.

#### **Auckland Design Manual (ADM) and best practice guidance**

The ADM recommends minimum combined kitchen and dining room sizes based on the number of bedrooms (and therefore anticipated number of occupants) (Table 2).

**Table 2: ADM recommended minimum kitchen and dining space requirements**

<b>Number of bedrooms</b>	<b>Auckland Design Manual (net floor area)</b>
Studio	5.1m <sup>2</sup>
1 bedroom	10.8m <sup>2</sup>
2 bedrooms	13.2m <sup>2</sup>
3 bedrooms	16.2m <sup>2</sup>

Note: ‘Studio’ describes a home in which the bed is in the same space as the kitchen, lounge and dining areas; i.e. there is no separate bedroom.

Source: *Auckland Design Manual*. R6: Residential Design Element Unit Layout and Room Sizes.

An alternative approach to floor area taken in other New Zealand guidelines is a minimum kitchen bench length and other storage requirements. For example, the Ministry of Housing and Urban Development’s Public Housing Design Guidance provides detailed guidance on kitchen space requirements for each element of a kitchen relative to the number of bedrooms,<sup>6</sup> (Table 3).

The Design Requirements have similar standards to the Public Housing Design Guidance. Technical guidance for kitchen design also includes:

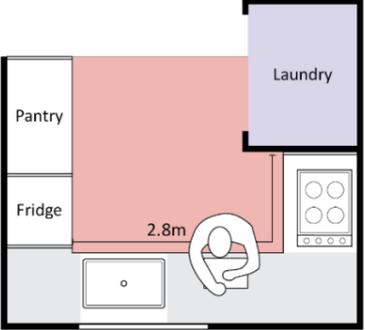
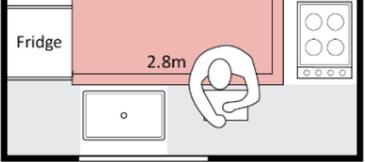
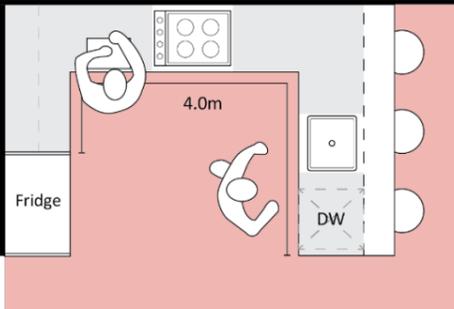
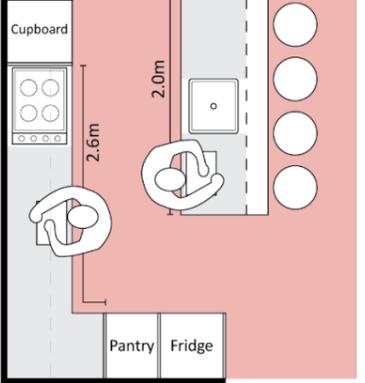
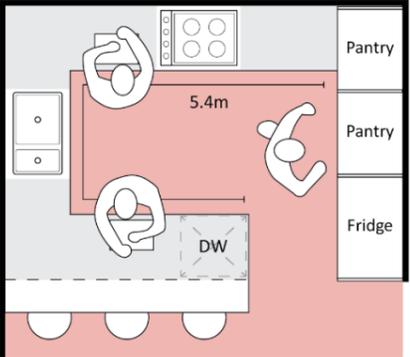
- 1.2m clearance between benches/appliances and main thoroughfare
- provide an external window and natural ventilation and daylight
- fridge space is dimensionally appropriate for the unit size
- minimum pantry height of 2m and depth of 0.6m
- provide a location for refuse and recycling.

The two NSW guidelines considered in this study do not specify minimum kitchen metrics. The Victoria Apartment Design Guidelines requires an assessment as to the useability, functionality and amenity of kitchen, dining and living areas.<sup>7</sup>

<sup>6</sup> Ministry of Housing and Urban Development (2022). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 4.4, Table 3.

<sup>7</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines*, Section 3 – Dwelling Amenity.

Table 3: MHUD Public Housing Design Guidance for Kitchens

Number of bedrooms	Example kitchen plans to illustrate total bench lengths	Total bench length	Pantry (width)	Drawers	Fridge
1 bedroom	 <p>2.8m Total bench length</p> <p>Usable bench space</p>	2.65m	0.45m	1 bank	
2 bedrooms	 <p>2.8m Total bench length</p> <p>Usable bench space</p>	2.65m	0.45m	1 bank	750mm (W) x 700mm (D) x 2000mm (H)
3 bedrooms	 <p>4.0m Total bench length</p> <p>Usable bench space</p> <p>Overhead cupboard</p> <p>Breakfast bench</p>	4.05m	0.6m	2 banks	
4 bedrooms	 <p>4.6m Total bench length</p> <p>Usable bench space</p> <p>Overhead cupboard</p> <p>Breakfast bench</p>	4.65m	0.6m	2 banks	750mm (W) x 850mm (D) x 2000mm (H)
5 bedrooms	 <p>5.4m Total bench length</p> <p>Usable bench space</p> <p>Breakfast bench</p>	5.4m	0.9m	2 banks	

Source: Ministry of Housing and Urban Development (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Kitchens, Table 3.

### Design observations

The following design matters have been observed by the council’s Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- limited kitchen functionality, including pantry storage and bench space for the intended number of occupants
- provision of a pantry space is not common, with only limited cupboard or drawer space to accommodate crockery, pots/pans, cutlery and food
- AUP requirements for passive surveillance or ‘eyes’ overlooking the street or communal accessways means that provision of a window from the kitchen can reduce opportunities for wall-mounted storage cupboards or large appliances such as fridges, particularly for narrow (~4m wide) terraced dwellings.

The images below illustrate some of these issues. Figure 3 and Figure 4 show the same kitchen layout in two properties. There is no space in this kitchen layout for a fridge and cabinetry does not include a pantry. Figure 3 shows a fridge and cabinet in what is intended to be the dining area and Figure 4 shows kitchen cabinets have been added to accommodate a fridge and create a pantry.

Figure 3: Kitchen example A



Source: TMDO, Auckland Council

Figure 4: Kitchen example B



Figure 5 shows a similar kitchen layout, for a 4-bedroom terraced house; again there is no space for a fridge or pantry. There are two under-bench corner cupboards intended for crockery, pots and pans, and one cupboard either side of the rangehood. There are no drawers, including no drawer for cutlery. The design of the street-facing window limits the inclusion of wall-mounted cupboards. Alternative window arrangements, such as sidelight windows or horizontal windows can provide for both passive surveillance opportunities and wall-mounted storage.

Figure 5: Kitchen without space for a fridge, a pantry or any drawers



Source: TMDO, Auckland Council.

### 1.1.3 Dining

Dining spaces should be able to seat the number of intended occupants at a table and allow circulation space around chairs (including when in use). More informal dining arrangements, such as eating at the kitchen bench or a breakfast bar, are also possible.

#### **Auckland Design Manual (ADM) and best practice guidance**

The ADM recommends a minimum combined kitchen and dining room space based on the number of bedrooms and therefore intended number of occupants, as set out in Table 2 above. A similar approach is taken in the Public Housing Design Guidance, which recommends that dwellings provide for a dining space that can seat the number of occupants at a table (assuming up to two people per bedroom). The Apartment Design Guidelines for Victoria require that dining areas provide for functional arrangements appropriate to the apartment size and number of bedrooms.

The NSW Apartment Design Guide provides guidance for lounge or combined dining and lounge areas, which is a different approach to the ADM which combines kitchen and dining. The NSW Guide recommends a minimum lounge or combined dining and lounge width of 3.6m for 1-bedroom apartments and 4m for 2- and 3-bedroom apartments. The NSW Low Rise Housing Design Guidance also combines dining with a lounge and recommends a minimum of 24m<sup>2</sup> for 1- and 2-bedroom dwellings, and 28m<sup>2</sup> for dwellings with 3 or more bedrooms.

The ADM also provides guidance on typical dining table, chair and circulation space requirements.<sup>8</sup>

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<sup>8</sup> *Auckland Design Manual*, Terraced Housing Design. The Building, Section 7.6.1.

### **Design observations**

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Dining spaces are a transitional space between the kitchen and lounge area, often compromising the functionality of each space, and the movement between them.
- Space provided for dining tables is often not of sufficient size to accommodate the intended occupancy or visitors.
- Dining tables are often placed against a wall or storage cupboard, or within kitchen circulation and preparation space, with inadequate circulation space or space to sit comfortably at the table.

#### **1.1.4 Lounges**

Lounges should accommodate seating for the intended number of occupants in the dwelling and visitors.

#### **Auckland Design Manual (ADM) and best practice guidance**

The ADM recommends a minimum lounge size based on the number of bedrooms and therefore anticipated occupancy. To allow easy movement through rooms, the minimum width of lounges and dining spaces, including circulation space, is recommended to be no less than 3.8m. Circulation space of at least 800mm is recommended around furniture and fittings.

A similar approach is adopted in the NSW and Victoria design guides (Table 4). The minimum recommended lounge sizes are relatively consistent between the ADM and NSW *Low Rise Housing Diversity Guide*, with the latter also including a minimum dimension of 4m. However, the NSW guidelines apply to both a lounge and a lounge and dining space combined. The NSW Apartment Design Guide provides only a minimum width for either a lounge or lounge and dining space combined (no floor area recommendation).

The Victoria Apartment Design Guide has a smaller floor area for lounges than the ADM, but also recommends a minimum room dimension.

The Public Housing Design Guidance and Kāinga Ora Design Requirements recommend a minimum combined floor area for kitchens, dining spaces and lounges (described previously in Table 1). The Public Housing Design Guidance also recommends that the space is sufficient to accommodate lounge seating for the number of occupants in the dwelling, assuming two occupants per bedroom.

Table 4: Minimum recommended lounge floor area and width, ADM and Australian examples

Number of bedrooms	Auckland Design Manual (net area for lounge only and minimum width)	NSW Apartment Design Guide (lounge or combined lounge and dining space minimum width)	NSW Low Rise Housing Diversity Design Guide (combined lounge and dining space net area and minimum dimensions)	Victoria Apartment Design Guide (net area for lounge only and minimum dimensions)
Studio	11m <sup>2</sup> and 3.8m	3.6m for studio and 1-bedroom apartments  4m for 2- and 3-bedroom apartments	N/A	10m <sup>2</sup> and 3.3m
1 bedroom	20m <sup>2</sup> and 3.8m		24m <sup>2</sup> and 4m	10m <sup>2</sup> and 3.3m
2 bedrooms	24m <sup>2</sup> and 3.8m		24m <sup>2</sup> and 4m	12m <sup>2</sup> and 3.6m
3 bedrooms	28m <sup>2</sup> and 3.8m		28m <sup>2</sup> and 4m	12m <sup>2</sup> and 3.6m

Sources:

- Auckland Design Manual, R6: Residential Design Element Unit Layout and Room Sizes.
- New South Wales Department of Planning and Environment (2015). *Apartment Design Guide*, Part 4 Designing the Building, Section 4D.
- New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 2.3K Terrace Dwelling Size and Layout, Design criteria 76 and 77.
- State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*. Section 3 – Dwelling Amenity. Table D8.

**Design observations**

The following design matters have been observed by the council’s Tāmaki Makaurau Design Ope (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Lounges can also function as transitional spaces such as the front entrance to the dwelling, but with no additional space for shoes/jackets/bags, etc.
- Lounge spaces are typically sized to accommodate a couch and TV cabinet, often meaning that there is insufficient space for all occupants to sit in the lounge or accommodate visitors. Couches are also often placed against ranch sliders or windows, blocking outlook and/or access to outdoor living spaces.
- A second living space in the form of a flexi-room on the first or ground floor is often recommended for 3+ bedroom homes, so that there are additional spaces for living for occupants.
- Combined kitchen, dining and lounge spaces typically do not increase proportionately with the number of bedrooms and therefore anticipated number of occupants. Additional bedrooms are being ‘stacked’ on upper levels of terraced houses with no corresponding increase in living spaces.

## 1.2 Survey results: Number and sizes of spaces for living

This section presents the results from the survey concerning indoor spaces for living. The first section describes the number of spaces for living in a home. A kitchen, lounge and dining space comprise one ‘living space’ in this study. Additional living spaces are flexi-rooms which can serve a range of functions, such as a study, hobby space, media room or playroom.

Kitchens are covered in Section 1.2.2, followed by dining spaces in Section 1.2.3, and finally lounges and flexi-rooms in Section 1.2.4.

### 1.2.1 Number of spaces for living

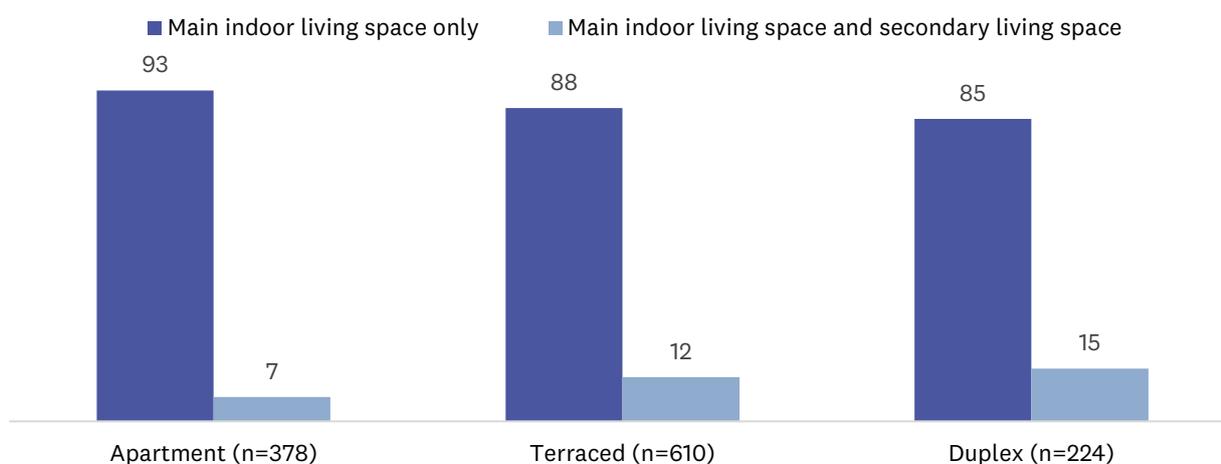
The survey participants were asked to indicate the types of spaces and rooms that were part of their home, including the presence of a ‘main indoor living space’ (the question wording suggested that this might include a lounge, dining and kitchen), as well as any second or third indoor living spaces (i.e. flexi-rooms).<sup>9</sup>

Participants who reported only having a main living space are interpreted to have one kitchen, lounge and dining space in their home. Those who reported having a secondary living space are interpreted as having one or more flexi-rooms.

Most of the properties in the survey (89 %) were reported as only having a main living space. Eleven per cent of properties were reported to have a second living space (i.e. flexi-room), and three homes had a third living space.

As Figure 6 below shows, the majority of apartments (93%) were reported to have only a main indoor living space (i.e. kitchen, dining and lounge) and seven per cent to have a second living space (i.e. flexi-room). Terraced houses (12%) and duplexes (15%) were more likely than apartments (7%) to have a second living space.

Figure 6: Main and secondary indoor living spaces, by typology (%)

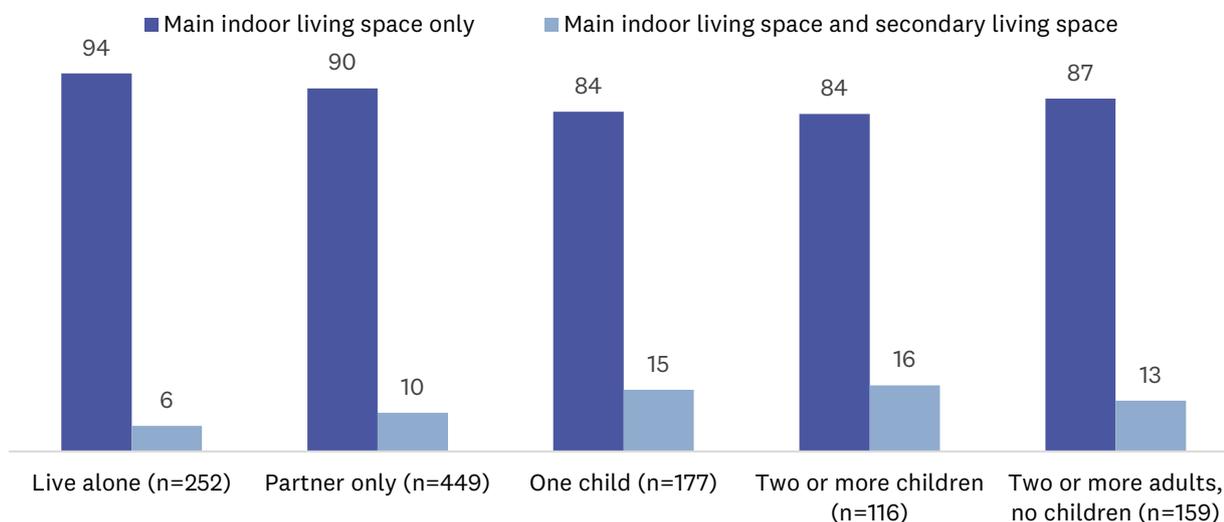


Note: Due to very small numbers, results for third indoor living spaces are not shown in the chart.

<sup>9</sup> Note: It is possible that spaces in a home reported to be second or third indoor living spaces may originally have been nominated on consented plans as bedrooms, garages or study spaces, but are used as extra ‘living spaces’ by participants.

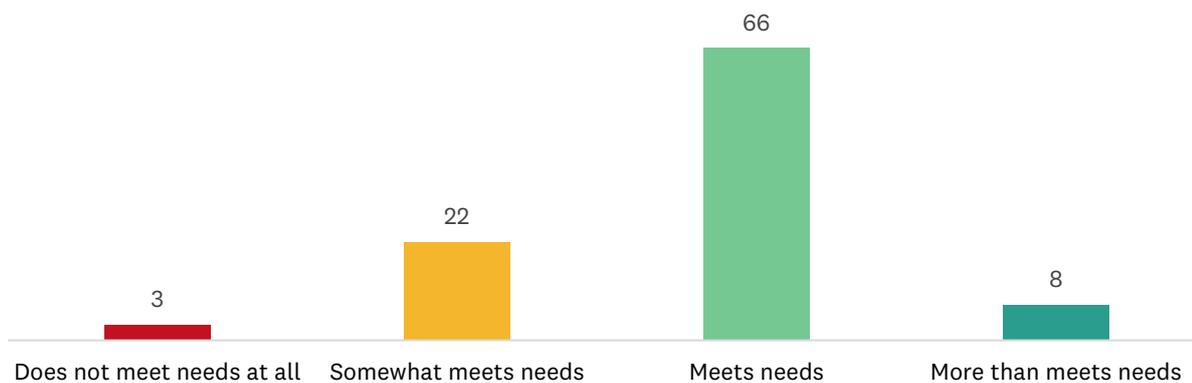
There were minimal differences in results by household composition. Households with children were more likely to live in a property that had a main and a secondary living space (one child, 15%; two or more children, 16%) compared with those who live alone (6%) (Figure 7).

**Figure 7: Main and secondary indoor living spaces, by household composition (%)**



Participants were asked to rate how well the number of indoor living spaces meets the needs of the household. As Figure 8 shows, two-thirds (66%) reported the number of spaces meets the needs of the household while 22 per cent said it ‘somewhat’ meets their needs. No significant differences in satisfaction were found across different numbers of living spaces in the home.

**Figure 8: Participant ratings of how well the number of indoor living spaces meets the needs of the household (n=1335) (%)**



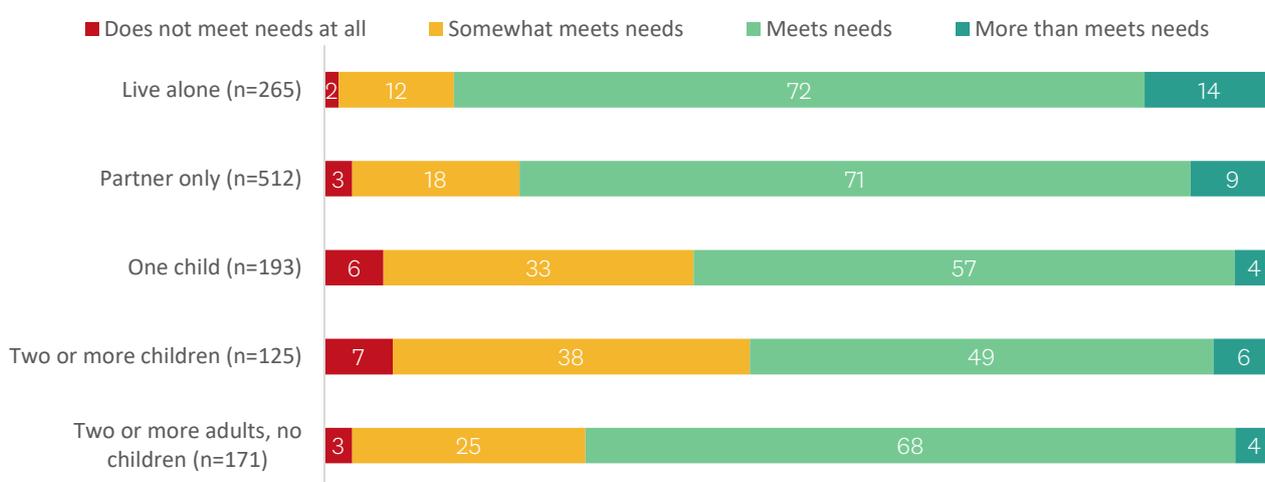
Larger households were more likely than smaller households to report the number of indoor living spaces ‘does not meet’ their needs. For example, just over a third (35%) of households with three people and 33 per cent of households with four or more people stated that the number of indoor living spaces ‘somewhat meets the needs’, compared with 17 per cent of one-person and 18 per cent of two-person households.

Very few (1%) one-person households reported that the number of living spaces ‘does not meet needs at all’. This figure compares with 5 per cent of households with three people, and 7 per cent of households with four or more people.

As Figure 9 shows, there is variation in how well the number of indoor living spaces is meeting needs across household compositions.

Households where participants live alone (72%) or with a partner only (71%) were significantly more likely to report the number of indoor living spaces meets the needs of the household compared with households with one child (57%) or two or more children (49%). Households with children (one child, 33%; two or more children, 38%) were significantly more likely to report the number of indoor living spaces ‘somewhat meets needs’ compared with those who live alone (12%) or with a partner only (18%).

**Figure 9: How well the number of indoor living spaces meets the needs of the household, by household composition (%)**

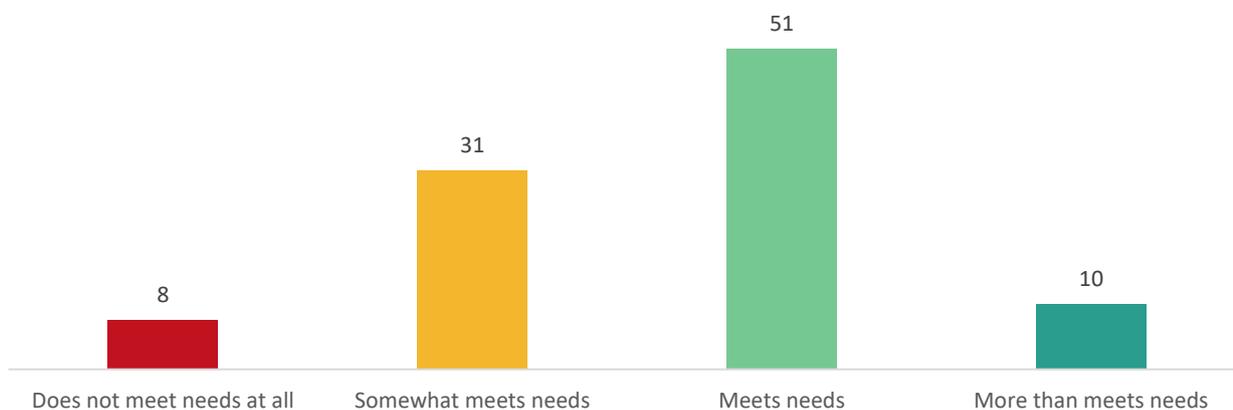


### 1.2.2 Kitchens

Participants were asked how well the size of their kitchen, including the bench space, meets the needs of the household.

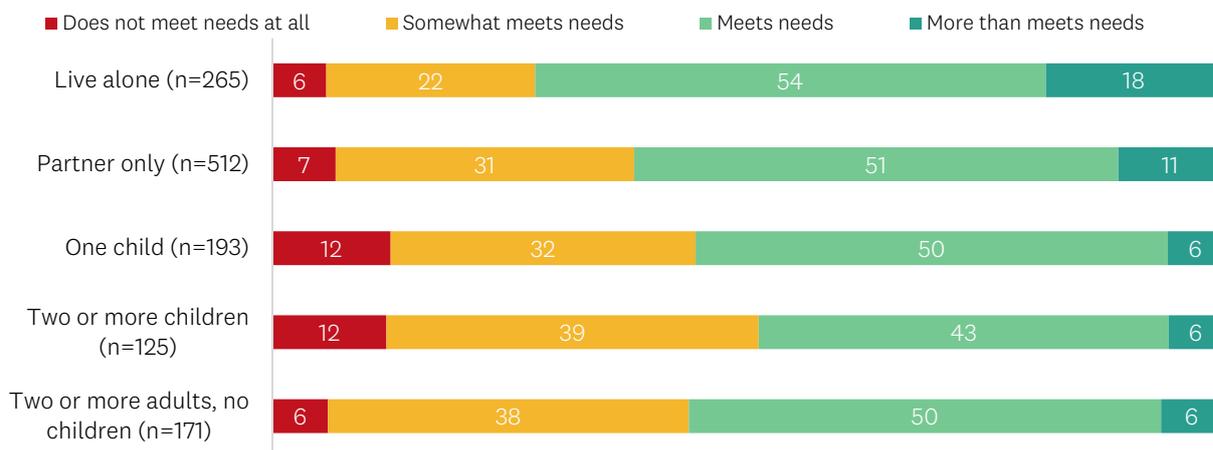
Half (51%) reported the size of the kitchen meets the needs of the household while 31 per cent reported it ‘somewhat meets needs’ and 8 per cent said it ‘does not meet needs at all’.

**Figure 10: Participant ratings of how well the size of the kitchen meets the needs of the household (n=1335) (%)**



There were some differences by household composition. Participants living alone (18%) were more likely to report that the size of their kitchen ‘more than meets the needs’ compared with any other household composition. However, over one in ten households with children (12% for both one child and two or more children) stated the kitchen size did ‘not meet their needs at all’.

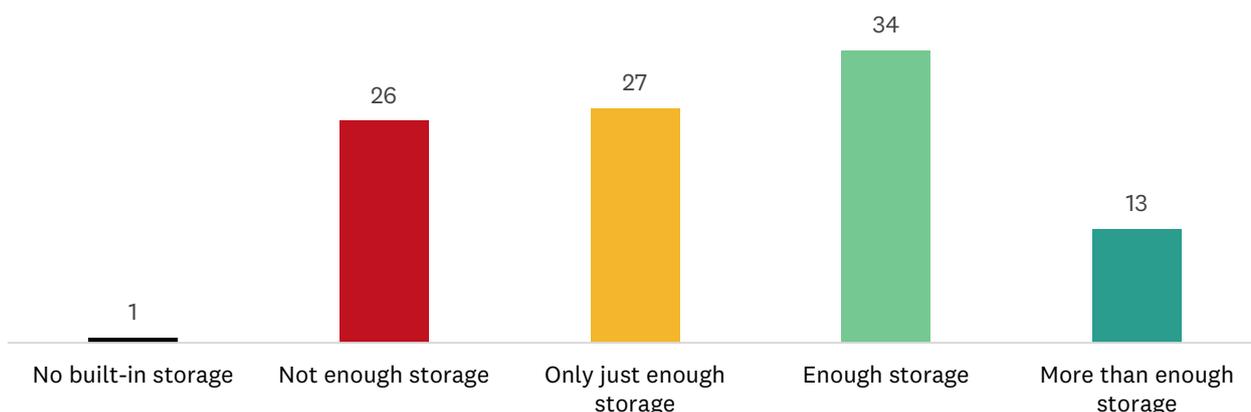
**Figure 11: How well the size of the kitchen meets the needs of the household, by household composition (%)**



### Kitchen storage

Participants were asked to rate the amount of built-in storage in their kitchen for food and equipment (e.g. pots, appliances, microwave). A third (34%) reported having ‘enough storage’, 27 per cent reported having ‘only just enough’ and 26 per cent reported having ‘not enough storage’.

**Figure 12: Participant ratings of the amount of built-in storage in the kitchen for food and equipment (n=1330) (%)**



Participants were asked if they had made changes to their kitchen, such as adding an island bench or storage cabinet. Seventeen per cent of participants who had made at least one change to their home reported having made a change to their kitchen.<sup>10</sup>

<sup>10</sup> Question 26 also asked participants whether they had made changes to the kitchen (Chapter 4); to improve privacy (discussed in Chapter 7); to increase storage, e.g. chest of drawers or storage cupboard (79% of participants who had made

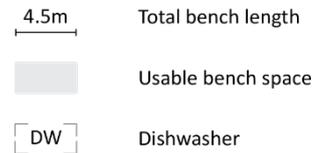
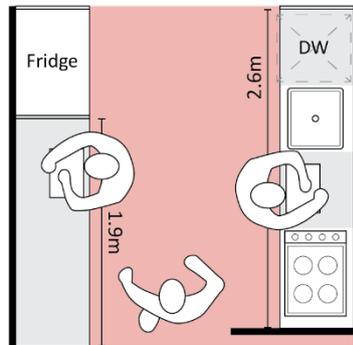
### Participants' comments about kitchens

A small number of participants (n=39) commented on aspects of their kitchen in response to a question asking what they like least about their home.

In some of these comments, participants describe the size of the kitchen overall as an issue:

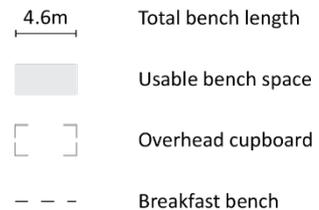
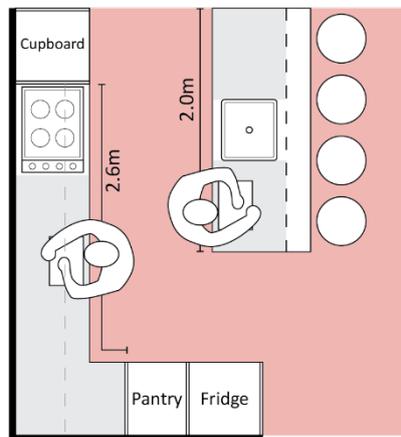
*Very small kitchen area.*

(7.8m<sup>2</sup> floor area  
actual plan of kitchen in  
participant's home from  
consented plans)



*Kitchen and living/dining areas  
are relatively small; i.e. it  
becomes crowded in the  
kitchen even when only 2  
people are in it.*

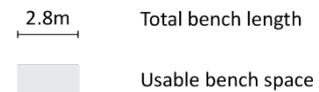
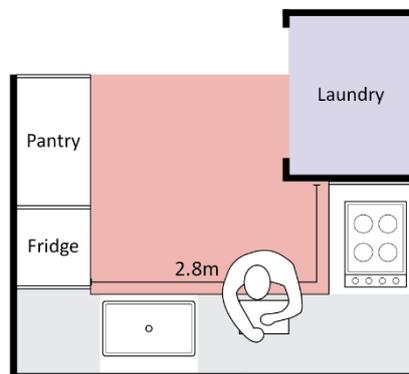
(8m<sup>2</sup> floor area  
actual plan of kitchen in  
participant's home from  
consented plans)



A few mentioned a lack of kitchen bench space. One participant living in a household with three adults and a kitchen bench 2.8m in length (from consented plans) commented:

*The kitchen is small and has  
very limited bench space.*

(5.2m<sup>2</sup> floor area”  
actual plan of kitchen in  
participant's home from  
consented plans)

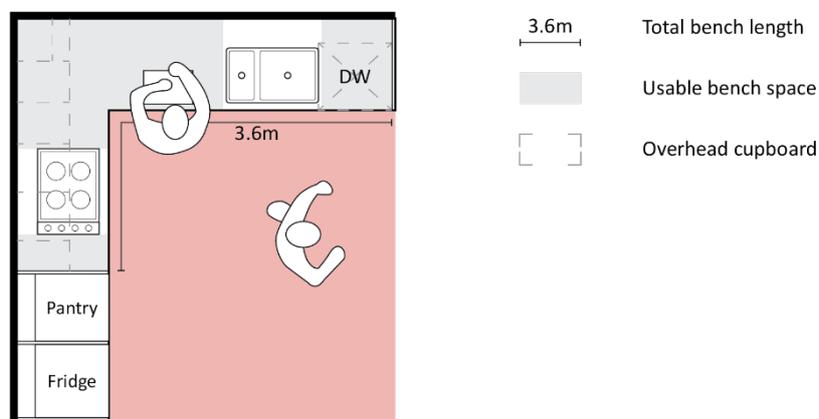


a least one kind of change); to permanently repurpose a room (13% of participants who had made a least one kind of change); improve accessibility (3% of participants who had made at least one kind of change), or changes to anything else. The participants could also indicate that they intended to make changes or that they had made no changes and had no intention to. Just over three-quarters (78%) stated they had made at least one kind of change to their dwelling since they had moved in.

Another participant living in a home with two adults and a kitchen bench 3.6m in length (from consented plans) commented:

*Insufficient kitchen bench space and food storage space.*

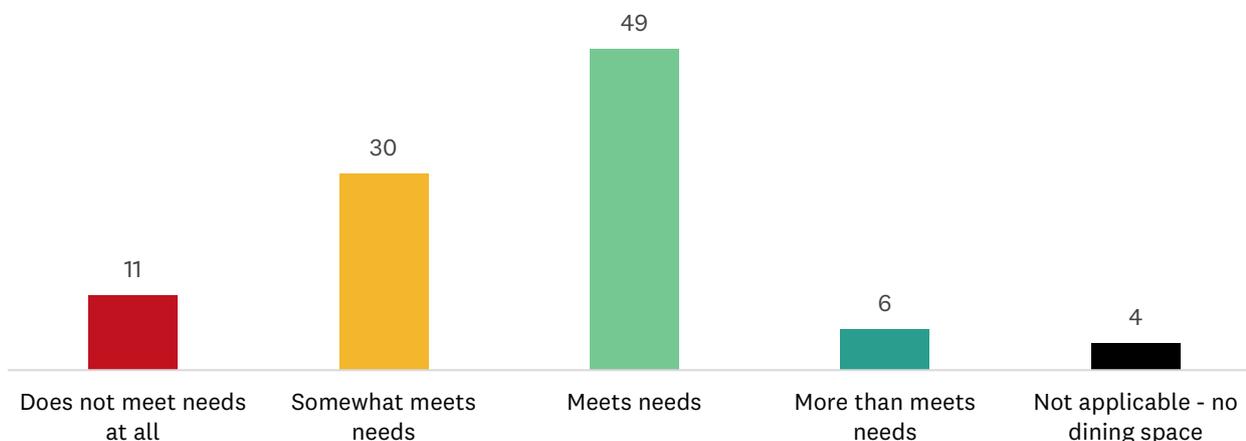
(actual plan of kitchen in participant's home from consented plans)



### 1.2.3 Dining spaces

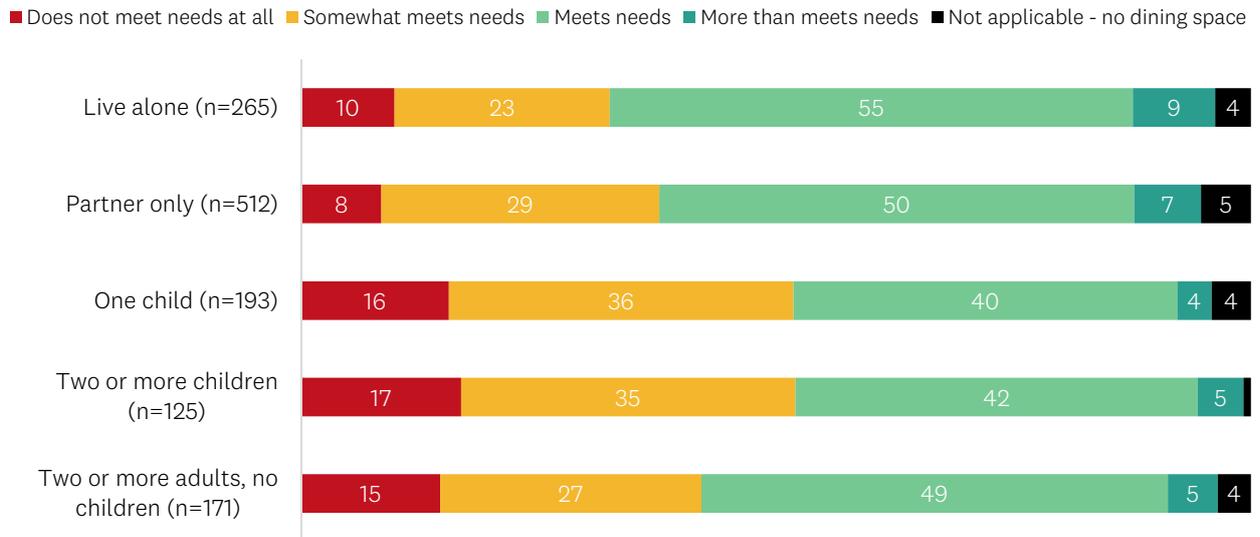
Participants were asked how well the size of the ‘dining room/space for a dining table’ meets the needs of the household. Close to half (49%) reported this space meets the needs of the household, 30 per cent said it ‘somewhat meets needs’ and 11 per cent said it ‘does not meet the needs at all’. A small proportion (4%) reported they do not have a dining space in their home.

Figure 13: Participant ratings of how well the size of the dining space meets the needs of the household (n=1335) (%)



How well the size of a dining space meets the needs of the household did not vary significantly by household composition. Close to half of the participants who live alone (55%), with a partner only (50%) or in a household with two or more adults and no children (49%) reported the size of the dining space meets the needs of their household. Meanwhile, closer to four in ten participants in households with children reported that the size of the dining space meets their needs (40% of households with one child, 42% of households with two or more children).

Figure 14: Participant ratings of how well the size of the dining room/space for a dining table meets the needs of the household, by household composition (%)



A few participants, when explaining why it is uncomfortable to do activities important to them in their home, commented about a lack of space for dining and hosting guests:

*Lack of space. No room for a dining table for when we have guests for a meal.*

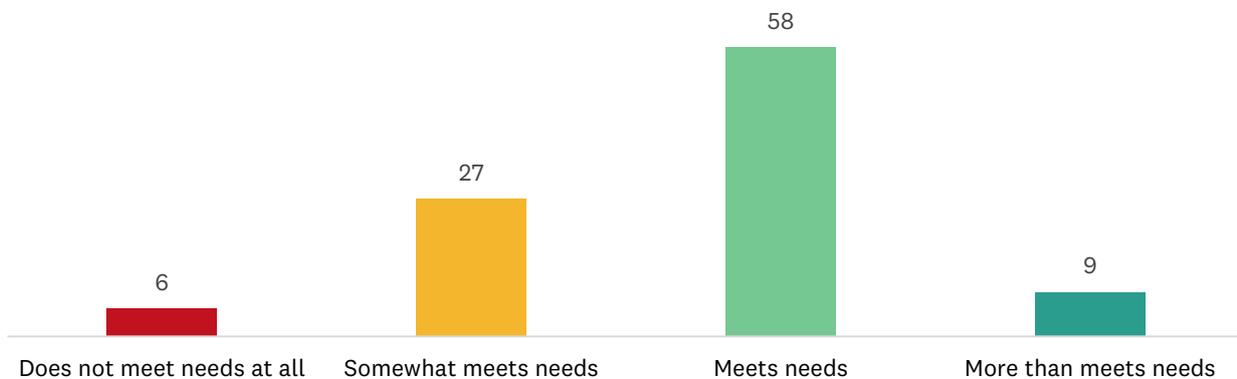
*Area around indoor are not spacious to host family and friends gathering.*

See Section 1.4 in this chapter for more detail on activities in the home.

### 1.2.4 Lounges and additional living spaces

Participants were asked to rate how well the size of their lounge or living room meets the needs of the household. As shown in Figure 15, over half (58%) said the size of their lounge meets the needs of the household, while 27 per cent reported it ‘somewhat meets needs’.

Figure 15: Participant ratings of how well the size of the lounge or living room meets the needs of the household (n=1335) (%)



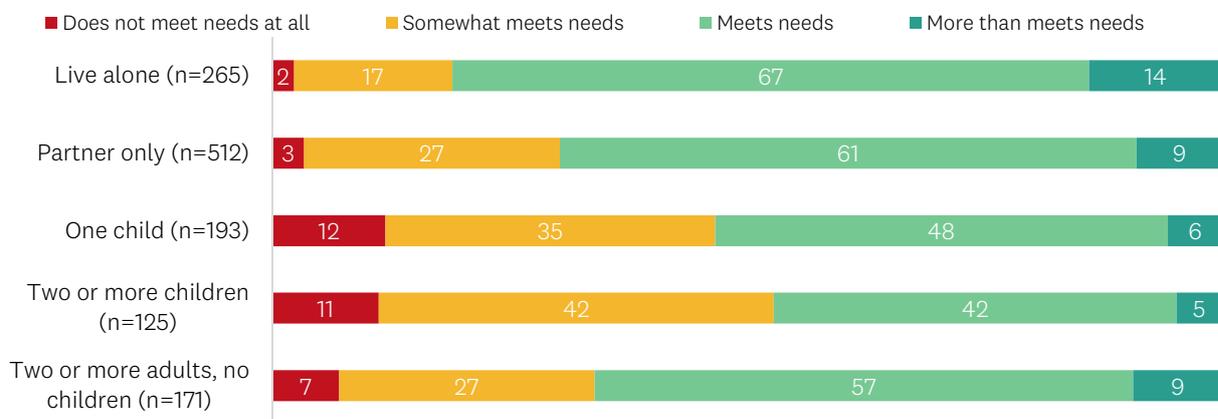
Unlike kitchen space, there were several differences in lounge space by household composition. Relatively large proportions of participants who live alone (81%) or with a partner only (70%) reported the size of the lounge ‘meets’ or ‘more than meets’ their needs. In comparison, 54 per cent

of participants in a household with one child and 47 per cent of participants in a household with two or more children reported the size of the lounge ‘meets’ or ‘more than meets’ their needs.

As Figure 16 shows, households with children (one child, 12%; two or more children, 11%) were more likely to report that the size of the lounge ‘does not meet needs at all’ compared with those who live alone (2%) or with a partner only (3%).

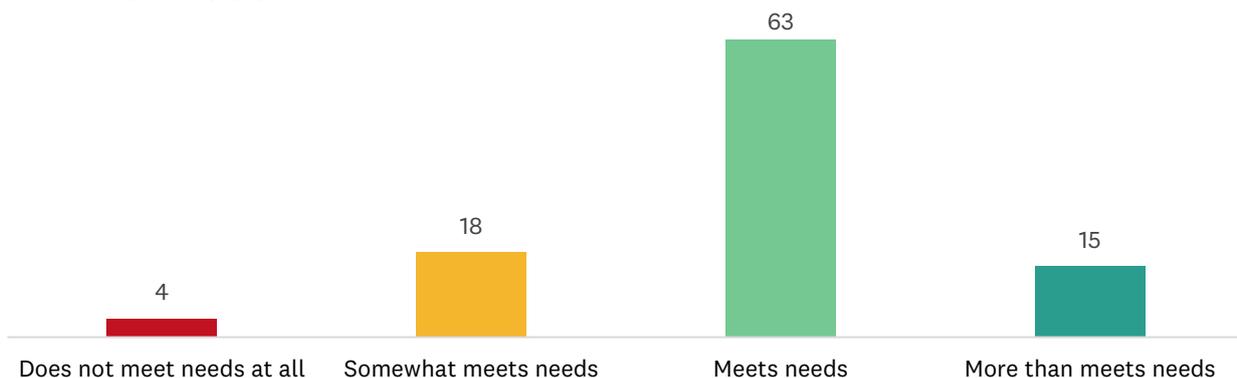
This result may be influenced by a lack of spare bedrooms or additional spaces, which places greater pressure on the only lounge space in the home. Larger households were more likely to have all bedrooms being used as a bedroom in their home, resulting in no spare bedrooms to be used as an additional living space (e.g. as a study, hobby space, playroom, media room). (See also Section 2.2 in this chapter for the research findings on bedrooms.)

**Figure 16: Participant ratings of how well the size of the lounge or living room meets the needs of the household, by household composition (%)**



Participants were also asked how well the size of any additional living spaces, such as a playroom or office/study, meets the needs of the household. As discussed in Section 1.2.1, the proportion of properties with additional living spaces was relatively small. However, 78 per cent of participants in this group reported the size of additional living spaces ‘meets’ or ‘more than meets’ the needs of the household, while 18 per cent reported the size ‘somewhat meets needs’, and 4 per cent that the size ‘does not meet needs at all’.

**Figure 17: Participants’ ratings of how well the size of their additional living space meets the needs of the household (n=140) (%)**



Note: Base is all participants with an additional living space in their home.

### **1.3 Consented plans: Number and sizes of spaces for living**

As described in Chapter 3, this study included analysis of the consented floor plans for 110 properties whose residents had participated in the survey. The largest number of plans were for terraced houses (58%), followed by apartments (24%) and duplexes (18%). A total of 117 survey responses were received from these 110 properties.

Nearly all (95%) of the consented plans in the sample showed an open plan kitchen, dining and living space. Five of the six properties without an open plan living space were terraced houses and one was a duplex. These properties had walls or other physical structures such as stairwells that divided the kitchen, lounge and dining areas (for an example, see Figure 2).

All of the properties in the sample had a kitchen and lounge, and all but two properties had a dining space. Twenty-one properties (19%) had at least one additional living space. Nine properties (8%) had two additional living spaces. On consented plans, these additional spaces were annotated in a variety of ways, such as flexi-room, study or family room. All these spaces could be used in different ways, such as a study, media room, playroom, or hobby space.

The average sizes of spaces for living are compared with the ADM and other best practice guidance. As Section 1.1 explained, different guidelines provide guidance for different combinations of spaces or fixtures (e.g. kitchen bench length) in a home. This section is organised to align with guidance in the ADM, which provides minimum floor areas based on number of bedrooms for the following:

- combined kitchen, dining and lounge (Table 1)
- combined kitchen and dining (Table 2)
- lounge (Table 4).

Kitchen bench length is compared with the New Zealand Public Housing Design Guidance (Table 3).

#### **1.3.1 Combined kitchen, lounge and dining areas**

The average floor area for combined kitchen, lounge and dining spaces in this sample was found to be smaller than the recommended minimum floor area in the ADM.

Two-bedroom homes had an average kitchen, lounge and dining space of 30.2m<sup>2</sup>, which is 7m<sup>2</sup> smaller than the ADM recommended minimum of 37.2m<sup>2</sup>, and 3-bedroom homes had an average kitchen, lounge, dining space of 33.1m<sup>2</sup>, which is 11m<sup>2</sup> smaller than the ADM recommended minimum of 44.2m<sup>2</sup> (Table 6). This finding is consistent with the TMDO observation of kitchen, lounge and dining spaces not increasing proportionally to the number of bedrooms.

Table 5: Net internal floor area for kitchen, lounge and dining space combined (m<sup>2</sup>), by number of bedrooms

	Average of analysed consented plans	ADM minimum recommendation*
1 bedroom	—	30.8
2 bedrooms	30.2	37.2
3 bedrooms	33.1	44.2

Note: Values representing 30 or fewer properties are marked with a dash and have been excluded from the table.

Source: \*Auckland Design Manual. Residential Design Element R6: Unit Layouts and Room Sizes.

### 1.3.2 Kitchen and dining

The average net internal floor area for the kitchen and dining area across the 110 properties was 17.9m<sup>2</sup>. There was variation across properties with the kitchen/dining space ranging from 4.5m<sup>2</sup> to 32m<sup>2</sup>. The average net internal floor area of the kitchen and dining space for 3-bedroom homes (18.5m<sup>2</sup>) was slightly higher than that of 2-bedroom homes (16.9m<sup>2</sup>). This degree of increase is similar to the size difference between the minimum size recommended in the ADM for a 3-bedroom home (16.2m<sup>2</sup>) and a 2-bedroom home (13.2m<sup>2</sup>).

While the average size of the kitchen and dining space for properties included in the consented plans analysis are 2 to 3m<sup>2</sup> larger than the ADM minimum, this small difference could be due to the challenge in determining where the lounge part of an open plan kitchen, lounge, dining space ends and the kitchen and dining space begins. This is acknowledged as being a subjective distinction and so this small difference is interpreted to be primarily the result of measurement differences.

Table 6: Net internal floor area of kitchen and dining space (m<sup>2</sup>)

	Average of analysed consented plans	ADM minimum recommendation*
1 bedroom	—	10.8
2 bedrooms	16.9	13.2
3 bedrooms	18.5	16.2

Note: Values representing 30 or fewer properties are marked with a dash and have been excluded from the table.

Source: \*Auckland Design Manual. Residential Design Element R6: Unit Layouts and Room Sizes.

Seven participants reported not having a dining space. Only two properties were noted as not having a dining space in the consented plans.<sup>11</sup> Of note, the participants living in these two properties without a dining space in the consented plans both reported the size of dining space ‘does not meet needs at all’, while the five other participants who reported not having a dining space did have a dining space in the consented plans of their homes. This could be due to dining spaces being absorbed into lounges or kitchens and not feeling like an intentional space for dining (for example,

<sup>11</sup> A ‘dining space’ was classified for the purpose of this study as space for a dining table and chairs or a breakfast bar.

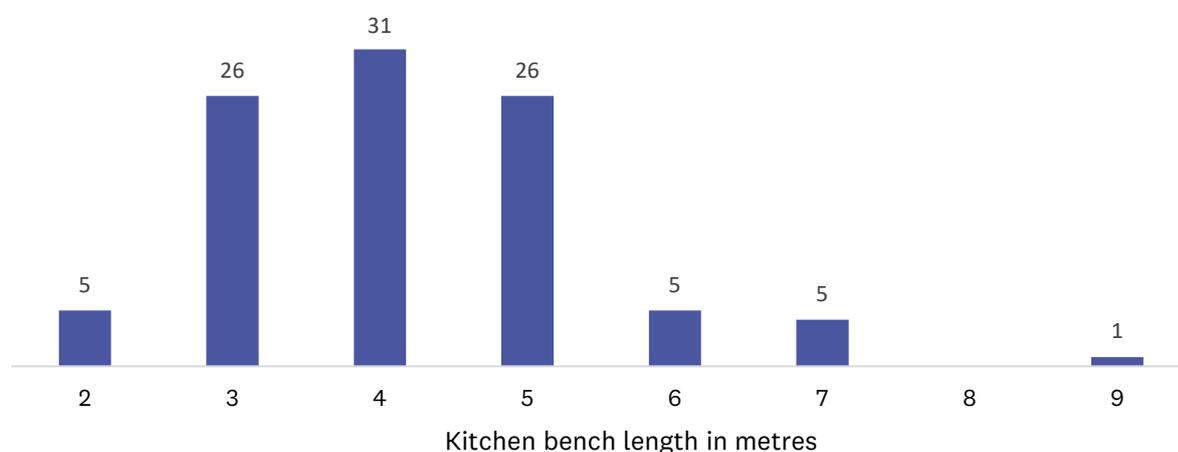
see the dining space in Figure 1 which could feel as though it is part of the lounge, and in Figure 43, which the participants used as kitchen bench and functions as part of the kitchen).

### Kitchen bench

The average kitchen bench length in the 110 consented plans was 4.2m.<sup>12</sup> The smallest kitchen bench measured 1.9m and the largest measured 8.8m. Kitchen benches can be modified by households without a building consent and so it is possible that some participants have altered their kitchen benches following the consenting process.

The majority (83%) of kitchen benches were between 3m and 5m (Figure 18). Kitchen benches that include an island or peninsula have a longer linear length (average of 4.4m) than those without (average of 3.5m).

Figure 18: Kitchen bench length on consented plans (n=110) (%)



Comparing the average kitchen bench length in the consented plans with the New Zealand Public Housing Design Guidance shows that benches are longer than the recommended length. Little difference in bench length is found between 2- and 3-bedroom homes, with both groups having kitchen benches close to 4m in length, which is the recommended length for 3-bedroom homes (Table 7).

Table 7: Kitchen bench length (m), by number of bedrooms

	Average of analysed consented plans (metres)	New Zealand Public Housing Design Guidance recommendation (metres)*
1 bedroom	–	2.65
2 bedrooms	3.9	2.65
3 bedrooms	4.1	4.05

Note: Values representing 30 or fewer properties are marked with a dash and have been excluded from the table.

Source: \*Ministry of Housing and Urban Development (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Table 3.

<sup>12</sup> Bench space includes sinks and oven hob space.

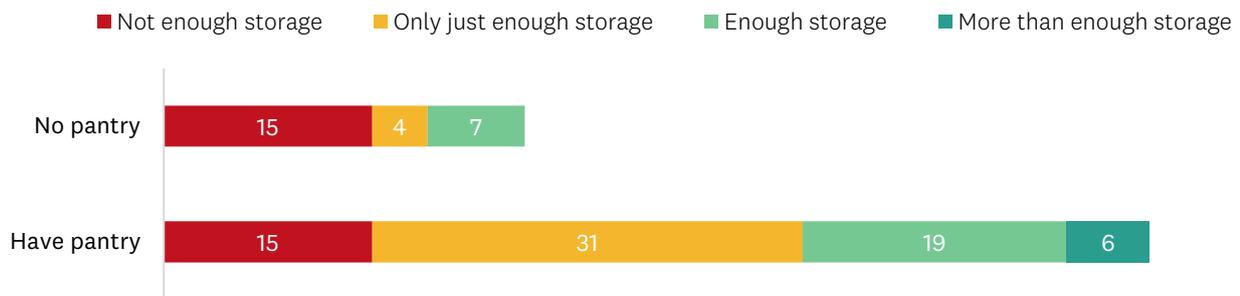
**Kitchen storage: pantry**

For the purposes of this study, a pantry is defined as a cupboard in the kitchen for the purpose of storing food. It usually contains several shelves and is from floor to ceiling in height.

A quarter (23%) of the consented plans did not include a pantry in the kitchen, nearly two-thirds (61%) had one pantry, and 5 per cent had two. The existence of a pantry could not be determined from the consent plans of 11 per cent of the properties.

In the survey, participants were asked to rate the extent to which there was enough built-in ‘kitchen storage for food and equipment (e.g. pots, appliances and microwaves)’. As Figure 19 shows, participants living in properties without a pantry noted in the consented plans tended to rate built-in storage in their kitchen for food and equipment poorer than those who have a pantry. No participants in the sub-sample reported their kitchen to have no built-in storage. This result suggests the inclusion of a pantry in their kitchen is important for most households.

**Figure 19: Participant ratings of the amount of built-in kitchen storage for food and equipment, by presence of pantry in consented plans (counts)**

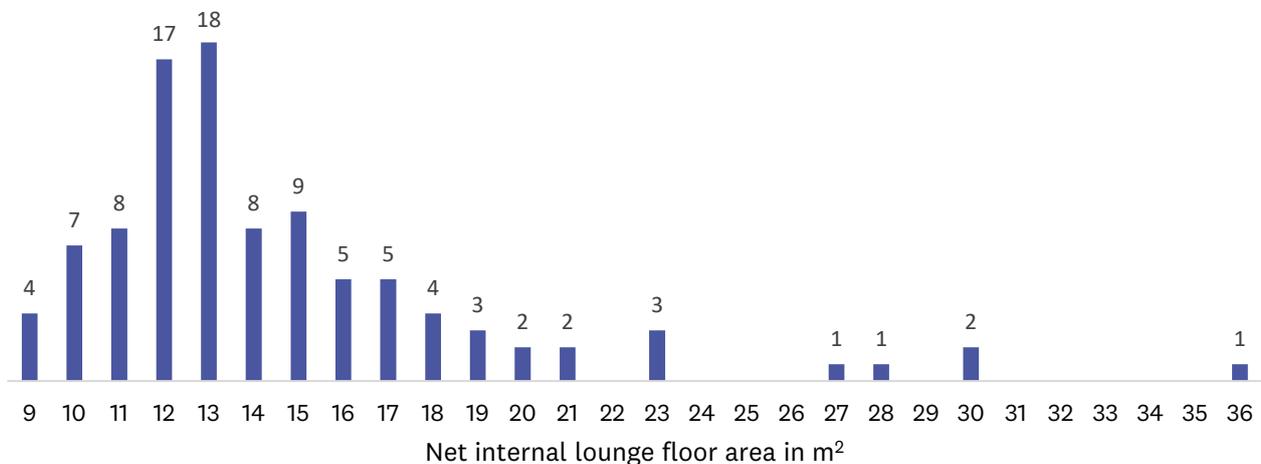


Note: The existence of a pantry could not be determined from the consent plans for 11 per cent of properties, so participant responses from these properties are not shown (n=13).

**1.3.3 Lounge**

The average size of a lounge in the consented plans was 14.5m<sup>2</sup>. As Figure 20 shows, three-quarters of lounges were between 10m<sup>2</sup> and 16m<sup>2</sup>.

**Figure 20: Net internal floor area (m<sup>2</sup>) of lounge (n=110) (%)**



The average floor area for lounges is more than 10m<sup>2</sup> less than the ADM guidance for homes with 2- or 3-bedrooms. Two-bedroom homes have an average lounge area of 13m<sup>2</sup> compared with the ADM guidance of 24m<sup>2</sup> while 3-bedroom homes have an average lounge area of 15m<sup>2</sup> compared with 28m<sup>2</sup>. To put this in context, an average sized bedroom with space for a queen bed and circulation around is 9m<sup>2</sup> (Figure 66).

**Table 8: Net internal lounge floor area (m<sup>2</sup>), by number of bedrooms**

	<b>Average of analysed consented plans</b>	<b>ADM minimum recommendation</b>
<b>1 bedroom</b>	-	20
<b>2 bedrooms</b>	13	24
<b>3 bedrooms</b>	15	28

Note: Values representing 30 or fewer properties are marked with a – and have been excluded from the table.

Source: *Auckland Design Manual*, Residential Design Element R6: Unit Layouts and Room Sizes.

### 1.3.4 Additional living spaces

Twenty-one homes in the sample had an additional living space. Fourteen of these were classified as a study/office space (including study nooks) and the remaining six as other kinds of living spaces such as flexi-rooms.

Study or office spaces ranged in size from 2m<sup>2</sup> (a study nook in a hallway) to 9.1m<sup>2</sup> (a room with a door). Flexi-rooms, rumpus rooms or other kinds of spaces for living were larger than study spaces, ranging from 9.8m<sup>2</sup> to 19.7m<sup>2</sup>.

## 1.4 Survey results: Uses of spaces for living

Participants were asked to indicate from a list of 13 possible options how different rooms and spaces in their home are used (they could also describe any other uses in an open-ended comment).<sup>13</sup> For example, if participants indicated that their home included a ‘main indoor living space’, two bedrooms and a garage, they were asked how each of these spaces was used. The uses of indoor living spaces and garages are presented here. The uses of bedrooms are presented in Section 2.2.4.

### 1.4.1 Indoor living spaces

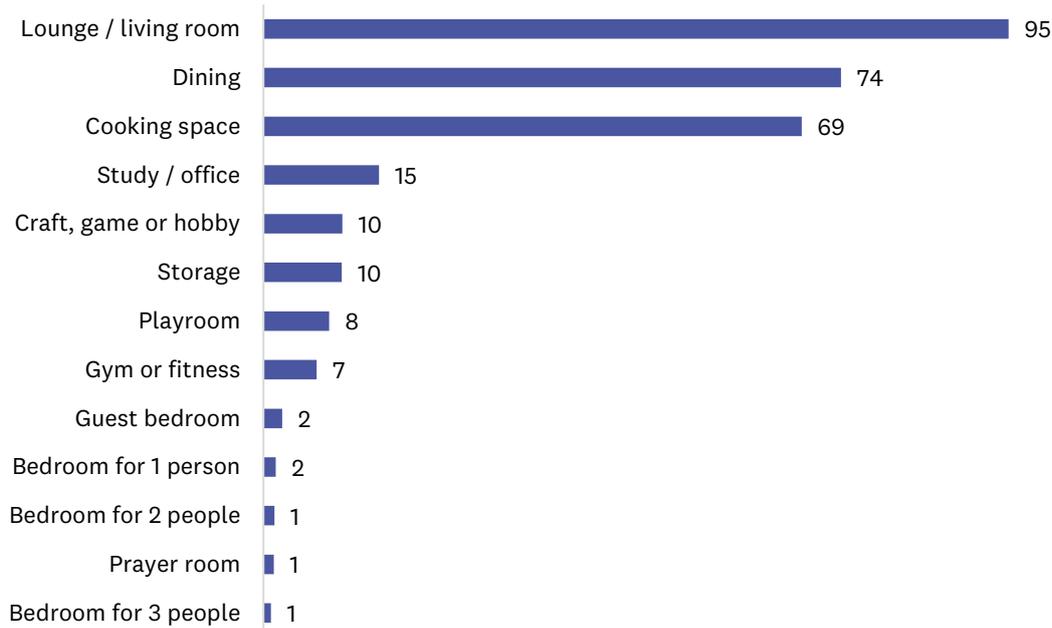
As explained in Section 1.2, participants were asked to indicate the types of spaces and rooms that were part of their home, including the presence of a ‘main indoor living space’ (the question wording suggested that this might include a lounge, dining and kitchen), as well as any second or third indoor living spaces (i.e. flexi-rooms).<sup>14</sup> These additional living spaces might be used as a playroom, hobby space, study or media room.

<sup>13</sup> Survey question 18; refer to Appendix 5.

<sup>14</sup> Note: It is possible that spaces in a home reported to be second or third indoor living spaces may originally have been nominated on consented plans as bedrooms, garages or study spaces, but are used as extra ‘living spaces’ by participants.

Figure 21 shows results for uses of 'main indoor living spaces' among those who indicated their home had such a space. The most reported uses were as a lounge/living space (95%), for dining (74%), and for cooking (i.e. includes a kitchen) (69%). For those who reported using this space for dining, this might be describing a dining table and chairs or breakfast bar, while for others this may mean meals are eaten in the lounge area on a sofa or on the floor (as may be their cultural custom). Smaller proportions of participants used the main living area as a study/office (15%), for craft, games or hobbies (10%), or for storage (10%). The multi-functionality of these spaces was evidenced by the finding that three uses of the space were identified by 44 per cent of participants.

**Figure 21: Uses of the main indoor living space (n=1130) (%)**



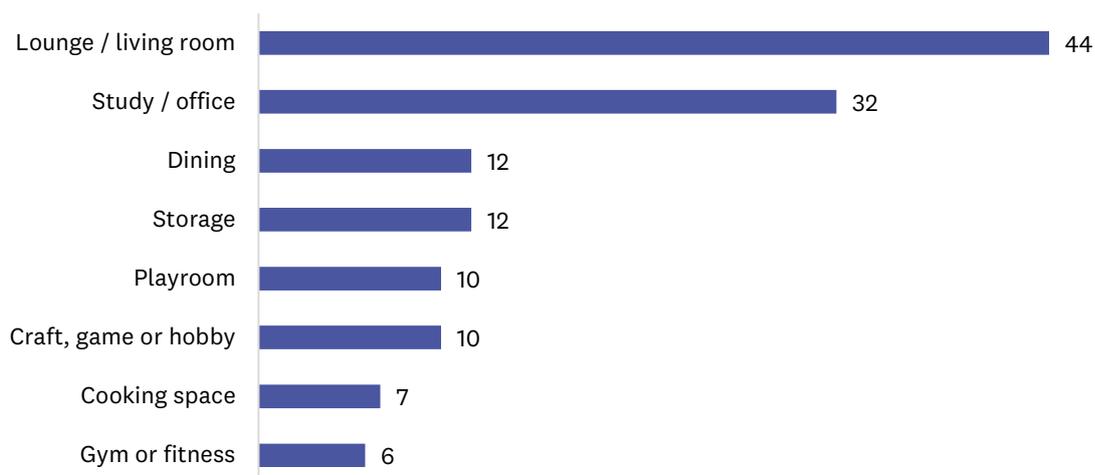
Notes: 1. Base is all the households with a 'main indoor living space'.  
 2. Multiple responses allowed; therefore, total does not sum to 100.

Close to half (44%) of those living in a property with a second living space use this space as a lounge or living room, while a third (32%) use this space as a study or office. Eighty-nine per cent of those with a second living area use this space for one purpose and 7 per cent nominated two purposes for the space.

The prevalence of second living areas functioning as a lounge suggests that the main living space provides insufficient lounge space for households. It also suggests that activities undertaken in a lounge (e.g. watching TV, socialising) are prioritised by households for these second spaces.

There may be inadequate space for other kinds of activities (e.g. office work, exercise, hobbies) to be undertaken in a space intended for such purposes as opposed to in a bedroom. Section 2.2.4 on the use of bedrooms demonstrates these are often used as spaces for activities such as office work and hobbies.

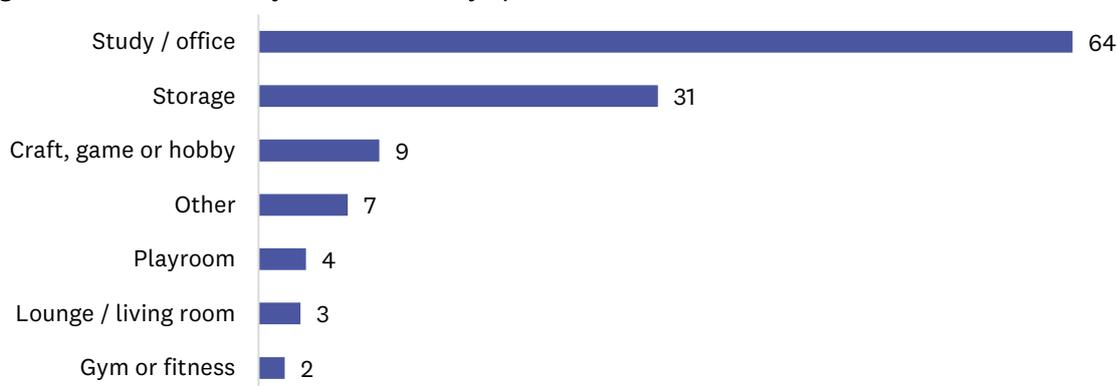
Figure 22: Uses of a second indoor living space (n=118) (%)



Notes: 1. Base is all the households with a ‘second indoor living space’.  
 2. Multiple responses allowed; therefore, total does not sum to 100.

The survey also asked about the uses of study nooks or hallway spaces. These spaces are most frequently used as a study/office space (64% of households with a study nook or hallway space). Thirty-one per cent of the 244 participants who had such a space in their home said they use this space for storage.

Figure 23: Uses of a study nook or hallway space (n=244) (%)



Notes: 1. Base is all the households with a ‘study nook or other hallway space’.  
 2. Multiple responses allowed; therefore, total does not sum to 100.

### 1.4.2 Garages

Garages are found to be an important, if unintended, place for ‘living’. The uses of garages are discussed in this section, and Chapter 8 also discusses garages as places for vehicle storage.

Just over half (53%) the participants living in a terraced house or duplex reported having a garage in their home. Garages were more common in duplexes (69% had a garage) than in terraced houses (47% had a garage).

The survey asked participants about how they use their garage as part of a question about using different spaces in their home. In this question participants selected from a list of options all their uses of the garage in their home. Carparking or bike storage was not an option in this list, although

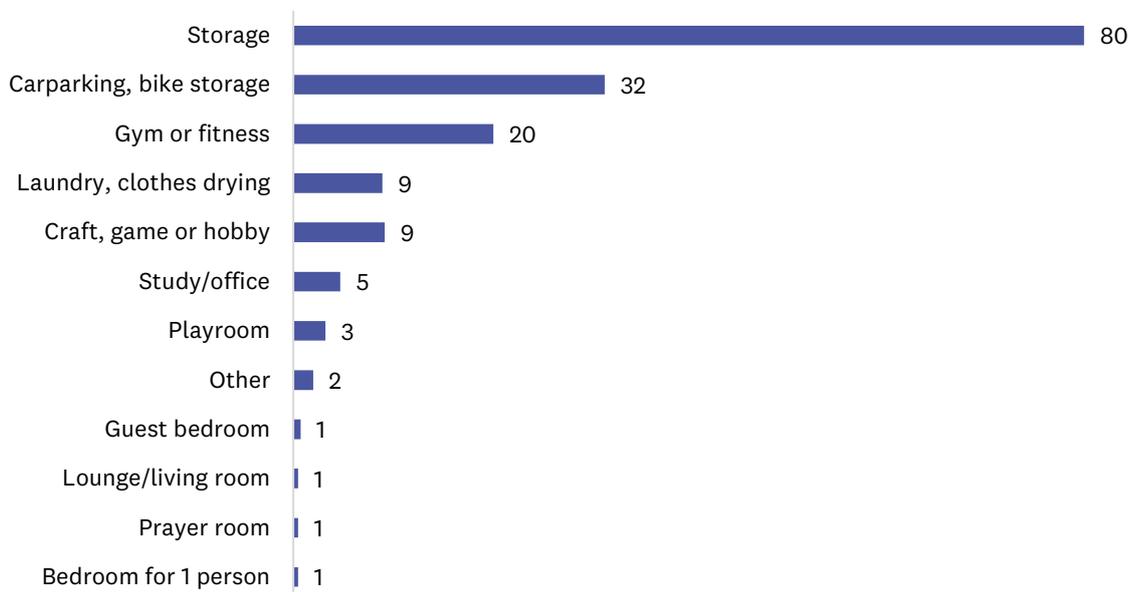
participants could answer ‘something else’ and write how they use their garage. In a separate question, participants were asked to describe in an open response questions where they store their vehicles, and for some this included their garage (see Chapter 8 for full results of this question).

In response to the question asking them to choose from a list how they use their garage, storage was the most reported use (selected by 80% of participants) (Figure 24). Participants also described using their garages for activities intended to be undertaken in a living space or bedroom. Twenty per cent use their garage for gym or fitness and 9 per cent for craft, games or hobbies, while 5 per cent use the space as a study/office, and 3 per cent as a playroom. Uses of the garage as a lounge is uncommon (reported by only 1 per cent of participants). This range of garage uses mirrors the results of previous research into a master planned community in South Auckland which found garages to be used as home gyms, for storage, as utility spaces and for cooking (Reid et al., 2019).

Nearly two-thirds (57%) of participants reported using their garage for one purpose and 28 per cent reported using their garage for two purposes.

A third (32%) of participants answered they used their garage for ‘something else’ and described using their garage for carparking or bike storage. This is likely to be underreported as it required participants to select ‘something else’ and type in carparking or bike storage. Chapter 8 on carparking and vehicle storage reports that 98 per cent of participants in terraced houses and duplexes reporting having at least one car. Of those with at least one car and a garage, half (50%) report storing at least one car in their garage.

**Figure 24: Uses of garages (n=399) (%)**



Notes: 1. Base is all the households with a ‘garage’.

2. Multiple responses allowed; therefore, total does not sum to 100.

### 1.4.3 Activities in the home

A series of questions asked participants about activities they might do in their home. The survey first showed participants 10 activities and asked them to rate how important doing each one in their home

is to them (Figure 25). If a participant rated any activities as being ‘somewhat important’ or ‘very important’, they were then asked how comfortable it is to do those activities in their home (Figure 26). Depending on how the participant rated the comfort of doing activities, they were asked to describe via an open response question what it is about their home that makes it comfortable – or uncomfortable – to do those activities that are important to them. If a participant rated at least one activity as ‘very uncomfortable’ or ‘somewhat uncomfortable’, they were asked what it is about their home that makes it uncomfortable to do that activity (or activities). Likewise, if a participant rated at least one activity as ‘somewhat comfortable’ or ‘very comfortable’, they were asked what it is about their home that makes it comfortable to do their activity (or activities).<sup>15</sup> Themed responses to these two open response questions are presented following the importance and comfort rating results.

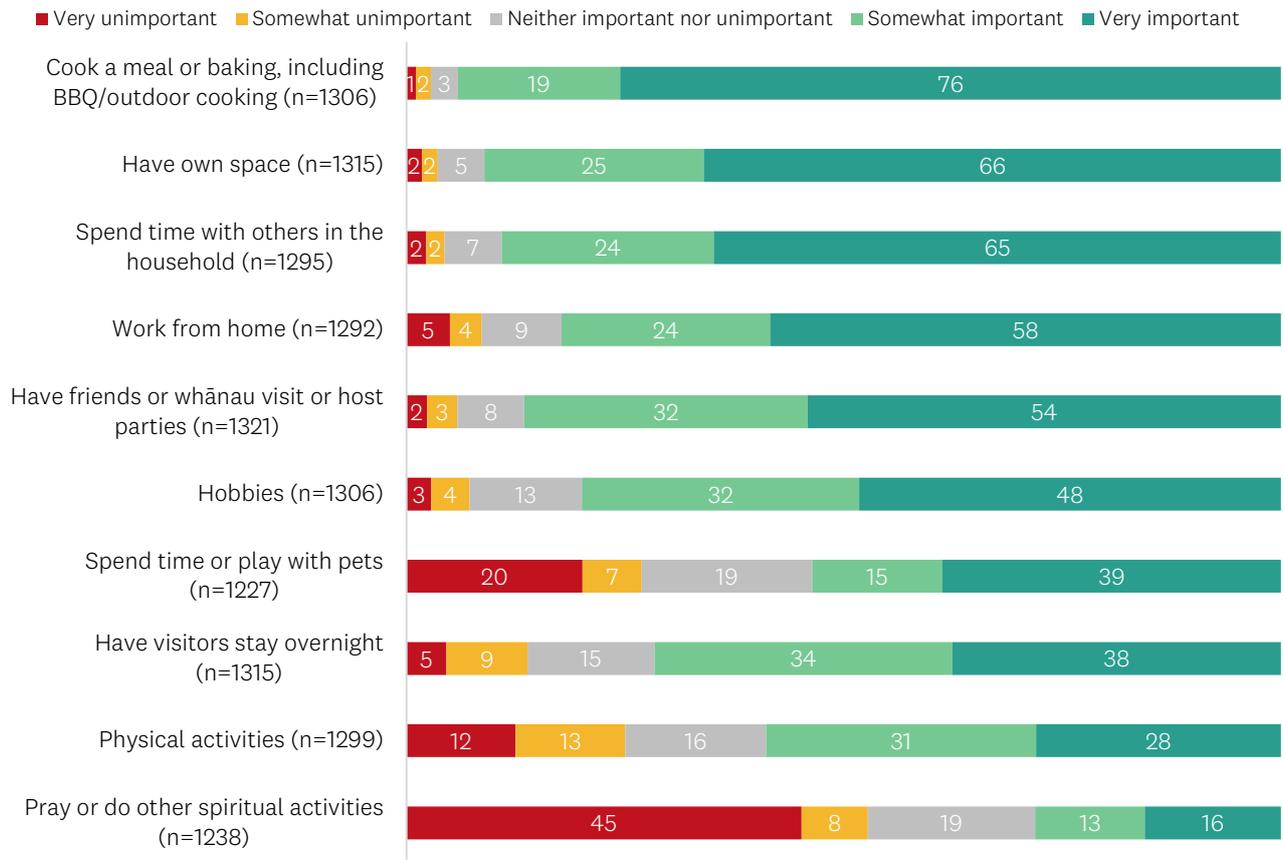
As Figure 25 shows, participants identified cooking a meal or baking as the most important activity that they do in their home (76% of participants said this is ‘very important’) followed by having their own space (66% ‘very important’) and spending time with others in the household (65% ‘very important’). In contrast, some of the least important activities reported are prayer or other spiritual activity (45% of participants said this was ‘very unimportant’), spending time with pets (20% ‘very unimportant’), and physical activity (e.g. throwing ball, yoga, children running around; 12% ‘very unimportant’).

Of the 317 participating households who reported having a pet, 78 per cent reported spending time or playing with the pet as being ‘very important’, 18 per cent ‘somewhat important’, and 4 per cent as ‘neither important nor unimportant’.

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<sup>15</sup> These open response questions were not asked separately for each activity. If one activity was rated as being uncomfortable, then participants were asked about why that is. Likewise if one activity was rated as being comfortable, they were asked why. Answering the open response questions was optional.

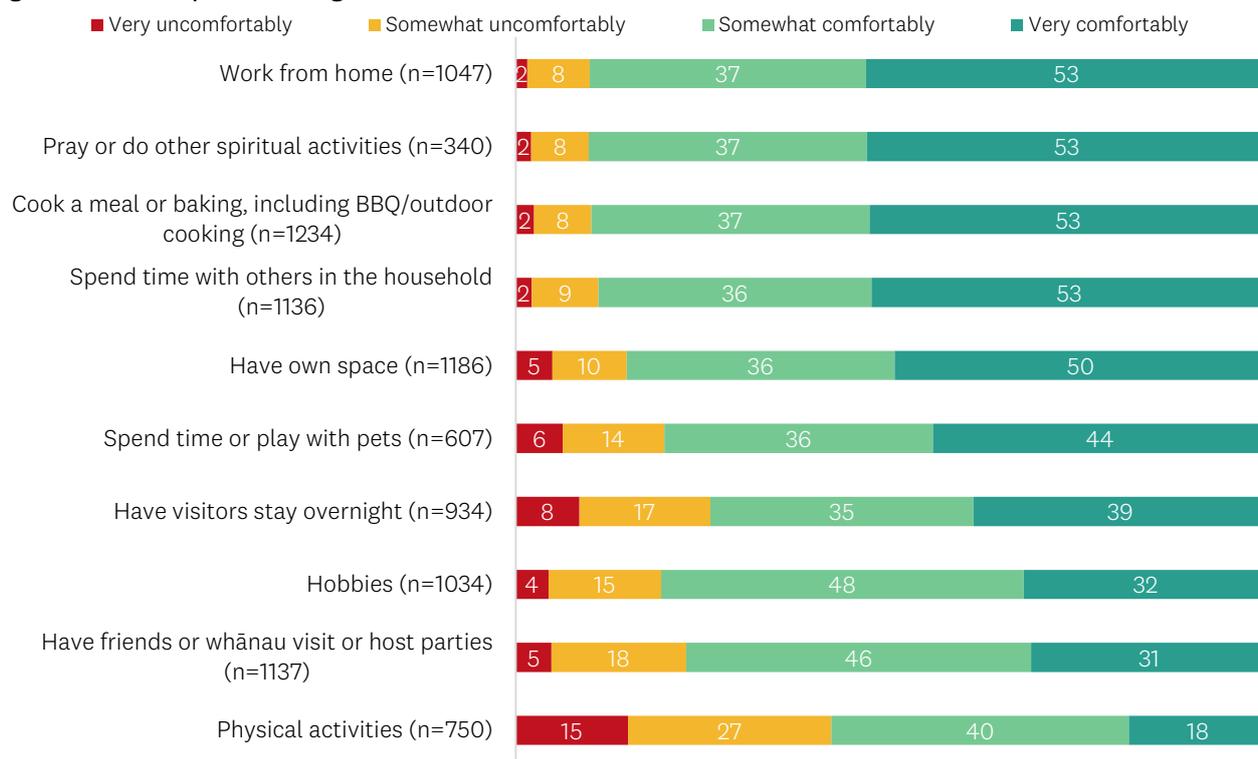
**Figure 25: Participants’ rating of importance of ability to be able to do certain activities in their home (%)**



Participants were then asked to rate how comfortable it is to undertake the activities they had indicated were ‘somewhat’ or ‘very’ important to them. Overall, participants indicated they can comfortably do the activities in their homes that are important to them (Figure 26).

The activity reported as the most uncomfortable to do is ‘physical activities’, with 27 per cent of participants reporting this to be ‘somewhat’ uncomfortable and 15 per cent reporting this to be ‘very’ uncomfortable. This is followed by having friends or whānau over or hosting parties (23% said this was ‘somewhat’ or ‘very’ uncomfortable).

**Figure 26: Participants' rating of how comfortable it is to do activities in the home (%)**



Note: Base is all the participants who answered the activity is 'somewhat' or 'very important' to them.

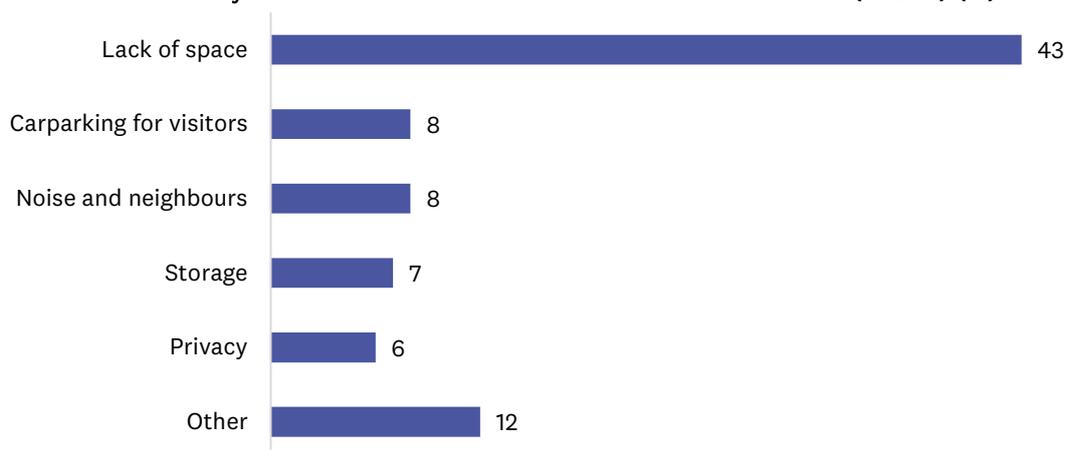
**Aspects of home that make it uncomfortable to undertake important activities**

Participants who reported at least one activity was important to them but 'somewhat' or 'very' uncomfortable to do in their home were asked to describe what it was about their home that makes it uncomfortable. A total of 593 participants were asked this question, and most (545 participants) provided a response. Responses were thematically coded and are discussed below. See Appendix 13 for a table summarising the thematic codes for the open responses.

As Figure 27 shows, lack of space was a common theme (43% of those who left a comment mentioned this). Other issues mentioned by smaller proportions of participants included carparking issues (8%), needing to be considerate of noise and neighbours (8%), lack of storage (8%), and privacy issues (6%).

An example of participant responses coded into each theme are provided below.

Figure 27: Reasons why it is uncomfortable to do some activities at home (n=545) (%)



Note: Base is all the participants who answered at least one activity that is 'somewhat' or 'very uncomfortable' to do in their home.

A lack of space can impact the ability to comfortably have visitors and do different activities:

*My apartment is well appointed but really only big enough for one person (and a dog). For example, when more than one person comes for a meal I need to rearrange the furniture to fit everyone around the table. I find I shift items from place to place depending on the activity I'm doing.*

*Space for working from home. The apartment is only a 1 bedroom and an open plan living, dining and kitchen area. In hindsight, if we knew we would be working at home throughout COVID thru to present time, we might have bought something bigger.*

*The size of some of the rooms limits what we can do in them or how many people we can have in our home at any given time. The layout of the kitchen was changed from what we were shown on plan, which severely limited bench space for preparing meals.*

Carparking for visitors was an issue for some:

*Not enough parking spaces for visitors. That's why I never host any religion activity meetings as not convenient for parking.*

*No visitor parking makes it unsafe having family/friends over in the dark if parking only available far away from my building.*

*There are only two visitor carparks for our 18 units and the time limit on the carparks is two hours so if I have a visitor who drives here, I often let them have my carpark and park my car somewhere nearby, like the train station, as our street parking is not very safe – neighbours' cars have been broken into overnight.*

A lack of storage affects the amount of space participants have to do activities.<sup>16</sup> Having guests over or doing hobbies can require rearranging furniture or unpacking and repacking equipment:

*The small size of the bedrooms and low amount of storage space means that our guest bedroom/home office is very cluttered. We have to do lot of rearranging to set it up for different activities; e.g. hosting guests or DIY or working from home. Storage space is the biggest pain point.*

*Items are stored away in the shed or storage boxes and must be unpacked and set up to use and then packed down again once finished.*

*Available space. We are able to have people over and do hobbies such as fitness in front of our TV, but usually this requires moving existing furniture around, being creative with storage, etc.*

A lack of storage can also mean some participants are unable to have the items needed to do activities, and so are unable to do these activities important to them at their home:

*Not enough space to do some things comfortably or even do some things at all. This includes not being able to do some things as not enough storage space to house appropriate equipment.*

*Not enough space to do the activities and storage to keep items related to activities.*

*No storage for such items like a sewing machine, etc.*

Concern around noise, sound privacy and imposing on their neighbours was an issue for 8 per cent of those who provided a comment:<sup>17</sup>

*Privacy and the ability to do anything without the neighbours hearing every word. (I do not enjoy being subjected to their gatherings/music, etc. and so I avoid doing it myself.)*

*The living area is too small to host more than four people at a time. I worry about impacts on neighbours if I am listening to loud music or having visitors over until late at night.*

*Proximity of neighbours meaning I have to be very mindful of noise as they can even hear me talking at normal level when the windows are open.*

*Awareness of neighbours if I want to sing with music mic and amp.*

### **Aspects of home that make it comfortable to undertake important activities**

Participants who indicated it would be ‘somewhat’ or ‘very’ comfortable to do at least one activity that was important to them at home were asked what it is about their home that makes it comfortable to do those activities. A total of 1130 participants provided a response. Responses were

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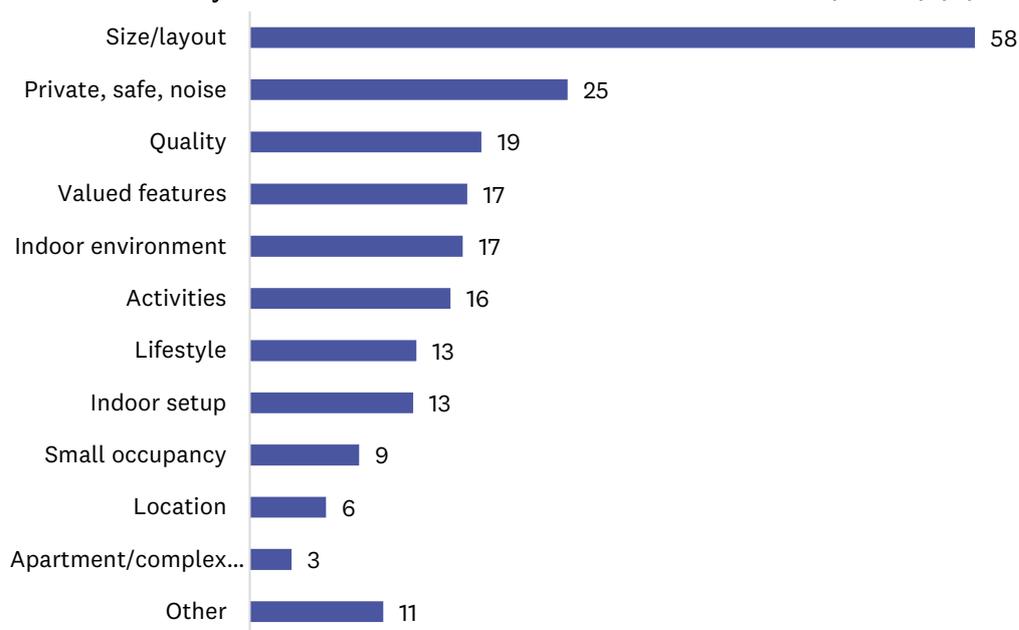
<sup>16</sup> See also Chapter 5, Section 1: Household storage.

<sup>17</sup> See also Chapter 7, Section 4: Sound and soundproofing.

thematically coded and are discussed below. See Appendix 13 for a table summarising the thematic codes for the open responses.

Figure 28 shows the proportion of comments coded to each theme. Size/layout was the largest theme, comprising 58 per cent of comments. Sub-themes were identified within these themes, and comments illustrating these sub-themes are provided below.

**Figure 28: Reasons why it is comfortable to do activities within the home (n=1130) (%)**



Note: Base is all the participants who answered at least one activity that is ‘somewhat’ or ‘very’ comfortable to do in their home.

A quarter (25%) of participants’ comments within the theme of size/layout described their home as having “enough space”, the “right amount of space”, or just “enough space” to do their activities:

*Enough space to do a workout in kitchen.*

*I think my home is small, but has enough space to make most of the things I want to do possible, and that provides me with comfort.*

*We have the right amount of space to do them, with designated zones for each activity.*

Being spacious was also a common sub-theme within the size/layout theme. These comments describe the home as being large or having ample space. For some, this space was the result of the small size of the household:

*Living alone means that it’s not crowded and easy to do things that are important to me.*

*Just the two of us live here in a 2-bedroom house so we have a main bedroom and a second room for our work space/gaming area. More than enough space for the two of us.*

The layout of the home was a theme mentioned in 18 per cent of comments. This included room locations, open plan living spaces or the separation of spaces, the number of bedrooms, and indoor-outdoor flow:

*Awesome and well thought out floor plan.*

*Open space makes it easy to be in the kitchen while looking after the kids.*

*Good flow between kitchen, lounge and dining room with the open plan design. Makes it easy to host and cook at the same time.*

*Enough space inside to do all these things in separate rooms.*

*Outdoor area faces the right way and is same level as house, so easy flow outside – great for family BBQ dinners.*

Outdoor space is another sub-theme within size/layout (mentioned by 11% of the participants who responded to this question):

*It has large outdoor garden patio, and big enough open plan living for yoga/exercise.*

*Plenty of outdoor space for gardening. We have planted more plants and enjoy gardening.*

*Large balcony for plants and entertaining, with good wind shelter and good sunlight.*

The final sub-theme within size/layout relates to having an extra room in the house, a spare bedroom or a flexi-room:

*A spare bedroom that no one lives in also makes it comfortable to do activities, but not need to rearrange or occupy the main living space (e.g. crafts, work from home).*

*Having a bedroom as an office means we can have more space when needed.*

*A spare bedroom which is used for guests, office space for working from home, and space for indoor hobbies.*

A quarter of the comments (25%) referred to factors relating to ‘privacy, safety and noise’. The largest proportion of comments within this theme (15%) were about homes being private:

*High up on the third storey and it has tinted windows.*

*Window treatments including sheer curtains for privacy with daylight into living spaces, and black out curtains for full privacy.*

*Trees and hedge trees are tall enough now so more privacy for my own yoga and home fitness, watching movies, praying chanting quietly by myself and my own family members. Small but private garden gives cosy feeling for my reading, studying at home by myself. Very sunny and warm nice air flowing; feels so fresh, so I really enjoy quiet, my own time.*

Quiet surroundings were mentioned by about 9 per cent of those who left a comment:

*Fairly good soundproofing with door to balcony closed but aware of neighbours.*

*Level of noise is low around the complex.*

*Double glazing windows to block out sound.*

Related to these sub-themes were comments about design features that made the home feel private or quiet, such as curtains or window coverings (8 comments), double glazing (17 comments) and insulation (33 comments):

*Ample space to do so. Plenty of privacy – curtains.*

*Double glazing windows to block out sound.*

*It's new, built well with good insulation.*

The final sub-theme within the privacy, safety, noise theme is about safety (47 comments), which refers to the safety of the building/complex or neighbourhood:

*Safe, soundproof.*

*It's a safe known space that we control.*

*It is private and there is enough space inside the gated complex to let little kids move around.*

A theme concerning 'perceptions of quality' comprised 19 per cent of comments. Within this theme were comments about homes being of high quality, new, clean or modern:

*My new apartment is of unusual high quality and FAR above the poor quality of most new apartments being built in Point Chev.*

*New, so no maintenance.*

*Clean and tidy, no clutter.*

*It's large and modern with lots of natural light.*

*Our home is relatively new and very well built in an area that we love and we can do everything we want in it.*

Also within this theme are generally positive comments, using a range of adjectives; for example:

*Aesthetically pleasing.*

*Comfortable.*

*Welcoming and calming.*

*Pleasant place to be in.*

The theme 'valued features' describes aspects of the home that are valued by participants (17% of comments). This includes aspects such as the view or outlook:

*Lovely outdoor view of trees and garden as well as neighbours' outdoor area.*

*Views on either side (no tunnel vision as in apartments with windows only on one side).*

Feeling relaxed and be able to do relaxing activities is also valued:

*All rooms have plenty of sunlight and excellent ventilation, makes feel very relax.*

*Living room space and lawn size are perfect to relax and spend time with family and friends.*

*There is a second smaller lounge which adds some extra space to relax, play the piano and watch TV.*

Features about their home that made it cheap or affordable to live in (due to the cost of utilities, maintenance and/or rent) was valued by some:

*It's also very warm and quiet and we have a heat pump which is so good and quite cheap to run because of all the insulation.*

*Modern amenities – Double glazed windows, warmth and insulation. Cheaper to run the house in terms of utilities like power and water.*

Comments within this theme were also about specific spaces in the home, including the garage, laundry, living spaces and bathrooms:

*Enough space for friends/family to hang out for the day; kids can play in room or garage.*

*The apartment comes with a small laundry and hot water cupboard. These features add hugely to the liveability of what is a fairly small space.*

*I can watch movie in the living room.*

*Having multiple bathrooms means I have a separate bathroom for visitors to use.*

The 'indoor environment' theme (17% of comments) included comments about sunlight, temperature, humidity and airflow:<sup>18</sup>

*Good sound and temperature insulation.*

*My apartment is cosy, warm in winter and cool enough in summer. It's light, sunny and dry. There is enough room for my collections and it's a comfy place for my dog.*

*Great indoor quality (temperature, humidity, light, noise, etc.).*

*I like having a breezeway; it allows airflow with the door ajar when inside on summer days.*

The 'activities' theme describes having spaces to do activities that are important to participants. For example, having space for a dining table to entertain guests or privacy to practise yoga:

*The kitchen/dining is spacious and modern which means cooking and entertaining for guests is definitely possible.*

*It has large outdoor garden patio, and big enough open plan living for yoga/exercise.*

*Design/layout of our spare room makes space for craft/hobby nice and spacious.*

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<sup>18</sup> See also Chapter 7: Indoor environment.

The ‘lifestyle’ theme reflects comments about living a lifestyle that is complementary to what MDH can offer (13% of comments). This includes choosing to live in a smaller space, home ownership, sense of community and low maintenance:

*Chose to live tiny so could spend time enjoying it.*

*That it is mine (owned), that it is private, that it is spacious enough for me to do all of those that are important to me.*

*Good community and neighbourhood.*

*Being smaller it is easy to maintain so we have more time for spending time as a family like movie nights and game nights.*

The theme of ‘indoor setup’ is related to lifestyle in some ways. This theme includes comments about having ‘no clutter’ or a small amount of material items, choosing furniture to fit the space, prioritising activities, or having hobbies that do not require large amounts of space:

*We have prioritised the small space we have for the important things like cooking meals and eating as a family.*

*Just enough space and careful furniture and storage selection.*

*Hobbies don’t always take up a lot of room.*

*Clean and tidy, no clutter.*

## **1.5 In-home immersions: Uses of spaces for living**

As described in Chapter 3, Section 1.3, this study included 20 in-home immersions with participants who had completed the survey.

The in-home immersions found that kitchen, lounge and dining spaces are generally used for living activities undertaken with other people (e.g. socialising, playing board games or watching movies). In contrast, flexi-rooms, studies or spare bedrooms (discussed in Section 2 on bedrooms) are for living activities done alone (e.g. playing musical instruments, office work, yoga or computer games). Garages accommodate both activities undertaken with other people (e.g. socialising) and activities undertaken alone (e.g. exercise). Activities done with other people can include watching TV, eating, playing board games, hanging out or socialising. It is these kinds of activities that tend to be done in the kitchen, lounge and dining spaces of homes, and can also be done in garages.

This section first describes findings about lounges, followed by where participants eat in their homes, which tended to be in lounges or at dining tables. Next kitchens and food storage is discussed. The final two sections display results about flexi-rooms or additional living spaces, and garages.

### **1.5.1 Lounges**

The size and layout of lounges (and dining spaces) affects how furniture can be arranged, and therefore how households use their space. Some participants were able, through creativity and financial means, to select furniture that made the space work well for them. Other participants

prioritised having furniture in their home that was important to them even though it was not always the best size for the available space (e.g. inherited chairs or dining tables reminiscent of their childhood). The homes described below illustrate how this range of capabilities and priorities translate into different experiences of living in lounges and dining spaces.

The configuration of furniture in lounges can be constrained by the location of sockets for power, internet and aerials, in addition to the size and shape of the space. In the figure below, the TV aerial and power points were in the corner requiring the TV to be placed there (Figure 29). To have the TV at the right angle for the sofa required a triangular cabinet and the household commissioned a custom-made cabinet to fit the space.

**Figure 29: Lounge as part of an open plan kitchen, dining, lounge space**

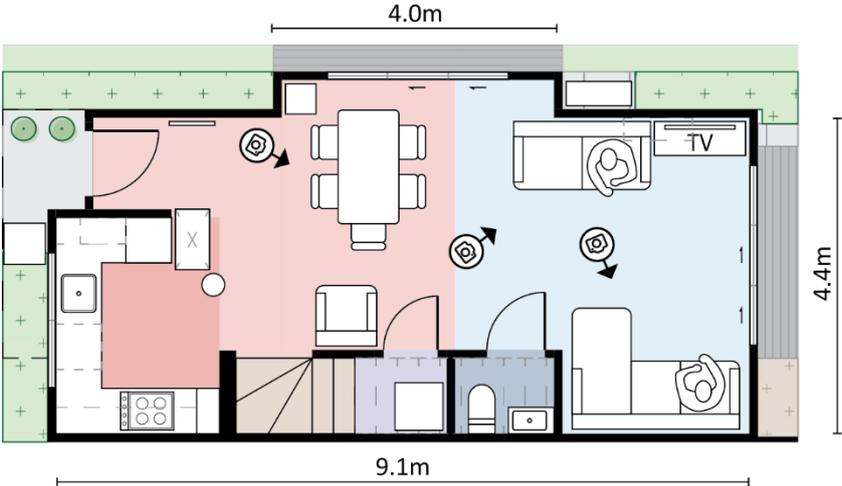


One participant, who lived alone in a duplex, commented on the challenge of finding furniture to fit in the lounge. He wanted the lounge that would both enable having conversations, achieved through sofas facing one another, and provide a comfortable space to relax and watch TV. The position of the TV in the corner and the 2-seater sofa sticking out past the wall demonstrates the challenge of sourcing furniture that fits in constrained spaces (Figure 30).

*I knew this space [the lounge] was going to be quite a challenge to fill, based on the plans [when it was being built], but I had a struggle, I had to search a little bit to find a couch that was going to fit...*

A lounge chair of sentimental value was kept in the dining space and moved into the lounge area when needed to accommodate guests.

Figure 30: Lounge furniture carefully selected to fit the space (left, centre) and lounge chair in dining space (right)



A multigenerational household of two adult children, a teenager, two parents and one grandparent placed their sofa in front of a ranch slider that gave access to a patio facing the street. This prevented use of the door and therefore access to the patio (Figure 31). However, of greater importance to the participants was that this layout caused an issue from their cultural perspective of Feng Shui as it affected the flow between the lounge and patio. The household had been unable to arrange their furniture in a way that better aligned with Feng Shui principles.

Figure 31: Access to patio restricted by placement of sofa in front of ranch slider



The challenge of finding furniture to fit their home was expressed by another participant who commented on the ‘non-standard’ size of spaces for furniture in their home.

*Purchasing furniture has been really interesting in this place, just in terms of the standard size of things and the fact that this space is an odd size... We’ve just put this [storage] cupboard in [beside door to the garage]. We’re going to have the light switches removed... the gap between this [kitchen bench] and the wall is 59cm and the standard size of a cupboard is 60cm. This inconsistency is kind of throughout the whole house, the spaces for furniture and things are not quite standard.*

Figure 32: Storage cabinet

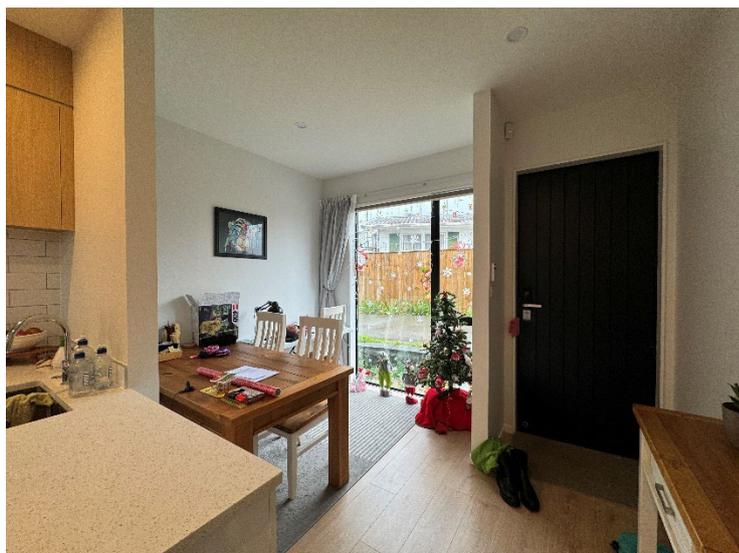


One household of two parents and their teenage daughter lacked space to accommodate furniture in which they could comfortably sit together to watch TV. The parents sat on the sofa and the daughter had a beanbag in their flexi-room upstairs which was brought down so they could sit together. This household also ate their meals in the lounge (Figure 33) as they used their dining table for hobbies like board games and Lego (Figure 34). The experience of this household in their lounge reflects the TMDO observation of lounges just being large enough to fit a sofa and TV cabinet, and therefore being insufficient in size to seat all members of the household or accommodate visitors.

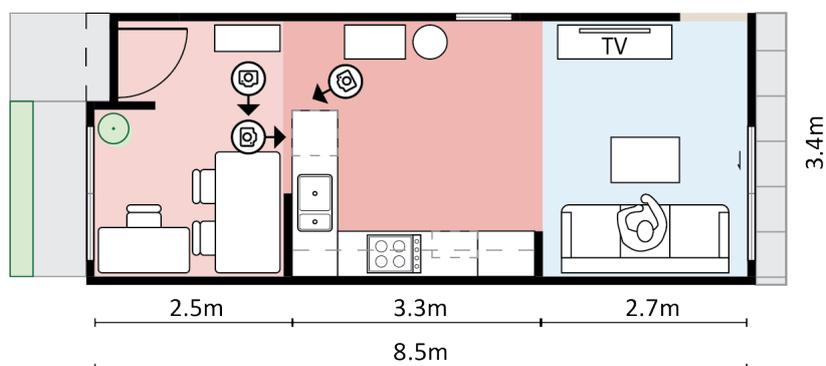
Figure 33: Lounge as part of an open plan kitchen, dining, lounge space



Figure 34: Dining table used for board games and other hobbies like Lego

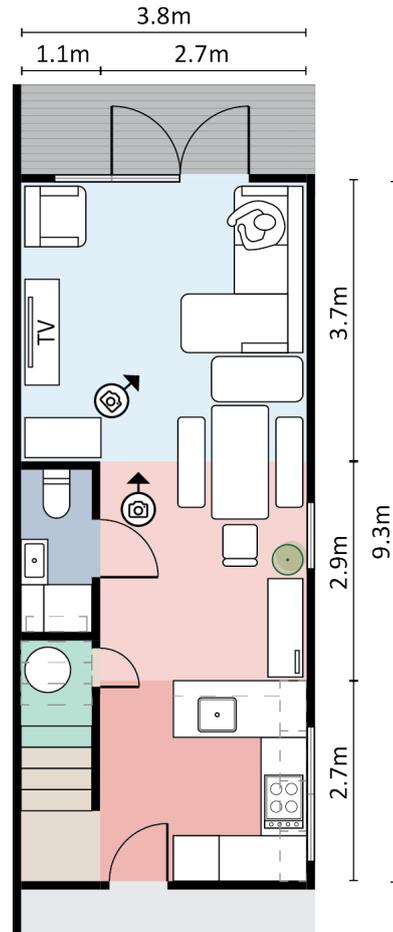


Note: The table had been recently pushed against wall to accommodate space for Christmas decorations.



In another household comprising of a couple and two flatmates, the couple were exceptionally considered in their choice of furniture to make their home accommodate social activities for the household. Their segmented sofa was arranged so that the couple could sit in the seats to the left, which was separated by an arm rest from the flatmates' seat to the right.<sup>19</sup>

Figure 35: Flating home with a couple and two flatmates



<sup>19</sup> The second flatmate worked in the evenings and so all four members of the household infrequently sat in the lounge together.

One participant, in a household of two adults and two children, described their open plan kitchen, dining (bar stools) and lounge as the “everything big space”:

*This is the everything big space ... this is the play space, the relaxing space, the TV space, the eating space ... Once the kids arrived, [this space became] all kids’ stuff in here, so books and toys and everything ... Some Friday nights we like to watch a movie here.*

Figure 36: Kitchen, dining, lounge space of an apartment with two adults and two children



Another household, consisting of a couple in a terraced house, had a wider (5m) home in which they were able to accommodate several activities in their lounge and dining space. They had lived in their home for a few years. Over that time, they have been through several arrangements of furniture and swapped out furniture as they could for items that better fitted the space:

*This table is a bit narrower, it’s 120 by 120. The last one took up a decent space, so we’ve only had this for a couple of months ... We used to have a square table, and we decided that for the space that we had, we’d be better to have one that wasn’t as wide but longer ... It works a lot better now ... The couch was another thing; we’ve had that for a couple of years now. The original one we brought with us, [but] it just stuck out just a bit too far. And it’s surprising, that extra 10cm just makes everything feel a bit more restrictive.*

They also described being able to use their lounge as a place for exercise, especially during COVID-19 lockdowns, to play with their cats, and for their piano. Both the careful selection of furniture and the width of this home enables the space to accommodate a range of activities comfortably.

**Figure 37: Wider (5m) lounge and dining space has seating for the household as well as space for a piano, exercise equipment, bookshelves and cat toys**



### 1.5.2 Eating and uses of dining tables

We found that dining spaces are not commonly used by households as places to eat together. Only three households that took part in the immersions discussed the importance of eating an evening meal as a household. Two of these households had a table for this purpose, and the third household ate their meals sitting on a sheet on the floor as was their cultural custom.

Meals are eaten sitting on a sheet on the carpeted floor for this household of two adults and two teenage children.

Figure 38: Open plan kitchen, lounge, dining area.



Eating meals together at the table was a priority for this multigenerational household of two adult children, a teenager, two parents and one grandparent. The dining space in this home was located at the rear of the terraced house, the kitchen in the middle, and the lounge at the front. This layout was a challenge for the household as it restricted their ability to watch the evening TV news and eat together, a bathroom opened into the dining space, and eating near their religious shrine was uncomfortable for them.

Figure 39: Round six-seater dining table



A multigenerational household with two children, two parents and a grandmother valued having a dining table as eating meals together was of religious and cultural importance to them. However, their dining experience had several constraints: the table and chairs need to accommodate five people, fit in the 3.6m wide dining space, and consist of furniture already owned from their previous home. The household found the furniture they had available was ill-fitted to the space.

Figure 40: Rectangular five-seater dining table



Being able to see the TV comfortably while eating appears to be of high importance to many of the participants, and where meals are eaten can be determined by the location of the TV. Many participants said they eat their meals while sitting on the sofa or in a chair in front of the TV. Figure 41 shows a dining table used only for entertaining visitors. The members of this household usually eat their meals sitting on a favourite chair in the lounge in front of the TV.

Figure 41: Open plan kitchen, lounge, dining space for a household of one person

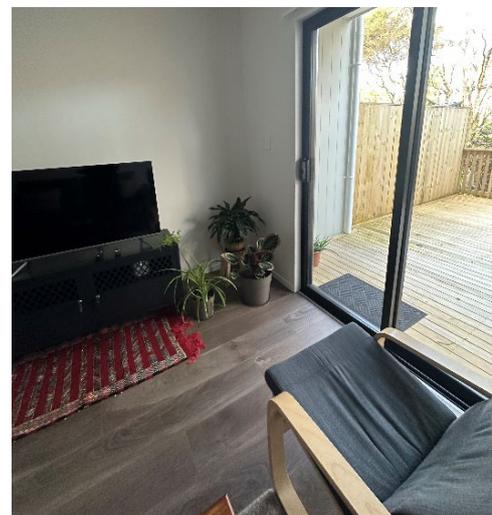
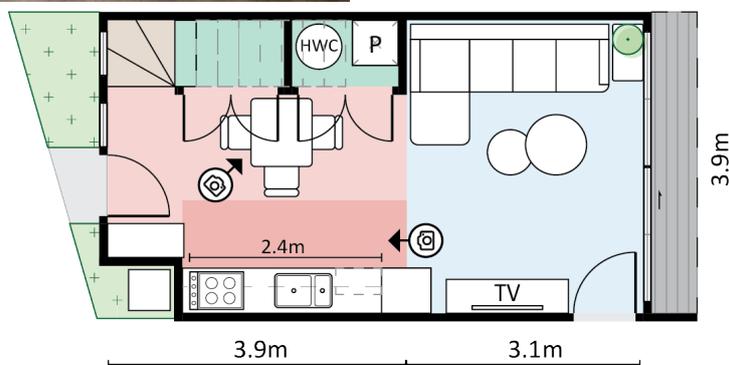
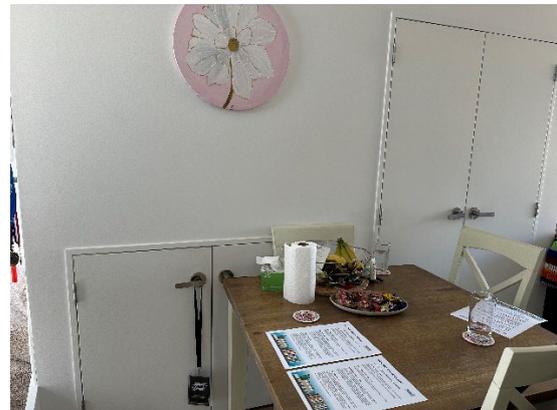
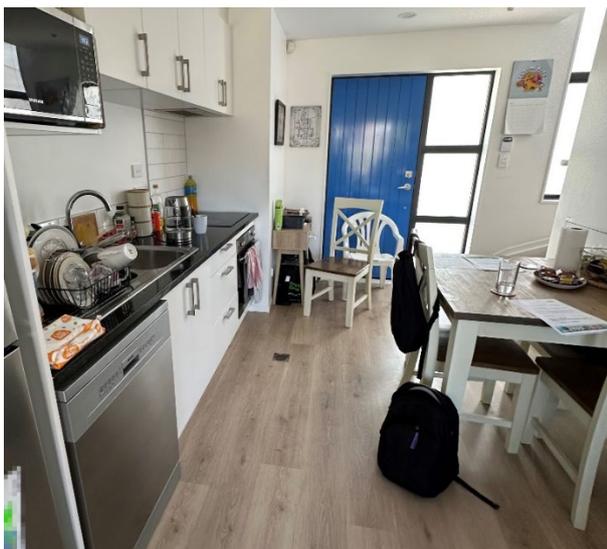


Figure 42 shows the lounge of a multigenerational household consisting of two parents, a teenage son and a grandparent. They eat their meals on the sofa using the nesting tables. The dining table near the kitchen has seating for three (although this is a household of five) and the table is used for meal preparation (i.e. as an extension of the kitchen bench) (Figure 43). The dining table is against wall in front of a half-cupboard (used for large pots, pans, food storage boxes) and the hot water cupboard/pantry (Figure 46).

Figure 42: Kitchen, dining, lounge space



Figure 43: Dining table in kitchen



Dining tables and chairs were present in 16 of the 20 in-home immersion homes, even when they were infrequently used for eating. Participants reporting using their dining tables for eating on special occasions, when considerable effort has gone into making a meal or when hosting visitors. The more

day-to-day function of dining tables was not about ‘dining’, and it may be more appropriate to refer to this piece of furniture as simply a ‘table’. These tables were used as an extension of the kitchen bench for meal preparation, a space to play board games, for laptop tasks, to have a conversation around, etc.

### 1.5.3 Kitchen and food storage solutions

The kitchen is a central part of the home for many of the households who took part in the in-home immersions. This means they are frequently used and need to accommodate a range of functions.

Kitchen benches are used as storage spaces for food, appliances and other items such as keys and water bottles. They are also used as a space for food preparation and drying dishes, and for pot plants. The wide range of uses demanded of kitchens helps to explain the dissatisfaction many of the survey participants reported with the size of their kitchens, including the kitchen bench and built-in storage.

Figure 44: A sample of kitchens displaying the variety of kitchen bench uses



Note: White rice container in bottom left of image, underneath kitchen bench.



Kitchen storage, and especially storage for food, is a challenge for most (16) of the participating immersion households. Built-in food storage (i.e. pantries) are difficult to use for some participants for a range of reasons. For example, one participant highlighted how the food storage cupboard in her kitchen opens directly onto the kitchen bench, meaning the bench has to be clear to open the cupboard doors, and consequently the doors are just kept open (Figure 45).

Figure 45: Pantry above bench with doors kept open

*I've got no storage space, so everything just kind of gets shoved in. Like look at this, the food is ridiculous!*



In another home, the pantry space is also the location of the hot water cylinder (Figure 46). These participants expressed discomfort at having their food near the cylinder as this felt “weird” and created a warm space that was not safe for storing some food.

Figure 46: Pantry cupboard shared with the hot water cylinder

*The pantry is half pantry half hot water cylinder ... The biggest problem with it is the warmth! So, we're careful not to put things in the pantry ... just sometimes I want to put some damp clothes in there to dry, but we try not to because ... it just feels weird.*



One participant who had an interest in cooking expressed disappointment about their kitchen storage. Some cupboards were hard to reach and so were underutilised (Figure 47) and to compensate they had added a buffet with a hutch to store plates and cups (Figure 48). The participant also found the narrow and deep design of the pantry challenging to access (Figure 49). Finding the ‘right’ spaces to store equipment was difficult. Storing their food mixer under the sink alongside cleaning products (Figure 51) and jars for preserves in the laundry under the stairs (Figure 50) was a dissatisfactory solution.

*A little bit disappointed with some of the kitchen storage options and just how that works for me ... I don't have a pantry per se ... when I signed the paperwork ... there was actually no details about those fixtures in there.<sup>20</sup>*

**Figure 47: Example of underutilised kitchen cupboards due to them only being accessible by stepladder**



**Figure 48: Buffet with hutch added to provide more kitchen storage**



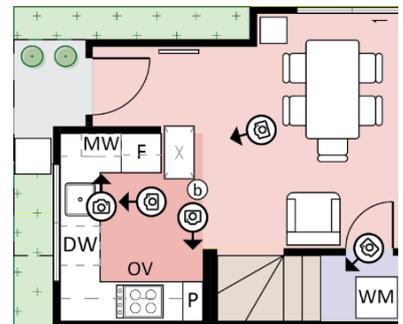
**Figure 49: Narrow pantry where items were found challenging to access**



**Figure 50: Preserving jars stored in laundry with buckets and brooms**



**Figure 51: Food mixer stored under the sink alongside cleaning products**



<sup>20</sup> Detailed kitchen schematics are not typically provided at the resource or building consent stage as a kitchen fitout does not require a consent.

Another problematic design for food storage is the cupboard under the stairs. Participants reported that low half-height cupboards are uncomfortable to access as they require squatting or kneeling on the ground. These cupboards typically lack shelving and so some participants store their food on wheeled trolleys which they can pull out of the cupboard, in addition to free-standing shelving.

**Figure 52: Understairs pantry found to be difficult to access**



**Figure 53: Wheely trolley in a half-height pantry under stairs**



A multigenerational household who followed Feng Shui practices in arranging their home spoke of the importance of their rice being stored in a container outside of a cupboard (see top left image in Figure 44). When asked about keeping this container outside of a cupboard, they explained:

*This [rice] is already a container itself. We want it to always be full, always full. We don't want to contain it.*

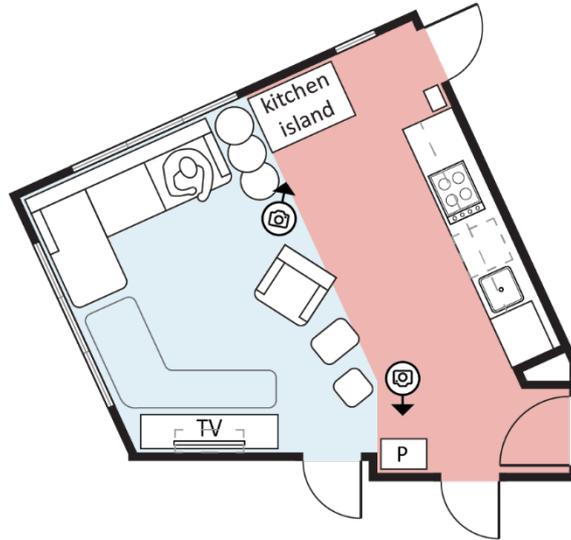
The need of this household to store their rice outside of a cupboard, and their creation of a space for this, is a different example to the additions of storage furniture added by other participating households described below who added a shelving or cupboards for food storage.

Many of the participants who are living in homes with insufficient built-in pantries have added storage furniture (often in the dining space) to store food. The food-storage furniture seen in the immersion households came in different forms, including double-door cupboards, baskets in a floating island bench and trolleys. This finding mirrors the design observation described in Section 1.1.2 that kitchens commonly lack pantries and sufficient storage.

A household with two adults and a child expressed frustration at the lack of kitchen storage and shared how they added a cupboard and floating island bench to store food and kitchen equipment (Figure 54).

*My biggest gripe with this place is the lack of storage, the no pantry thing. We're forever having to find new ways of storing everything...*

Figure 54: Cupboard added to function as a pantry and a floating island bench with baskets used for food storage (and shoes stored underneath)



A flatting household with four adults lacked a pantry in their kitchen. They found a free-standing cupboard on TradeMe and added handles to match their kitchen cupboards.

*There is a shortage of space [in this kitchen]. And to be honest, if it wasn't for this [indicating the storage unit], we would be stuffed. I found this on TradeMe for \$10 and I found the exact same handles online, too. Now doesn't that look part of the kitchen? ... We love it. We keep our food here.*

The inclusion of this pantry in the dining space means that the dining table is now encroaching on the lounge. As described in Figure 35, the participants were selective in the choice of their lounge furniture to fit the available space.

Figure 55: Additional cupboard added to dining space to function as a pantry



Some households stored their kitchen items in unexpected locations, such as drawers containing tins next to the TV cabinet (Figure 56) and plastic containers in an unused dishwasher (Figure 57). One household extended their kitchen bench to create a food storage cupboard, space for their microwave and a drawer for pots and pans (Figure 58).

**Figure 56: Additional food storage drawers next to TV cabinet in lounge**



**Figure 57: Dishwasher used as storage for plastic containers**

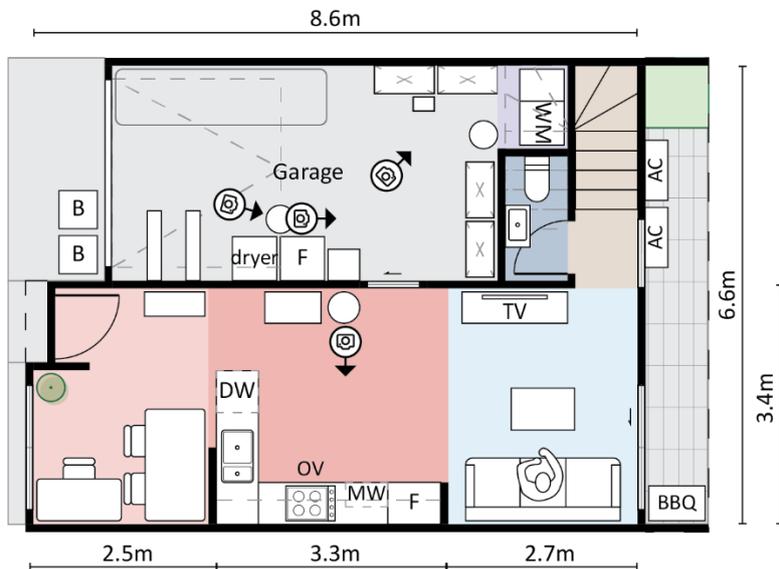
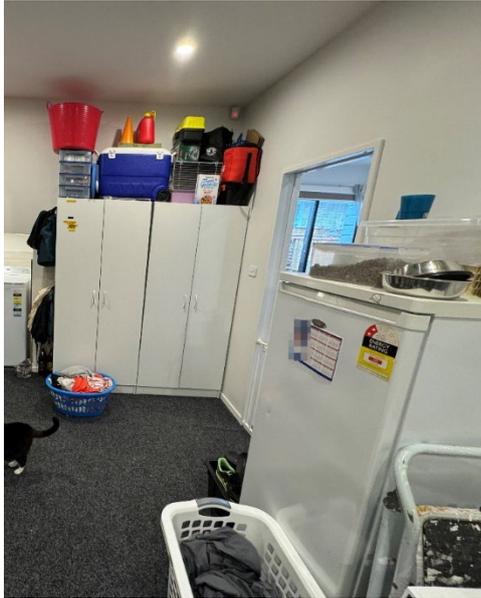


**Figure 58: Kitchen bench extended by participant**



Garages were also locations for food storage. Some garages had shelving or cupboards to store dry goods, kitchen equipment/appliances and/or chest freezers or additional fridges. One household of two parents and a teenage daughter lacked a pantry in their kitchen and so added shelving and cupboards to the garage for storage of food, kitchen appliances, cleaning products, general household storage and cat food/litter (Figure 59). This garage was not used to park the household's car.

Figure 59: Shelving, free-standing cupboards and a standing freezer for food storage in a garage. Kitchen without pantry also pictured



All combined, households tended to be required by the design and space allocation of their kitchens to distribute the storage of their food around the home. This has flow-on impacts for the uses of these other spaces. For example, additional furniture in the dining space is reducing the space for a dining table, and storage in a garage is reducing the space for carparking. (See also Section 1.5.5 in this chapter for the findings from the in-home immersions on the use of garages.) The accessibility and function of understairs pantries/kitchen storage cupboards could be improved by installing shelving.

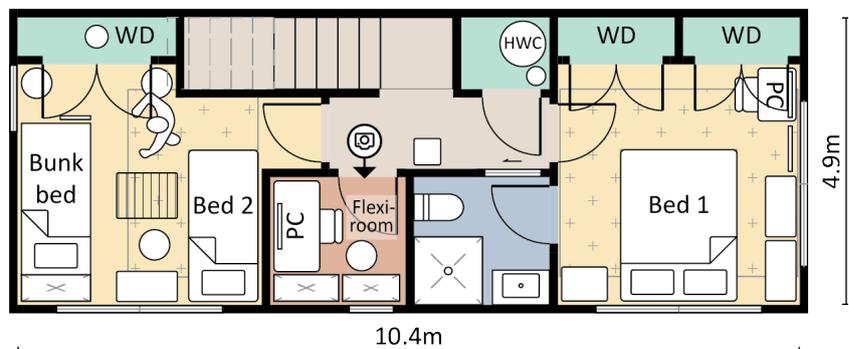
Consideration of appropriate cultural and safe food storage is required. Pantries have been a common approach to storing dried foods in New Zealand. However, Auckland is a culturally diverse region and homes with a diversity of food storage solutions are required to accommodate, for example, Feng Shui approaches to food storage (e.g. the rice container). Appropriate separation of food from other items is also a food safety consideration. One household’s pantry was shared with a hot water cylinder (Figure 46), and they commented about the warm temperature of the space being unsafe for some foods. Similarly, storing food in garages or dispersed around the home is resulting in food stored alongside cleaning products and pet food/items.

#### 1.5.4 Flexi-rooms or additional living spaces

Six of the homes had a flexi-room (a room shown on the approved plans as a study or other non-bedroom space). The uses of the flexi-room were similar to that of a spare bedroom in that they tended to be used for activities done alone, such as being an office or hobby space for a teenager. A flexi-room is often lacking windows and/or smaller than the minimum size for a bedroom. Flexi-rooms do not have wardrobes. (See also Section 2.2 in this chapter for the research findings on bedrooms.)

A household with a teenage daughter, younger son, parents and grandmother had a flexi-room in the second storey of their terraced house. The flexi-room was used by the teenage daughter and called her ‘office’ (Figure 60). She used this space to do make-up and use the computer. This space also stored some of the household’s shoes and the vacuum cleaner.

**Figure 60: Flexi-room used as cosmetics and hangout space for teenager. Space also used for storage of shoes and vacuum cleaner.**



Another household with a teenage daughter also made their second storey flexi-room into a space for their daughter (Figure 61). This space was referred to as the daughter’s “hang-out space” and contained a TV and seating, including a beanbag which was brought downstairs to watch TV as a household (Figure 33).

Figure 61: Flexi-room (no windows, only skylight pictured in ceiling)



One participant, who lived alone in an apartment with one bedroom, one flexi-room and two bathrooms, described her flexi-room as a “fake bedroom” (Figure 62). She used this space as an office and had a TV on a wall-bracket which allowed it to swing out into the room and be watched from the sofa. There was no space in the lounge for a TV.

Figure 62: Flexi-room with glazed sliding door



### 1.5.5 Garages

Garages are found to be critically important components in homes. The garages of the in-home immersion homes are rarely used for their intended purpose of carparking and instead are highly multi-functional spaces used to undertake activities not accommodated elsewhere in the home. (See also Chapter 8, Section 1.6 for further results about cars and carparking from the in-home immersions.)

Five of the 20 in-home immersion households lived in properties that had garages. Two garages were used for parking a car – one was a double garage and the other wider than a standard single garage. The other three homes did not use their single garage for carparking. All five garages were multi-functional. Uses other than carparking included general household storage, storage of food and kitchen equipment (see Section 1.5.3 in this chapter on kitchen and food storage), exercise equipment (treadmills, boxing bags, surfboards), shoes and clothing, lawn mower, tools and wheelie bins, as well as for a piano, for TV/gaming and as a guest bedroom. Garages were also used for the storage of push bikes, e-bikes and motorbikes.

Participants described the multitude of uses of and items stored in their garages. Participants saw that they ‘needed’ their garage to provide this space and one participant hypothetically asked where the stuff in their garage would go if they did not have a garage:

*If you were to put a car in there [garage], where do you then put all of that stuff? There’s no ability to put a shed anywhere ... and I think if you have a family, with kids’ toys, bikes, scooters, prams ... where does all that stuff go?*

Figure 63 shows the garage of a terraced house that is home to a teenage son, two parents and a grandmother. The lounge is most often used by the parents or the household all together (Figure 42), while the garage functions as the space for the teenage son to hang out with his cousins. In acknowledgement of how the garage was used, the family call the garage “the [son’s name]’s boy cave”. The garage also has a piano, washing machine and drying rack, as well as storage for shoes, boxes and the recycling bin.

*We knew with the limited space, like this [garage] would be some type of second living room. We’ve got a lot of kids, nieces and nephews in our wider families, our extended family. So yeah, so we make use of the chairs as well out there ... The older boys like to [be in the garage] because there’s another TV in there and they can do the PlayStation kind of thing.*

This household also commented that none of the terraced houses in their block of nine used their garage to park their cars.

**Figure 63: Multipurpose garage**



A household with a wider garage (although it is too narrow to be considered a double garage for two cars) used their garage to park one car on top of a rug (Figure 64). The rug was said to have been placed there simply for temporary storage as opposed to being placed for the purpose of protecting the garage carpet from the car. The size of this garage means there is enough space for a laundry and the household can store a wide range of items there in addition to their car. The garage provides storage for wheelie bins, a vertical freezer, work clothing, tools and cupboards and boxes containing a range of household items.

Figure 64: Wide garage with outdoor living spaces accessible through a ranchslider at rear of garage



Another household described their garage as the place with “everything in it” and felt that their car would not fit in their garage, even if they wanted to use it for carparking (Figure 65; see also Figure 59 showing kitchen storage in this garage):

*It's like got everything in it! We use it for everything ... so we use it for our bikes ... dryer and the freezer ... our trolley for our groceries ... soccer balls ... clothing racks, work bags, treadmill in action ... pantry and the baking supplies... all your plastics and extra stuff ... baking stuff ... the dog leads and the bags can go up there, all our shoes.*

*So our SUV, it's not a big one, only just sort of fits in the garage. And you would have to let everyone else out, outside the garage ... like there's no room especially now with our stuff in there.*

Figure 65: Multipurpose garage



## 2 Bedrooms

This section considers all aspects of bedrooms including the number, size, uses and storage for clothes and shoes.

### 2.1 Regulations and best practice guidance

#### **Auckland Unitary Plan (AUP)**

The AUP does not specify minimum bedroom sizes, but the purpose of the overall minimum dwelling size standard is to “ensure that dwellings are functional and of a sufficient size to provide for the day to day needs of residents, based on the number of occupants the dwelling is designed to accommodate”.<sup>21</sup>

#### **Auckland Design Manual (ADM) and best practice design guidance**

Bedrooms should be able to comfortably accommodate a queen size bed or two single beds, as well as a wardrobe. Adequate circulation space should be provided around the bed(s), and larger bedrooms should be able to accommodate additional furniture such as a chest of drawers or desk space.

Table 10 sets out relevant best practice guidance for bedroom sizes and wardrobe provision. Note that the ADM recommended minimum size is less than the other New Zealand and Australian design guidance considered in this study.

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<sup>21</sup> For example, Mixed Housing Urban Policy H5.3(5)(a) and Minimum Unit Size H5.6.16 Purpose Statement.

Table 9: Best practice guidance for bedroom sizes and wardrobes

	<b>Auckland Design Manual (net)</b>	<b>Public Housing Design Guidance and Kāinga Ora Design Requirements (gross)</b>	<b>NSW Apartment Design Guide (net)</b>	<b>NSW Low Rise Housing Diversity Design Guide (net)</b>	<b>Victoria Apartment Design Guide (net)</b>
<b>Principal (largest) bedroom</b>	9m <sup>2</sup>	10m <sup>2</sup>	10m <sup>2</sup>	10m <sup>2</sup>	10.2m <sup>2</sup>
<b>All other bedrooms</b>	9m <sup>2</sup>	9m <sup>2</sup>	9m <sup>2</sup>	9m <sup>2</sup>	9m <sup>2</sup>
<b>Minimum bedroom dimension</b>	3m	2.9m	3m	3m	3.4m (principal) 3m (other)
<b>Wardrobes</b>	1 bedroom 1m <sup>2</sup> 2 bedrooms 2.18m <sup>2</sup> 3 bedrooms 3.18m <sup>2</sup>	0.6m(d) x 1.2m(w) (0.72m <sup>2</sup> )	1.8m(w) x 0.6m(d) x 2.1m(h) (1.08m <sup>2</sup> )	—	1.5–1.8m(w)

## Sources:

- *Auckland Design Manual*, R6: Residential Design Element Unit Layout and Room Sizes.
- Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Table 4.
- Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Table B2.1-1.
- New South Wales Department of Planning and Environment (2015). *Apartment Design Guide*, Part 4 Designing the Building, Design criteria 4D-3, 1 and 2.
- New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 2.3K Terrace Dwelling Size and Layout, Design criteria 74 and 75.
- State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Section 3 – Dwelling Amenity, Table D7.

The ADM has a minimum recommended bedroom size of 9m<sup>2</sup>. A floor area of 10m<sup>2</sup> can accommodate additional furniture, and a further ~1m<sup>2</sup> is recommended for a wardrobe. Larger bedrooms of 10-12m<sup>2</sup> allow for more flexible use of the room including two single beds, and space for drawers, as illustrated in Figure 66.

Figure 66: Bedroom sizes and furniture layout



**Section 35 (s35) monitoring**

The Council’s s35 monitoring of the AUP did not specifically monitor bedroom provision but did find that a broad range of dwelling sizes and number of bedrooms are being provided to meet the diverse needs of Aucklanders.

## Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Room sizes are generally ~3m x ~3m (9m<sup>2</sup>; Figure 66) with little space for additional furniture (e.g. drawers, desk etc).
- Wardrobes are often needed for general household storage (e.g. linen, towels, suitcases).
- Bedrooms at ground level at rear of garaging are often only accessible through the garage, creating amenity and functionality issues.
- Bedrooms at ground level of terraced houses are often used for access to outdoor living spaces, reducing functionality of outdoor living space and reducing privacy and amenity of the bedroom.
- Window placement and size (particularly floor-to-ceiling glazing) can impact flexibility of the space, including how furniture can be placed within the room, as well as privacy.

## 2.2 Research findings

This section presents the research findings on indoor living spaces and is organised by topic. The section presents the results of the survey, consented plans analysis and in-home immersions. Results pertaining to the number and size of bedrooms are described first, followed by storage for clothes and shoes, and finally uses of bedrooms.

The results presented in this section describe bedrooms as defined by participants. The survey participants were asked to indicate from a list of different rooms and spaces which ones were part of their home. The list included 'main bedroom', 'second bedroom', 'third bedroom', etc. As discussed further on in this section, there may be variation in how participants define a 'bedroom', relative to how it is defined in consented plans or by a design professional. For example, a space used as a 'bedroom' by a participant may be a 'flexi-room' in consented plans, and vice versa.

Section 2.2.4 shows that a 'bedroom' from the perspective of participants is not always a room with a bed. Instead, bedrooms can have a wide range of uses and furniture and still be called a bedroom. The term 'spare bedroom' is adopted in this report to describe rooms that are bedrooms (defined as either a bedroom in consented plans or called a bedroom by participants) but are used for something other than sleeping or do not contain a bed. The term 'guest bedroom' is used to describe a room with a bed that is not a bedroom for a permanent member of the household.

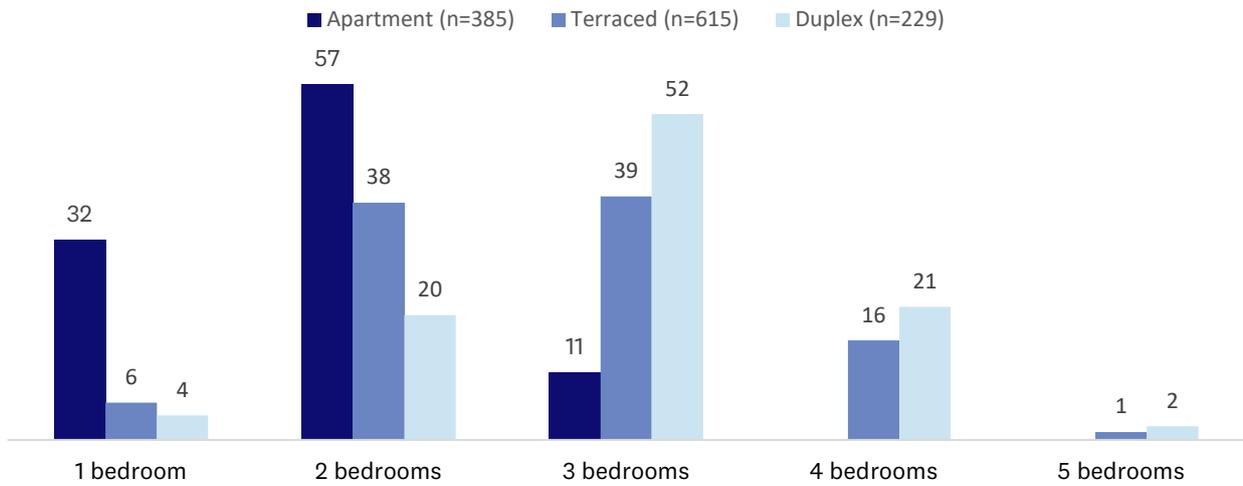
### 2.2.1 Number of bedrooms

In this section, survey and consented plan analysis results about the number of bedrooms are described.

#### Survey results

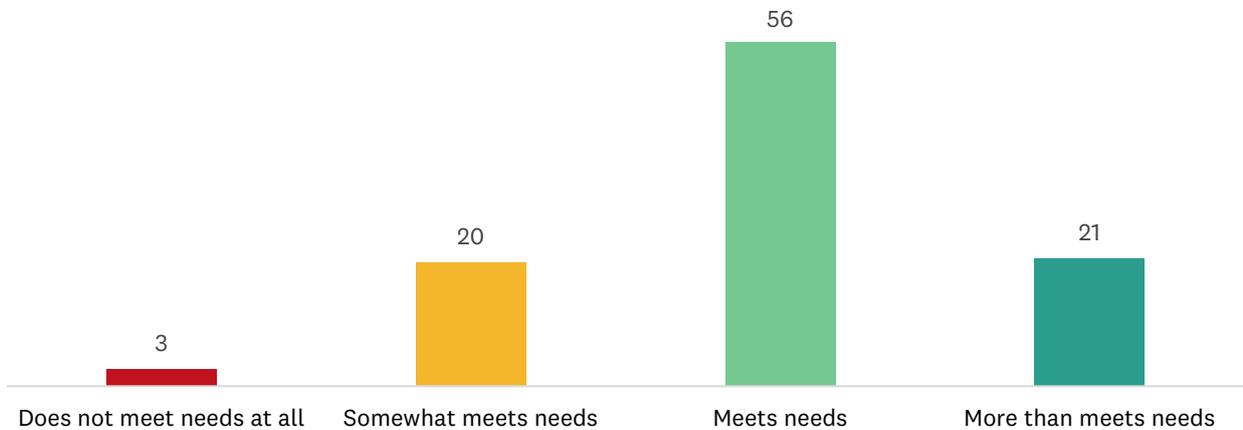
The largest proportion of properties in this study were reported to have two or three bedrooms (Figure 67). Apartments are more likely to have one bedroom (32%) than are terraced houses (6%) and duplexes (4%), which are more likely to have three bedrooms (39% and 52%, respectively).

Figure 67: Number of reported bedrooms in the home, by typology (%)



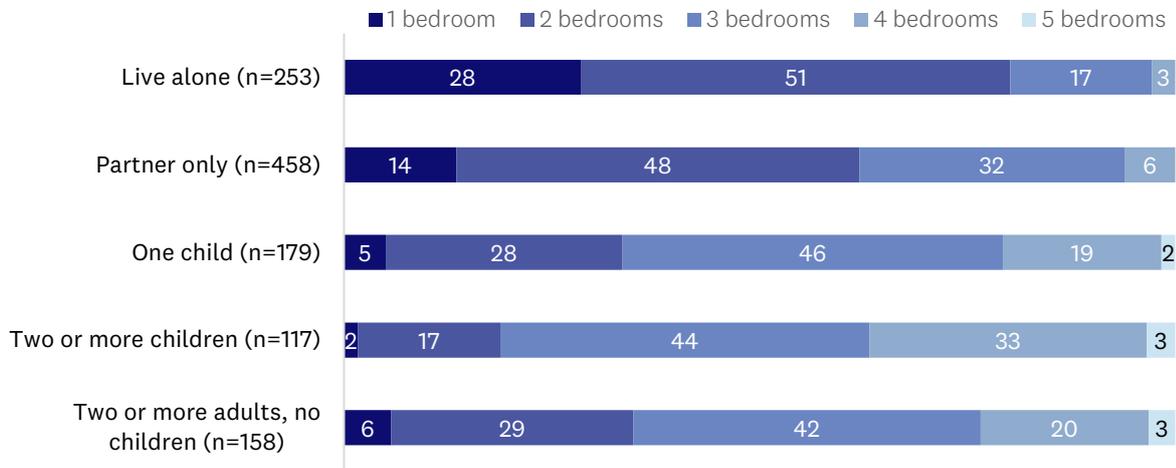
Participants were asked how well the number of bedrooms in the home meets the needs of the household. Over half (56%) reported that the number of bedrooms meets the needs of the household, 21 per cent reported the number of bedrooms ‘more than meets’ their needs and 20 per cent reported the number of bedrooms ‘somewhat meets needs’. Participants with three bedrooms were more likely than those with one or two bedrooms to report the number of bedrooms more than meets their needs (Figure 68).

Figure 68: How well the number of bedrooms meets the needs of the household (n=1333) (%)



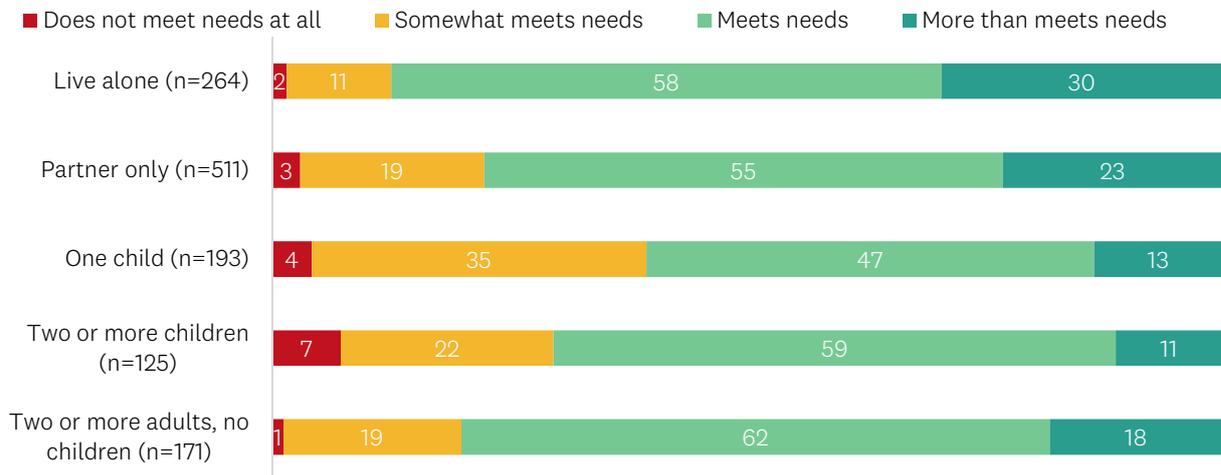
Households with children, or two or more adults and no children, were living in homes with more bedrooms than those who live alone or with a partner only (Figure 69).

**Figure 69: Number of bedrooms, by household composition**



As Figure 70 shows, households with one child were more likely to report the number of bedrooms ‘somewhat meets needs’ of the household (35%) compared with those who live alone (11%), with a partner only (19%) or with two or more adults and no children (19%). Those who live alone (30%) or with a partner only (23%) were more likely to report the number of bedrooms ‘more than meets’ the needs of the household compared with households with two or more children (11%).

**Figure 70: How well the number of bedrooms in the home fit the needs of the household, by household composition**



Generally, the results from the survey found a correlation between the number of people in a household and the number of reported bedrooms in the home (Table 10). For example, a large proportion (103, or 61%) of 1-bedroom homes were home to one person households. The largest proportion of 2-bedroom homes were home for two people, and the largest proportion of 3-bedroom homes were home to three people.

Table 10: Reported number of people in the household, by reported number of bedrooms (counts)

	1 person	2 people	3 people	4 or more people	Total
1 bedroom	103	51	6	8	168
2 bedrooms	180	243	54	18	495
3 bedrooms	64	189	91	58	402
4 bedrooms	15	51	33	50	149
<b>Total</b>	362	534	164	134	1214

Note: Households reported to have 5 or more bedrooms (n=12) have been excluded from table.

### Consented plans

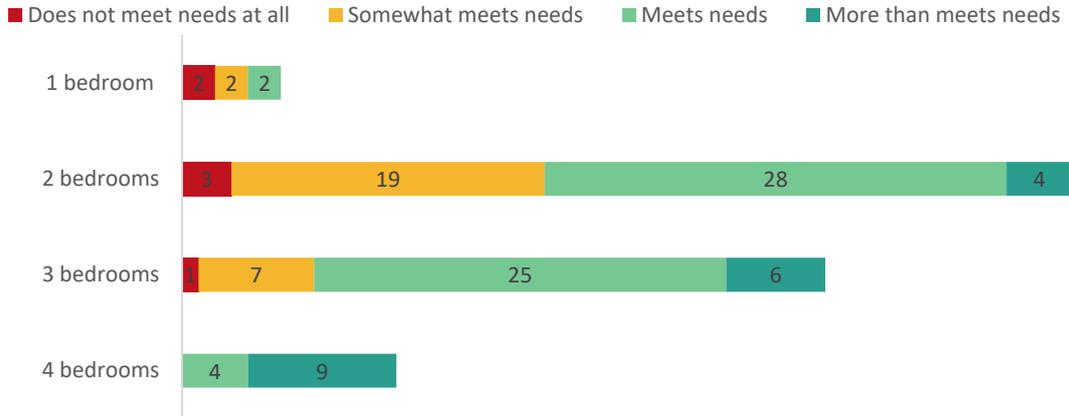
Almost half (45%) the properties included in the sample of consented plans analysed showed two bedrooms on the plans and a third (34%) showed three bedrooms.

Table 11: Number of bedrooms in a property (n=110 properties)

	Proportion
1 bedroom	8%
2 bedrooms	45%
3 bedrooms	34%
4 bedrooms	12%
5 bedrooms	1%

Larger numbers of participants in homes with fewer bedrooms reported the number of bedrooms ‘does not meet needs at all’ or ‘somewhat meets needs’ (Figure 71). Two participants in a 1-bedroom home and three participants in a 2-bedroom home reported the number of bedrooms ‘does not meet needs at all’ compared with only one participant in a 3-bedroom home and no participants in 4-bedroom homes.

Figure 71: How well the number of bedrooms meets the needs of the household, by number of bedrooms (counts)

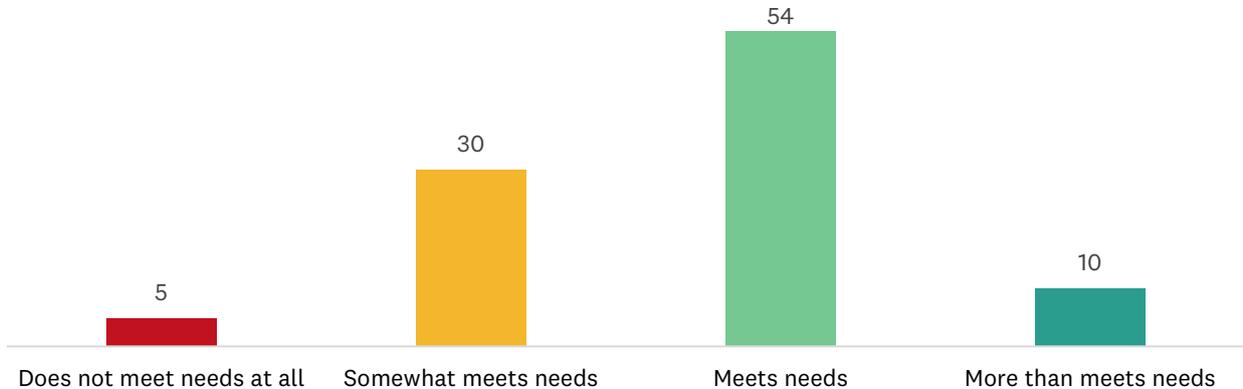


### 2.2.2 Size of bedrooms

#### Survey results

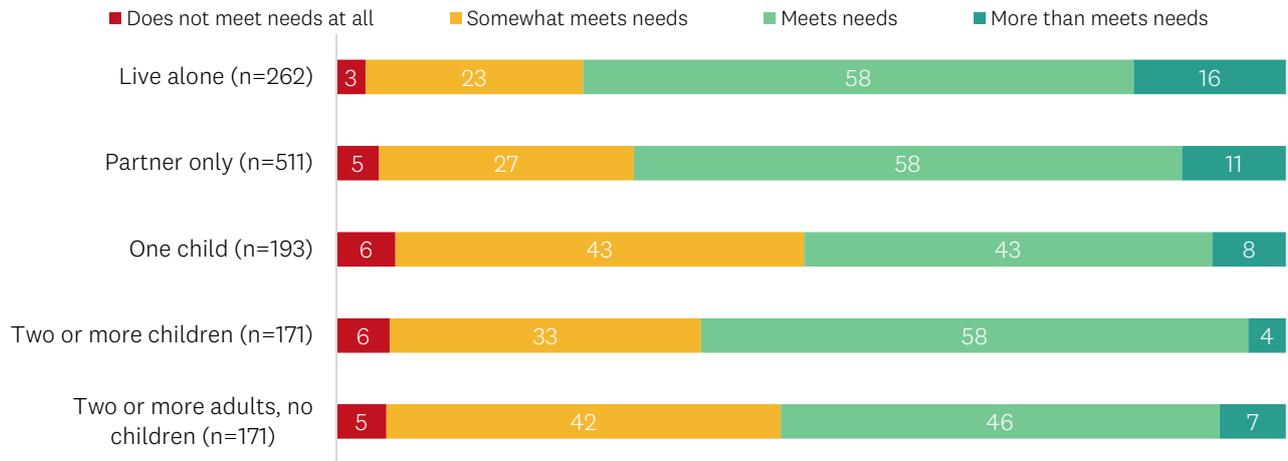
Over half (55%) of the participants reported the size of bedrooms in their home ‘meets needs’ of the household. Close to a third (30%) reported the size of bedrooms ‘somewhat meets needs’ of the household.

Figure 72: How well the size of bedrooms meets the needs of the household (n=1335) (%)



The participants who live alone (16%) were more likely to report the size of bedrooms in their home ‘more than meets’ the needs of the household compared with households with two or more children (4%). Those with one child (43%) or two or more adults and no children (42%) were more likely to report the size of bedrooms ‘somewhat meets needs’ compared with those who live alone (23%) or with a partner only (27%).

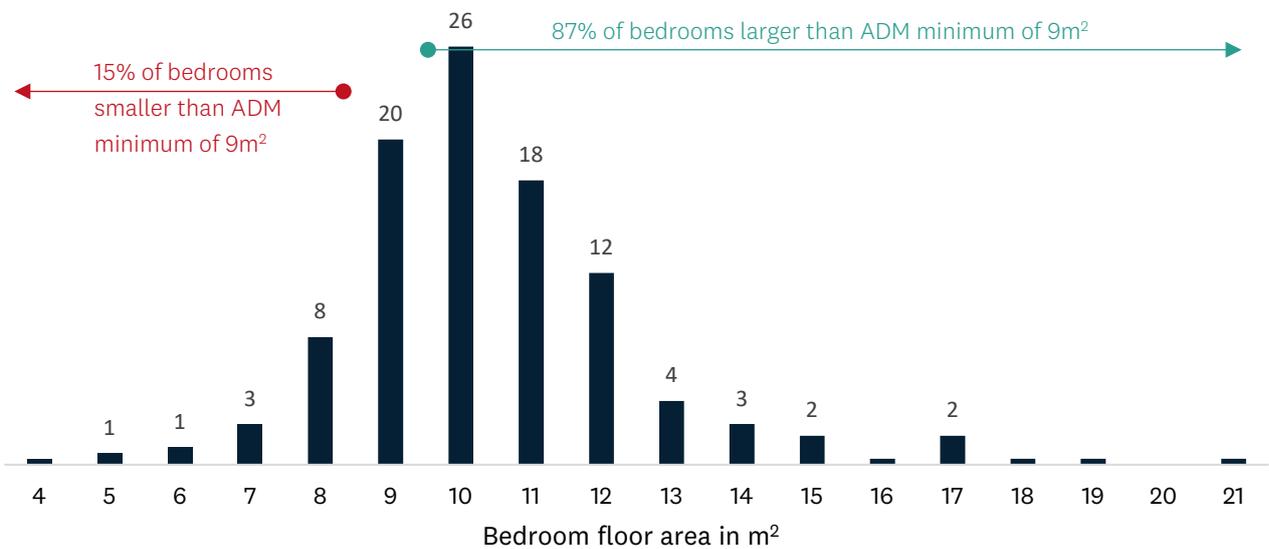
Figure 73: How well the size of bedrooms fits the needs of the household, by household composition (%)



### Consented plans

The average bedroom size in the 110 consented plans analysed was 10.4m<sup>2</sup>. The smallest bedroom in the sample was 4.4m<sup>2</sup> and the largest was 21m<sup>2</sup>. Three-quarters of the bedrooms were between 9m<sup>2</sup> and 12m<sup>2</sup> (Figure 74).

Figure 74: Bedroom floor area (m<sup>2</sup>) (n=277 bedrooms) (%)



- Notes: 1. Measurement excludes wardrobe space and is rounded to nearest m<sup>2</sup>.
- 2. Chart displays floor areas for 277 bedrooms across 110 properties. Labels for values less than 1% excluded.
- 3. Housing Improvement Regulations 1947 state that a bedroom, by definition, is at least 6m<sup>2</sup> and has a minimum dimension of 1.8m.

In this study, a bedroom under 8m<sup>2</sup> is defined as only able to accommodate a single bed and only able to accommodate one person,<sup>22</sup> whereas bedrooms larger than 8m<sup>2</sup> are defined as being able to accommodate a queen size bed. Thirty-five bedrooms in the sample were identified as single

<sup>22</sup> This floor area has been determined on the basis of the minimum dimensions required to accommodate a double or queen bed, and 0.8m of circulation space around the bed.

bedrooms. In the consented plans, these single bedrooms tended to have a single bed drawn against a wall.

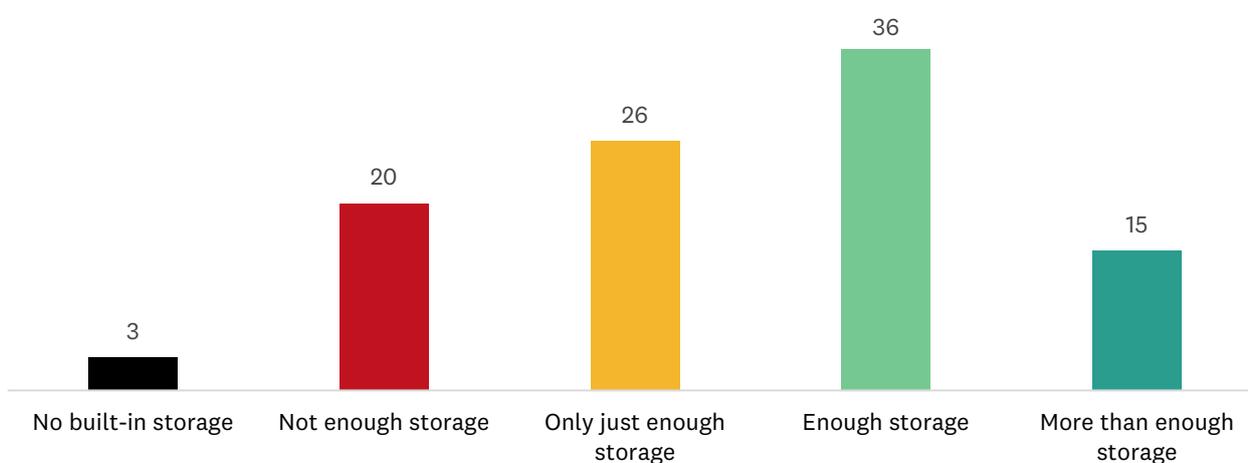
### 2.2.3 Storage for clothes and shoes

#### Survey results

Participants were asked to rate the amount of built-in storage for clothes and shoes (this can come in the form of wardrobes, coat cupboards or shoe racks).

One in five (20%) participants reported there is 'not enough storage' for clothes and shoes, 26 per cent reported 'only just enough' and 36 per cent reported 'enough storage' (Figure 75).

Figure 75: Participant ratings of the amount of built-in storage for clothes and shoes (n=1330) (%)



Note: Nine participants reported not having clothes and shoes and have been excluded from the chart.

Some participants commented about a lack of wardrobe storage when asked what they dislike about their home:

*Due to lack of storage in the too-small wardrobe (we don't have many clothes), we needed a chest of drawers in the room which made it cramped and difficult to clean.*

*No storage whatsoever! I have 1 single wardrobe that has a hot water tank inside!*

### Consented plans

The average floor area of a wardrobe in the 110 consented plans we looked at was 1.5m<sup>2</sup>. The largest wardrobe was 6.7m<sup>2</sup> and the smallest was 0.3m<sup>2</sup>. There were very few properties with large walk-in style wardrobes and most wardrobes had a floor area of 1m<sup>2</sup>.

The ADM guidance for wardrobes is based on the total floor area of all wardrobes in a home. The average wardrobe floor area for properties of all bedroom sizes exceeds the ADM minimum. However, not all homes exceed ADM guidance.

Table 12: Total floor area (m<sup>2</sup>) of all wardrobes, by number of bedrooms

	Average	Maximum	Minimum	ADM
1 bedroom	1.4	2.2	0.5	1.0
2 bedrooms	2.9	4.8	1.9	2.18
3 bedrooms	4.4	8.9	2.0	3.18
4 bedrooms	7.4	10.8	4.8	—

Source: *Auckland Design Manual*, Residential Design Element R6: Unit Layouts and Room Sizes.

### In-home immersions

Generally, wardrobes were working well for the participating households. However, it was not uncommon for participants to supplement the built-in shelving and racks in wardrobes with baskets or shoe racks. The fitout of wardrobes with racks and minimal shelving can lack functionality without additional storage, resulting in dissatisfactory storage of clothing (e.g. stored on the floor).

Figure 76: Sets of drawers added to wardrobe



Figure 77: Baskets added to a wardrobe.



Figure 78: Shoe rack, hooks (left) and baskets (top shelf) added to a wardrobe



Figure 79: Wardrobe lacking additional storage resulting in clothing stored on the floor



In some homes, wardrobes were also used for the storage of linen, paperwork or other household items, and this can result in additional drawers being required for clothing. This finding reflects the design observations described in Section 2.1 on wardrobes being used for household storage, and furniture placed in front of windows.

**Figure 80: Linen (top shelf) and boxes (bottom) in a wardrobe**



**Figure 81: Drawers and shelves in a bedroom to provide storage for clothing**



Note: Drawers have been intentionally placed in front of full height window to improve privacy.

Shoes were infrequently stored in bedrooms and several participants added shoe storage furniture to their entranceways (which for one household was through their garage).

**Figure 82: Shoe rack by front door**



**Figure 83: Shoe rack inside front door**

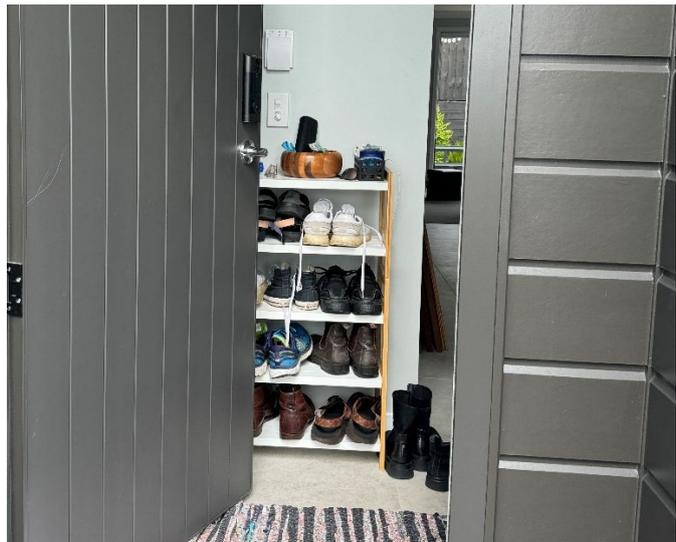
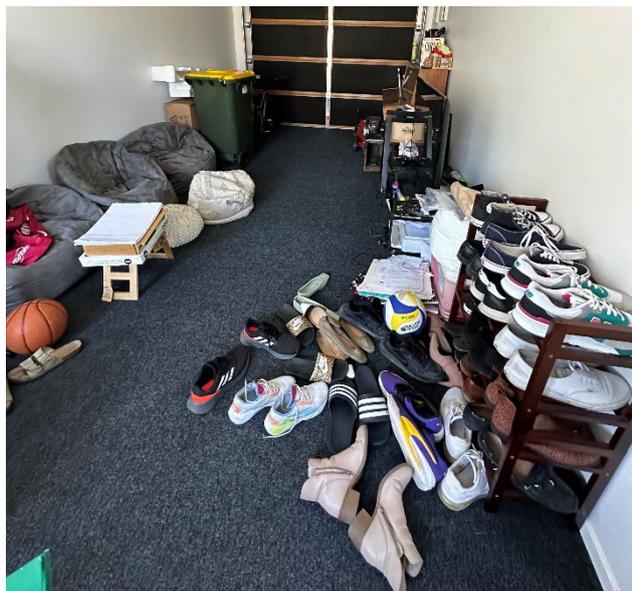
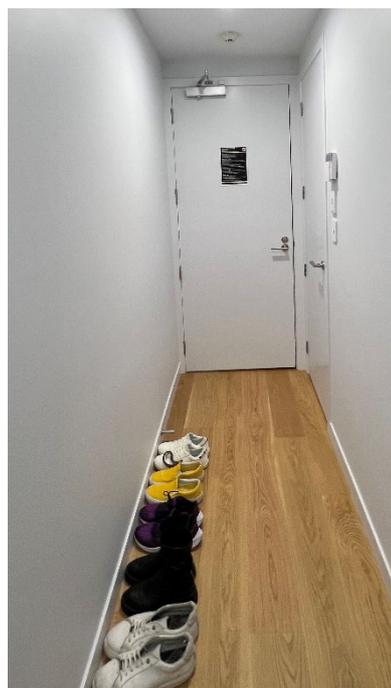


Figure 84: Shoe rack in garage



Note: Household enters their home through the garage and do not use their front door.

Figure 85: Shoes stored in a hallway



## 2.2.4 Uses of bedrooms

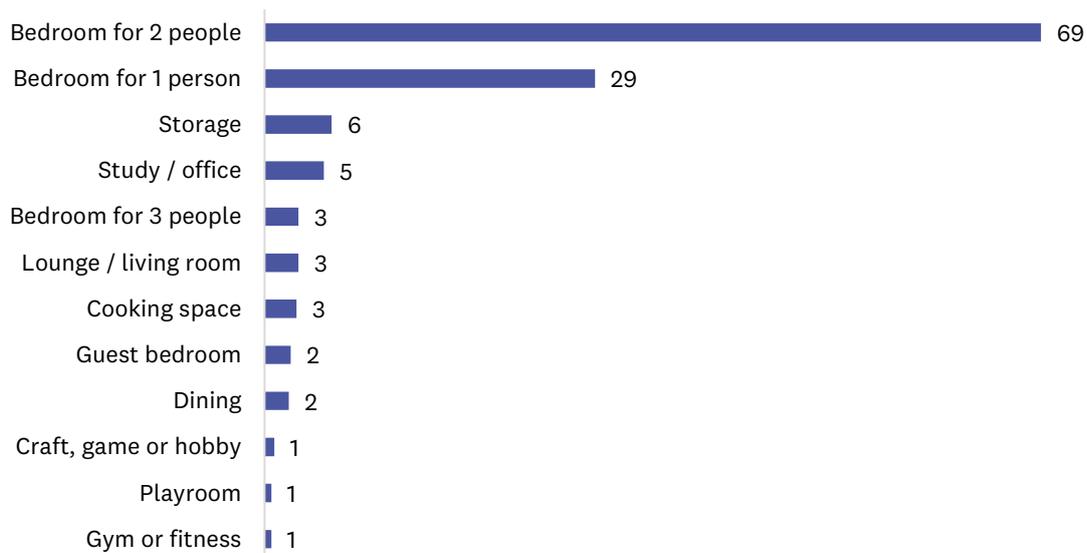
### Survey results

This section reports on uses of bedrooms. Participants were asked how they used the different spaces which they had previously indicated were part of their home.

The participants who indicated in the survey they had a ‘main bedroom’ were asked how this room was used. The main bedroom was used as a bedroom for two people by 69 per cent of participants and a bedroom for one person by 29 per cent.

The majority (89%) of main bedrooms were reported to have one use, and 8 per cent to have two uses. The most common second uses for the main bedroom were for storage or as a study/office space (Figure 86).

Figure 86: Uses of the main bedroom (n=1154) (%)

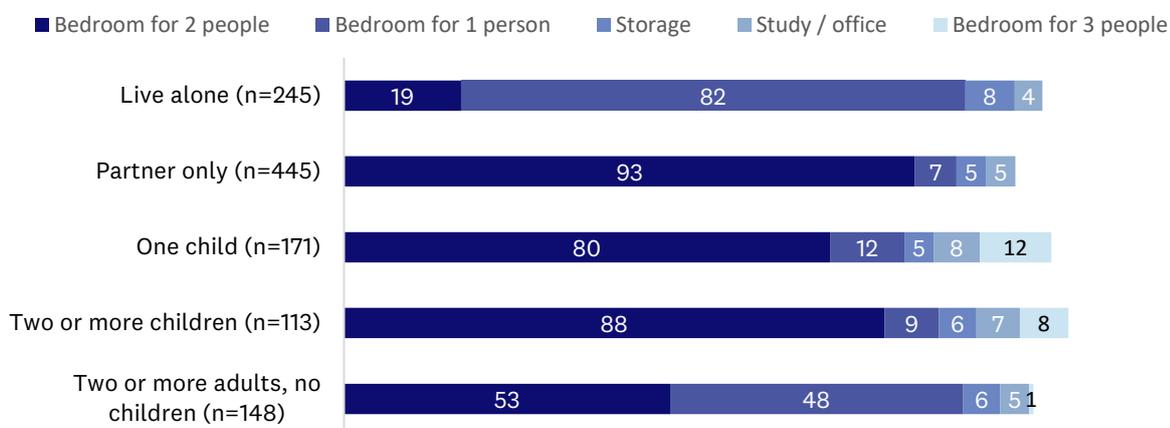


Notes: 1. Base is all households with a ‘main bedroom’.  
 2. Six participants said they used the main bedroom as a prayer room. This is less than 1 per cent of the sample, so is not visible on the chart.  
 3. Multiple responses allowed; therefore, total does not sum to 100.

The uses of a main bedroom are generally consistent across different household compositions (Figure 87). For all household compositions, except those living alone, the main bedroom is most frequently used as a bedroom for two people. Some households with children report using the main bedroom as a bedroom for three people (12% of one child households and 8% of households with two or more children). The third person is likely a baby as a few participants described having a bassinet in their main bedroom.

Nineteen per cent of the participants who live alone reported that their main bedroom is a bedroom for two people. Participants may have interpreted this question to be asking how many could use the bedroom and answer that it is a bedroom for two people if the room contains a double bed.

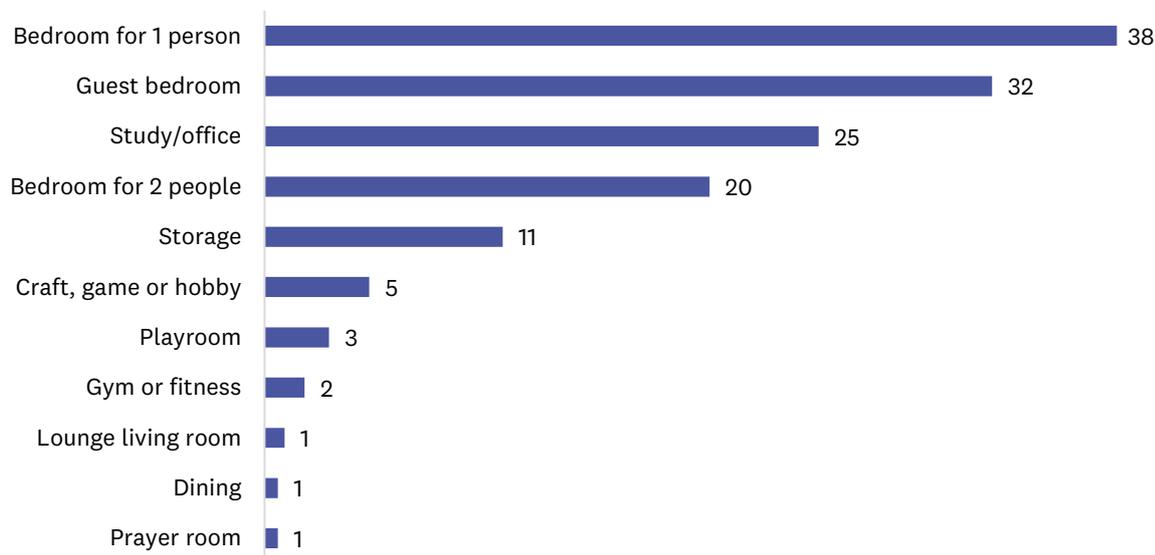
Figure 87: Uses of the main bedroom, by household composition (%)



Notes: 1. Base is all the households with a ‘main bedroom’.  
 2. Multiple responses allowed; therefore, total does not sum to 100.

The participants who reported having a second bedroom were asked how this was used. Second bedrooms were used by over a third (38%) of participants as a bedroom for one person. Thirty-two per cent report using a second bedroom as a guest bedroom. A quarter (25%) of participants use a second bedroom as a study and 20 per cent as a bedroom for two people (Figure 88).

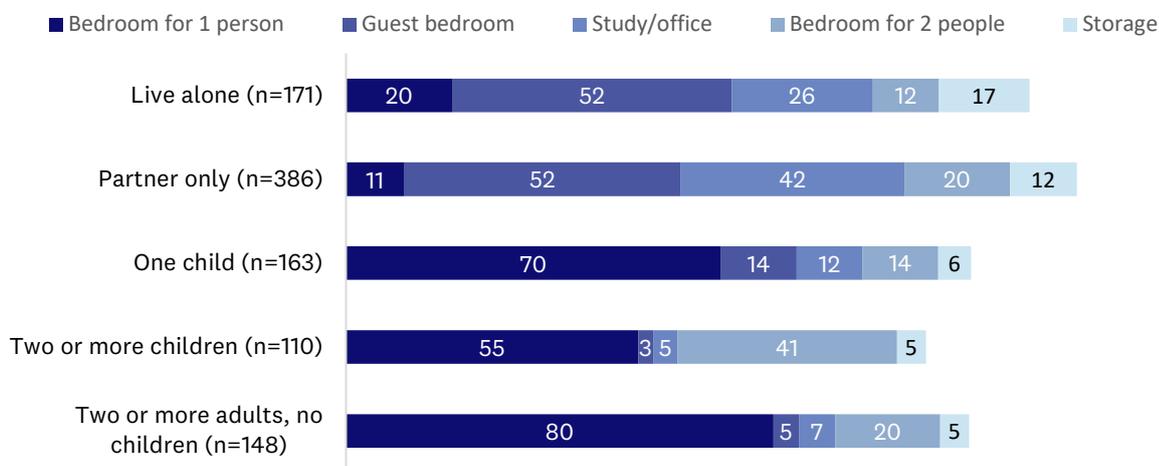
Figure 88: Uses of a second bedroom (n=1008) (%)



Notes: 1. Base is all the households with a ‘second bedroom’.  
2. Multiple responses allowed; therefore, total does not sum to 100.

Uses of second bedrooms vary across different household compositions (Figure 89). Households with one child (70%) or with two or more adults and no children (80%) were more likely to use the second bedroom as a bedroom for one person than those who live alone (20%) or with a partner only (11%). Households with two or more children were more likely to use the second bedroom as a room for two people (41%) compared with all other household compositions. Guest bedrooms were the most frequently reported use of second bedrooms for those who live alone (52%) or with a partner only (52%) compared with all other household compositions.

Figure 89: Uses of second bedroom, by household composition (%)

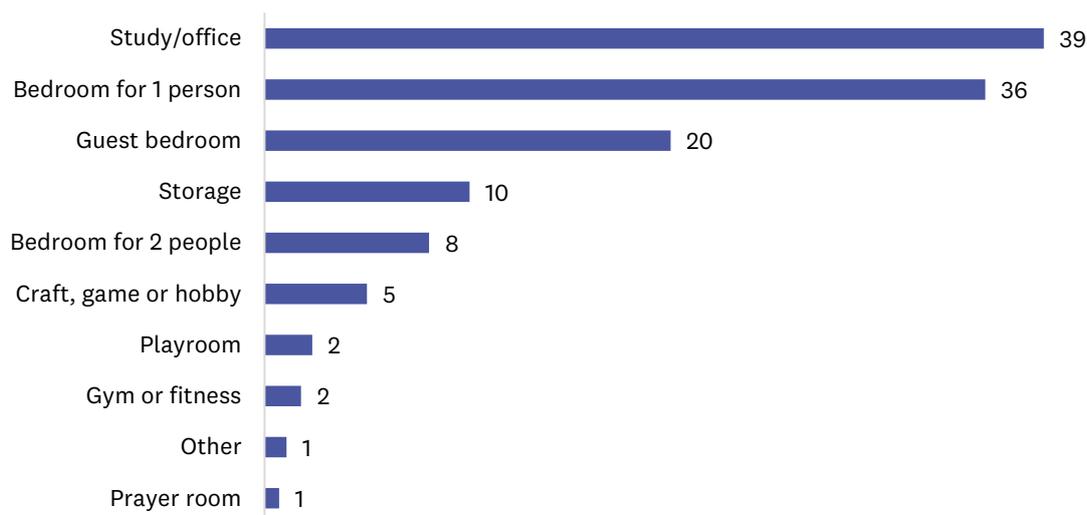


Notes: 1. Base is all the households with a ‘second bedroom’.  
2. Multiple responses allowed; therefore, total does not sum to 100.

Over a third (39%) of third bedrooms were used as a study or office space and a similar proportion (36%) were used as a bedroom for one person (Figure 90). Eight in ten (82%) third bedrooms had one use and 12 per cent had two uses.

Households with two or more children were more likely to use a third bedroom as a room for one person (66%) compared with those who live alone (30%), with a partner only (11%) or with one child (37%). Households with a partner only (60%) are more likely than any other household composition to use a third bedroom as a study or office space.

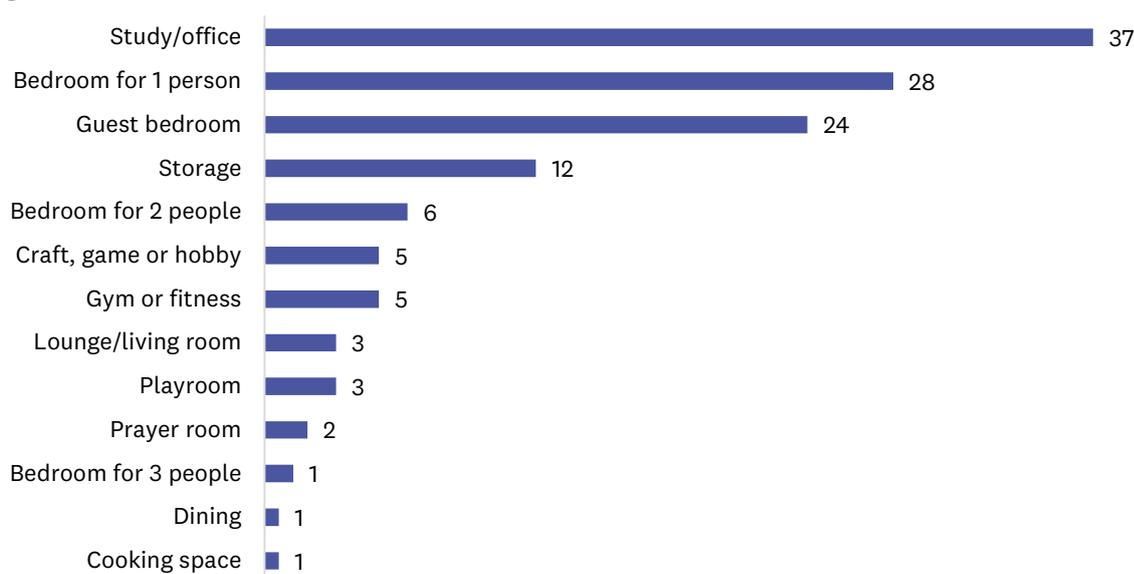
**Figure 90: Uses of the third bedroom (n=545) (%)**



Notes: 1. Base is all the households with a ‘third bedroom’.  
2. Multiple responses allowed; therefore, total does not sum to 100.

The use of fourth bedrooms also varies. The three main uses were as a study/office (37%), as a bedroom for one person (28%), and as a guest bedroom (24%) (Figure 91).

**Figure 91: Uses of a fourth bedroom (n=157) (%)**



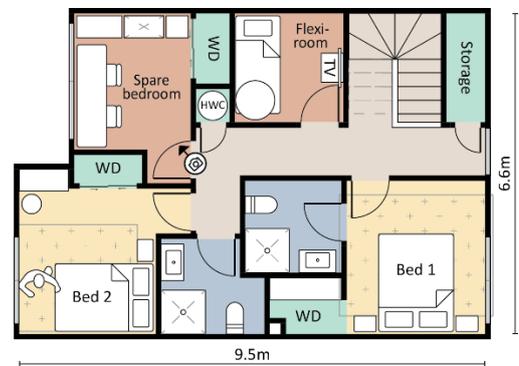
Notes: 1. Base is all the households with a ‘fourth bedroom’.  
2. Multiple responses allowed; therefore, total does not sum to 100.

**In-home immersions**

In-home immersions found that bedrooms (i.e. closed rooms with a window and wardrobe) tend to be used as a bedroom (i.e. a place for sleep), or as a space for other activities (e.g. for hobbies, media, office, play space) and/or home management (e.g. for laundry, storage, vacuum). The figures below demonstrate uses of spare bedrooms in four households.

The first spare bedroom, in a home to a couple and their teenage daughter, is a craft room (Figure 92). The couple used one bedroom with the larger wardrobe and smaller floor area (bed 1), and the daughter the larger floor area bedroom (bed 2). The daughter was also the primary user of the flexi-room (Figure 61).

**Figure 92: Spare bedroom used as a craft room**



The home in Figure 93 had two spare bedrooms. One of these rooms is used as an office, and the other as both a media room and for exercise (Pilates equipment and spin bike). This 2storey duplex was home to a couple and their adult daughter. The couple used the bedroom with the walk-in wardrobe and ensuite (bed 1), and the daughter the other bedroom (bed 2).

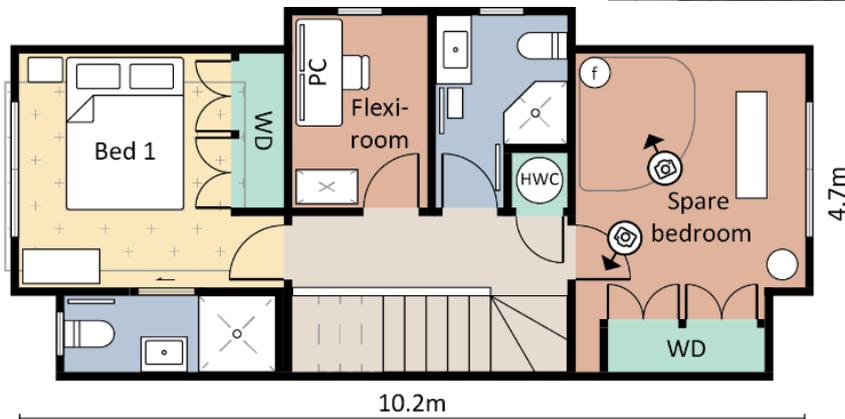
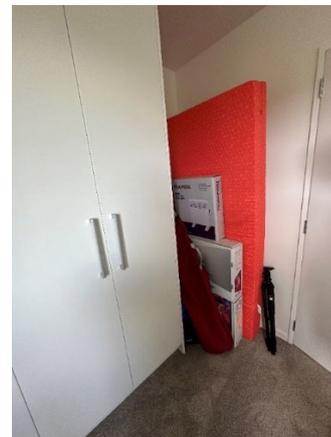
**Figure 93: A home with two spare bedrooms – one used as a media room and exercise space, the other as an office**





The 2-storey duplex pictured below was home to one person. Their spare bedroom was multi-purpose, being used to practise musical instruments, for ironing, and for storage of their vacuum cleaner, heaters, spare mattress, boxes etc.

Figure 94: Multi-purpose spare bedroom



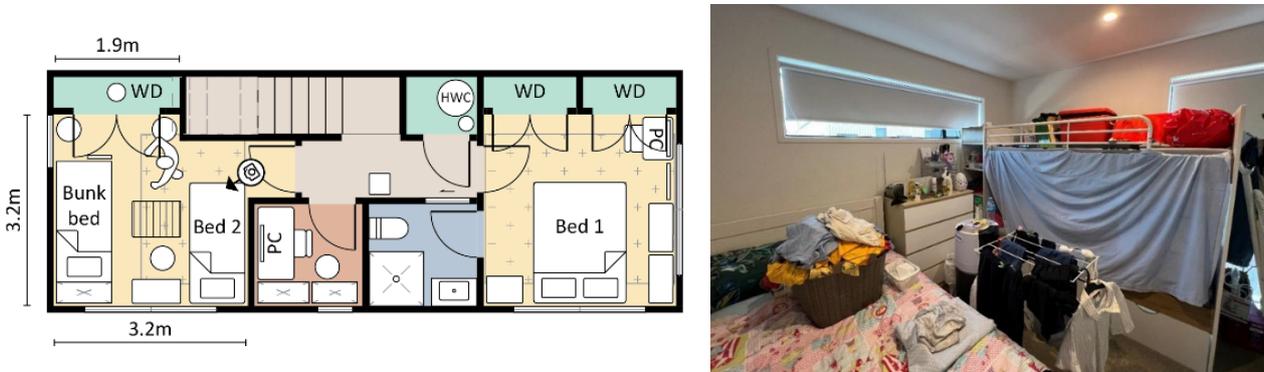
The spare bedroom in Figure 95 was used for drying laundry and household storage (e.g. suitcase, fan, documents and office supplies). This was a home to one person.

Figure 95: Spare bedroom used for laundry and storage



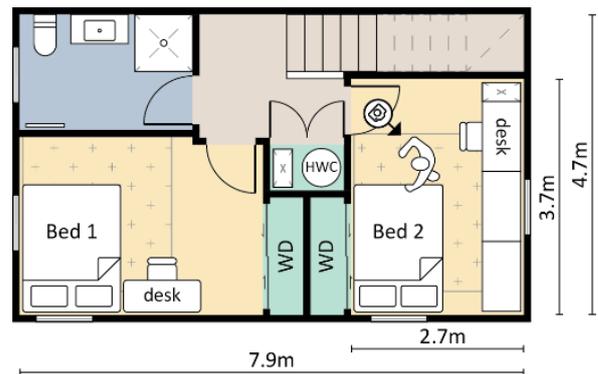
Bedrooms were infrequently being used as both a bedroom and as a space for other activities (e.g. office or for laundry). Households that were lacking a spare bedroom to be used as a space for other activities described above, struggled to find spaces in their homes for such activities. One bedroom was shared by a teenage daughter and her grandmother. The room is also used to dry laundry and a top bunk bed is used for storage of suitcases and other bulky items (Figure 96).

Figure 96: A 10m<sup>2</sup> bedroom for two people, and other activities



One participant who was now living alone had recently had a flatmate. She used her bedroom as a bedroom as well as a space to work at a desk, and had created a reading nook atop the drawers by the window (Figure 97). Her bedroom was her private space away from her flatmate. Accommodating these uses of the room required her bed to be against the wardrobe. The wardrobe was accessed by standing on the bed. She had selectively purchased furniture from overseas that exactly fitted along the length of the wall.

Figure 97: 10m<sup>2</sup> main bedroom with office space and reading nook



## 3 Overall size of the home

The size (floor area) of a dwelling and the internal arrangement of rooms are meant, in the AUP, to provide functional spaces for the intended number of people in the household. Optimal floor area and room arrangement affords flexibility and ease of living, including activities that the home can support as well as privacy between different room uses.

This section first describes regulations and best practice relating to the overall size (internal floor area) of homes. Analysis of the 110 consented plans follows in Section 3.2. The final section presents five case studies containing the consented floor plans of a survey participant's homes alongside their comments about the size of the home and descriptions of how different spaces in the home are used by the household.

### 3.1 Regulations and best practice guidance

#### Approaches to regulations and guidelines

There are two main approaches to the design of a home in respect of its overall size, from a planning and design perspective. These are a minimum floor area approach and a design-led approach.

#### Minimum Floor Area

Minimum floor area requirements for different activity areas or rooms and/or overall dwelling size is adopted in many design guidelines and planning standards/rules. While minimum floor area rules are simple to apply to the design of a dwelling, and to confirm compliance with from a consenting perspective, they are a blunt and inflexible tool to manage the design of spaces, as they do not consider the variability of dwelling layout and circulation (such as space taken up by stairwells and hallways). And while they do protect against the very smallest floor areas, they can also have the unintended consequence of dwellings being designed to the absolute minimum required standard, rather than designing for function and amenity.

The same minimum floor area standard in the AUP applies to all housing typologies including standalone houses, terraced houses, duplexes and apartments. This ignores the significant difference in dwelling layouts arising from the typologies- a terraced house has two to three levels and as such will include a greater amount of space dedicated to circulation (i.e. staircases and associated hallways), whereas an apartment is typically on one level in a multi-storey building and will have far less circulation space. Both the Kāinga Ora Ngā Paerewa Hoahoa Whare Design Requirements and the Public Housing Design Guidance acknowledge this by recommending different gross floor area requirements depending on the number of levels of a dwelling; for example, a single level 2-bedroom dwelling has a minimum floor area requirement of 70m<sup>2</sup>, whereas a 2-storey 2-bedroom dwelling has a minimum floor area requirement of 82m<sup>2</sup> – a 17 per cent increase on the single-storey floor minimum area. Australian design guidance referenced in this study also have different guidelines for terraced houses and apartments, in acknowledgement of their different typological characteristics.

There is inconsistency across the AUP and design guidelines referred to in this study with respect to the measurement of 'floor area'. Where a minimum floor area is required or recommended, the definition of this as either net or gross floor area is significant. The AUP and best practice guidance referenced in this report includes both methods of measurement (for example, see Table 1 where the ADM uses net floor area and the other two New Zealand guidelines use gross floor area).

Gross floor area is defined in the AUP as the sum of the area of all floors of a building measured from the exterior faces of the exterior walls, or from the centre line of walls separating two adjoining dwellings (e.g. terraced houses). The AUP gross floor area definition also includes balconies and garages but excludes carparking.<sup>23</sup> Gross floor area by this definition will therefore be larger than the net floor area. However, depending on the design and layout of a dwelling, it may not necessarily mean that the different activity areas within a home are functional. From the consented plan analysis undertaken as part of this research, gross floor area is most commonly used in resource consent and building consent application drawings.

Net internal floor area is defined in the AUP as the floor space between the finished surfaces of internal walls between rooms and excludes both balconies and garages.<sup>24</sup> The net floor area is therefore a more accurate calculation of usable floor area for a particular room or space. However, where circulation is included in a total net floor area, it may not provide an accurate representation of how functional individual rooms or activity areas are. For the purposes of the consented plan analysis and in-home immersion interviews, a net internal floor area has been used to be consistent with the AUP and is a more accurate measurement of useable floor space for individual rooms/spaces. Notwithstanding this, based upon the consented plans of the 20 in-home immersion homes, the amount of space dedicated to circulation ranged between 0 to 13 per cent (of the total net internal floor area, excluding garages and balconies) for a single-storey dwelling (n=7 dwellings), 9 to 17 per cent for a 2-storey dwelling (n=13 dwellings), and 25 per cent for the one 3-storey dwelling.

### Design-led approach

An alternative approach to a minimum floor area is a more design-led approach related to the functionality of different activity areas or rooms through design principles. This approach requires consideration of the needs of different activity areas relative to the number of people a dwelling has been designed to accommodate. The spatial requirements of each activity area are then considered to ensure it is functional, including circulation. This method allows more flexibility for designers while still ensuring that spaces are functional for their intended use. It also allows for more adaptable layouts that can provide for changes in household needs. However, a design-led approach is not as simple to determine compliance with compared with a minimum floor area approach. A design-led approach requires a more discretionary consenting framework, and in some instances, determination of compliance with the design principles is undertaken by a design review panel.<sup>25</sup>

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<sup>23</sup> *Auckland Unitary Plan*, Chapter J1 Definitions.

<sup>24</sup> *Ibid.*

<sup>25</sup> For example, the New South Wales Housing State Environmental Planning Policy and Assessment Regulations 2021 established a Design Review Panel to determine compliance with the New South Wales Apartment Standards, which take a design-led approach.

The Apartment Design Guidelines for Victoria takes a somewhat hybrid approach where minimum dimensions and areas are specified for some activity areas (bedrooms and living areas) but also requires that the usability, functionality and amenity of a room, including configuration of furniture and circulation space, is demonstrated.

### **Auckland Unitary Plan (AUP)**

The AUP adopted the minimum floor area approach and specifies a minimum net internal floor area of 30m<sup>2</sup> for studio dwellings and 45m<sup>2</sup> for one- or more bedroom dwellings in the Mixed Housing Suburban (MHS), Mixed Housing Urban (MHU) and Terraced Housing and Apartment Building (THAB) zones.<sup>26</sup> The purpose of these standards is “to ensure dwellings are functional and of a sufficient size to provide for the day to day needs of residents, based on the number of occupants the dwelling is designed to accommodate”.<sup>27</sup> However, this is an assessment matter for four or more dwellings in the MHS and MHU zones,<sup>28</sup> and all dwellings in the THAB zone, rather than a standard or rule for compliance, and is considered as part of a resource consent application.

The minimum dwelling size does not increase proportionately with the number of bedrooms; i.e. a 1-bedroom dwelling of 45m<sup>2</sup> and a 3-bedroom dwelling of 45m<sup>2</sup> would both comply with the standard. This appears at odds with the purpose of the standard, which requires the dwelling to be functional for the number of occupants the dwelling is designed to accommodate. The standard therefore only prevents the smallest of floor areas.

The minimum dwelling size standards in the AUP were derived from the minimum gross floor areas for studio and 1-bedroom apartments in the legacy Auckland City Council Central Area District Plan rules for apartments.<sup>29</sup> These rules were adopted in 2011 in response to the ‘shoe box’ apartments in the city centre in the 2000s and research commissioned by the then national Building Industry Authority.<sup>30</sup> However, the legacy Central Area District Plan rules for apartments differ to the AUP in that they also applied minimum floor areas of 70m<sup>2</sup> for 2-bedroom and 90m<sup>2</sup> for 3-bedroom apartments.

The AUP minimum dwelling standards therefore ignore the significant differences in dwelling layouts and circulation requirements for different dwelling typologies.

### **Auckland Design Manual (ADM) and best practice guidance**

The ADM also adopts the minimum floor area approach and recommends minimum activity areas/rooms and a total minimum net internal floor area depending on the number of bedrooms (and therefore intended number of occupants).<sup>31</sup> These minimum guidelines were also taken from the

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<sup>26</sup> *Auckland Unitary Plan*, Terraced Housing and Apartment Building zone Standard H6.6.17, Mixed Housing Urban zone Standard H5.6.16 and Mixed Housing Suburban zone Standard H4.6.15.

<sup>27</sup> *Auckland Unitary Plan*, Purpose of Terraced Housing and Apartment Building zone Standard H6.6.17, Mixed Housing Urban zone Standard H5.6.16 and Mixed Housing Suburban zone Standard H4.6.15.

<sup>28</sup> ‘Assessment matters’ in the AUP require *consideration* in the assessment of resource consents as opposed to being a requirement.

<sup>29</sup> City of Auckland – District Plan, Central Area Section. Operative 2004. Appendix 12 Minimum Residential Apartment Standards. A. Matrix of minimum gross floor areas for components of various residential apartment types.

<sup>30</sup> Heslop, V., Lysnar, P., Dixon, J. et al. (2004). *Living the highlife? A review of apartment living in inner city Auckland* (A report prepared for the Building Industry Authority). Uniservices, University of Auckland.

<sup>31</sup> *Auckland Design Manual*, Residential Design Element R6: Unit Layout and Room Sizes.

legacy Auckland City Council’s Auckland Central Area District Plan rules.<sup>32</sup> It is therefore questionable as to whether these minimum floor areas are appropriate for all medium density typologies, particularly multi-level terraced houses and duplexes with their additional circulation requirements. As outlined previously, the consented plans of the 20 in-home immersion properties had up to 25 per cent of the total net internal floor area dedicated to circulation.

As mentioned above, both the Kāinga Ora Design Requirements and the Public Housing Design Guidance acknowledge the additional circulation requirements of multi-level homes by recommending floor areas based on the number of storeys (Table 13).

The National Medium Density Design Guide, while not specifying minimum dwelling sizes, does recommend a minimum terraced house or apartment width be greater than 4.5m.<sup>33</sup>

All of the design guidance referred to in this report has larger minimum floor areas than the AUP (by up to 150%) and ADM (by up to 47%).

**Table 13: Best practice guidance for minimum dwelling size (m<sup>2</sup>)**

Number of bedrooms	Auckland Unitary Plan (net)	Auckland Design Manual (net)	NZ Public Housing Design Guidance and Kāinga Ora Design Requirements (gross, excl. garages, decks and patios)		NSW Apartment Design Guide (net)	NSW Low Rise Housing Diversity Design Guide (net)	Victoria Apartment Design Guidelines (net)
			One level	Two level			
Studio	30m <sup>2</sup>	30m <sup>2</sup>	—	—	35m <sup>2</sup>	—	Functional layout with furniture and circulation space adequate for the number of people
1 bedroom	45m <sup>2</sup>	45m <sup>2</sup>	50m <sup>2</sup>	—	50m <sup>2</sup>	65m <sup>2</sup>	
2 bedrooms	45m <sup>2</sup>	62m <sup>2</sup>	70m <sup>2</sup>	82m <sup>2</sup>	70m <sup>2</sup>	90m <sup>2</sup>	
3 bedrooms	45m <sup>2</sup>	82m <sup>2</sup>	95m <sup>2</sup>	107m <sup>2</sup>	90m <sup>2</sup>	115m <sup>2</sup>	
4 bedrooms	45m <sup>2</sup>	—	118m <sup>2</sup>	130m <sup>2</sup>	—	127m <sup>2</sup>	

Sources:

- Auckland Unitary Plan, Residential Standards H4.6.15, H5.6.16 and H6.6.17 Minimum Dwelling Size.
- Auckland Design Manual, Residential Design Element R6: Unit Layouts and Room Sizes.
- Ministry of Housing and Urban Development. (2022). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Table 2.
- Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Table B2.1-1.
- New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 4 Designing the Building, Section 4D.
- New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 2.3K Terrace Dwelling Size and Layout, Design criterion 70.
- State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Section 3 – Dwelling Amenity.

<sup>32</sup> *City of Auckland – District Plan*, Central Area Section. Operative 2004. Appendix 12 Minimum Residential Apartment Standards. A. Matrix of minimum gross floor areas for components of various residential apartment types.

<sup>33</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 7, Rule of Thumb.

### Findings from Section 35 (s35) monitoring

The council's s35 monitoring of the AUP found that a broad range of dwelling sizes and number of bedrooms are being provided to meet the diverse needs of Aucklanders,<sup>34</sup> and in most instances, the dwelling sizes exceed the AUP's minimum standards.

### Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- The typical terraced house width of 4m limits the spatial arrangement and flexibility of the dwelling layout.
- It is becoming common for each bedroom to have an ensuite, which can result in room sizes and storage provision being compromised.
- Secondary living spaces shown on consented plans as 'family' or 'media rooms' are designed in a way (e.g. with a conventional hinged door, a wardrobe and ensuite) that would allow them to be used as bedrooms, further compounding size and functionality of kitchen, dining spaces and lounges.
- Dwelling facilities such as hot water cylinders are being placed outside due to internal space constraints.

## 3.2 Consented plans

The ADM does not provide guidance for circulation space (e.g. hallways, stairs), flexi-rooms/studies or garages. As a result, the total internal floor area of homes, including such spaces, is lacking a direct comparison in best practice guidance. To overcome this limitation, the analysis of 110 consented plans presented in this section combines the floor areas of rooms/spaces which are included in the ADM's minimum dwelling size recommendation (Table 13). These rooms/spaces include lounges, kitchens, dining spaces, bedrooms and wardrobes, and bathrooms. The floor areas of additional living spaces (i.e. flexi-rooms), garages and circulation space (i.e. hallways, stairs) are excluded. The results of this analysis are presented in Table 14.

The average floor areas for lounges, kitchen and dining, bedrooms and wardrobes have been previously shown in earlier sections of this report (see Section 1.3 and Section 2.2.2 in this chapter). As mentioned in Section 1.3.3, the size of lounges, on average, are more than 10m<sup>2</sup> smaller than the ADM recommended minimum. Kitchen and dining spaces are slightly larger than the ADM minimum, although this difference may be due to the challenge of determining where a dining space ends and a lounge begins in an open plan kitchen, lounge, dining space layout.

The average floor area of bedrooms in both 2- and 3-bedroom homes is 10m<sup>2</sup>, which is slightly larger than the ADM recommended minimum of 9m<sup>2</sup>. For 2-bedroom homes, the total floor area of these two bedrooms is 20.3m<sup>2</sup>, on average, and the three bedrooms of 3-bedroom homes is 30.4m<sup>2</sup>.

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<sup>34</sup> Auckland Council (2022). *Auckland Unitary Plan Section 35 monitoring*, B2.3 A quality built environment, page ix.

Table 14: Floor area (m<sup>2</sup>) of consented plan sub-sample properties and ADM minimums, by rooms and spaces

		1 bedroom	2 bedrooms	3 bedrooms
Lounge	Average in sample	—	13.4	14.7
	ADM minimum	20	24	28
Kitchen and dining	Average in sample	—	16.9	18.5
	ADM minimum	10.8	13.2	16.2
KLD subtotal	Average in sample	—	30.3	33.1
	ADM minimum	30.8	37.2	44.2
Bedroom	Average in sample	—	10.1 (20.3 total)	10.4 (30.4 total)
	ADM minimum		9	9
Bathroom	Average in sample	—	3.9 (6.1 total)	3.6 (9.8 total)
	ADM minimum		3 (3 total)	3 (6 total)
Laundry	Average in sample	—	—	—
	ADM minimum	0.84	1.26	1.26
Wardrobe	Average in sample	—	2.9	4.4
	ADM minimum	1.0	2.18	3.18
Internal floor area	Total of sample averages		59.6	77.6
	ADM minimum	45	62	82

- Notes: 1. Values representing 30 or fewer properties are marked with a dash and have been excluded from the table.  
 2. 'Internal floor area: total of sample averages' is the average of KLD subtotal, all bedrooms, all bathrooms, all wardrobes.  
 3. Laundry floor area is not included in the consented plan analysis, as it was often understairs, in a cupboard or in the garage (if applicable).

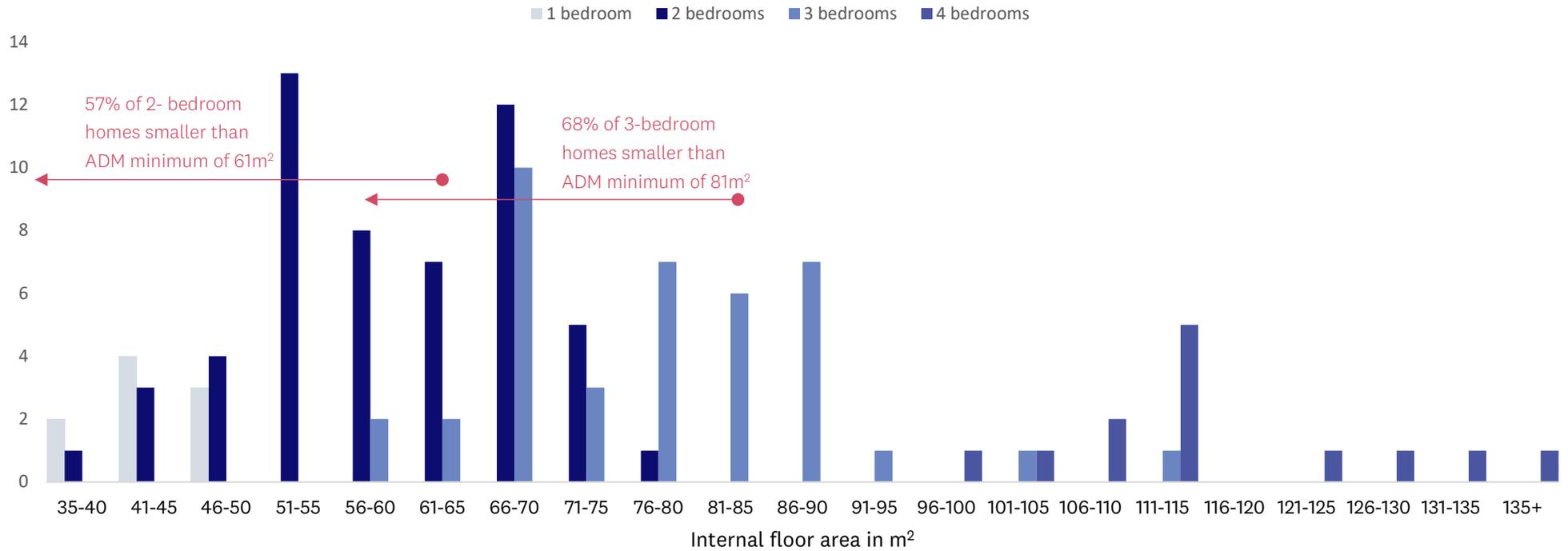
The ADM recommends one bathroom of a minimum 3m<sup>2</sup> for 2-bedroom homes, and two bathrooms totalling a minimum of 6m<sup>2</sup> (3m<sup>2</sup> each) for 3-bedroom homes. The consented plans of 2-bedroom homes analysed had an average of 6.1m<sup>2</sup> dedicated to bathrooms, which often comprises either two bathrooms (rooms with a shower or bath), or a bathroom and a WC (i.e. separate toilet). Three-bedroom homes show a similar pattern, with an average of 9.8m<sup>2</sup> dedicated to bathrooms. This combined 'bathroom' floor area is representing several bathrooms or a combination of bathrooms and WCs. Compared with the ADM, the consented plans analysed have on average 3m<sup>2</sup> more floor area dedicated to a bathroom (or WC) than is recommended. Bathrooms are discussed further in Chapter 5 on Storage, laundries and bathrooms.

The average internal floor area of all these spaces combined for 2-bedroom homes was 59.6m<sup>2</sup> and for 3-bedroom homes was 77.6m<sup>2</sup>. These figures are smaller than the ADM minimums of 62m<sup>2</sup> for a 2-bedroom home and 82m<sup>2</sup> for a 3-bedroom home.

The consented plan analysis also recorded the net total internal floor area of the home, inclusive of all space including those excluded from ADM guidelines. The net total internal floor area measurement recorded included hallways, stairwells, secondary living spaces such as study/office space or flexi-rooms, and garages (which are not included in the ADM guidance). For 2-bedroom homes, the net total internal floor area on average is 77m<sup>2</sup>, and for 3-bedroom homes, it is 119m<sup>2</sup>. These measurements are much larger than the sum of net internal floor areas for the ADM specified rooms and spaces in a home and are indicative of the amount of space consumed by circulation spaces primarily, and also additional living spaces such as flexi-rooms and studies not included in guidelines.

Figure 98 shows the distribution of the internal floor areas of the 110 consented plans analysed. These floor areas are inclusive only of the rooms/spaces included in the ADM minimum dwelling size recommendation. In addition to the average 2- and 3-bedroom homes being smaller than the minimum, this figure shows 57 per cent of 2-bedroom homes and 68 per cent of 3-bedroom homes are smaller than the ADM minimum. This chart also shows the distribution of the small number of 1- and 4-bedroom homes in the sample.

Figure 98: Internal floor area (m<sup>2</sup>) (ADM comparable), by number of bedrooms



Note: Floor areas represented include the sum net floor area of bedrooms, wardrobes, lounge, kitchen, dining and bathrooms. This excludes circulation space, flexi-rooms/studies, garages, storage cupboards, balconies and outdoor living areas.

### 3.3 Survey results: Perceptions of overall size of homes

The size of their home was a common theme when participants were asked about what they like the most and least about their homes. Being too small (dislike) was mentioned by 15 per cent of participants (183 comments), while being a good size was mentioned by 12 per cent (137 comments).

To provide further context, a selection of quotes from the survey are displayed below, alongside drawings of the consented plans for their home for five participants. The arrangement of furniture and implied uses of different rooms and spaces is an interpretation of the consented plans and does not necessarily reflect how the household has set-up their home.

These comments demonstrate both positive and negative sentiments towards the size of homes and how well homes are meeting the needs of the household.

#### Example 1

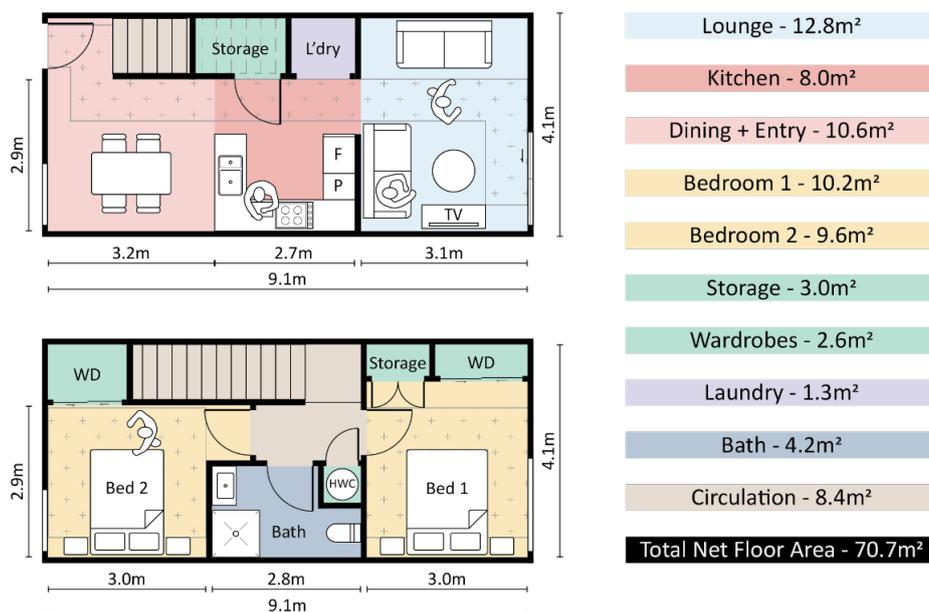
Figure 99 shows the floor plan of the home of one participant who lives in a household with two adults and a pre-school aged child. They said there was:

*Simply not enough space for two adults and a baby (and all the items babies come with!)*

The combined kitchen, dining space and lounge of their home was 31.4m<sup>2</sup> which is close to 6m<sup>2</sup> smaller than the ADM recommended size of 37.2m<sup>2</sup> for a 2-bedroom home. The ADM recommends a minimum bedroom size of 9m<sup>2</sup> and so 6m<sup>2</sup> is equivalent to a small single-bedroom amount of space ‘missing’ from the combined kitchen, dining, lounge in this home. The main living area of this home is described by the participant to be a lounge, for dining, and for their child to play.

The participant describes their home as having two bedrooms and explained how these rooms are used. One bedroom sleeps all three members of the household with their young child in a bassinet. The other bedroom is used as a study, for storage and as a bedroom for one person (this may be for the child when they are older).

Figure 99: 70.7m<sup>2</sup> 2-bedroom, 1 bathroom duplex consented floor plan



**Example 2**

One participant living in a household consisting of two adults and two primary school aged children said:

*There is very little space. It is a small 3 bedroom and very small outdoor space.*

As Figure 100 shows, the combined kitchen, dining and lounge area of their home is 38.3m<sup>2</sup> which is close to 6m<sup>2</sup> smaller than the ADM recommended size of 44.2m<sup>2</sup> for a 3-bedroom home.

This home has three bedrooms, with only one bedroom (11.1m<sup>2</sup>) larger than the ADM recommendation of 9m<sup>2</sup>. The other two bedrooms are 8.8m<sup>2</sup> and 7.8m<sup>2</sup>. The long and narrow almost L-shape of the smallest bedroom (bed 3) is such that it can only fit a single bed. All three bedrooms in this home are used as bedrooms for the four members of the household. There are no spare bedrooms in this home and the bedrooms are reported to only be used as bedrooms (i.e. they are not also functioning as spaces for play, hobby, study etc.).

**Figure 100: 92.8m<sup>2</sup> 3-bedroom, 1 bathroom, 1 WC terraced house consented floor plan**



### Example 3

A participant who was living alone in a property with two bedrooms, two bathrooms and a flexi-room said:

*Small living spaces, small bedrooms, no storage facility.*

The combined kitchen, dining and lounge area of this home is 16.3m<sup>2</sup> which is less than half (44%) of the ADM recommended size of 37.2m<sup>2</sup> for a 2-bedroom home (Figure 101).

One of the two bedrooms was larger than the ADM recommended minimum of 9m<sup>2</sup>, at 11.6m<sup>2</sup>, but the other was smaller, at 8.2m<sup>2</sup>. The participant described their home in the survey as having three bedrooms and one living space. One bedroom is used as a bedroom for one person. The second bedroom is a guest bedroom and used for storage. The third bedroom (noted as a flexi-room on the floor plan below) is used as a study, for storage and as a ‘pet room’.

The only built-in storage in this home are two wardrobes (totalling 2.2m<sup>2</sup> of floor space). There is no built-in storage for linen, household items (e.g. suitcases, vacuum cleaner, laundry rack), or personal possessions (e.g. hobbies, books, memorabilia).

Figure 101: 65.8m<sup>2</sup> 2-bedroom, 1 flexiroom, 2 bathroom, 2-storey duplex floor plan



**Example 4**

A household of two adults in a 104.7m<sup>2</sup> terraced house with 3 bedrooms said their home has:

*Just the right amount of space indoors and outdoors.*

The combined kitchen, dining space and lounge of this home is 44.6m<sup>2</sup>, which is slightly larger than the ADM recommended size of 44.2m<sup>2</sup> for a 3-bedroom home.

Two of the three bedrooms are larger than the ADM recommendation of 9m<sup>2</sup> (12.6m<sup>2</sup> and 11.1m<sup>2</sup>). This participant described their home as having two bedrooms and two living spaces. One bedroom is used as a bedroom for the couple in the household and one bedroom is a guest bedroom and sewing room. The second living space, which is a spare bedroom, is used as a study.

Figure 102: 104.7m<sup>2</sup> 3-bedroom 1 bathroom, 2 WCs terraced house floor plan



**Example 5**

Another household, also with two adults, described what they like about their home:

*We have more than enough space – only two of us in a 4-bedroom house, and only one car meaning we don't have to use the indoor garage, just the carport.*

This 158.8m<sup>2</sup> home has four bedrooms, all of which are larger than the ADM 9m<sup>2</sup> recommendation (the bedrooms range from 12.5m<sup>2</sup> to 16.4m<sup>2</sup>). With just two adults in the household, this household is anticipated to have at least two spare bedrooms.

The ground floor kitchen, dining space, lounge is 39.2m<sup>2</sup>. The ADM does not make recommendations for 4-bedroom homes, although a 3-bedroom home is recommended to have a kitchen, dining space and lounge of 42.2m<sup>2</sup>. The participant's comment suggests that their garage is being used as a space for 'living' as their car is parked in the carport.

**Figure 103: 158.8m<sup>2</sup> 4-bedroom, 2 bathrooms, 1 WC terraced house floor plan**



## 4 Summary

AUP requirements are to deliver homes that are functional and of an adequate size to meet the day-to-day needs of residents (based on the number of occupants the dwelling is designed to accommodate).<sup>35</sup> The results presented in this chapter suggest that this outcome is not being achieved for all MDH. Overall, MDH is meeting some of the needs of some households. There are several reasons to explain this variance, including the impact of limited food storage in the kitchen resulting in pantries being placed in dining spaces and garages, inflexibility in how furniture can be arranged in lounges, and the importance of spare bedrooms. Homes with fewer people in the household appear to have greater flexibility within the spaces of their home and so are interpreted to have a more positive experience of their MDH compared with larger households who experience more constraints.

The sections below summarise the results presented in this chapter.

### **Size of spaces for living and their ability to accommodate activities of importance to participants**

Lounges and combined kitchen, dining, lounge spaces are found to be substantially smaller than Auckland Design Manual (ADM) recommended minimum sizes. The size of these spaces for 'living' was found to not be meeting the needs of a notable proportion of the 1335 participants:

- Thirty-three per cent of participants report the size of the lounge 'somewhat' or 'does not meet' the needs of the household.
- Thirty-eight per cent of participants report the size of the kitchen, including the kitchen bench, 'somewhat' or 'does not meet' the needs of the household.
- Forty-one per cent of participants report the size of the dining space 'somewhat' or 'does not meet' the needs of the household.

The survey participants were asked what activities are important to them and how comfortable these were to do in their homes. Most participants reported that spending time with others in the household (89%) and having friends or whānau visit or hosting parties (82%) are 'somewhat' or 'very' important to them. However, having friends or whānau visit has the second highest proportion of participants (23%) reporting this to be 'somewhat' (18%) or 'very' uncomfortable (5%). Undertaking physical activities was also of high importance to 58 per cent of participants ('somewhat' or 'very' important) but has the highest proportion of participants reporting these to be 'somewhat' (27%) or 'very' uncomfortable (15%) to do in their home.

When asked what makes it uncomfortable to do activities important to them, participants reported a lack of space (43%) and storage (7%), describing how they need to rearrange furniture,

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<sup>35</sup> For example, Mixed Housing Urban Policy H5.3(5) and associated minimum dwelling size standard H5.6.16, to "ensure dwellings are functional and of a sufficient size to provide for the day to day needs of residents, based on the number of occupants the dwelling is designed to accommodate".

unpack/repack equipment, or are simply unable to do activities that are important to them in their homes. Some participants reported that a lack of space is preventing them from comfortably having visitors to their home. This finding highlights a risk to wellbeing (social, mental, physical and spiritual) and a potential shift in the demand of public space, spaces shared with neighbours (e.g. communal outdoor living space, see Chapter 9: Shared facilities), or third-places to accommodate these activities.<sup>36</sup>

Working from home (90%), cooking a meal (90%), and spending time with others in the household (89%) were the most frequently reported activities to be somewhat or very comfortably done in the home. Fifty-eight per cent of participants reported the size or layout of their home is what makes it comfortable to do activities important to them. Living spaces need to be as flexible as possible to accommodate a wide range of activities and household needs.

### **Lounges and additional living spaces**

Ninety-three per cent of homes are reported to have one living space. A small proportion (7%) of homes are reported to have a second living space (e.g. flexi-room, study, playroom, media room).

The number and size of lounges are more likely to ‘meet’ the needs of those who are living alone or with a partner only. Meanwhile households with children are more likely to report the number and size of lounges ‘somewhat’ meets the needs of the household. As the section below on bedrooms describes, this difference across household compositions may be the result of households without children using spare bedrooms as a space for living (e.g. as a study, hobby space or exercise space), which are less frequently available in larger households.

The dimensions of lounges and placement of power points can restrict the types and arrangement of furniture they can accommodate. This is resulting in lounges that only contain a sofa and TV and consequently are spaces primarily used for watching TV (and eating, see below section on dining spaces). Households in the in-home immersions said they found it challenging to find and arrange furniture that enables both watching TV and facing one another to have a conversation.

This limitation of lounges encourages asking where households are doing other activities like hobbies, play, exercise and study. Spare bedrooms appear to have a role in accommodating these activities, as do dining spaces and garages. A lack of built-in storage (e.g. pantry) can result in households adding storage furniture, which can compromise the available space to do activities in the home.

### **Kitchens**

Thirty-eight per cent of participants reported the size of their kitchen ‘does not meet’ or ‘somewhat meets’ the needs of their household. The remaining 61 per cent report the size of the kitchen ‘meets’ or ‘more than meets’ their needs. Over half the participants reported having ‘not enough’ (26%) or ‘only just enough’ (27%) storage in the kitchen for food and equipment.

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<sup>36</sup> A ‘third-place’ is a place outside the home (‘first-place’) or work place (‘second-place’) where people spend time with others, such as a café or community centre.

In-home immersions found food storage to be a challenge in terms of:

- being difficult to access (e.g. requiring step ladders, squatting to reach understairs cupboards)
- the wrong size/shape for items (e.g. large pots, stand mixers)
- enabling a range of cultural approaches (e.g. Feng Shui)
- supporting safe food storage (e.g. appropriate temperature).

Participants are adding storage furniture to other spaces in their homes (e.g. dining spaces, lounges and garages) to compensate for storage limitations in their kitchens. This is having a flow-on effect on the uses of other spaces, such as being unable to park a car in the garage or a dining table taking up space in the lounge. Resolving functionality challenges with kitchen storage may therefore benefit not only the use of kitchens but also how other spaces in the home are able to be used, and even carparking.

### **Dining Spaces**

Fifty-five per cent of participants reported their dining space ‘meets’ or ‘more than meets’ the needs of their household, while 41 per cent reported this space ‘does not meet needs at all’ or ‘somewhat meets needs’ and four per cent said they do not have a dining space. Little variation is seen across household compositions.

The in-home immersions show that eating is not an activity that only happens around a dining table. For a few households, having an evening meal together around a table was important, but for many, being able to watch TV while they ate was equally or more important. This way of living is unlikely to be a reality for only households living in MDH and encourages a reconceptualisation of ‘dining spaces’ in design guidelines.

Most of the households who participated in the in-home immersions had a dining table. These tables served several functions for households; for example, as an extension of the kitchen bench for food preparation, for hobbies like board games, for having a conversation or for working on a laptop. The dining table is a multi-functional piece of furniture, and the space it occupies in homes needs to facilitate much more than sitting members of the household to eat together. The multi-functionality of dining tables is especially critical given the limitations on furniture arrangement in lounges that can prevent lounges from being spaces for social activities done with others.

### **Bedrooms**

Seventy-seven per cent of participants reported that the number of bedrooms in their home ‘meets’ or ‘more than meets’ the needs of the household.

The participants living in apartments reported having fewer bedrooms compared with those living in terraced houses and duplexes. Only 11 per cent of the participants living in apartments reported having three bedrooms (39% of terraced and 52% of duplexes had three bedrooms) and none of the participants living in apartments reported having more than three bedrooms. A greater supply of apartments with more bedrooms in Auckland may enable a wider range of household compositions to live in apartments.

The most frequently reported uses of main and second bedrooms are as bedrooms for one or two people. Those with third or fourth bedrooms are reporting these spaces to be used as a study, with slightly smaller proportions of participants reporting these rooms to be used as a bedroom for one person or as a guest bedroom. Households with children are more likely to be using second bedrooms as bedrooms for one or two people (likely bedrooms for children) compared with households without children.

The in-home immersions found that bedrooms tend to be used as a bedroom for a permanent member of the household or as a space for other activities (e.g. hobbies, as a study) and home management (e.g. for airing laundry, storage). When bedrooms are required to accommodate both being a bedroom and other activities *and* home management, this demand on a bedroom can become very challenging. Households with children and multi-generational households were more often lacking a spare bedroom in the in-home immersions.

These differences across household composition in having a spare bedroom may explain variation in satisfaction with kitchen, dining space, lounges and additional living spaces described earlier in this section. It is interpreted that spare bedrooms are providing a space for activities that are unable to be comfortably accommodated in spaces intended for living (i.e. lounges, dining spaces, flexi-rooms, etc.). Spare bedrooms are contributing to, for example, lounges ‘meeting the needs’ of the household when they are only able to function as a space for watching TV because a spare bedroom is available to be the space in which participants do hobbies, exercise, play or work. Conversely, lounges are ‘not meeting the needs’ of the household when there is no spare bedroom because in this situation, the lounge is also required to function as a space for hobbies, exercise, play, etc. Lounges can struggle to be multi-purposes spaces due to their dimensions and the space possibly containing furniture intended for other spaces (e.g. storage or dining table).

Close to half of the survey participants reported negatively about the amount of built-in storage for clothes and shoes (3% reported ‘no built-in storage’; 20%, ‘not enough storage’; 26%, ‘only just enough’). Analysis of consented plans finds that, on average, wardrobes are slightly larger than the ADM minimum. This seems in conflict with high proportions of participants reporting not enough or just enough storage. However, the in-home immersions found that the space in wardrobes for clothes and shoes can be restricted by wardrobes having ducting for air conditioning, and because they are being used to store linen or hobby items. Wardrobes rarely include built-in storage for shoes and participants were found to add shoe racks to their wardrobes and/or be storing shoes elsewhere, such as in the garage or entranceway. The uses of wardrobes to store more than clothing and the lack of built-in shoe storage can explain that while the floor area of wardrobes is slightly larger than the minimum recommended in the ADM, insufficient storage elsewhere in the home is resulting in wardrobes being too small to meet the needs of households.

## **Garages**

Just over half (53%) of the participants living in a terraced house or duplex reported having a garage in their home. Of those with at least one car and a garage, half (50%) report storing at least one car in their garage.

The survey participants reported using their garage for ‘living’ activities (20% of participants use their garage for gym or fitness, 9% for craft or hobbies, 5% as a study, and 3% as a playroom). The garage as a place for living was also seen in the in-home immersions, as places for fitness (e.g. treadmills), for socialising (e.g. teenager ‘boy cave’), and as a place for laundry and storage for a range of items (e.g. bikes, food, wheelie bins, shoes, etc.).

The use of garages as a space for living could be explained as being the result of limitations on the intended living spaces (i.e. kitchen, dining, lounge, flexi-rooms, bedrooms) within the home, as discussed previously. Garages, like spare bedrooms, could be interpreted by households to be critical in making the experience of living in the home viable. Households without a garage or spare bedroom are facing significant challenges to living comfortably due to limitations described on spaces intended for living.

Garages are also used to undertake laundry, a use reported by nine per cent of the survey participants who have a garage in their home. The in-home immersions found garages are spaces where drying racks are put up and one participant had installed a washing line. Some garages are also the location for the washing machine and storing baskets of laundry.

### **Overall size of the home**

Efforts to compare the internal floor area of homes to best practice guidelines has uncovered inconsistencies in definitions and approaches to measuring ‘internal floor area’. For example, the total floor area guidelines in the ADM do not include circulation space (i.e. hallways and staircases) which can account for over 20m<sup>2</sup> in a 2-storey terraced house. The AUP defines a minimum net internal floor area, but it does not define how staircases in multi-storey homes are measured. Consented plans generally state the gross floor area and count staircases for every level (i.e. in a 2-storey home, the floor area of staircases is counted twice), which is at risk of artificially inflating the floor area. It is consequently challenging to draw conclusions about how well the overall size of MDH in this study is meeting guidelines and brings into question how guidelines are being applied through council processes such as consents and development contributions.

Circulation space is unable to be used as a space for living. Households are unable to use hallways or staircases safely or comfortably for activities. Layouts of homes should therefore aim to have the smallest possible amount of circulation space to enable the remaining space to be utilised. The floor plans displayed throughout this chapter illustrate terraced houses and duplexes are mostly rectangular and have similar layouts (i.e. kitchen, dining, lounge on ground floor and bedrooms on higher levels). More variation is seen in apartments with some having irregular shapes and others being more square than rectangular. Long and narrow rectangles can require more hallways (and therefore a smaller proportion of floor area for living), compared with squarer shapes. Guidelines on overall sizes of homes would benefit from considering the amount of ‘useable’ floor area that excludes circulation space and floor layouts/shapes that minimise circulation space.

Developing floor area recommendations for different housing typologies that considers variation in circulation space could assist in overcoming these limitations. Section 35 monitoring came to a similar conclusion in reporting that applying generic standards across different housing typologies is inadequate for medium density typologies and larger scale developments.

The size of their home was mentioned in 320 of the open response questions by participants when asked what they like and dislike about their home. Being too small (dislike) was mentioned by 15 per cent of participants (183 comments), while being a good size was mentioned by 12 per cent (137 comments). Looking at the floor plans and overall size of a small sample of these homes relative to the household composition, as well as uses of different rooms, again demonstrates that kitchen, dining spaces, lounges and bedrooms smaller than ADM recommended sizes are dissatisfactory, and the existence of spare bedrooms and garages are contributing to greater satisfaction.

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 5

# Storage, laundries and bathrooms





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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## **Introduction to this chapter**

This chapter discusses spaces in the home that enable day-to-day life. This includes spaces for storage of household items (e.g. linen, suitcases, vacuum cleaners), laundries and bathrooms. As was discussed in the previous chapter on indoor spaces for living, in some homes, spaces for living are infringed on by storage and laundry when the provision for such aspects in a home are insufficient (e.g. wardrobes being used for linen or laundry happening in bedrooms where people sleep).

# 1 Household storage

This section reviews the provision of built-in storage for household items such as linen, occasional items such as suitcases, and general household equipment. It excludes wardrobes and kitchen cupboards, as they are covered in Chapter 4.

## 1.1 Best practice guidance and regulations

Having access to convenient, accessible and secure storage improves the functionality of dwellings. Storage additional to that provided in wardrobes and kitchen cupboards is required for small and bulky items including shoes, linen, suitcases, ironing boards, vacuum cleaners, sports and hobby equipment. Storage can be cleverly integrated into a dwelling, such as using the space underneath stairs, or attic space. The overall volume of storage should be proportional to the number of bedrooms in a dwelling and therefore the number of occupants.

Lack of storage can mean that spaces intended for other purposes (such as bedrooms or garages) are used for storage, or that certain items or activities cannot be accommodated in a dwelling, thus requiring an outdoor storage shed or off-site storage (e.g. commercial storage facilities).

### Auckland Unitary Plan (AUP)

The AUP does not specify minimum storage requirements for medium density housing (MDH) but does require accommodation “to be designed to meet day to day needs of residents”,<sup>1</sup> and more specifically through the assessment criteria for residential development, that dwellings “provide secure and conveniently accessible storage for the number and type of occupants the dwelling is designed to accommodate”.<sup>2</sup>

### Auckland Design Manual (ADM) and best practice guidance

The *Auckland Design Manual* (ADM) recommends that a range of storage solutions are provided for, including indoor and outdoor storage (i.e. sheds). Storage solutions should provide easy access to regularly used items such as vacuum cleaners and linen. For less regularly used items, such as suitcases and sporting equipment, this could be provided for in less convenient spaces such as attics, within garages or in lockable outdoor storage sheds. Outdoor storage should also be considered for gardening equipment, tools and bicycles.

The ADM recommended minimum internal storage volumes (m<sup>3</sup>) are detailed in Table 1 below, in comparison to other best practice guidance. Where storage recommendations are made as a plan area (m<sup>2</sup>), they have also been converted to a volume, using a standard residential 2.4m floor-to-ceiling height, to enable a direct comparison. The *National Medium Density Design Guide* recommends 8m<sup>3</sup> for dwellings with 2-3 occupants, so that dwellings provide “sufficient storage to

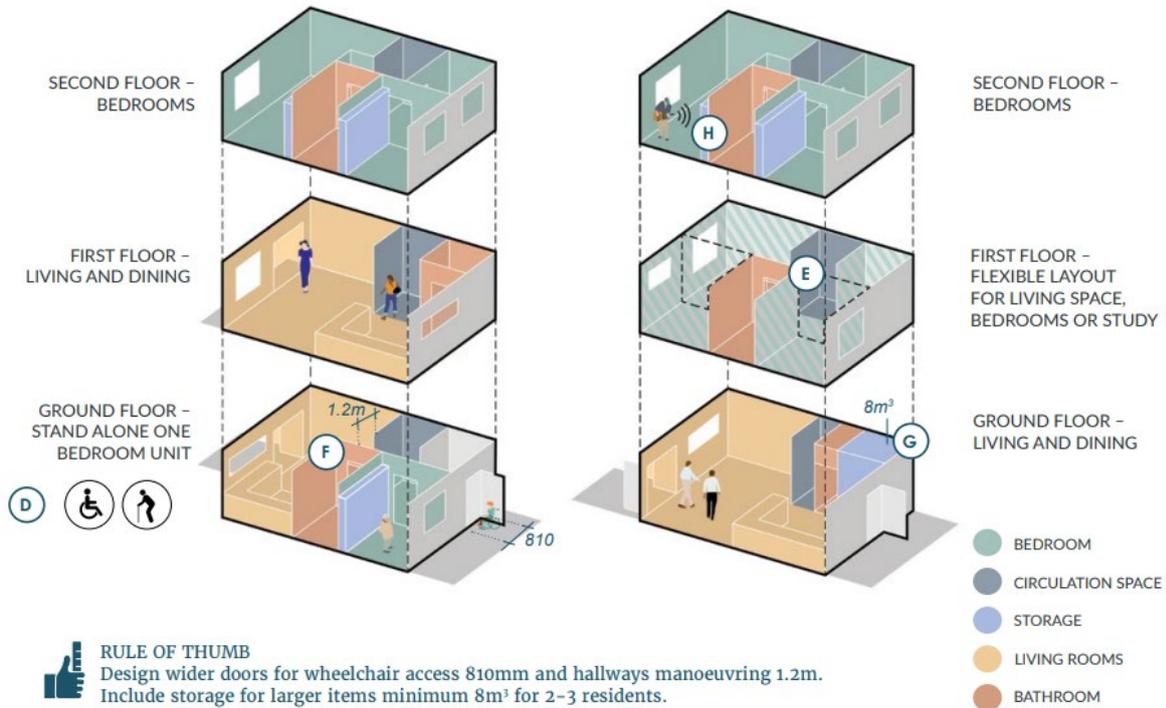
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<sup>1</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban Policy H5.3(5).

<sup>2</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban Assessment Criterion H5.8.2(2)(e)(iii).

accommodate larger items, recreational equipment, and other items, such as prams. This can increase the efficient use of indoor space and avoid larger items spilling out onto outdoor living spaces”.<sup>3</sup>

Figure 1: Storage provision within a dwelling



Source: Ministry for the Environment. (2023). *National Medium Density Design Guide*, page 17.

The *Kāinga Ora Ngā Paerewa Hoahoa Whare Design Requirements* (2024) (hereafter, referred to as the *Kāinga Ora Design Requirements*) specifies minimum storage for linen, general storage, wardrobe storage and hot water cylinder (HWC) storage. The *Apartment Design Guidelines for Victoria* recommended storage volume includes bathrooms and kitchens. Dedicated lockers for long-term storage are also recommended in basement and carparking areas, of a functional shape and size to suit various needs such as storing bulky items.

<sup>3</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 6, In the house: A liveable home, Design criterion G.

Figure 2: Long-term storage solution in basement car park

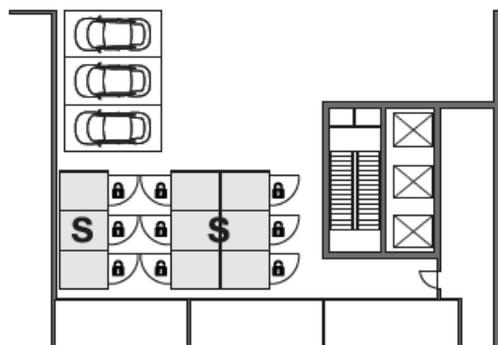
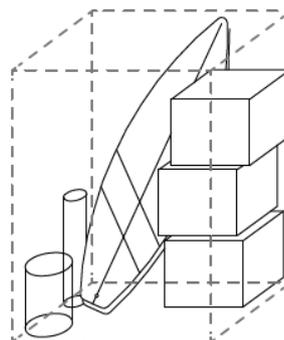


Figure 3: Functional long-term storage volume



Source: The State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, page 125.

The ADM generally only recommends half the storage requirements of other New Zealand and Australian best practice guidance. Other best practice guidance recommended in this report (excluding kitchen and bathroom storage) ranges from 4-8m<sup>3</sup> for studio dwellings, 4.8-8m<sup>3</sup> for 1-bedroom dwellings, 4.8-8m<sup>3</sup> for 2-bedroom dwellings, 7.2-10m<sup>3</sup> for 3-bedroom dwellings and 12m<sup>3</sup> for 4-bedroom dwellings.

Table 1: Minimum storage requirements (volume)

Number of bedrooms	ADM	National Medium Density Design Guide	Public Housing Design Guidance	Kāinga Ora Design Requirements	NSW Apartment Design Guide	NSW Low Rise Medium Density Design Guide <sup>4</sup>
Studio	1.5m <sup>3</sup>	8m <sup>3</sup> for 2-3 residents	-	-	4m <sup>3</sup>	-
1 bedroom	2m <sup>3</sup>		4.8m <sup>3</sup>	4.8m <sup>3</sup>	6m <sup>3</sup>	6m <sup>3</sup>
2 bedrooms	3m <sup>3</sup>		4.8m <sup>3</sup>	6.5m <sup>3</sup>	8m <sup>3</sup>	8m <sup>3</sup>
3 bedrooms	4m <sup>3</sup>		7.2m <sup>3</sup>	8.2m <sup>3</sup>	10m <sup>3</sup>	10m <sup>3</sup>
4 bedrooms	5m <sup>3</sup>		12m <sup>3</sup>	12m <sup>3</sup>	-	-

Sources:

- *Auckland Design Manual*, Residential Design Element R8: Site Amenities, Section 1.2.
- Ministry for the Environment (2023). *National Medium Density Design Guide*, Section 6. In the house: A liveable home, Rule of thumb.
- Ministry of Housing and Urban Development (2023). *Public Housing Design Guidance for community housing provides and developers*, Section 4.8, Table 7.
- Kāinga Ora Homes and Communities (2024). *Ngā Paerewa Hoahoa Whare Design Requirements*, Table B2.4-2.
- New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide for Apartments*, Objective 4G-1, Design criterion 1.
- New South Wales Department of Planning, Industry and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 2.3 Terraces, Design criterion 82.

<sup>4</sup> At least 50 per cent to be contained within the dwelling.

## Section 35 (s35) monitoring

Auckland Council's s35 monitoring did not specifically analyse storage provision in dwellings. However, it found that structures such as storage sheds are added to outdoor living areas by residents after the development is completed.<sup>5</sup> The effect is a reduction in the size and dimensions of the outdoor living space. This, in combination with other site facilities in outdoor spaces such as waste storage, hot water cylinders, heat pump tanks and water tanks, was effectively changing the functionality of outdoor living spaces to be service courtyards.

### Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Storage is generally not a primary consideration in the design of medium density dwellings and is often an afterthought which is squeezed into leftover spaces, often making access to storage inconvenient or inaccessible.
- Storage solutions under stairs are common, but are not fitted out with bespoke solutions such as pull-out trolleys or drawers, which would make them more functional.
- Outdoor storage sheds are often added by occupants to compensate for poor storage within the dwelling, which can reduce the usability and amenity of outdoor living areas.

Figure 4 and Figure 5 below illustrate these points.

**Figure 4: Storage integrated underneath internal staircase, accessible from outside of dwelling**



Source: TMDO, Auckland Council.

<sup>5</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, page 78.

Figure 5: Storage sheds placed in outdoor living space



Source: TMDO, Auckland Council

## 1.2 Survey results

The survey participants were asked to rate the amount of built-in storage they had in their home for seven types of household items. Some results are shown here, and others are included elsewhere in the report.<sup>6</sup>

This chapter focuses on the storage of linen (e.g. sheets, towels, blankets), household equipment (e.g. vacuum cleaner, airing rack, ironing board), hobby/sport equipment (e.g. sewing machines, golf clubs, collectables, guitar), young children's items (e.g. pram, car seat, highchair, toys) and occasional-use items (e.g. suitcases, Christmas tree). Results for each are discussed separately below and are somewhat mixed. Rating of storage across households will depend to an extent on the number of and types of items that need to be stored – which was not explored in this study. It is worth noting, however, that for all items shown below, at least a quarter of participants stated there was 'not enough storage'.

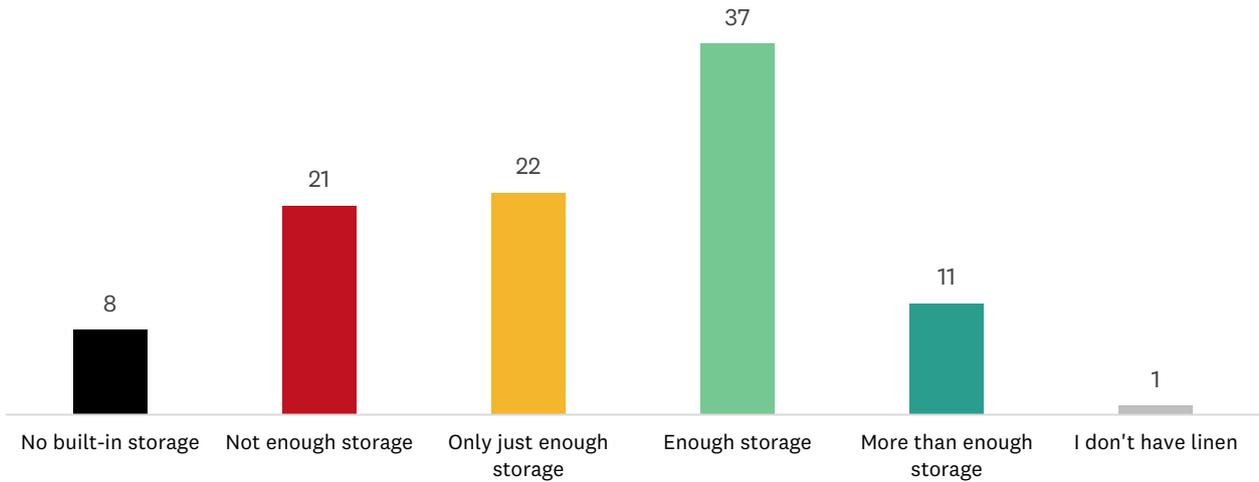
### 1.2.1 Linen

Over a third (37%) reported having 'enough storage' for their linen, 22 per cent had 'only just enough', and 21 per cent had 'not enough storage'. A small proportion (8%) reported that their home had no built-in storage for linen.

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<sup>6</sup> Chapter 4 discusses participants' rating of the amount of kitchen storage for food and equipment (Section 1.2.2) and storage for clothes and shoes (Section 2.2.3).

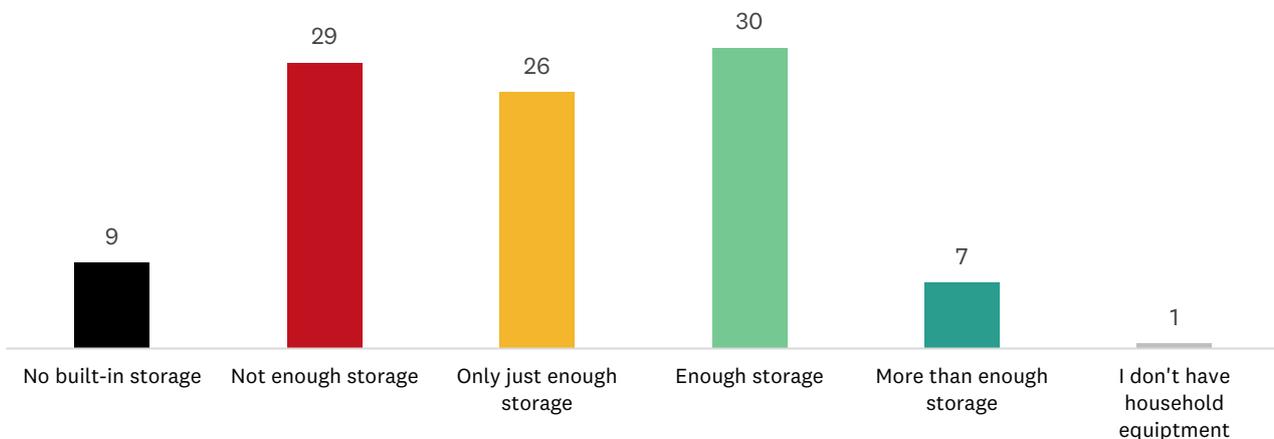
Figure 4: Participant ratings of the amount of built-in storage for linen (n=1330) (%)



### 1.2.2 Household equipment

While just under a third of participants (30%) reported having ‘enough storage’ for household equipment (e.g. vacuum cleaners, lawnmower, airing rack and ironing board), similar proportions reported having ‘not enough storage’ (29%) or ‘only just enough storage’ (26%). One in ten (9%) reported that their home had no built-in storage for that kind of item.

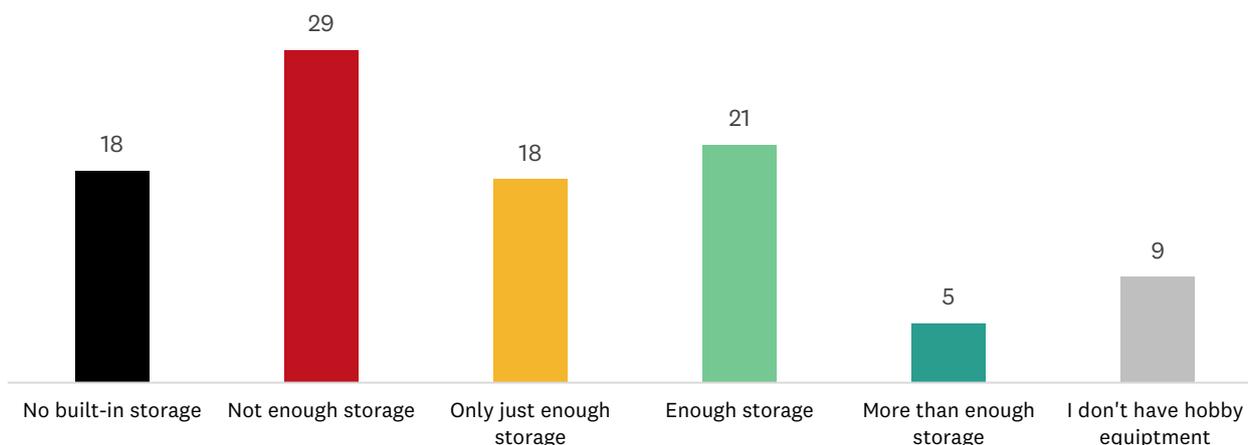
Figure 5: Participant ratings of the amount of built-in storage for household equipment (n=1330) (%)



### 1.2.3 Hobby/sport equipment

Large proportions of participants reported insufficient built-in storage for hobby and sport equipment and only nine per cent of participants reported not having any hobby or sport equipment. Eighteen per cent of participants reported having ‘no’ built-in storage for hobby and sport equipment, 29 per cent reported having ‘not enough’ and 18 per cent reported having ‘only just enough’ storage.

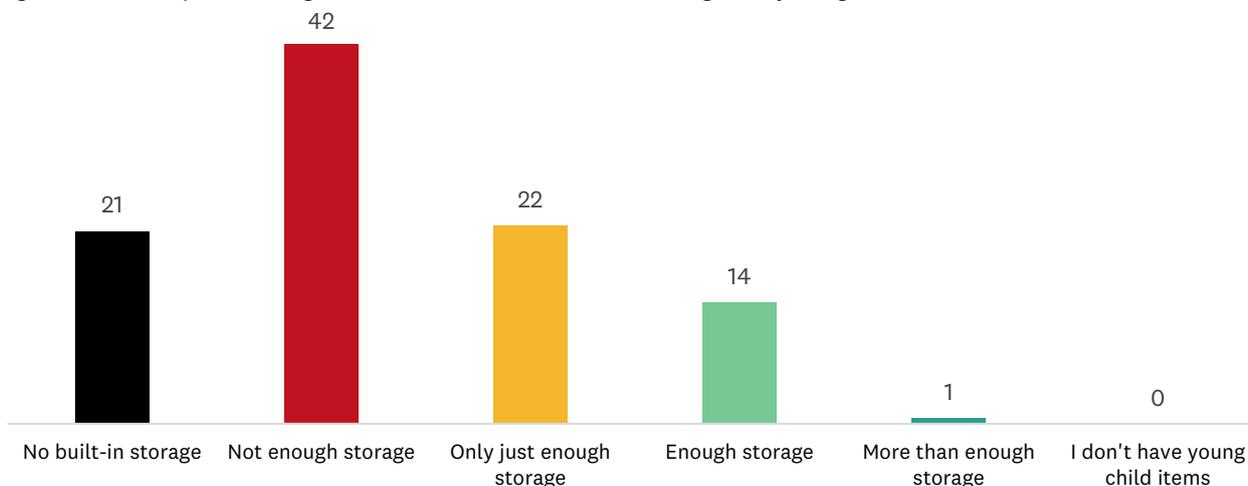
Figure 6: Participant ratings of the amount of built-in storage for hobby/sport equipment (n=1330) (%)



### 1.2.4 Young children’s items

Figure 9 shows how participants who reported having pre-school aged children in their household responded to a question on storage for young children’s items such as prams and highchairs. Twenty-one per cent of participants reported having ‘no’ built-in storage, 42 per cent reported having ‘not enough’ and 22 per cent reported having ‘only just enough’. Only one per cent reported having ‘more than enough’ storage.

Figure 7: Participant ratings of the amount of built-in storage for young children’s items (n=177) (%)

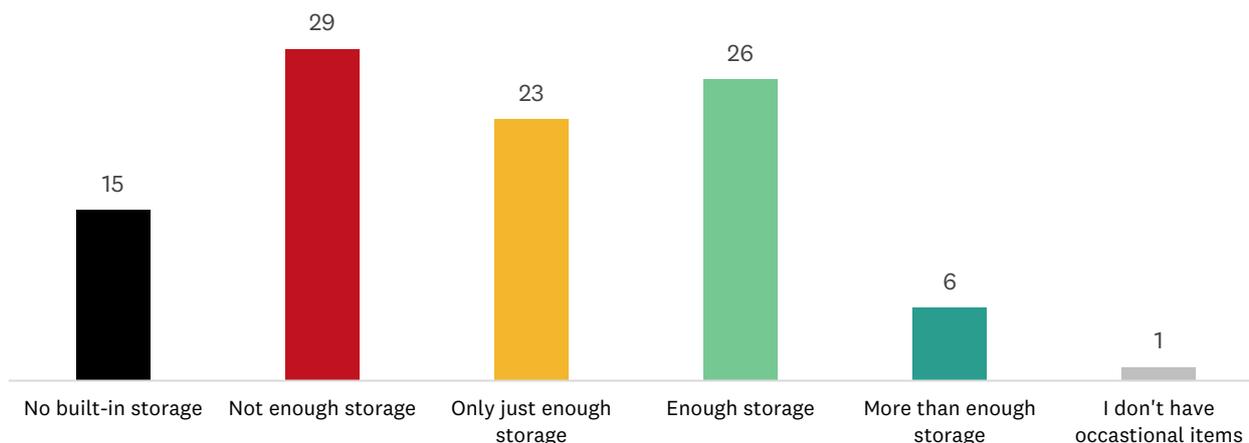


Note: Base is all the participants with pre-school aged child(ren) in their household.

### 1.2.5 Occasional-use items

A similar pattern is seen for storage of occasional items (e.g. suitcases, Christmas tree). Close to a third (29%) reported having ‘not enough storage’, 23 per cent said there was ‘only just enough storage’ and 15 per cent reported their home had ‘no built-in storage’ for this kind of item.

Figure 8: Participant ratings of the amount of built-in storage for occasional items (n=1330) (%)



### 1.2.6 Comments on storage

We also asked participants to tell us whether they had made any changes to their home since they had moved in (they were asked to select from a list of possible options). One of the options was whether they had increased storage (e.g. chest of drawers, cupboard shelving). A large proportion (58%) said they had done this. Forty-four of the participants who reported they had made changes to 'something else' described making a change to increase storage. Generally, four kinds of storage were described:

1. Outdoor storage, often in the form of a garden shed, but also built into other outdoor modifications

*Built a deck with storage under the seats.*

*Built an awning for outdoor storage, multiple shelves for storage.*

*Had to build an outdoor shed so we can have more storage for sports equipment.*

2. Storage in a garage

*Cupboards in the garage.*

*Built own storage cupboards in our carpark.*

*Added five floor-to-ceiling shelves across the garage wall for extra storage. Includes extended pantry, kitchen equipment, shoes, camping gear, occasional stuff.*

3. A way to use their attic as storage

*Attic stairs.*

*Installed a pull-down attic.*

4. Modifying spaces in the home to create storage

*Added under stairs storage.*

*Converted cloak cupboard into storage space for kitchen appliances, etc.*

*Repurposed wardrobes with more shelving and less clothes-hanging space.*

In their comments about what they dislike about their home, 8 per cent mentioned a lack of household storage space; for example:

*Lack of built-in functional storage.*

*Not enough general storage space – people need adequate storage space in townhouses, and it is not provided.*

*I wish we had more space and storage so it felt less cramped and so that I could put things away more easily.*

*Lack of storage space for everyday items like cloths rack, ironing boards, etc.*

### **1.3 Consented plans**

As described in Chapter 3, this study included analysis of the consented floor plans for 110 properties of residents who had participated in the survey.

Most (93%) of the plans analysed showed at least one household storage space in the home, such as under stairs, a linen cupboard or storage locker.

The types of storage spaces were denoted as being a ‘half cupboard’ (e.g. under stairs or to approximately 1.2m in height) or ‘full cupboard’ (typical floor-to-ceiling cupboard height of 2.4m). An approximation of the volume of storage was calculated through these estimated heights and the measured floor area. Nine properties were noted to have a storage locker in a communal area such as a basement (no volume estimate available).

On average, properties are found to have 2.5m<sup>3</sup> of storage space. Comparing the average volume of storage in the sample properties with the ADM recommendation, we find the average storage provision is under the recommended amount. Two-bedroom homes have an average of 2.3m<sup>3</sup> while the recommended amount is 3m<sup>3</sup>, and 3-bedroom homes have 3m<sup>3</sup> on average while the recommendation is 4m<sup>3</sup>.

Comparing with the National Medium Density Design Guide, which recommends 8m<sup>3</sup> for 2-3 residents, the average indoor storage provision for 2-bedroom homes (2.3m<sup>3</sup>) was 71 per cent less and 3-bedroom homes (3.0m<sup>3</sup>) was 63 per cent less. As noted previously, the ADM generally recommends storage volumes half that of other design guidance.

Table 2: Volume (m<sup>3</sup>) of indoor storage (excluding bathroom and kitchen), by number of bedrooms

	<b>Average indoor storage</b>	<b>ADM</b>	<b>National Medium Density Design Guide</b>	<b>Public Housing Design Guidance</b>	<b>Kāinga Ora Design Requirements</b>	<b>NSW best practice guidance</b>
<b>1 bedroom</b>	—	2m <sup>3</sup>	8m <sup>3</sup> for 2-3 residents	4.8m <sup>3</sup>	4.8m <sup>3</sup>	6m <sup>3</sup>
<b>2 bedrooms</b>	2.3m <sup>3</sup>	3m <sup>3</sup>		4.8m <sup>3</sup>	6.5m <sup>3</sup>	8m <sup>3</sup>
<b>3 bedrooms</b>	3.0 m <sup>3</sup>	4m <sup>3</sup>		7.2m <sup>3</sup>	8.2m <sup>3</sup>	10m <sup>3</sup>
<b>4 bedrooms</b>	—	5m <sup>3</sup>		12m <sup>3</sup>	12m <sup>3</sup>	—

Note: Averages based on fewer than 30 values are not shown.

Sources:

- *Auckland Design Manual*, Residential Design Element R8: Site Amenities, Section 1.2.
- Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 6. In the house: A liveable home, Rule of thumb.
- Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for community housing provides and developer*, Section 4.8, Table 7.
- Kāinga Ora Homes and Communities, (2024). *Ngā Paerewa Hoahoa Whare Design Requirements*, Table B2.4-2.
- New South Wales Department of Planning and Environment, (2015). *Apartment Design Guide for Apartments*, Objective 4G-1, Design criterion 1.
- New South Wales Department of Planning, Industry and Environment, (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 2.3 Terraces, Design criterion 82.

## 1.4 In-home immersions

As described in Chapter 3 Section 1.3, this study included 20 in-home immersions with participants who had completed a survey.

Finding innovative storage solutions for household items was a challenge for most of the participants we talked to during the in-home immersions. This resulted in unexpected solutions such as using spare bathrooms and hallways for storage of household items such as suitcases, irons and cleaning equipment (Figure 11 and Figure 12).<sup>7</sup> Some participants were able to find innovative furniture with built-in storage (e.g. sofa with storage under seats) (Figure 13 and Figure 14).

Figure 9: Suitcase and other household items stored on landing



Figure 10: Suitcase and other household items stored in the shower of a 'spare bathroom'



Figure 11: Sofa with built-in storage



Figure 12: Ottoman with storage



<sup>7</sup> See Section 3.4 in this chapter for more information on spare bathrooms.

Some homes had built-in storage that could accommodate suitcases and other bulky occasional items, such as an attic space (Figure 15).

**Figure 13: Suitcase and other household items stored in an attic space accessed by a drop-down ladder**



Outdoor sheds were used to store items, especially those that were not used often and/or were bulky and large.

**Figure 14: Suitcase and other items stored in sheds in outdoor living space**



Linen was sometimes stored in wardrobes due to a lack of dedicated linen cupboards. Some homes included a cupboard that was used to store linen and other household items (e.g. cleaning products/equipment, toilet paper) (Figure 18). Not all these cupboards came equipped with shelving, resulting in households adding shelving (Figure 19), or when this option was not financially available, placing linen on the ground (Figure 20).

Figure 15: Bed with built-in drawers used to store linen



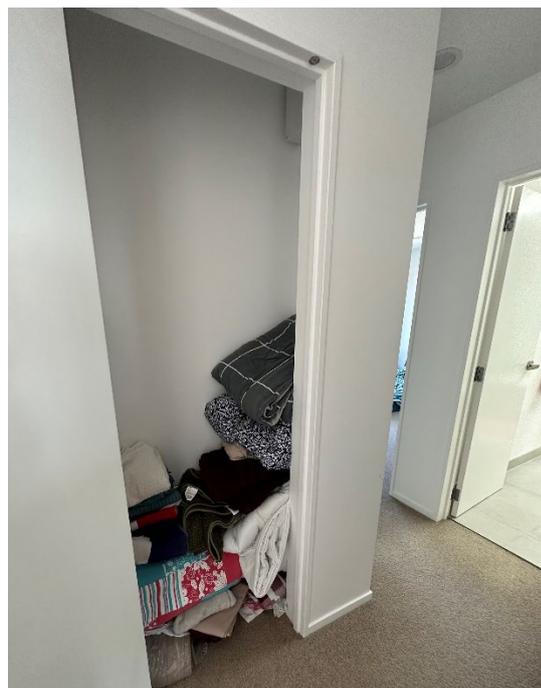
Figure 16: Linen and other household items in a cupboard



Figure 17: Linen stored on free-standing shelving unit in hot water cylinder cupboard



Figure 18: Linen cupboard without shelving



## 2 Laundry

### 2.1 Best practice guidelines and regulations

Laundry facilities such as space for a washing machine and dryer, and space for outdoor drying are necessary to provide for the day-to-day needs of residents. Space for outdoor drying also contributes to a healthy home by reducing moisture within the home.

#### Auckland Unitary Plan (AUP)

The AUP does not specify laundry requirements but does include policies and standards to “ensure that dwellings are functional and of a sufficient size to provide for the day to day needs of residents, based on the number of occupants the dwelling is designed to accommodate”.<sup>8</sup>

#### Auckland Design Manual (ADM) and best practice guidance

The ADM specifies a minimum laundry size of 0.84m<sup>2</sup> for studio and 1-bedroom dwellings, and 1.26m<sup>2</sup> for two or more bedrooms. The Public Housing Design Guidance and Kāinga Ora Design Requirements specify a minimum laundry tub width, as well as minimum space for a washing machine/dryer. The Kāinga Ora Design Requirements also include provision for a wall-mounted shelf.

Laundries are discouraged in kitchen areas for tapu and noa design considerations in the Public Housing Design Requirements.<sup>9</sup> This is also acknowledged in the National Medium Density Design Guide.<sup>10</sup>

The Kāinga Ora Design Requirements require an outdoor service area including external clothes drying facilities for all dwellings, of a size that suits the dwelling’s occupancy.<sup>11</sup> It is recommended that this area is screened from the street, and for apartments, an alternative solution such as a shared laundry facility is considered. Similarly, the Public Housing Design Requirements include provision for private washing lines, screened from the street, but does not specify minimum clothesline lengths.<sup>12</sup> For apartments, open-air laundry drying on the balcony is recommended where possible, positioned with least visual line of sight from the street.<sup>13</sup> The New South Wales Apartment

<sup>8</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban Policy H5.3(5)(a) & Minimum Unit Size H5.6.16 Purpose Statement.

<sup>9</sup> In te ao Māori, there is a need to keep certain household functions separate from others in order to preserve their tapu (sacred) or noa (common/profane) nature – bathrooms/toilets being the most tapu element and food the most noa. Thus, there is a need to keep all food-related facilities separate from bathrooms, toilets and clothes washing.

<sup>10</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 6: In the house: A liveable home, Design criterion F.

<sup>11</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirements*, Performance requirement 2.3.2.A.

<sup>12</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for community housing provides and developer*, Section 3.7.

<sup>13</sup> It is common, however, for body corporate rules to prevent households drying laundry on their balcony.

Design Guide also recommend that where clothes drying is located on balconies, they should be screened and integrated into the building design.<sup>14</sup>

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<sup>14</sup> *New South Wales Apartment Design Guide*, Objective 4E-3.

Table 3: Laundry provision

Number of bedrooms	ADM	National Medium Density Design Guide	Public Housing Design Guidance	Kāinga Ora Design Requirements	NSW Apartment Design Guide	NSW Low Rise Medium Density Design Guide	Victoria Apartment Design Guide
Studio	0.84m <sup>2</sup>	—	—	—	N/A	An outdoor area for clothes drying of at least 16 lineal metres, screened from public and communal areas	N/A
1 bedroom	0.84m <sup>2</sup>	Can be located in bathroom or cupboard Minimum tub width of 0.35m	Tub width 0.35m Washer/ dryer space 0.45m <sup>2</sup>	Tub width 0.35m Washer/ dryer space 0.45m <sup>2</sup> Clothesline 14-28m long	N/A		N/A
2 bedrooms	1.26m <sup>2</sup>				N/A		N/A
3 bedrooms	1.26m <sup>2</sup>	Separate laundry of 3m <sup>2</sup> Minimum tub width of 0.56m	Tub width 0.56m Washer/ dryer space 0.45m <sup>2</sup>	Tub width 0.56m Washer/ dryer space 0.45m <sup>2</sup> Clothesline 14-28m long	N/A		N/A
4 bedrooms	—				Tub width 0.56m Washer/ dryer space 1.05m <sup>2</sup>		Tub width 0.56m. Washer/ dryer space 1.05m <sup>2</sup> Clothesline 28-40m long

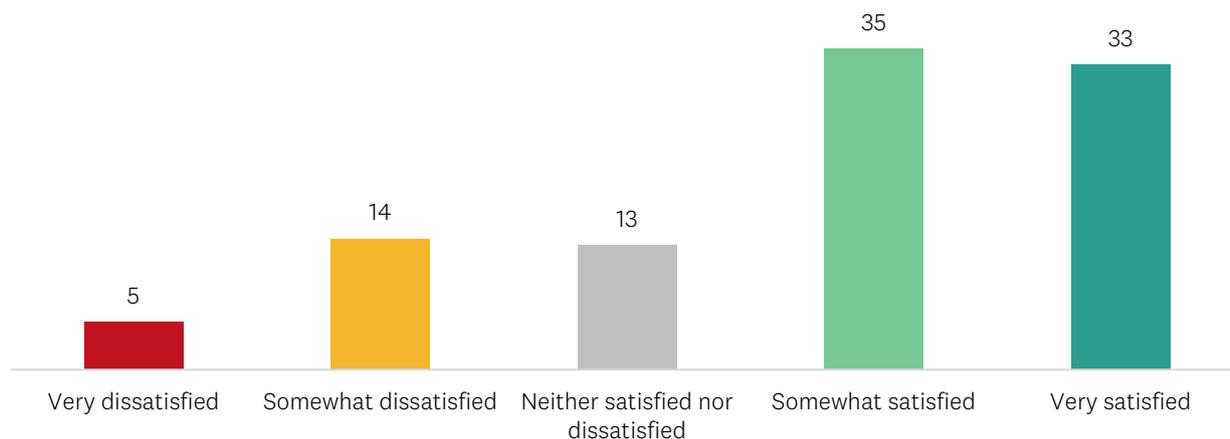
## Sources:

- *Auckland Design Manual*, Residential Design Element: R6 Unit Layouts and Room Sizes, Section 1.0.
- Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 4.7, Table 6.
- Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement*, Table B2.3-1, Minimum requirements for kitchen and laundry components and performance requirement A2.3.2.A.
- New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 4, Designing the Building.
- New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Design criterion 116.
- State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*.

## 2.2 Survey results

The survey participants were asked about their satisfaction with the laundry facilities in their home, building or complex. Laundry facilities might include washing machine, laundry sink, or space for drying washing, including consideration of body corporate or residents' association rules. Over two-thirds of participants are 'somewhat' or 'very satisfied' with the laundry facilities in their home.

Figure 19: Participant satisfaction with laundry facilities (n=1333) (%)



A few participants mentioned making modifications to their laundry to increase storage and usability:

*Fixed shelving in laundry and storage cupboard.*

*Added laundry tub and shelving.*

Issues with laundry were mentioned by some when describing what they dislike about their home:

*There is also no outside line to hang laundry, so my guest bedroom is a dedicated laundry room.*

*Laundry tiny.*

*Drying laundry indoors (with window open).*

*Laundry not set up very functionally.*

*Drying washing (on a drying rack) takes up a lot of space in my living area when I am unable to use my balcony to do this. Body Corp rules prevent washing being visible on balconies (which I agree with) but at times it is too windy to use my outdoor screening blind.*

Thirty-nine participants mentioned using their garage as a laundry including for drying clothes. Garages used as a laundry can limit the ability of the garage to also function as a carparking space. (See also Chapter 4, Section 1.4.2 on the uses of garages.)

*A car can fill up the garage so that laundry won't be accessible.*

## 2.3 In-home immersions

The activity of doing laundry was found to occur in many spaces around the home. Laundry hampers with dirty laundry and baskets with clean laundry are stored in a range of locations including lounges, garages, bedrooms and bathrooms. Washing machines and dryers are often located in garages, cupboards or tucked around a corner.

Figure 20: Washing machine and dryer in corner by front door



Figure 21: Washing machine, drying rack and basket in garage



Figure 22: Washing machine with hanging laundry basket



Figure 23: Washing machine in garage under stairs



Drying racks, baskets and hampers are used and stored in many locations including bathrooms, bedrooms, lounges, garages and outdoor living spaces. (See Chapter 4, Section 1.5.5 on the uses of garages and Section 2.2.4 on the uses of bedrooms.)

Figure 24: Laundry hamper, basket and drying rack in a spare bedroom



Figure 25: Laundry baskets and hamper in a bedroom

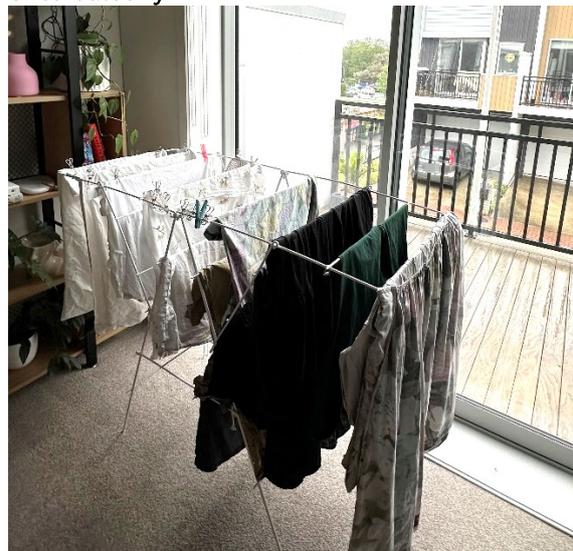


Figure 26: Laundry hamper in bathroom



Note also additional storage baskets underneath vanity.

Figure 27: Drying rack in lounge by ranch slider onto balcony



## 3 Bathrooms

This study distinguishes between a bathroom and a water closet (WC). A ‘bathroom’ is defined as a room with a bath and/or a shower; a bathroom may also include a toilet, but not always. A WC is defined as a room with a toilet, and without a shower or bath.

### 3.1 Best practice guidelines and regulations

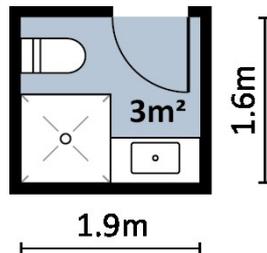
#### Auckland Unitary Plan (AUP)

The AUP does not contain any standards or guidance on provision of bathrooms or WCs.

#### Auckland Design Manual (ADM) and best practice guidance

The ADM does not distinguish between bathrooms and WCs, and it does not define what a bathroom is. However, it recommends that each bathroom is 3m<sup>2</sup> in floor area (Figure 30), and that two bathrooms are provided for dwellings with 3 or more bedrooms.<sup>15</sup>

Figure 28: Bathroom with 3m<sup>2</sup> floor area



The Public Housing Design Guidance and National Medium Density Design Guide both recognise the need to keep certain household functions separate from others in order to preserve their tapu or noa nature.<sup>16, 17</sup> The Public Housing Design Guidance recommends that all food-related facilities are kept separate from bathrooms, toilets and clothes washing, and that there is no visual line of sight to any toilet fitting within any bathroom from the living or dining room or kitchen, or the dwelling entry. Similarly, the NSW Apartment Design Guide recommends that access to bathrooms and laundries is separated from living areas, minimising direct openings between living and service areas.<sup>18</sup>

The Kāinga Ora Design Requirements require a bath in addition to a shower for dwellings with 3 or more bedrooms and a second shower for dwellings with 5-6 bedrooms (Table 5).

<sup>15</sup> *Auckland Design Manual*, Residential Design Element R6: Unit Layouts and Room Sizes.

<sup>16</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for community housing providers and developers*, Section 4.1.1.

<sup>17</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 6: In the house: A liveable home, Clause F.

<sup>18</sup> New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 4, Objective 4D-3.

Table 4: Bathroom provision by floor area (m<sup>2</sup>)

Number of bedrooms	AUP	ADM	National Medium Density Design Guide	NSW Apartment Design Guide	NSW Low Rise Housing Diversity Design Guide	Victoria Apartment Design Guide
1 bedroom	N/A	3m <sup>2</sup>	N/A	Secondary bathrooms are a minimum of 5m <sup>2</sup> in area	Secondary bathrooms are a minimum of 5m <sup>2</sup> in area	N/A
2 bedrooms	N/A	3m <sup>2</sup>	N/A			
3 bedrooms	N/A	3m <sup>2</sup> x 2	N/A			
4 bedrooms	N/A	3m <sup>2</sup> x 2	N/A			

Sources:

- *Auckland Design Manual*, Residential Design Element R6: Unit Layouts and Room Sizes, Section 1.0.
- New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 4, Objective 4D-1, Design criterion 1.
- New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Objective 2.3K-1, Design criterion 71.

Table 5: Bathroom provision by number of fixtures

Kāinga Ora Design Guidance and Public Housing Design Guidance				
Number of bedrooms	Toilet	Shower	Bath	Vanity
1 bedroom	1	1	0	1
2 bedrooms	1	1	0	1
3 bedrooms*	1 in separate room	1	1	1
4 bedrooms*	2	1	1	1

Note: Kāinga Ora Design Guidance requires that multi-storey homes with 3 or more bedrooms must include one toilet per floor, whereas the Public Housing Design Guidance requires multi-storey homes with 4 or more bedrooms to provide one toilet per floor.

Sources:

- Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers*, Section 4.7, Table 5.
- Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement*, B2.3 Private Space: Kitchens, Bathrooms and Laundries, Performance requirement acceptable solution B2.3.2.B(i) and Table -3 Minimum requirements for bathroom and toilet fittings and fixtures.

### Section 35 (s35) monitoring

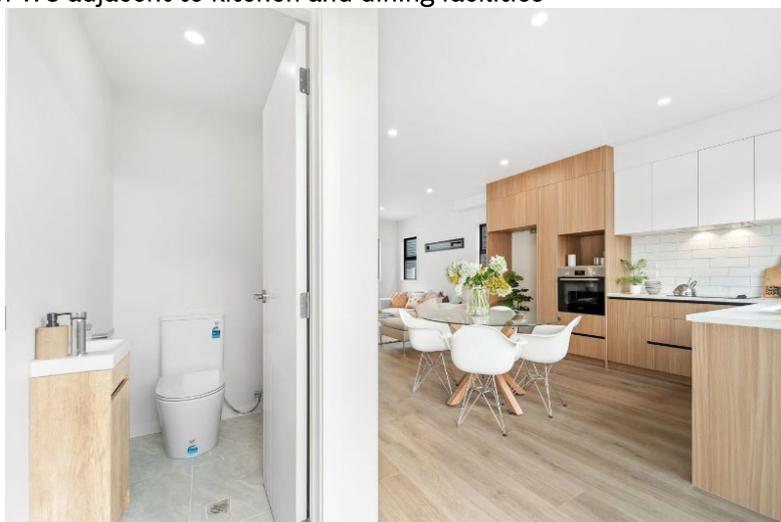
No specific monitoring of bathrooms or WCs was included in the s35 monitoring.

## Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- There is a developer preference for WCs to be on the ground floor in acknowledgement of benefits for universal access and visitors. However, this can compromise amenity of adjacent kitchen and dining space and remove or compromise storage opportunities under stairs.
- One bathroom (often an ensuite) per bedroom is typically provided.
- There is limited provision for baths.
- There is limited integrated storage solutions within bathrooms.

Figure 29: Example of WC adjacent to kitchen and dining facilities



Source: TradeMe.

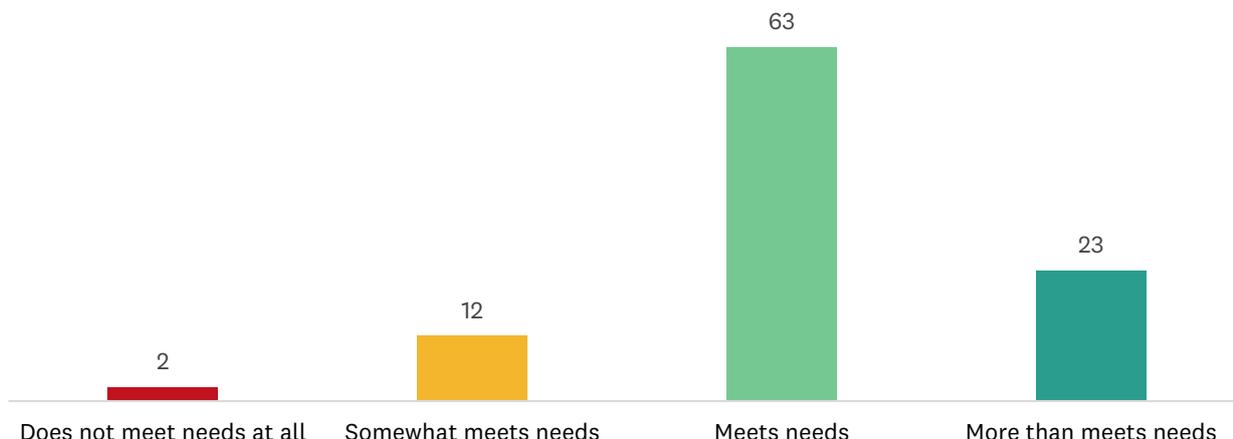
## 3.2 Survey results

The survey participants were asked how well the number of bathrooms in their home meets the needs of the household.<sup>19</sup> Two-thirds (63%) reported the number of bathrooms 'meets the needs' of the household and a quarter (23%) reported the number of bathrooms 'more than meets the needs' (Figure 32).

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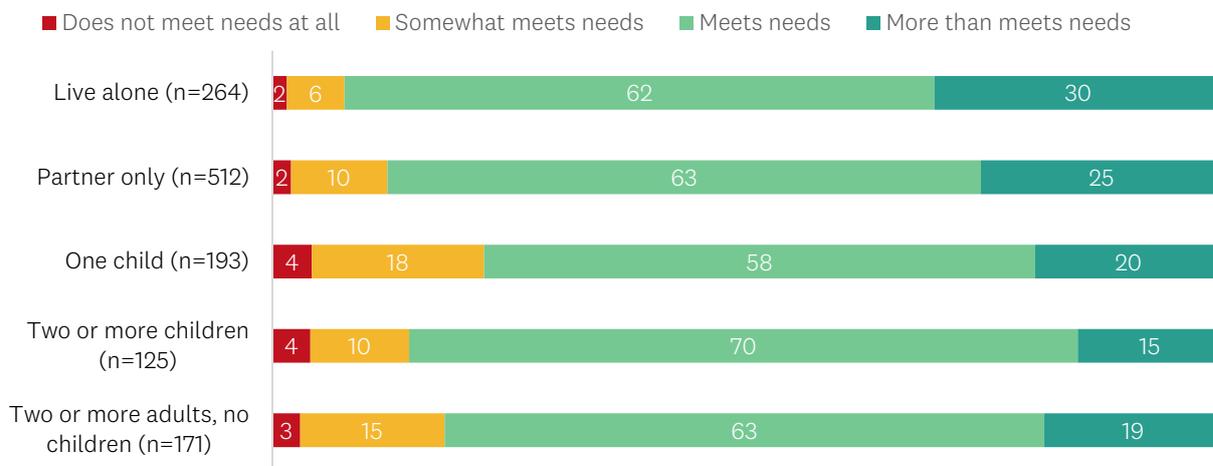
<sup>19</sup> Note: The survey question did not define a 'bathroom' or distinguish a bathroom from a WC.

Figure 30: Participant rating of how well the number of bathrooms fit the needs of the household (n=1335)



Households with one child were more likely than other households to say the number of bathrooms ‘somewhat meets needs’ (18%). This proportion compares with 6 per cent for those who live alone, 10 per cent for those with a partner only and for those with two or more children, and 15 per cent for two or more adults with no children.

Figure 31: Participant rating of how well the number of bathrooms fits the needs of the household, by household composition (%)



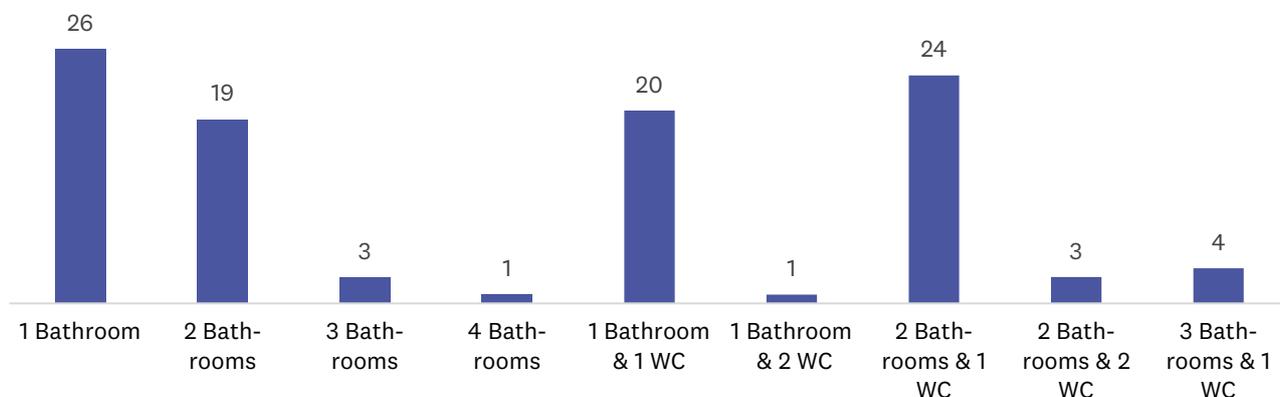
### 3.3 Consented plans

The ADM recommends a minimum bathroom size of 3m<sup>2</sup> for 1- and 2-bedroom homes and 6m<sup>2</sup> (or two bathrooms) for those with three or more bedrooms.<sup>20</sup> The average size of a bathroom/WC was 3.9m<sup>2</sup>. The smallest bathroom/WC was 1.2m<sup>2</sup> and the largest was 8.5m<sup>2</sup>.

<sup>20</sup> The ADM does not define a bathroom. This minimum is interpreted to be for either a WC or a bathroom, as defined in this study.

Our analysis of 110 consented plans found a mix of homes with bathrooms only, or bathrooms and WCs. Close to half had a combination of bathrooms and WCs. A quarter (26%) had 1 bathroom, a quarter (24%) had 2 bathrooms and a WC, and 20 per cent had 1 bathroom and 1 WC (Figure 34).

Figure 32: Number of bathrooms and WCs (n=110) (%)



Different best practice guidelines take different approaches to bathrooms. Some recommend the number of bathrooms and/or WCs while others recommend the number of fixtures (i.e. toilets, showers or baths).

As mentioned earlier, the ADM does not distinguish between bathrooms and WCs and it recommends having a second bathroom (or WC) only when there are three or more bedrooms. Our analysis of 110 consented plans found that bathroom and WC provision was more generous than these guidelines. For example, 29 of the 50 2-bedroom homes had either two bathrooms or one bathroom and a WC, and 20 of the 37 3-bedroom homes had three bathrooms (or a combination of bathrooms and WCs) (Table 6).

Table 6: Number of bathrooms and WCs, by number of bedrooms (counts)

	<b>1 bathroom</b>	<b>2 bathrooms</b> (or 1 bathroom and 1 WC)	<b>3 bathrooms</b> (or a combination of bathrooms and WCs)	<b>4 bathrooms</b> (or a combination of bathrooms and WCs)
<b>1 bedroom</b>	9	—	—	—
<b>2 bedrooms</b>	20	16 had 2 bathrooms (13 had 1 bathroom and 1 WC)	(1 had 1 bathroom and 2 WCs)	—
<b>3 bedrooms</b>	—	5 had 2 bathrooms (9 had 1 bathroom and 1 WC)	1 had 3 bathrooms (19 had 2 bathrooms and 1 WC)	1 had 4 bathrooms (2 had 2 bathrooms and 2 WCs)
<b>4 bedrooms</b>	—	—	1 had 3 bathrooms (7 had 1 bathroom and 2 WCs)	1 had 4 bathrooms (4 had 3 bathrooms and 1 WC)
<b>5 bedrooms</b>	—	—	1 had 3 bathrooms	—

The Public Housing Design Guidance and Kāinga Ora Design Guidelines take a different approach to the ADM guidelines. These recommend a WC for dwellings with three or more bedrooms and a toilet on each level.<sup>21</sup> Of the consented plans analysed with three or more bedrooms, most had at least one WC and a small number had two WCs (Table 7).

**Table 7: Number of WCs (separate toilet), by number of bedrooms (counts)**

	<b>No WC</b>	<b>1 WC</b>	<b>2 WCs</b>
<b>1 bedroom</b>	9	—	—
<b>2 bedrooms</b>	36	13	1
<b>3 bedrooms</b>	7	28	2
<b>4 bedrooms</b>	1	11	1
<b>5 bedrooms</b>	1	—	—

New Zealand’s Public Housing Design Guidance and Kāinga Ora Design Requirements also recommend the numbers of toilets and showers/baths instead of a number of bathrooms. One toilet and one shower is recommended for 1- and 2-bedroom homes (Table 5). One toilet in a WC (i.e. a toilet that is not in a bathroom), one shower and one bath is recommended for 3-bedroom homes. Two toilets and one shower and one bath is recommended for 4-bedroom homes.

Taking this guidance into account, and looking at toilets first, all the 1-bedroom homes had just one toilet (Table 8). Most of the two 2-bedroom homes (29) had two toilets, which is one toilet more than the guidelines recommend. Similarly, most of the 3-bedroom homes (20) had three toilets, and three 3-bedroom homes had four toilets, which again are more toilets than recommended.

**Table 8: Number of toilets, by number of bedrooms (counts)**

	<b>1 toilet</b>	<b>2 toilets</b>	<b>3 toilets</b>	<b>4 toilets</b>
<b>1 bedroom</b>	9	—	—	—
<b>2 bedrooms</b>	20	29	1	—
<b>3 bedrooms</b>	—	14	20	3
<b>4 bedrooms</b>	—	—	9	4
<b>5 bedrooms</b>	—	—	1	—

The detail available in consented plans prevents distinguishing between baths and showers, especially when there may be a shower over a bath. As a result, baths and showers have been combined in this analysis. When looking at showers and baths, we found that a large proportion of the 2-and 3-bedroom homes have the recommended number of showers/baths (Table 9). Two-

<sup>21</sup> The data collected from the consented plans does not allow for assessment of the number of toilets per level in a home.

bedroom homes are recommended to have one shower and most (31) have one shower or bath; however, a considerable number of the 2-bedroom homes (18) have two showers or baths. Three-bedroom homes are recommended to have one shower and one bath, and 21 of the 3-bedroom homes met this recommendation with two showers or baths, and nine homes exceeded the recommendation with three or more showers or baths.

**Table 9: Number of showers/baths, by number of bedrooms (counts)**

	<b>1 shower/bath</b>	<b>2 showers/baths</b>	<b>3 showers/baths</b>	<b>4 showers/baths</b>
<b>1 bedroom</b>	9	—	—	—
<b>2 bedrooms</b>	31	18	1	—
<b>3 bedrooms</b>	7	21	8	1
<b>4 bedrooms</b>	—	4	5	4
<b>5 bedrooms</b>	—	—	1	—

The number of bathrooms (including WCs) in the consented plans generally exceeded the guidelines. And both the number and size of bathrooms is greater than the ADM guidelines. The number of toilets and the number of showers and/or baths is greater than New Zealand Public Housing Design Guidance and Kāinga Ora Design Requirements. This suggests that some MDH with more bathrooms and fixtures than the guidelines may have bathrooms or WCs, or fixtures within, which are underutilised. These spaces may function as spare bathrooms and either not be used (and are an inefficient use of space) or be used for a different purpose (such as storage or drying laundry) in a similar way to how spare bedrooms are being used as a study or hobby space.

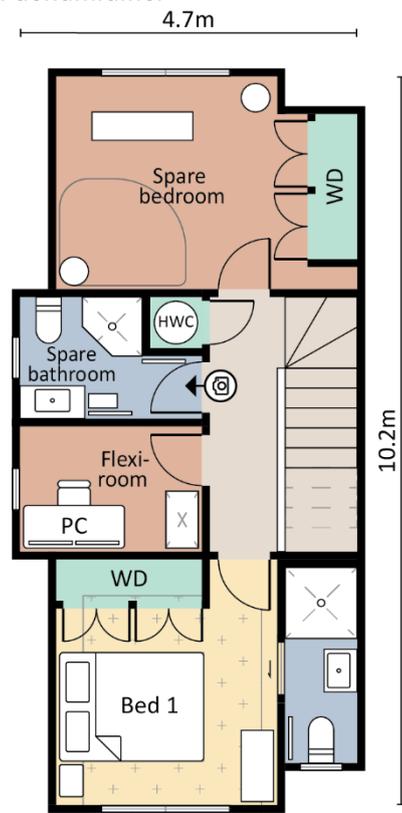
### **3.4 In-home immersions**

Half of the 20 homes visited had a WC in addition to their one (six homes) or two (four homes) bathrooms. The other 20 homes had one bathroom (five homes), two bathrooms (four homes) or three bathrooms (one home). (Refer to Tabel 7 in Chapter 3: Section 7 for an overview of the bathrooms/WCs and their fixtures.)

Those living in properties with equal numbers of bedrooms and bathrooms, or more bathrooms than the number of bedrooms, were found to have spare bathrooms which were being repurposed for storage and laundry activities (i.e. drying and laundry hampers). One participant living in a terraced house commented that their next-door neighbour had converted their downstairs toilet into a butler’s pantry. This suggests this excess of bathroom or WC amenity is not beneficial for households and the space may be better allocated to an additional living space (e.g. flexi-room) or as storage (e.g. pantry).

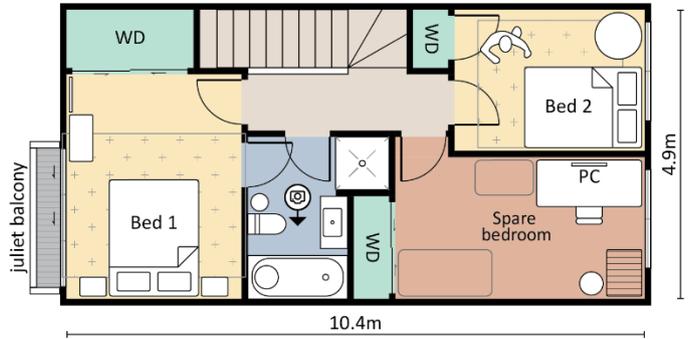
One participant living alone in a duplex that had two bathrooms and a WC used their ensuite bathroom as a bathroom, the downstairs WC on occasion (Figure 43), and the other bathroom as a dedicated laundry drying room. They had set up a dehumidifier in the bathroom and hung laundry on a rack (Figure 35).

Figure 33: Spare bathroom used as a laundry drying room with dehumidifier



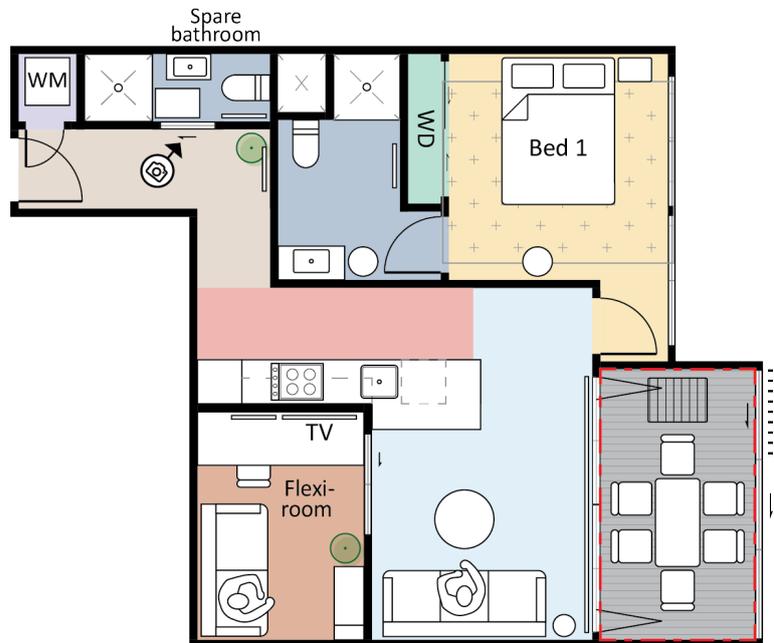
A household of two adults used the bath in their upstairs bathroom for storage. This bathroom has a separate shower (Figure 36).

Figure 34: Bath used for storage



Another participant living in a 1-bedroom apartment had two bathrooms (an ensuite and another bathroom off the hallway). They used their spare bathroom for storage (Figure 37).

Figure 35: Spare bathroom used as a storage cupboard



Supplementary storage was found to have been added for toiletries and other bathroom items (e.g. toilet paper, towels, cleaning products/equipment). Some of this storage furniture is being added to bathrooms (where there is space), while other households are adding storage to circulation space or garages.

Figure 36: Storage baskets stored underneath vanity

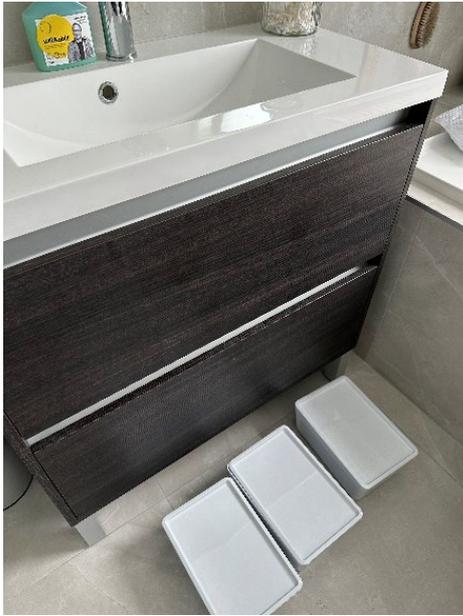


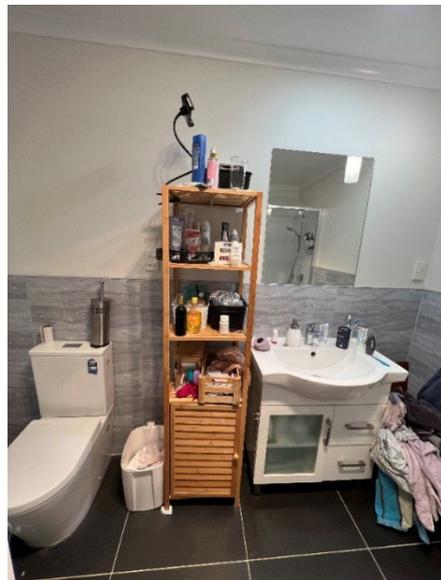
Figure 37: Additional shelving in bathroom



Figure 38: Shelving for bathroom products in upstairs hallway



Figure 39: Shelving unit in bathroom



Some terraced houses had a WC on the ground floor, often under the stairs, which opened into the kitchen, dining and lounge space (Figure 42 and Figure 43).<sup>22</sup> The amount of separation between the toilet and living area had an impact on participants' degrees of comfort and use of this space. Many expressed discomfort with the proximity of the WC to the living space, saying they felt it is 'wrong' for toilets to be close to food (kitchen, dining) and socialising (i.e. privacy concerns with others hearing use of the WC).

Figure 40: Ground floor WC that opens into dining space

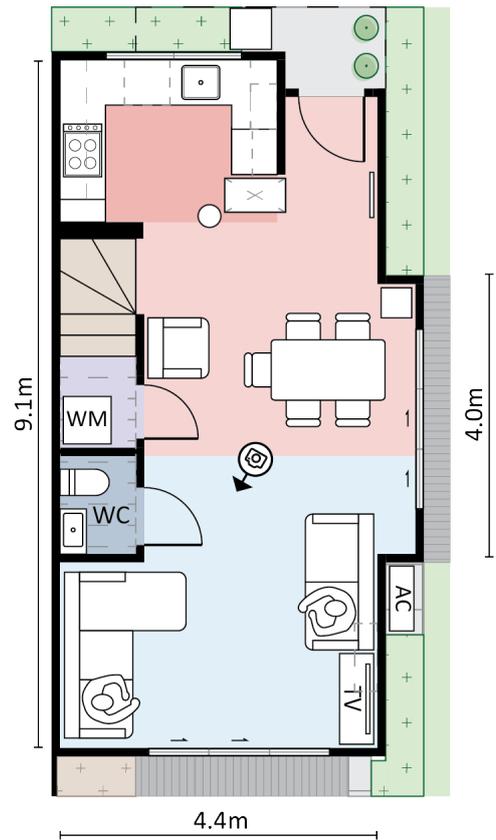


The participant living in the home pictured in Figure 43 said:

*I would never encourage guests to use that loo because it's right here ... there's just something about it ... it's so close to the living area; I guess, it just feels different to what I might ordinarily associate with what happens in one place, and I guess living happens in another. But like I said, when you're dashing out of the house and you think "Oh maybe it would be really good if I just went", then it's perfect for that.*

<sup>22</sup> The Compliance Document for New Zealand Building Code Clause G1 Personal Hygiene states that in household units at least one door shall be provided between a soil fixture (e.g. toilet) and a kitchen or place for food storage. Source: <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>. In contrast, from the 1950s to 1990s local councils required kitchens to be separated from toilets by two doors (source: <https://teara.govt.nz/en/washing-cleaning-and-personal-hygiene/page-4>).

Figure 41: Ground floor WC opening into lounge



Where toilets are separated by an additional door off the living area (Figure 44 and Figure 45), this provides enough separation from the dining/lounge space and was not as much of a concern to the householders. Designs where the downstairs WC is buffered by a laundry, access from the garage, or the door is around a corner are preferable.

Figure 42: Ground floor WC accessed from garage

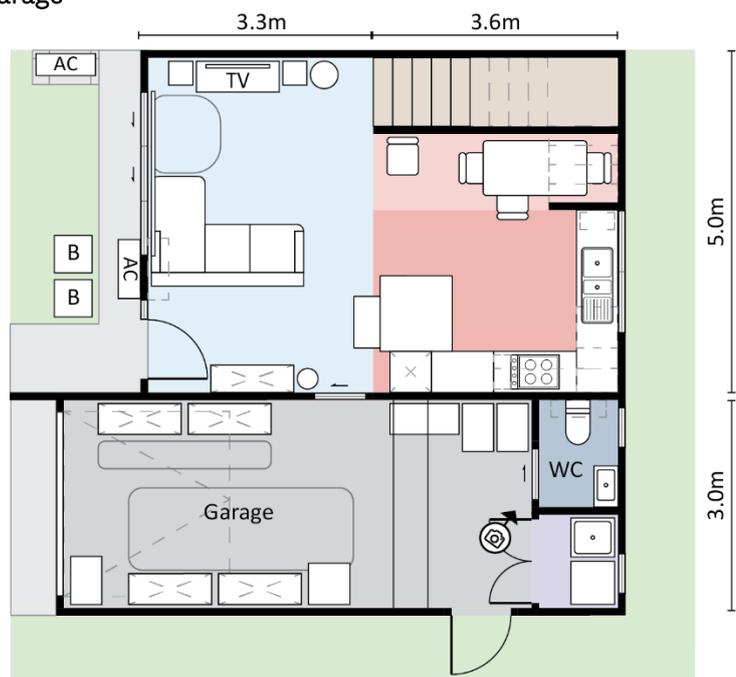


Figure 43: Ground floor WC separated from kitchen, dining and lounge by additional door, accessed through laundry



## 4 Summary

### Storage

Built-in storage for linen, household equipment and occasional-use items is lacking in the homes of many of the survey participants. Over half the participants (51%) reported having ‘no’, ‘not enough’ or ‘only just enough’ built-in storage for linen. Two-thirds (62%) reported having ‘no’, ‘not enough’ or ‘only just enough’ built-in storage for household equipment. And 67 per cent of participants reported having ‘no’, ‘not enough’ or ‘only just enough’ built-in storage for occasional items.

The ADM recommends 3m<sup>3</sup> of storage for 2-bedroom homes and 4m<sup>3</sup> for 3-bedroom homes. Analysis of the 110 consented plans showed that 2-bedroom homes have on average 2.3m<sup>3</sup> of storage and 3-bedroom homes have 3m<sup>3</sup> of storage on average. In other words, homes have close to one cubic metre less storage than recommended, which aligns with notable proportions of participants reporting insufficient storage for linen, household equipment and occasional-use items. And in comparison to the National Medium Density Housing Design Guidance, homes are providing less than a third of the recommended 8m<sup>3</sup> of storage.

Items are being stored in wardrobes, garages, outdoor living spaces and storage furniture in lounges, spare bedrooms and even spare bathrooms. The lack of dedicated built-in storage is resulting in items being stored in spaces for living, which in turn has an impact on the ability of these spaces to accommodate activities of importance to the household (see also the discussion in Chapter 4).

### Laundry

While 68 per cent of participants are ‘somewhat’ or ‘very’ satisfied with the laundry facilities in their homes, where to dry laundry is an issue for some. For example, participants expressed dissatisfaction at needing to dry laundry inside in living spaces (e.g. lounges, spare bedrooms) due to a lack of outdoor facilities or rules determined by their body corporate/residents’ association.

Garages are used as places for laundry by nine per cent of the participants with a garage (see Chapter 4, Section 1.5.5). Having washing machines and dryers in a garage can limit the possibility of the garage being used for its intended purpose of carparking (if the garage is not designed to allow circulation space around a parked vehicle to access other uses in the garage such as storage or laundry facilities). Some participants found their washing machines to be inaccessible with their car also in the garage.

### Bathrooms

Eighty-six per cent of participants reported that the number of bathrooms in their home ‘meets’ or ‘more than meets’ the need of the household. Only 14 per cent reported that the number of bathrooms ‘somewhat’ or ‘does not’ meet the needs of the household.

Homes are found to have more bathrooms or WCs and more fixtures (e.g. toilets, showers) than is recommended for the number of bedrooms in a home (generally one bathroom/WC per bedroom is provided). The in-home immersions found that participants with more bathrooms or WCs or more

fixtures (e.g. baths, showers) than they require use these spare bathrooms in unintended ways, including for the storage of suitcases and cleaning equipment and for drying laundry.

The experience of living in MDH may be improved by reducing the number of bathrooms and WCs and increasing the amount of built-in storage for household items, as well as spaces for living (e.g. flexi-rooms).

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 6

# Outdoor living spaces



Kathryn Ovenden and Melanie McKelvie

September 2024, Technical Report 2024/6





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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### **Introduction to this chapter**

This chapter covers multiple aspects of outdoor living spaces in medium density housing (MDH) including how well the number and size of these spaces is meeting the needs of participating households, environmental aspects of the spaces (e.g. privacy, sunlight and shade), and the impact of site facilities (e.g. washing line, storage shed, heat pump units) being present in these spaces. Outdoor living spaces featured frequently in comments made by the survey participants when asked what they like and dislike about their home, as well as modifications made to their home. The final section summarises the chapter.

# 1 Best practice and regulations

Outdoor living spaces are an extension of the home. They should be well-connected to the internal living areas and of a functional size to accommodate a range of uses including passive recreation, play areas for children, opportunities for gardening and for entertaining guests. The size, dimension, sunlight access and privacy of these spaces can all have an impact on their amenity and functionality for occupants.

Terraced houses and duplexes typically have their outdoor living space at ground level, while apartments typically provide a balcony or rooftop terrace.

## **Auckland Unitary Plan**

The Auckland Unitary Plan (AUP) encourages dwellings to provide useable and accessible outdoor living space.<sup>1</sup> For MDH developments of four or more dwellings, provision of outdoor living space is not a standard (rule) for compliance, but a matter for assessment as part of a resource consent application.<sup>2</sup> The purpose of the standard is to provide dwellings with an outdoor living space that is of a functional size and dimension, has access to sunlight, and is accessible from the dwelling.<sup>3</sup>

MDH developments of four or more dwellings are assessed through the resource consent process as to the extent to which they achieve the following:

- Dwellings with a ground floor level to have an outdoor living space of at least 20m<sup>2</sup> that comprises a ground level space (with a minimum dimension of 4m and gradient not exceeding 1 in 20) and/or a balcony/roof terrace space (minimum dimension of 1.8m and area of at least 5m<sup>2</sup>).
- Dwellings above ground floor (such as apartments) must have a balcony, patio or roof terrace that is at least 5m<sup>2</sup> for a studio or one-bedroom dwelling, or 8m<sup>2</sup> for dwellings with two or more bedrooms, both with a minimum dimension of 1.8m. Except that where the net internal floor area is at least 35m<sup>2</sup> for a studio and 50m<sup>2</sup> for one or more bedrooms, no outdoor living space is required.
- Outdoor living spaces that are located south of any building located on the same site, must have an increased depth to ensure that adequate sunlight access is provided to the space.<sup>4</sup>
- Privacy is provided between the outdoor living space of adjacent dwellings on the same site and between outdoor living space and the street.

The changes introduced to the outdoor living space standard by AUP Plan Change 16 removed the requirement for the outdoor living space to be accessible from the kitchen, dining space or lounge,

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<sup>1</sup> E.g. Mixed Housing Urban Policy H5.3(6).

<sup>2</sup> E.g. Mixed Housing Urban Assessment Criterion H5.8.1(2)(2)(b)(vi).

<sup>3</sup> E.g. Mixed Housing Urban Standard H5.6.14 Outdoor living space Purpose.

<sup>4</sup> E.g. Standard H5.6.14 – Where an outdoor living space is located south of any building located on the same site, the southern boundary of that space must be separated from any wall or building by at least 2m +0.9(h), where (h) is the height of the wall or building. For the purposes of this standard, south is defined as between 135 and 225 degrees.

meaning that outdoor spaces are now permitted to be accessed via any room, including a bedroom or garage.

The figures below demonstrate typical outdoor living spaces for terraced houses and an apartment.

Figure 1: 20m<sup>2</sup> outdoor living space of terraced houses

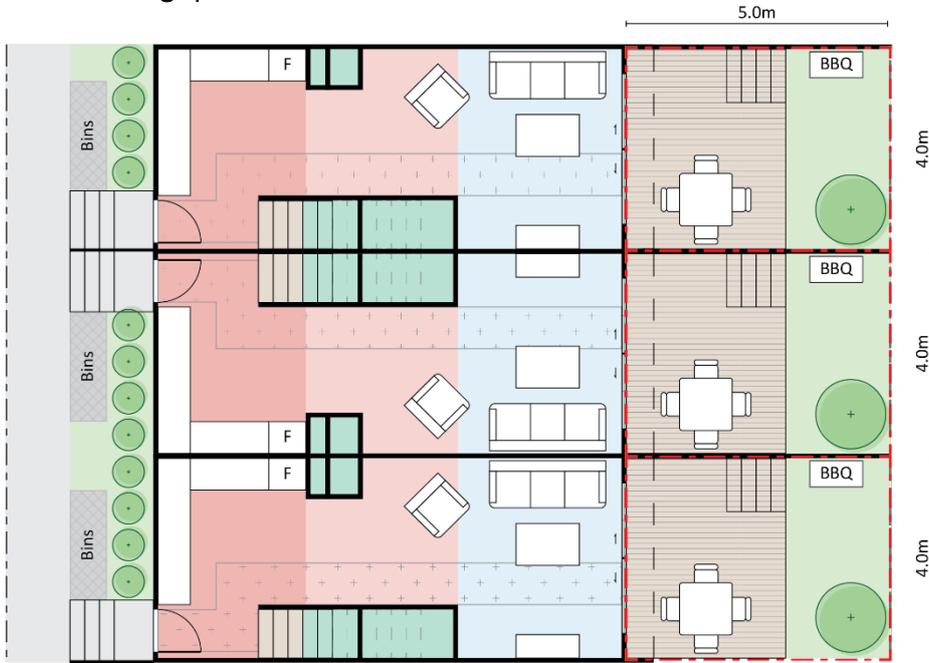


Figure 2: Apartment balcony of 6.5m<sup>2</sup>

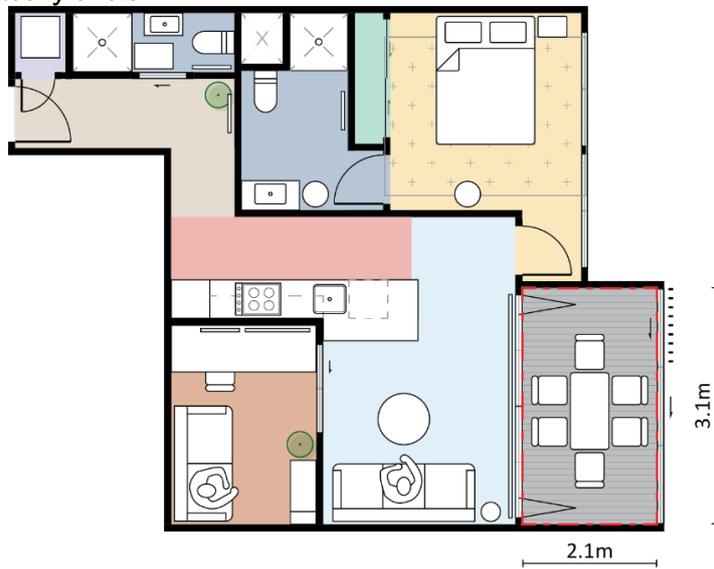


Figure 3: Ground level outdoor living spaces (not meeting minimum 4m dimension) accessed from a garage and a first-floor balcony accessed from the lounge



Note: The third storey contains three bedrooms (not shown).

### **Auckland Design Manual (ADM) and best practice guidance**

The *Auckland Design Manual* (ADM) recognises that outdoor living spaces are highly valued and in the context of MDH, can offset the smaller internal living areas and improve the overall liveability of a development. It recommends that outdoor living spaces have good sunlight access (minimum five hours of sunlight in autumn), are directly and conveniently connected to the internal living spaces, and should provide for a range of uses.<sup>5</sup> Landscape treatment for mature trees and food production should also be considered.

The ADM also recommends that balconies and outdoor living spaces are oriented towards the street or the backyard, rather than into neighbouring properties, and that a change in level is introduced between ground floor private space (both indoor and outdoor) and public or communal spaces.<sup>6</sup>

Outdoor living spaces should be of a size and dimension to accommodate a table and/or seating for the intended number of occupants. All best practice guidance recommends that private outdoor living spaces are accessible and located adjacent to internal living areas and are oriented for good levels of sunlight throughout the year. Australian best practice guidance recommends that outdoor living spaces are provided with shade by canopy trees and other shading structures and that paving and surface materials that lower surface temperatures and reduce heat absorption are utilised. Kāinga Ora's *Ngā Paerewa Hoahoa Whare Design Requirements* (hereafter, referred to as the Kāinga Ora Design Requirements) also encourages shade and shelter from the prevailing wind.

Privacy within outdoor living spaces is best achieved when located to the 'back' of a dwelling rather than facing a public street or shared accessway. For upper-level outdoor living spaces on balconies and rooftop terraces, it is generally recommended that balconies are oriented away from adjacent or neighbouring private open spaces to ensure adequate privacy is maintained to those properties, with careful design of balustrades/screening devices.

The *National Medium Density Housing Design Guide* recommends that ground-level outdoor living spaces have direct access to well-used internal living areas and are designed to allow flexibility to configure private space for outdoor furniture, raised gardens, or other uses.<sup>7</sup> Consideration should also be given to adequate utility space, such as washing lines and garden sheds, while also considering the concepts of tapu and noa.<sup>8</sup>

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<sup>5</sup> *Auckland Design Manual*, Terraced Housing Design, Section 5 Outdoor Spaces; Apartment Design, Section 5 Outdoor Spaces.

<sup>6</sup> *Auckland Design Manual*, Terraced Housing Design, Section 3.5 Respect the neighbours.

<sup>7</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 5 Around the house: and integrated landscape, Clauses C, D, H and I.

<sup>8</sup> 'Tapu' can be interpreted to mean 'sacred' and can be associated with restrictions. 'Noa' is the opposite of tapu, meaning ordinary, normal or unrestricted.

Table 1: Best practice guidance for size and dimension of ground-level outdoor living spaces

Number of bedrooms	Auckland Unitary Plan	Auckland Design Manual	National Medium Density Design Guide	Public Housing Design Guidance and Kāinga Ora Design Requirements	NSW Apartment Design Guide	NSW Low Rise Medium Density Design Guide	Victoria Apartment Design Guide
Studio	20m <sup>2</sup> 4m dimension	N/A	N/A	N/A	15m <sup>2</sup> 3m depth	45m <sup>2</sup> 4m dimension	25m <sup>2</sup> 3m dimension
1 bedroom				20m <sup>2</sup>			
2 bedrooms				20m <sup>2</sup>			
3 bedrooms				35m <sup>2</sup>			
4 or more bedrooms				50m <sup>2</sup>			

Table 2: Best practice guidance for size and dimension of balconies

Number of bedrooms	Auckland Unitary Plan (minimum area and depth)	National Medium Density Design Guide (minimum depth)	Public Housing Design Guidance and Kāinga Ora Design Requirements (minimum area and depth)	NSW Apartment Design Guide (minimum area and depth)	Victoria Apartment Design Guide (minimum area and depth)
Studio	5m <sup>2</sup> and 1.8m	1.8-2.4m	N/A	4m <sup>2</sup>	8m <sup>2</sup> and 1.8
1 bedroom			8m <sup>2</sup> and 2m	8m <sup>2</sup> and 2m	8m <sup>2</sup> and 1.8m
2 bedrooms	10m <sup>2</sup> and 2m		10m <sup>2</sup> and 2m	8m <sup>2</sup> and 2m	
3 bedrooms	10m <sup>2</sup> and 2.5m		12m <sup>2</sup> and 2.4m	12m <sup>2</sup> and 2.4m	
4 bedrooms	10m <sup>2</sup> and 2.5m		12m <sup>2</sup> and 2.4m	12m <sup>2</sup> and 2.4m	

Note: The New South Wales *Low Rise Medium Density Design Guide* recommends a 4m depth, only if a balcony is provided.

Sources:

- Auckland Unitary Plan, Mixed Housing Urban Standard H5.6.14 Outdoor living space.
- Ministry for the Environment. (2023). *National Medium Density Guide*, Section 5, Rule of Thumb.
- Ministry of Housing and Urban Development (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2.1 web), Section 3.6.
- Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Table A2.1-1.
- New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 4 Designing the Building, Design criteria 4E-1, 1 and 2.
- State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Section 3 – Standard D19.

### Section 35 (s35) monitoring

The AUP identifies primary outdoor living space as a key component of delivering high-quality built environments. Auckland Council’s s35 monitoring found that overall, “the performance of primary outdoor living spaces shows a trend that the AUP is not performing as well as it could for the health and wellbeing of residents”.<sup>9</sup> The quality and performance of outdoor living spaces as spaces for children to play and residents to use for passive recreation, gardening or other uses were impacted by:

<sup>9</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, pages 81-82.

- The placement of utilities within the outdoor living space, such as heat pump units, hot water cylinders, sheds, water tanks, and waste/recycling storage – effectively reducing the space to a service courtyard.
- Privacy effects where outdoor space is oriented towards a public street or driveway and an occupant desire to provide higher fencing than the AUP permits, reducing passive surveillance of public and semi-public spaces.
- The cumulative effects of multiple outdoor living spaces adjoining each other in terms of potential for overlooking and privacy effects as well as acoustic privacy.
- Maintenance of outdoor living spaces, particularly lawnmower access for grassed areas, and the proportion of grassed areas that have been replaced with other materials such as artificial turf or pavers to reduce maintenance requirements.
- Lack of space for planting of scale within outdoor living spaces and, more generally, poor implementation of landscape plans and maintenance of landscaped areas across the site.
- The AUP requires sunlight to outdoor living spaces at the equinox but not in mid-winter when residents most need sunlight for their health and wellbeing. Up to a quarter of the developments in the residential sample could have sunlight to some outdoor living spaces compromised due to south-facing orientation or overshadowing by structures and buildings during mid-winter.

It was too soon for the monitoring to identify the effects of the recent Plan Change 16 on the functionality, location and orientation of outdoor living spaces.<sup>10</sup>

### **Design observations**

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Poor connectivity between outdoor living space and internal living rooms, with an increasing number of outdoor spaces accessed via bedrooms (creating privacy conflicts) or garages.
- Outdoor living spaces that front onto a public street, shared vehicle space or pedestrian accessway have reduced privacy, which may lead to additional or higher fencing/screening being implemented by occupants. A reliance on permeable pool type fencing to maintain opportunities for passive surveillance often does not provide sufficient privacy for users of outdoor living spaces and can lead to further screening being added.
- An increased use of artificial turf in outdoor living spaces due to reduced maintenance requirements, also reducing opportunities for landscape treatment and broader contribution to onsite amenity and biodiversity.

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<sup>10</sup> Plan Change 16 (PC16) included a series of changes to correct errors and inconsistencies in all AUP zones and definitions. With respect to outdoor living space, the purpose of the standard included a requirement for outdoor living space to be directly accessible from a kitchen, dining or lounge space, which did not carry through to the wording of the standard itself. PC16 sought to include this requirement in the standard, but the reference was deleted in its entirety from both the purpose of the standard and the standard itself by the Independent Hearings Panel. This means that outdoor living space is now permitted to be accessed from 'non-living' spaces such as bedrooms, laundries or garages.

- Poor consideration of the location and impact of site facilities on functionality and amenity of outdoor living spaces.
- Impacts of retaining walls and fencing on amenity and sunlight access to outdoor living spaces.

The figures below illustrate some of these issues.

**Figure 4: Outdoor living space with hot water cylinder, storage shed and washing line**



Note: Deck is too narrow to accommodate seating for table and chairs. Source: Raywhite.

**Figure 5: Outdoor living space with artificial turf, storage shed, washing line, external heat pump units and hot water cylinder (screened)**



Source: TMDO, Auckland Council.

**Figure 6: Outdoor living space almost entirely decked, with heat pump unit, water tank pump and washing line**



Source: Barfoot and Thompson.



Figure 7: Outdoor living space entirely decked with canopy for shade



Source: TMDO, Auckland Council.

Figure 8: Outdoor living space fronting a street with additional screening (weed mat and brushtix) added to permeable pool fence



Note: Curtains also closed to first-floor bedroom windows. Source: Google Maps.

Figure 9: Outdoor living space overlooking a communal parking area, with additional screening added to permeable pool fence



Source: TMDO, Auckland Council.

Figure 10: Outdoor living space and primary outlook from living space overlooking the street with additional screening added to balcony balustrade



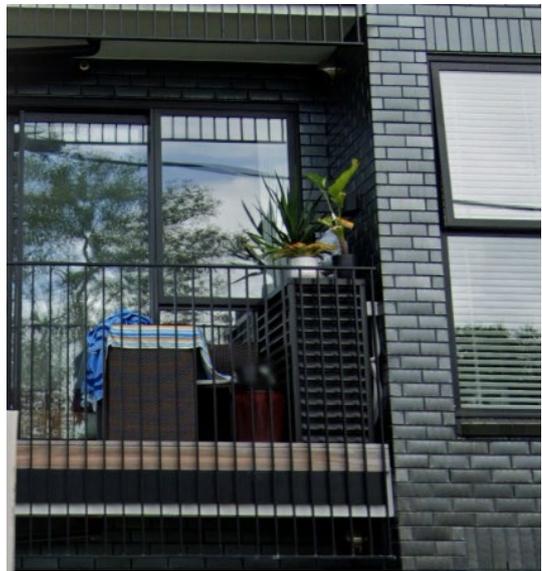
Source: TMDO, Auckland Council.

Figure 11: Screened heat pump unit in ground floor apartment outdoor living



Source: TMDO, Auckland Council.

Figure 12: Screened heat pump unit used as bench for pot plants on apartment balcony



Source: Google Maps.

## 1.1 Site facilities

Facilities such as hot water cylinders and external heat pump units can be (and often are) placed in outdoor living spaces. Different site facilities take up different amounts of space and their presence can limit the remaining available space for outdoor activities, furniture and people.

Table 3 below describes the standard dimensions of common site facilities found in MDH in Auckland, and Figures 13 to 18 on the following page show examples of site facilities in outdoor living spaces.

**Table 3: Sizes of standard site facilities**

Site facility	Standard footprint dimension (m <sup>2</sup> )
Refuse bins (Auckland Council kerbside collection landfill, recycling, and food scraps combined) <sup>11</sup>	1.4
Rainwater tank <sup>12</sup>	1.8-3.2
Hot water cylinder <sup>13</sup>	0.26
Storage shed <sup>14</sup>	2.3
Washing line <sup>15</sup>	2.9
External heat pump unit <sup>16</sup>	0.28
<b>Total possible site facilities in outdoor space</b>	<b>8.9-10.34</b>

If all these possible facilities were placed in the minimum required 20m<sup>2</sup> outdoor living space, it could take up half of the total outdoor living space.<sup>17</sup> The National Medium Density Design Guide recognises this and recommends that when planning outdoor living space that sufficient utility space is also provided for.<sup>18</sup>

<sup>11</sup> *Auckland Design Manual*, Residential Design Element R7: Design for waste.

<sup>12</sup> Various models range in size from 1000-7000 litres.

<sup>13</sup> 250 litre hot water cylinder suitable for 2-5 people, 1.55m high x 0.58m wide. <https://www.cylinderdirect.nz/blog/what-size-hot-water-cylinder-do-we-need>

<sup>14</sup> 1.52m x 1.52m shed.

<sup>15</sup> 24 lineal metre line – 2.2m width x 1.3m depth.

<sup>16</sup> Average of 10 different heat pump models ranging from 5.2-16kilowatts.

<sup>17</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, Typical dimensions of common utilities, page 78.

<sup>18</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 5(I) Around the house.

Figure 13: External heat pump unit, pipes and water tank pump in outdoor living space



Figure 14: Rainwater tank in an outdoor living space



Source: TMDO, Auckland Council.

Figure 15: Storage shed and storage bins in outdoor living space



Figure 16: Washing line and external heat pump unit in outdoor living space



Figure 17: Washing line and storage shed in outdoor living space



Figure 18: Storage shed, washing line, screened hot water cylinder and heat pump units in outdoor living space



Source: TMDO, Auckland Council.

## 2 Research findings

This section presents the research findings on outdoor living spaces and is organised by topic. The section presents the results of the survey, consented plans analysis and in-home immersions. Results on the number and types of outdoor living spaces are in Section 2.1; Section 2.2 focuses on the size of outdoor living spaces; a range of environmental aspects such a connection with indoor living spaces and privacy are the focus of Section 2.3; and Section 2.4 discusses site facilities within outdoor living spaces from the in-home immersions. Outdoor living spaces were a common topic in the survey participant's comments about their likes and dislikes. Themes in the participants' open text responses regarding outdoor living spaces are discussed in Section 2.5.

### 2.1 Number and types of outdoor living spaces

#### 2.1.1 Survey results

The survey participants who had indicated they had some form of outdoor living space were asked to indicate which types of outdoor living spaces were part of their home, from a list of three possible options:<sup>19</sup> living space at ground level (e.g. deck, patio, garden), living space above ground level (e.g. deck or balcony), and rooftop garden or other rooftop space. Participants could select more than one option.

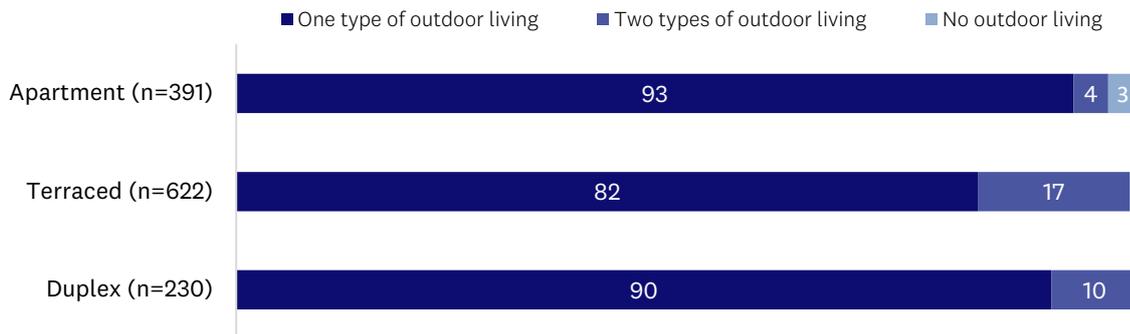
Nine in ten (87%) households reported having only one type of outdoor living space (e.g. only a ground-level space or only a balcony). Those who stated they lived in an apartment were more likely to have reported only one type of outdoor living space (93%) compared with those in terraced houses (82%) (Figure 19) and that tended to be a balcony (Figure 20).

Households in terraced houses (17%) or duplexes (10%) were more likely to have reported two types of outdoor living spaces (most likely a ground-level space and a balcony) compared with those in apartments (4%).

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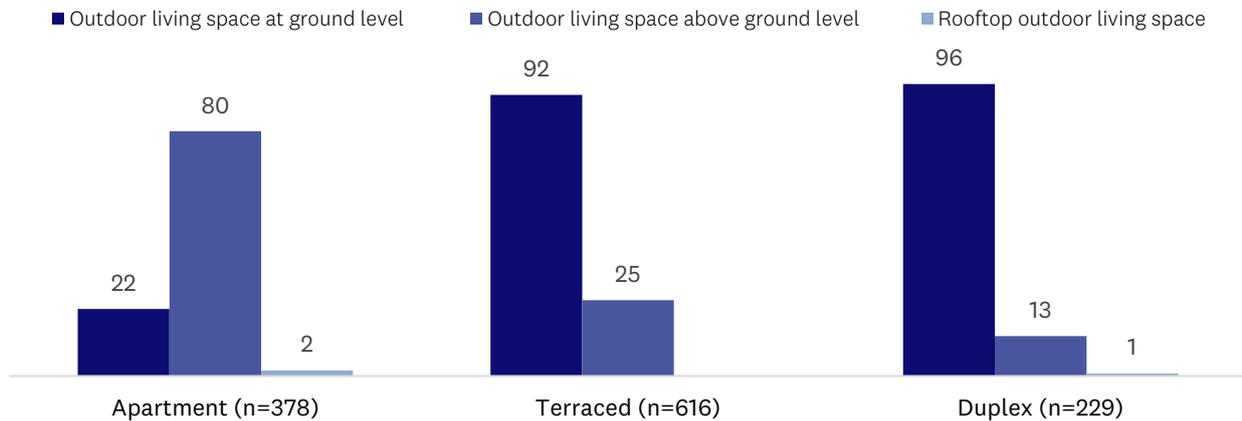
<sup>19</sup>The survey did not ask participants directly whether their property included any form of outdoor space. The presence of outdoor space, or not, was calculated by responses to question 16 in the survey: 'How well do the number of rooms and spaces in your home meet the needs of your household?' If participants provided a response to the item 'Number of outdoor living spaces', they were assumed to have at least one (this excludes those who responded that they did not have that space in their home). The majority of participants (98%) were interpreted to have some form of outdoor living space – only 20 participants reported not having an outdoor living space. Those with outdoor living spaces were then asked Question 19 further on: 'Which of the following outdoor living areas are part of your home?' (See the survey questionnaire in Appendix 5.)

Figure 19: Number of reported types of outdoor living spaces, by typology (%)



Balconies were the most frequently reported type of outdoor living space among those living in apartments (80%). A quarter (22%) of the participants living in apartments reported having a ground-level outdoor living space. Ground-level outdoor living spaces were the most frequently reported type of outdoor living for terraced houses (92%) and duplexes (96%).

Figure 20: Reported types of outdoor living spaces, by typology (%)

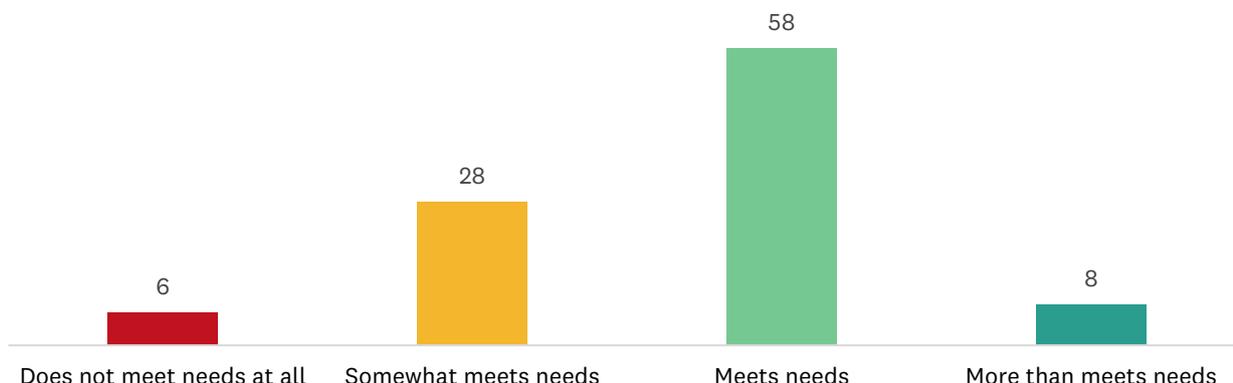


Note: Multiple responses allowed; therefore, total does not sum to 100.

As mentioned above, participants were asked how well the number of outdoor living spaces meets the needs of the household. Over half (58%) reported the number of spaces ‘meet the needs’ of the household, and 28 per cent reported the number of spaces ‘somewhat meets needs’.

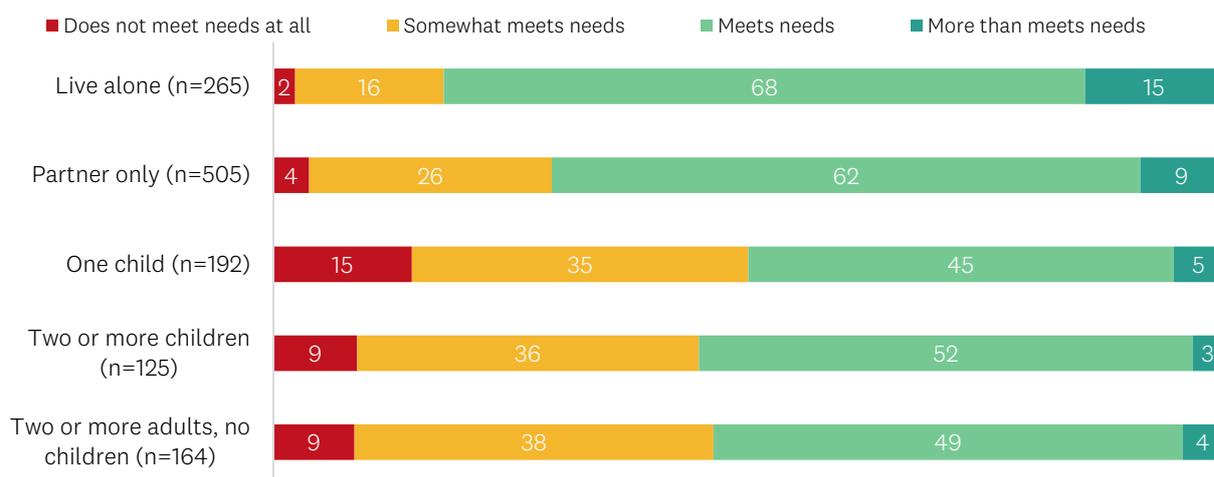
There were differences in how well the number of outdoor living spaces met the needs of different household compositions. As Figure 22 shows, households with one child (15%), two or more children (9%) or with two or more adults, no children (9%) were more likely to have reported that the number of outdoor living spaces ‘does not meet needs at all’ compared with those who live alone (2%). These same household compositions were more likely to have reported that the number of outdoor living spaces ‘somewhat meets needs’: one child (35%), two or more children (36%), and two or more adults, no children (38%), compared with those who live alone (16%).

Figure 21: Participants’ rating of how well the number of outdoor living spaces meets the needs of the household (n=1317) (%)



Note: Base is all participants with an outdoor living space.

Figure 22: How well the number of outdoor living spaces meets the needs of the household, by household composition (%)



Note: Base is all participants with an outdoor living space.

Participants living in an apartment were more likely to report the number of outdoor living spaces ‘meets needs’ (66%) or ‘more than meets needs’ (13%) compared with those in a terraced house (54% and 6%, respectively) or duplex (55% and 5%, respectively). Similarly, those living in terraced homes and duplexes were more likely to report the number of outdoor living spaces ‘somewhat meets needs’ (32% terraced, 35% duplex) compared with those in apartments (17%). This finding is expected given the correlations between household composition and typology: households with children were less likely to live in apartments (see Chapter 3, Section 4.1: Household composition by housing typology).

### 2.1.2 Consented plans

As described in Chapter 3, this study included analysis of the consented floor plans for 110 properties whose households had participated in the survey.

The analysis found a correlation between the types of outdoor living spaces and housing typologies (Table 4). For example, balconies or decks above ground level were most common in apartments, with 77 per cent of the apartments having a balcony.

**Table 4: Number of balconies and decks above ground level, by typology**

	Apartment		Terraced		Duplex	
	count	%	count	%	count	%
None	6	23	56	89	15	75
One	20	77	4	6	5	25
Two	—	—	3	5	—	—

Patios and paved, decked or grassy outdoor living spaces at ground level were more common in terraced houses and duplexes, with 90 per cent of terraced houses and 85 per cent of duplexes having one or more ground-level outdoor living spaces (Table 5). A quarter (23%) of apartments had a ground-level outdoor living space.

**Table 5: Number of patios, paved, decked or grassy outdoor living spaces at ground level, by typology**

	Apartment		Terraced		Duplex	
	count	%	count	%	count	%
None	20	77%	6	10%	3	15%
One	5	19%	53	84%	11	55%
Two	1	4%	4	6%	6	30%

Artificial turf is sometimes used as an alternative to lawn in outdoor spaces as it does not require mowing. However, it is proposed in the AUP Plan Change 78: Intensification that artificial turf is excluded from the landscaped area standard due to sustainability concerns and because it does not contribute to green space. The presence of artificial turf in outdoor spaces was not common in the consented plans. Only nine of the plans recorded artificial turf as a feature, seven of which were terraced houses. However, Council's s35 monitoring observed that some outdoor living spaces had replaced grass with artificial turf.<sup>20</sup>

## 2.2 Size of outdoor living spaces

The size of outdoor living spaces in MDH is addressed in this section, starting with the survey participants' perceptions, followed by the consented plan analysis.

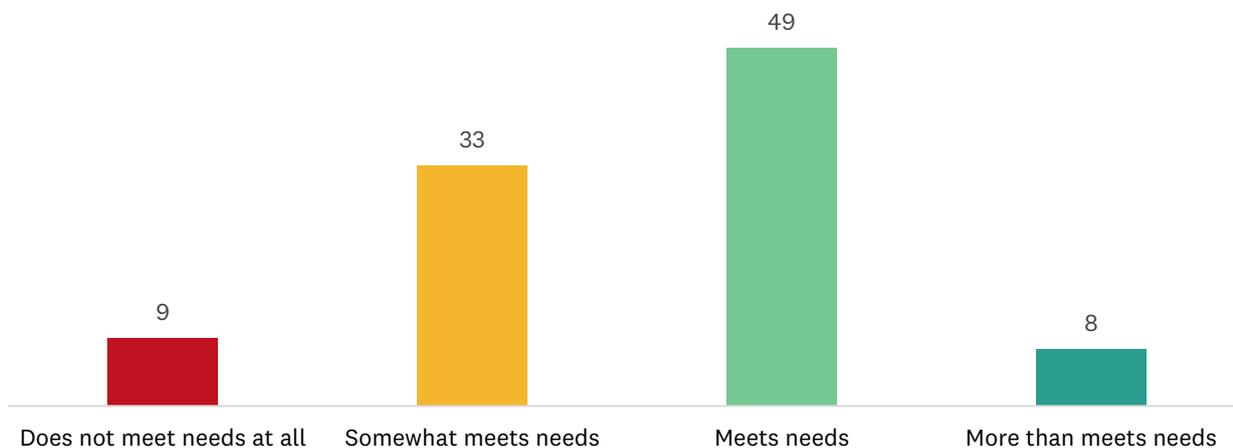
### 2.2.1 Survey results

Participants were asked how well the size of their outdoor living spaces meets the needs of the household. Half (49%) reported the size of outdoor living spaces 'meets the needs' of the household,

<sup>20</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, page 99.

while 33 per cent reported it ‘somewhat meets needs’ and 9 per cent that it ‘does not meet needs at all’.

**Figure 23: Participants’ rating of how well the size of outdoor living space(s) fits the needs of the household (n=1313) (%)**

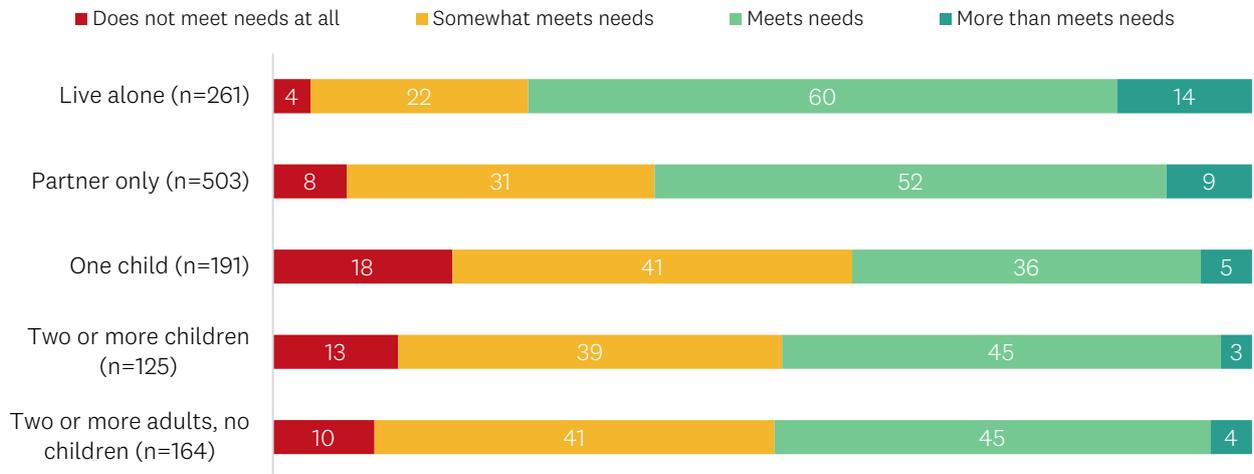


Participants with an outdoor living space at ground level were more likely to report it ‘somewhat’ meets their needs than participants with a balcony (36% compared with 28%). Similarly, those with a balcony were more likely than those with a ground-level space to report this ‘more than meets’ their needs (11% compared with 6%).

There were some differences in how well the size of outdoor living spaces is meeting the needs of households across different household compositions. Those who live alone were more likely to report the size of outdoor living spaces ‘more than meets needs’ (14%) compared with households with one child (5%), two or more children (3%) or two or more adults and no children (4%). Meanwhile households with one child (18%) or two or more children (13%) were more likely to report the size of outdoor living spaces ‘does not meet needs at all’ compared with those who live alone (4%) (Figure 24).

Similar trends in how well the size of outdoor living spaces meets the needs of the household are seen looking at the number of people in a household. Smaller households are more likely to report the size of outdoor living spaces meets the needs of their household compared with larger households. For example, households with one person are more likely to report the size of outdoor living spaces meets the needs of the household (56%) compared with households with three people (34%). Conversely, households with three people are more likely to report the size of outdoor living spaces ‘does not meet needs at all’ (20%) compared with households with one (7%) or two (7%) people.

**Figure 24: How well the size of outdoor living spaces meets the needs of the household, by household composition (%)**



Note: Base is all participants with an outdoor living space.

### 2.2.2 Consented plans

#### Size of balconies for apartments

Balconies range in size from 3.7m<sup>2</sup> to 24.8m<sup>2</sup>. The average sizes of balconies for different numbers of bedrooms are all slightly larger than the AUP minimum size. The average depth of balconies is the AUP recommended minimum of 1.8m.

**Table 6: Size of balconies (m<sup>2</sup>) and depth of balconies (m) for apartments (n=26)**

	Average	Maximum	Minimum	AUP*
1 bedroom	5.2m <sup>2</sup>	6.1m <sup>2</sup>	3.7m <sup>2</sup>	5.0m <sup>2</sup>
2 bedrooms	11.0m <sup>2</sup>	24.8m <sup>2</sup>	4.3m <sup>2</sup>	8.0m <sup>2</sup>
3 bedrooms	9.5m <sup>2</sup>	9.5m <sup>2</sup>	9.5m <sup>2</sup>	8.0m <sup>2</sup>
Depth	1.8m	2.5m	1.0m	1.8m

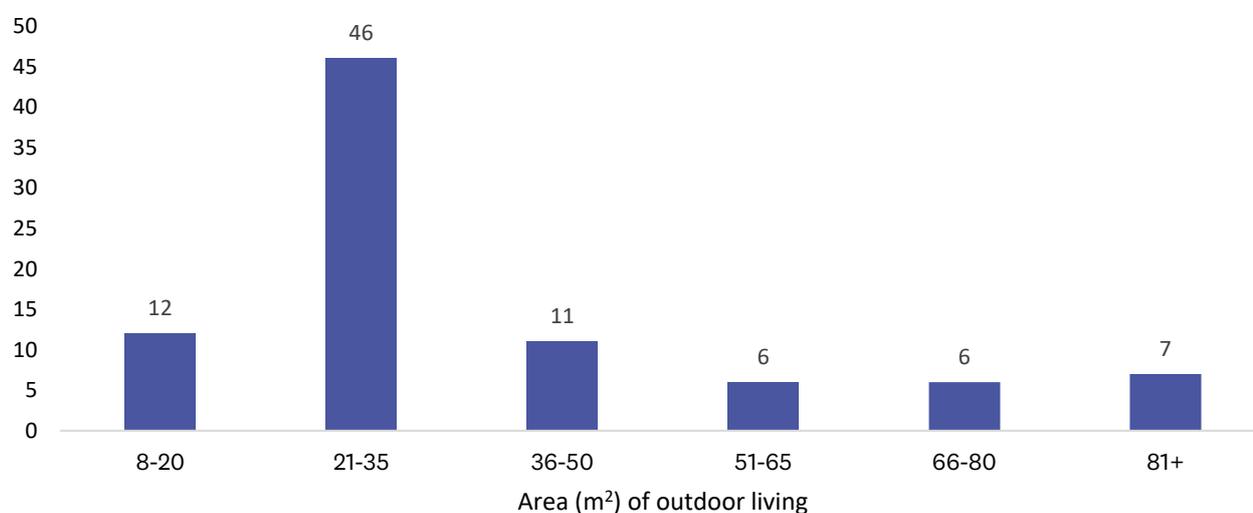
\*Source: Auckland Unitary Plan, Mixed Housing Urban Standard H5.6.14(2).

#### Size of ground-level outdoor living spaces

Apartments, terraced houses and duplexes can all have ground-level outdoor living spaces. Seven of the 28 apartments analysed had a ground-level outdoor living space. The average size of ground-level outdoor living spaces across all typologies is 37m<sup>2</sup>, and for terraced houses (n=68), the average is 34m<sup>2</sup>. One terraced house had no outdoor living space, and 12 other properties had an outdoor living space smaller than the AUP minimum of 20m<sup>2</sup>.

A small sample size prevents directly comparing survey responses on how well the size of their outdoor living space meets the needs of the household with the size of the ground-floor outdoor living spaces. The results suggest that ground-level outdoor living spaces tend to be larger than the AUP minimum of 20m<sup>2</sup>. Only 12 properties (13%) in the consented plan analysis have an outdoor living space smaller than 20m<sup>2</sup>. Survey results show that nearly half (46%) the participants with a ground-level outdoor living space reported its size ‘somewhat’ or ‘does not meet’ their needs. If the sample of consented plans analysed are indicative of the size of outdoor living spaces overall, this suggests that for a large proportion of households 20m<sup>2</sup> is considered to be too small to meet their needs. There is potential for communal outdoor living spaces to offset the size limitations of private outdoor living spaces; see Chapter 9, Section 5: Shared living facilities.

**Figure 25: Area (m<sup>2</sup>) of outdoor living space for terraced houses and duplexes (counts)**



Sixteen properties have a ground-level outdoor living space with a minimum dimension smaller than 4m. Four of these properties are ground floor apartments.

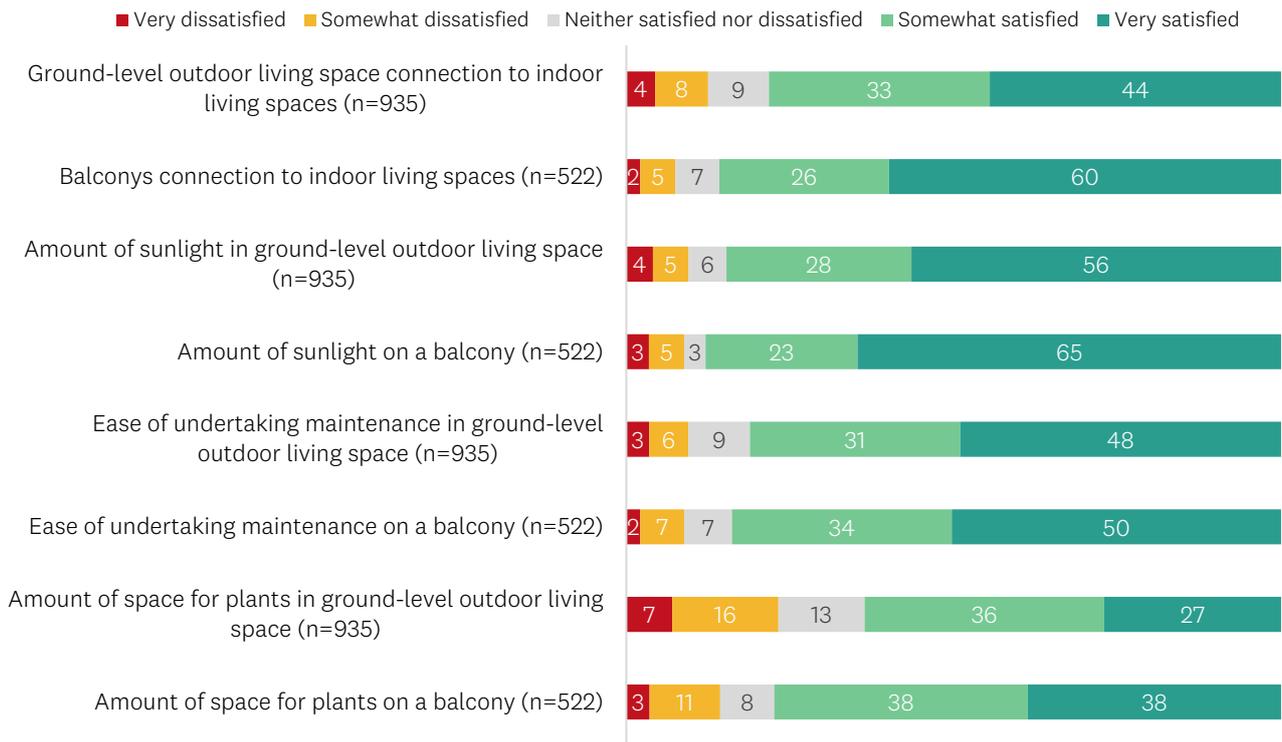
## 2.3 Environmental aspects of outdoor living spaces

### 2.3.1 Survey results

Participants who had outdoor living spaces as part of their home were asked to rate their level of satisfaction with four aspects: connection to indoor living spaces, sunlight, ease of undertaking maintenance (e.g. gardening, cleaning, lawnmowing), and the amount of space for plants (e.g. pot plants, trees, vegetable garden, vertical garden). Results are presented below in Figure 26 from those who had an outdoor living space above ground level (e.g. balcony) and those who had an outdoor space at ground level (e.g. patio). (Note that participants could have both; these are not mutually exclusive categories.) Only 11 participants reported having a rooftop outdoor living space and so their satisfaction with aspects of this space is not reported.

Degrees of satisfaction with different aspects of outdoor living spaces are similar for the participants who have ground-level outdoor living spaces and for those with balconies.<sup>21</sup> The participants with balconies reported having slightly higher satisfaction with the amount of space for plants compared with the participants with ground-level outdoor living spaces. This may be due to differing expectations in the amount of space for plants, with less space anticipated for balconies compared with ground floor spaces.

**Figure 26: Satisfaction with aspects of outdoor living spaces at ground-level and balconies (%)**



Note: Base is all participants with an outdoor living space at ground-level or a balcony.

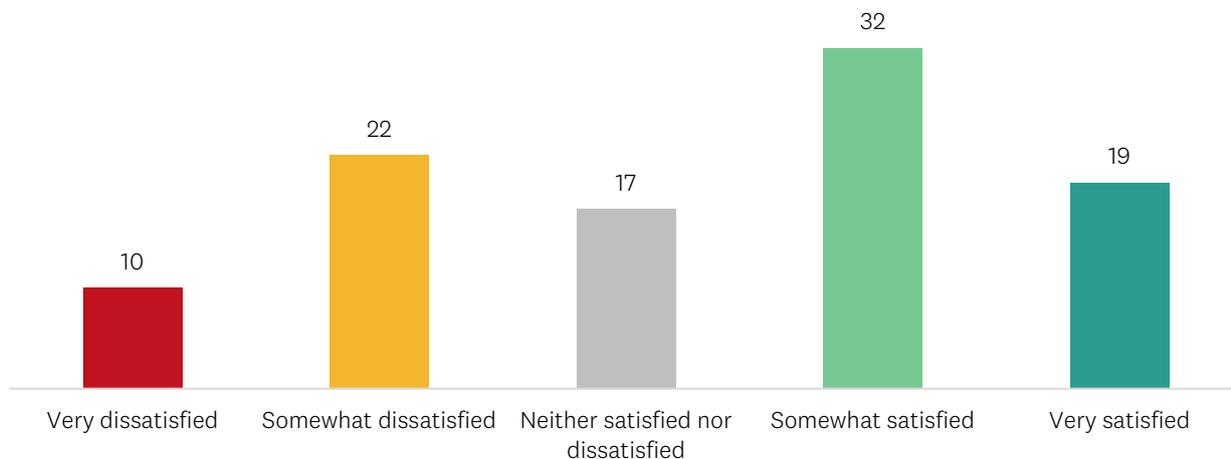
### Privacy

Participants were also asked to rate their level of satisfaction with the privacy of their outdoor living spaces.<sup>22</sup> Results were mixed. Half the participants (51%) are ‘somewhat’ or ‘very satisfied’ and a third (32%) are ‘somewhat’ or ‘very dissatisfied’.

<sup>21</sup> ‘Balcony’ is used in the sentences in the chart and refers to participants who reported having an ‘outdoor living space above ground level (e.g. balcony)’.

<sup>22</sup> Question 24 also asked them to rate levels of satisfaction with privacy inside their home. The results are discussed in Chapter 7, Section 3: Visual privacy.

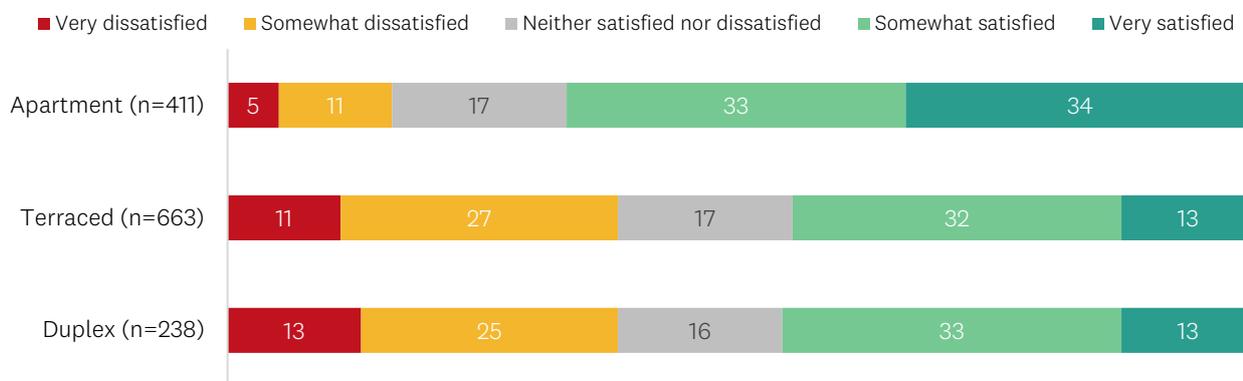
Figure 27: Participants’ rating of satisfaction with privacy in their outdoor living spaces (n=1312) (%)



Note: Base is all participants with an outdoor living space.

There were significant differences in satisfaction with privacy in outdoor living spaces by housing typology. The participants living in apartments are more likely to be ‘very satisfied’ (34%) with privacy in their outdoor living spaces compared with those in terraced houses or duplexes (both 13%). Those living in terraced houses (11%) and duplexes (13%) are more likely to be ‘very dissatisfied’ compared with those in apartments (5%).

Figure 28: Satisfaction with privacy in outdoor living spaces, by typology (%)



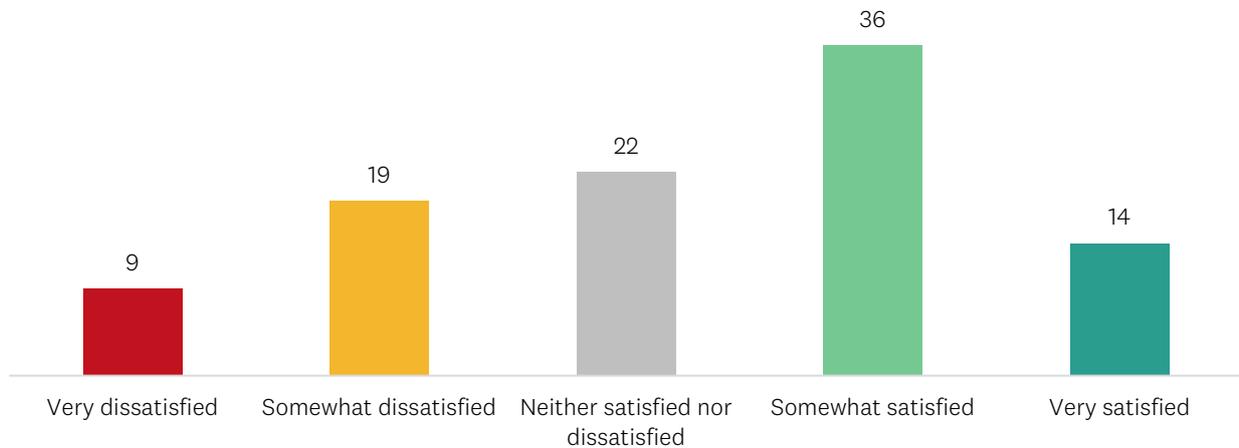
Note: Base is all participants with an outdoor living space.

### Sound

We also asked about satisfaction with sound in outdoor living spaces.<sup>23</sup> Three in ten (28%) participants were ‘somewhat’ or ‘very dissatisfied’ and 22 per cent were ‘neither satisfied nor dissatisfied’.

<sup>23</sup> Question 24 also asked them to rate levels of satisfaction with sound proofing on walls shared with their neighbours. The results are discussed in Chapter 7, Section 4: Sound and soundproofing.

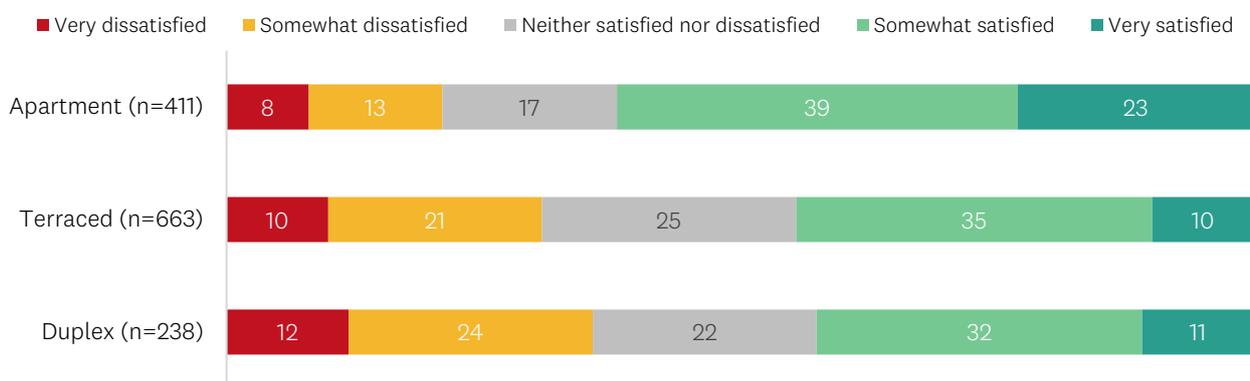
Figure 29: Participants’ rating of satisfaction with amount of sound in outdoor living spaces (n=1312) (%)



Note: Base is all participants with an outdoor living space.

This pattern was consistent across typologies (Figure 30). Participants living in terraced houses (21%) or duplexes (24%) were more likely to report being ‘somewhat dissatisfied’ with the amount of sound in outdoor living spaces than those living in apartments (13%).

Figure 30: Participants’ rating of satisfaction with the amount of sound in outdoor living spaces, by typology (%)



Note: Base is all participants with an outdoor living space.

### 2.3.2 In-home immersions

As described in Chapter 3, Section 1.3, this study included 20 in-home immersions with participants who had completed a survey.

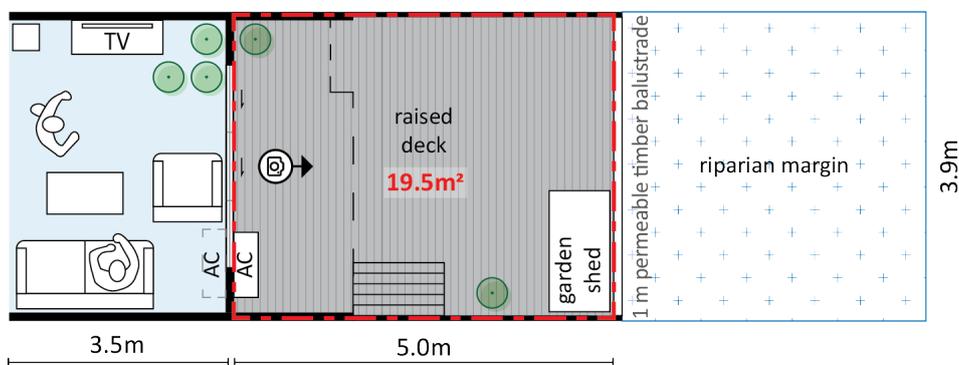
Those we spoke with valued some aspects of their outdoor living spaces and found room for improvement with other aspects. Two recurring themes emerged: perceptions of privacy and modifications to make the outdoor living space private enough, and perceptions of the connection to indoor living spaces with their home and how this affected their use of outdoor spaces.

#### Privacy

Households tended to like outdoor spaces with a high degree of visual privacy. For example, the household of the property shown in Figure 31 like that the garden shed and fencing of the outdoor

area made it feel enclosed on several sides and they also like that it overlooks a public reserve. They commented on enjoying the trees and hearing bird song from the reserve. They saw no issue with the space taken up by the garden shed and were pleased for this to be in this location as it acted as privacy fencing.

Figure 31: Outdoor living space overlooking reserve



Participants, or their neighbours, were making modifications to increase the privacy of their outdoor living spaces. This was often achieved by increasing the height of fencing or adding screening material to make fencing opaque. The neighbours of one household increased the height of the fence between their homes (Figure 32). The participant was comfortable with the height of the original fence but was willing to respect his neighbours' desire for greater privacy.

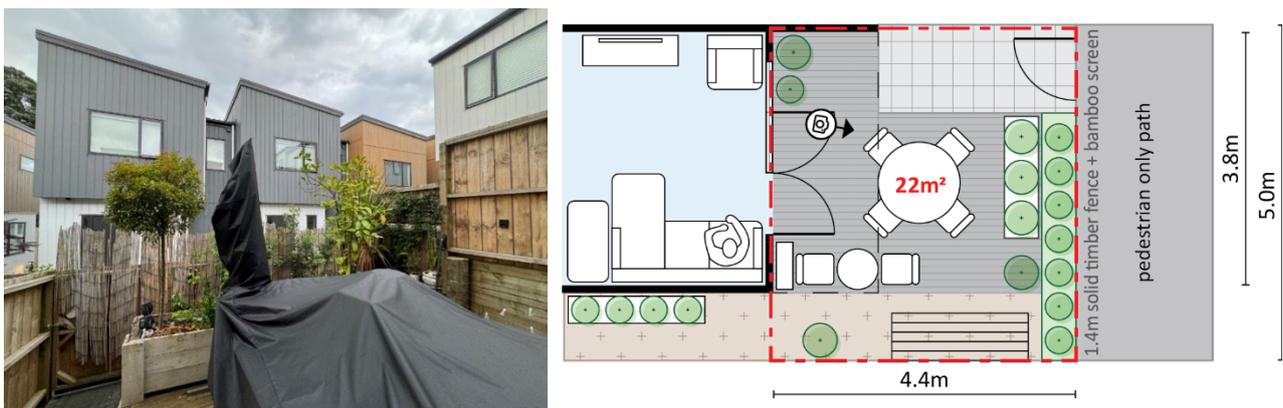
Figure 32: Height of fencing between adjoining outdoor living spaces increased to improve privacy



A household of four adults (a couple and two flatmates) enjoyed entertaining in their outdoor living space (Figure 33). They had added bamboo screening to increase the existing fence height (1.4m) while they waited for plants to grow, in an effort to limit disruption to their neighbours and increase visual privacy for themselves:

*Privacy's definitely a downside of living here, because we've had to put the bamboo things up ... we're just waiting for these plants to grow up just so we have a little bit more privacy, but it's not really for our own privacy. It's more for like if we do have drinks and it goes you know past 10 o'clock, we just feel a bit bad about it. You know, noise escaping ... the bamboo stuff, we did that because as much as it's kind of quite daunting [lack of privacy], the reality is that if someone walked by, they could see you from the waist up, we wouldn't typically be stood talking. We'd sit and then if you sat down, you actually can't see much.*

Figure 33: Bamboo screening attached to increase existing fence (1.4m in height)



Note: Outdoor living space adjoins a pedestrian-only accessway serving 14 other homes.

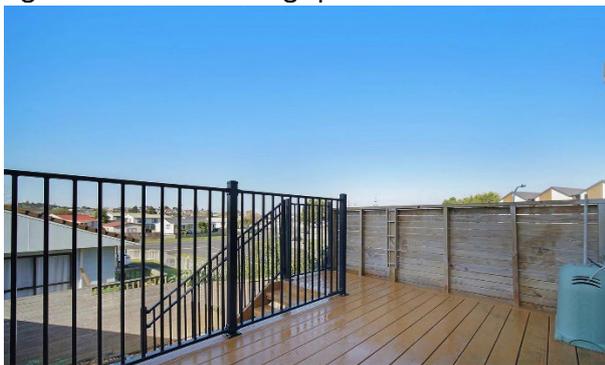
### Connection with indoor living spaces

Insufficient connection between indoor and outdoor living spaces was an issue for at least two households who participated in the in-home immersions, and an issue for other households who participated in the survey, as described in Section 2.3.1.

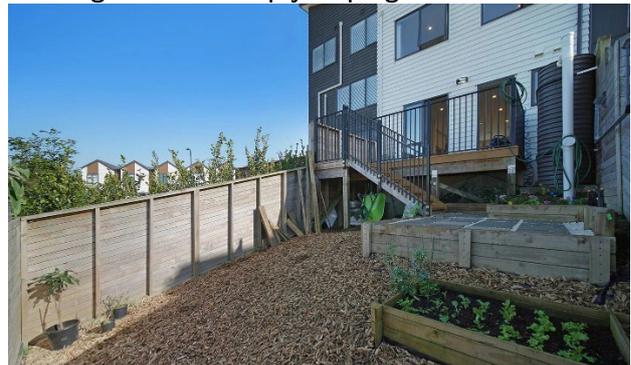
One household described how their outdoor living area was disconnected from their indoor living spaces because it was accessed through the dining area, which is only used for eating when friends visit (Figure 34). The participants found arranging furniture in their lounge and dining space a challenge due to the number of exterior doors (two each in the lounge and dining space), location of power plugs for the TV, and kitchen cabinetry in the dining space (pantry and fridge space). They expressed confusion at the dining space being larger than the lounge and wished the spaces were switched around with the kitchen bench moved “30cm” to provide more space for a lounge (it is noted that the larger dining space could not be used as a lounge due to the lack of uninterrupted wall space for placement of furniture and power plugs). Having the lounge at the rear of the home opening into the outdoor living space, participants thought, would make their home feel more spacious as they imagined using the outdoor living space as an extension of their lounge.

At 46.8m<sup>2</sup>, the total size of the outdoor living space is more than double the AUP minimum of 20m<sup>2</sup>. However, the space is very steep and covered in bark because the participants found it too steep to use a lawnmower, let alone use for activities.

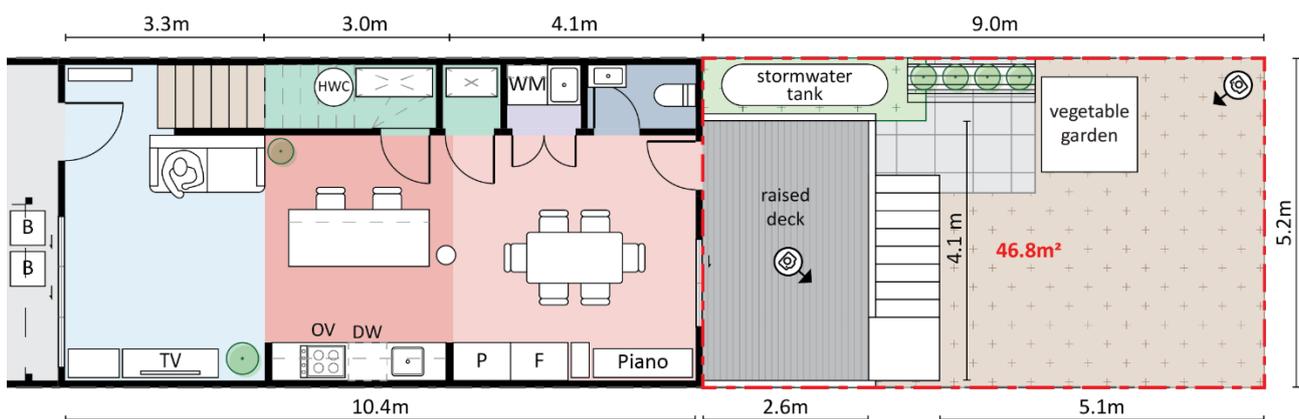
Figure 34: Outdoor living space with a deck and steps leading down to steeply sloping barked area



Source: Remax



Source: Remax



Another household lived in an apartment with a 6m<sup>2</sup> balcony accessible only from the bedroom. The participants commented that this made it hard to have visitors over as the balcony space could not be used as an extension of the living area and there was not enough space to serve food (Figure 35).

Figure 35: Access to apartment balcony only possible via bedroom



## 2.4 Site facilities in outdoor living spaces

This section contains observations about site facilities in outdoor living spaces from the in-home immersions.

While the survey did include questions related to the impact of site facilities on outdoor spaces, results are not presented due to discrepancies between participants responses and analysis of consented plans, which raised doubts regarding how the questions had been interpreted by the survey participants.<sup>24</sup>

### 2.4.1 In-home immersions

Site facilities in the outdoor living spaces of participants' homes included external heat pump units, washing lines, rubbish and recycling bins, water tanks and storage sheds. Participants had different perspectives about the uses of their outdoor living space.

One household's outdoor living space was at the front of their home, behind their car pad and overlooking the street (Figure 36). Currently they use the sunny space for drying laundry on a free-standing rack, but eventually they would like to put a BBQ with table and chairs there. They are content with this use of their outdoor living space.

Figure 36: Drying rack in outdoor living space

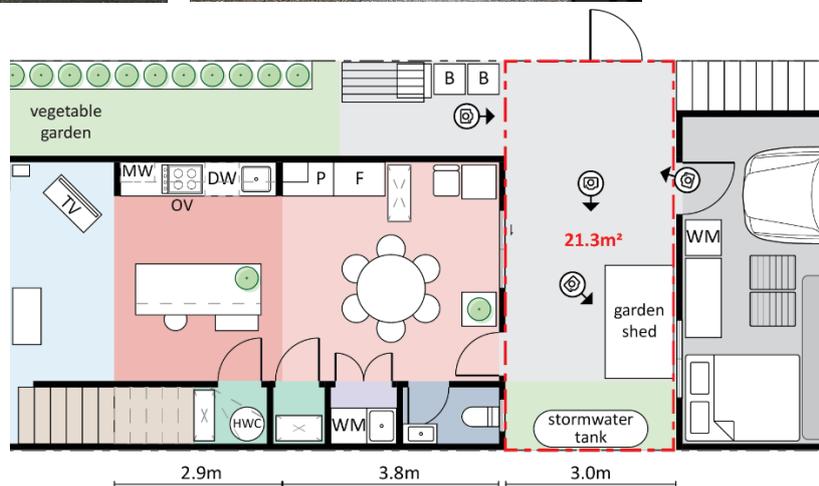


A multigenerational household had several site facilities in their outdoor living space, as well as storage or other items (Figure 37). The outdoor living space also functioned as a walkway between the separate garage, stairs going up to the apartment above the garage, and the main terraced house. These two functions limited the household's ability to use the space for 'living' activities such as dining. The shed in this space is used for wok cooking on a gas cooker as the stove in the kitchen is

<sup>24</sup> Participants who had outdoor living spaces as part of their terraced house or duplex were asked to rate the level of impact (thinking about heat, noise, taking up space and general enjoyment of the space), if any, the location of six separate site facilities had on their outdoor living space. The site facilities were a garden storage shed, external heat pump unit, hot water or gas cylinder, rainwater tank, wheelie or large rubbish and recycling bins, and outdoor washing line. The participants living in apartments with an outdoor living space were asked to rate the level of impact of an external heat pump unit. There were differences between participant responses and what showed on the consented plans for some participants. Due to these differences, the results from the survey are deemed to be unreliable and are not reported on.

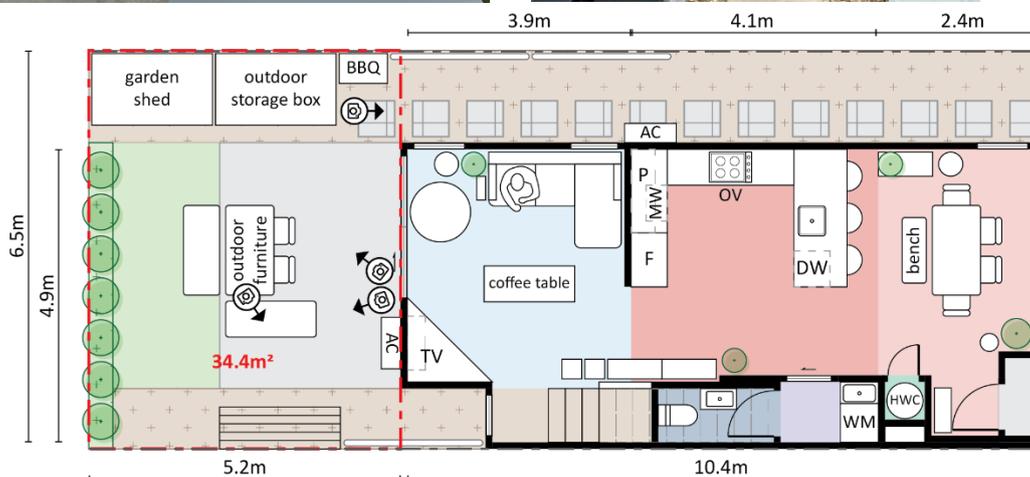
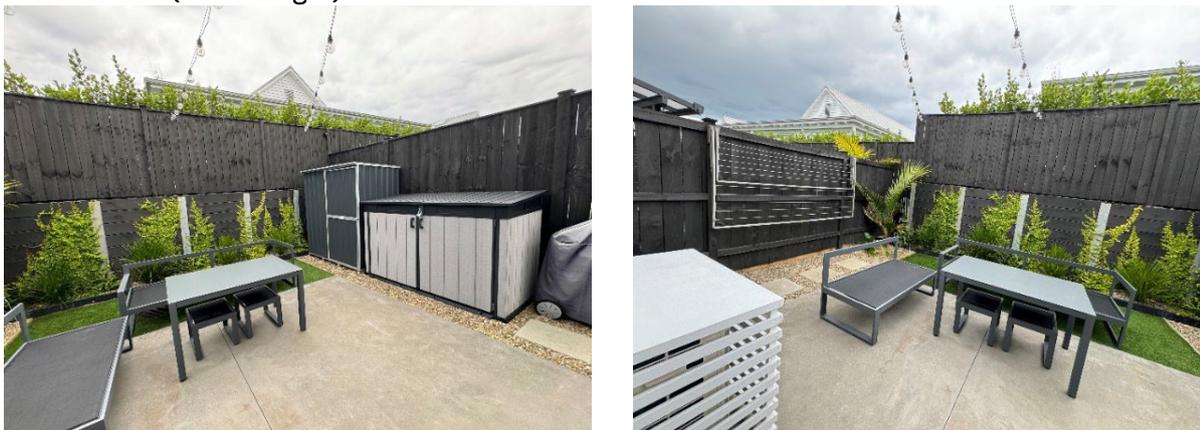
unable to facilitate this style of cooking. The side yard, past the rubbish bins and washing line, contains a garden growing a range of vegetables along the fence.

Figure 37: Cooking and storage shed (top left); water tank, water tank pump, brooms/gardening materials in outdoor living space (top right); stairs up to apartment, door into garage and gate washing line (bottom left, photo taken from inside garage); vegetable garden and rubbish bins in side yard and ranchslider door into dining space (bottom right)



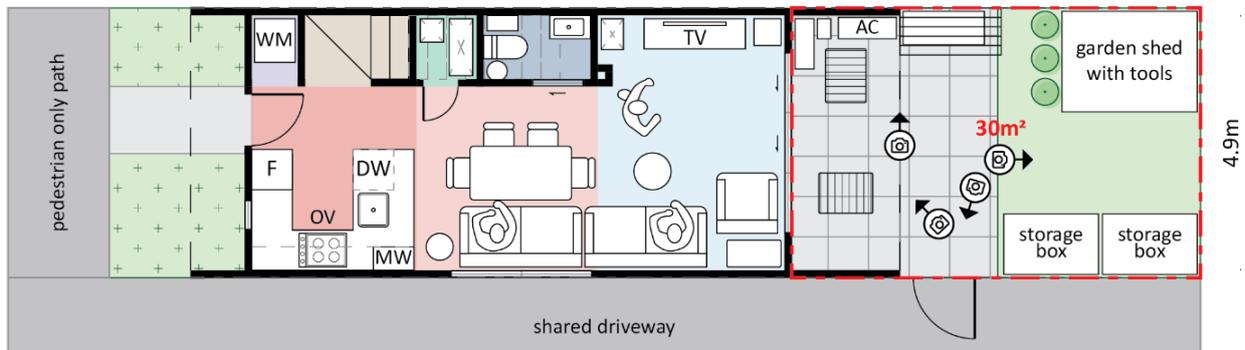
For some, site facilities did not infringe on their space and enabled it to function well. As an example, one of the two storage sheds in Figure 38 stored cushions for the outdoor dining chairs and the top of the heat pump unit enclosure was used as a table for serving drinks and food. This outdoor living space is 34m<sup>2</sup>, which is 70 per cent larger than the minimum required 20m<sup>2</sup> under the AUP. In addition, this home has side yards which are used to accommodate a second heat pump unit and surfboards.

Figure 38: 34m<sup>2</sup> outdoor living space with storage sheds (top left), washing line and enclosed heat pump unit (top right and bottom left) and second air conditioning unit in 1.6m wide side yard alongside storage of surfboards (bottom right)



Another multigenerational household of three adults and two children used their outdoor living space as a place of utility (i.e. storage, laundry and other home management tasks, such as organising rubbish, replacing water bottles) as opposed to a place for living activities (e.g. socialising, play) because of limitations inside their home. The shed and storage units contained goods and materials for the husband's business. Most of the household's shoes were stored in weathertight boxes to the side of the air conditioning unit. Freestanding shelving stored tools, toys, grocery bags and other household possessions. There is both a washing line attached to the fence and two drying racks for laundry. Bins, buckets, boxes and empty water containers are also stored here.

Figure 39 External air conditioning unit, washing line and drying rack, shoe and household item storage, shed and additional storage boxes, all in a 30m<sup>2</sup> outdoor living space



## 2.5 Participants' comments about outdoor spaces

Outdoor living spaces were mentioned by 187 participants in response to questions about what they like and dislike about their home. These comments are discussed below, and in some cases, the participants' quotes are accompanied by images of the consented floor plans of their home and/or photos of their property to provide further context.

Six per cent of the survey participants said their outdoor space was something about their home they like the most. Many of these comments simply mentioned the existence of an outdoor space:

*Having an outdoor space.*

*I like the patio.*

Some mentioned an aspect of their outdoor space they like, such as privacy, sunlight or the outlook:

*Secure private patios and fenced garden.*

*Outdoor space small but enough to do garden and BBQ or just hang around with privacy.*

*The house gets a decent amount of sun; even in winter the garden and deck are nice in summer to relax or to entertain in.*

*The large deck at the back of the house overlooks a reserve with a lot of trees, this provides a lot of privacy and makes me feel like I have my own space.*

*Our outdoor deck gets lots of sun and we have outdoor furniture set up, so the space is very comfortable.*

A few participants said they like the low maintenance of a small outdoor space or the lack of an outdoor space:

*Garden is small and easy to maintain.*

*Small backyard, so less work and low maintenance.*

*I love gardening but I've been ill so not having one to look after is actually quite good.*

Seven per cent of participants reported they had made changes to their outdoor living spaces. These included adding a deck or other changes to the land cover (e.g. artificial turf, pavers). These modifications described by participants to their outdoor living spaces align with the findings of the s35 monitoring that noted challenges with maintaining grass and site facilities imposing on the useable space.

*Built a deck.*

*Laid fake grass outside to make area useable.*

*Replace part of the lawn with pavers near one fence line – that side of the garden has no direct sunlight, which result in very wet lawn and overgrown moss.*

*Outdoor space is only a very small patio, and the garden shed takes up some of that room as well. We moved the washing line to the side of the house which isn't usable anyway, to make the small patio space comfortable to use.*

*Converted barked garden to artificial grass to create larger usable area in outdoor living space.*

Others made changes to improve protection from the elements:

*Added archgola over back deck for more shade and cover from rain.*

*Added deck shade cover that is retractable.*

*Added a patio roof over our deck area.*

*Added outdoor pergola.*

Some made changes to planting. These findings also align with s35 monitoring that found many sites were poorly landscaped and lacked the amount of planting shown in the consented landscape plans.

*Created garden and planting.*

*Planter boxes/vegetable gardens.*

*Changes to outdoor area – deck, outdoor stairs x 2, landscaping (lots of plants planted).*

Ten per cent of participants mentioned their outdoor living space as something they dislike about their home. Comments included that these spaces are too small:

*Small space for backyard.*

*Small size of yard, no grass backyard.*

*Very limited garden space and deck.*

*Tiny outdoor space.*

**Figure 40: Outdoor living space of duplex**



Source: Nearmap Urban Aerial Imagery (NZTM).

Figure 41: Outdoor living spaces of terraced houses



*No outdoor space that everyone in the household has access to. Only a small concrete courtyard attached to the smallest bedroom.*

Note: The outdoor living space is 20m<sup>2</sup> and is shown as being accessed from a 'family room' on the consented plans. The participant's comment suggests that this room is instead being used as a 4th bedroom.

Source: Nearmap Urban Aerial Imagery (NZTM).

Some participants reported issues with privacy, both visual and aural, in their outdoor areas. Section 35 monitoring also noted privacy in outdoor living spaces to be an issue.

*Privacy in my backyard from upstairs neighbours overlooking it and a dog next door that barks at me when I go into my small backyard space.*

*Lack of privacy in garden.*

*It is a small 3bdrm and very small outdoor space, there are a lot of neighbours so doesn't feel very private.*

**Figure 42: Outdoor living spaces of terraced houses facing shared carpark with low fencing**



*Not much privacy in our back patio area, as neighbours are surrounding it and can easily look inside. Would love a bigger back patio for our dogs to play in.*

Source: Google Maps.

**Figure 43: Balconies with 'pool fencing' balustrades allowing direct views between adjacent balconies**



*Not overly private ... people can see our outdoor space from their balconies.*

Source: Google Maps.

Figure 44: Outdoor living spaces of two rows of terraced houses



*r courtyards all back onto one another and noise travels easily. You can hear the neighbours' conversations/arguments, music, children crying, etc.*

Source: Nearmap Urban Aerial Imagery (NZTM).

Some participants mentioned disliking the lack of green space/plants/trees or vegetable garden.<sup>25</sup>

*There's not enough green space, no space for community gardens, hanging out, etc.*

*Lack of gardening ability/interest by neighbours.*

*No community garden to grow veges.*

*Lack of garden space for planting fruits and vegies.*

*I would love a shared garden for vegetable/food growing, and access to space for composting to reduce rubbish.*

Figure 45: No trees on Treeline Lane



Source: Google Maps.

*There's no trees or real green space. Our road is called Treeline Lane and there aren't any trees which is somewhat ironic. More green space would be good and more planting.*

<sup>25</sup> See also Chapter 9, Section 5: Shared living facilities.

## 3 Summary

Outdoor living spaces are recognised in the ADM to be highly valued as they can offset limitations of smaller internal living spaces. The AUP identifies outdoor living spaces as a key component of delivering a high-quality built environment, but s35 monitoring reports that the AUP is not performing as well as it could to enable outdoor living spaces to enhance the health and wellbeing of households.

This study finds that the functionality of outdoor living spaces as spaces for 'living' can be compromised due to space taken up by site facilities (including sheds or boxes used for household storage such as shoes, suitcases, sport equipment), lack of privacy, and poor access from indoor living spaces. Participants reported liking the low maintenance of their outdoor living space and/or making changes to reduce maintenance such as replacing grass/planting with pavers/artificial turf.

The functionality of outdoor living spaces could be improved by better accommodating household storage and other site facilities either inside the home or in dedicated service areas separate from the outdoor living space.

### **Number and size of spaces**

The results are mixed with regard to how well the number and size of outdoor living spaces are meeting the needs of households. For about two-thirds of participants (66%) the number, and for over half (57%) the size, of outdoor living spaces are 'meeting' or 'more than meeting' the needs of the household. For the remaining participants, a third (33%) report the number, and 43 per cent report the size, of outdoor living spaces is 'somewhat' or 'not at all meeting' the needs of the household. Households with children are more likely to report the number and size of outdoor living spaces 'somewhat' meets the needs of the household. Infringement of outdoor living spaces by site facilities could be reducing the capacity of these spaces to act as living spaces, especially for households with children who are more likely to be without a spare bedroom, which may explain this difference in rating.

### **Green space**

Close to a quarter (23%) of participants reported being 'somewhat' or 'very' dissatisfied and 13 per cent report being 'neither satisfied nor dissatisfied' with the amount of space for plants in ground-level outdoor living spaces. Some of the participants who had reported making changes to their outdoor living spaces described creating a garden and planting plants, while others described changing the surface of their outdoor space to be decked, paved or turfed (i.e. artificial grass). When asked what they dislike about their home, some participants described the lack of space in their home for planting or not having a garden. Section 35 monitoring found landscaping of sites to be poorly implemented, which aligns with the participants' comments about plants and gardens.

These results suggest that the amount of green outdoor space in MDH is dissatisfactory for households, and that the amount of water permeable land cover is being reduced to increase the use for living activities (e.g. replacing grass with paving). The proportion of green spaces and water

permeable land is at risk of decreasing as more MDH is delivered across Auckland. This could have implications for wellbeing, biodiversity and resilience to climate change (i.e. from flooding events and increasing temperatures).

Auckland Council's Future Development Strategy aims to mitigate risks of development to biodiversity by encouraging densification in areas already developed, and risks to climate change by discouraging densification in locations at risk of flooding. Consideration is also required to ensure increasing housing density in developed areas is cognisant of climate change impacts (i.e. water and heat; see Chapter 7: Indoor environment), biodiversity and access to green space for wellbeing.

See also Chapter 9, Section 5: Shared living facilities.

### **Visual privacy**

Half (49%) of the survey participants were 'very dissatisfied', 'somewhat dissatisfied' or 'neither satisfied nor dissatisfied' with visual privacy in their outdoor living space. Dissatisfaction is greater in the participants living in terraced houses (38% 'very' or 'somewhat' dissatisfied) and duplexes (38% 'very' or 'somewhat' dissatisfied) compared with those living in apartments (16% 'very' or 'somewhat' dissatisfied). Issues with privacy emerged as a theme in the participants' comments about what they dislike about their home. Some households who participated in an in-home immersion described making changes to their outdoor living spaces in efforts to improve privacy, such as increasing the height of a fence or adding a bamboo screen to effectively increase the fence height.

### **Sound and aural privacy**

Sound in outdoor living spaces is an issue for half the participants (50% were 'very' or 'somewhat' dissatisfied or 'neither satisfied nor dissatisfied' with the amount of sound in their outdoor living spaces). A similar pattern to visual privacy across typologies is seen, with those living in terraced houses (21%) and duplexes (24%) more likely to be 'somewhat dissatisfied' than those living in apartments (13%) with sound in outdoor living spaces. Sound travelling between outdoor living spaces was mentioned by some of the survey participants when describing what they dislike about their home. It was also an issue raised by some of the in-home immersion participants.

Section 35 monitoring reports that the acoustic privacy of multiple adjoining outdoor living spaces is harder to mitigate than visual privacy. This study finds that sound is an issue for similar proportions of participants to visual privacy. Some in-home immersion participants who could hear their neighbours in their outdoor living spaces acknowledged this as a function of living closer together and were accepting of this reality. Comments from participants in both the survey and in-home immersions described modifying their behaviour in attempts to be considerate of their neighbours and to protect their aural privacy, such as avoiding having sensitive conversations or regulating their volume in their outdoor living spaces.

### **Site facilities**

Site facilities such as washing lines, storage sheds, external heat pump units and rainwater tanks can be present in outdoor living spaces and compromise the available space for living. Where these were present in the outdoor living spaces of the in-home immersions and did not compromise the

functionality of the space, the outdoor living space was larger than the 20m<sup>2</sup> minimum required by the AUP.

Some of the site facilities found in outdoor living spaces accommodate functions, such as storage or hot water cylinders, that may be better suited to be provided for inside the home. It appears that a lack of storage for household items and a proliferation of various site facilities, including wheelie bins, are resulting in outdoor living spaces making these accommodations at the cost of providing an outdoor space for living

activities (e.g. eating, socialising, play). As described in Chapter 4 and Chapter 5, households with a spare bedroom, extra bathrooms or WCs, or a garage can use these spaces for storage and laundry. However, households without one of these indoor spaces can become reliant on their outdoor living space to provide these functions instead.

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 7

# Indoor environment



Kathryn Ovenden and Melanie McKelvie

September 2024, Technical Report 2024/6





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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### **Introduction to this chapter**

This chapter discusses environmental factors inside the home. The sections of this chapter are arranged thematically. Each section begins with an overview of regulations and best practice guidance before describing the research results. Survey results are presented first, followed by findings from the in-home immersions. Consented plans tend to have little available information about the topics covered in this chapter and results from analysis of consented plans are briefly included in Section 5.3.

Section 1 discusses temperature, sunshine and shade, followed by Section 2 on ventilation and humidity. All these factors are inter-related and contribute to households' experiences of a comfortable temperature inside year-round. Section 3 focuses on visual privacy and Section 4 on sound and sound proofing (aural privacy). The in-home immersions revealed a strong relationship between privacy (visual and aural) and temperature regulation. Large windows allow a lot of heat and sunlight, which can be mitigated by closing blinds, which also increases privacy. Windows with small openings enable limited airflow and, while critical for heat management, when open, these windows have an impact on aural privacy.

Section 5 describes perceptions of safety and sense of community. Finally, Section 6 summarises the results presented in this chapter.

# 1 Temperature, sunshine and shade

This section discusses temperature, sunshine and shade in and around the home. Regulations and best practice guidelines are described first. Results from the survey and in-home immersions follow.

## 1.1 Regulations and best practice guidelines

### Auckland Unitary Plan

The Auckland Unitary Plan (AUP) does not contain any standards specifically relating to dwelling temperature but does require the design of medium density housing (MDH) for four or more dwellings to consider “the extent to which dwellings optimise sunlight and daylight access based on orientation, function, window design and location and depth of the dwelling floor space”.<sup>1</sup>

In terms of sunlight access, the AUP is primarily concerned with maintaining a reasonable standard of sunlight access to adjoining properties via the height in relation to boundary control. There are no assessment matters or standards relating to the management of temperature or provision of shade within the dwelling or outdoor living spaces.

### Auckland Design Manual (ADM) and best practice guidance

The *Auckland Design Manual* (ADM) recommends that dwellings are comfortably heated and cooled by natural means and encourages the use of passive solar design principles to maximise the ability of the natural environment to heat and cool homes.<sup>2</sup> Mechanisms include insulation, double glazing, designing eaves and shading devices that allow for different sun angles, and thermal mass materials that store heat during the day and release it at night. Deep recessive eaves, mechanical louvres and other passive shading devices can help prevent overheating from the high summer sun on north-facing windows.

Similar guidance is provided in the *National Medium Density Design Guide* and the *Public Housing Design Guidance*,<sup>3,4</sup> which recommend orientating the house and living areas to maximise solar gain for sunlight and warmth to improve energy efficiency. The *National Medium Density Design Guide* recommends that shading devices, such as deeper eaves, louvres and balconies, help maintain indoor comfort in the summer, while still allowing sunlight to heat rooms in the winter, reducing the need for heaters and air conditioners.<sup>5</sup>

Australian design guidance specifies a minimum number of hours of direct sunlight during winter into rooms, as well as considering the window type, size, glazing selection, orientation and placement to respond to the site context. The integration of shading and solar control devices into buildings, to

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<sup>1</sup> E.g. Mixed Housing Urban Assessment Criterion H5.8.2(2)(e)(ii).

<sup>2</sup> *Auckland Design Manual*, Terraced Housing Design, Placing the Building, Section 3.6 Designing for Light and Sun, and Apartment Building Design, Placing the Building, Section 3.5, Designing for Light and Sun.

<sup>3</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 6(A).

<sup>4</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance*, Section 3.2.

<sup>5</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 6(B).

allow winter sun but shade summer sun, along with occupant control are also recommended for climates with variable weather.

The NSW *Apartment Design Guide* requires living rooms and private open spaces of at least 70 per cent of apartments to receive a minimum of 2-3 hours direct sunlight between 9am and 2-3pm at mid-winter, dependent on the geographic location.<sup>6</sup> It also recommends a number of design features to control sunlight access and glare during warmer months, including shading devices such as eaves, awnings, balconies, pergolas, external louvres, horizontal shading to north-facing windows and vertical-shading to east- and west-facing windows.<sup>7</sup>

The NSW *Low Rise Housing Diversity Design Guide* recommends solar and daylight access to dwellings based on dwelling orientation and room depth, with a minimum level of sunlight access to habitable rooms during winter (21 June) as a worst-case scenario for solar access. It also recommends:<sup>8</sup>

- eaves and awnings to provide shade for windows during summer
- reduced or adjustable shading to east- and west-facing windows
- mid- to light-coloured roofs which absorb less heat in summer
- using smart glass or other technologies on north and west elevations.

### **Section 35 monitoring**

No specific analysis was undertaken of temperatures within the home. However, it was noted that significant retaining walls were reducing sunlight access into dwellings and outdoor spaces and that “amenity, sunlight access, privacy (visual and acoustic) and other factors that contribute to quality housing and the health and safety of residents within sites as well as adjoining sites, are being compromised in favour of housing yield in some developments”.<sup>9</sup>

### **Design observations**

The following design matters have been observed by the council’s Tāmaki Makaurau Design Ope (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Anecdotal reports of overheating, particularly in upper floor bedrooms.
- Retrofitting of heat pump or air conditioning condenser units can compromise outdoor living courts or the external appearance of dwellings.
- Floor-to-ceiling glazing is increasingly common in bedrooms, which impacts temperature and privacy issues.
- Internal dwelling layout is manipulated to achieve compliance with AUP standards such as outlook, which can result in the largest glazing facing south over a driveway with poor solar gain and privacy.

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<sup>6</sup> New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 4, Objective 4A-1.

<sup>7</sup> New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 4, Objective 4A-3.

<sup>8</sup> New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 3U, Design guidance 4, 5, 7 & 9.

<sup>9</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, page 119.

Figure 1: Three external air conditioning units attached to terraced house



Source: TMDO, Auckland Council.

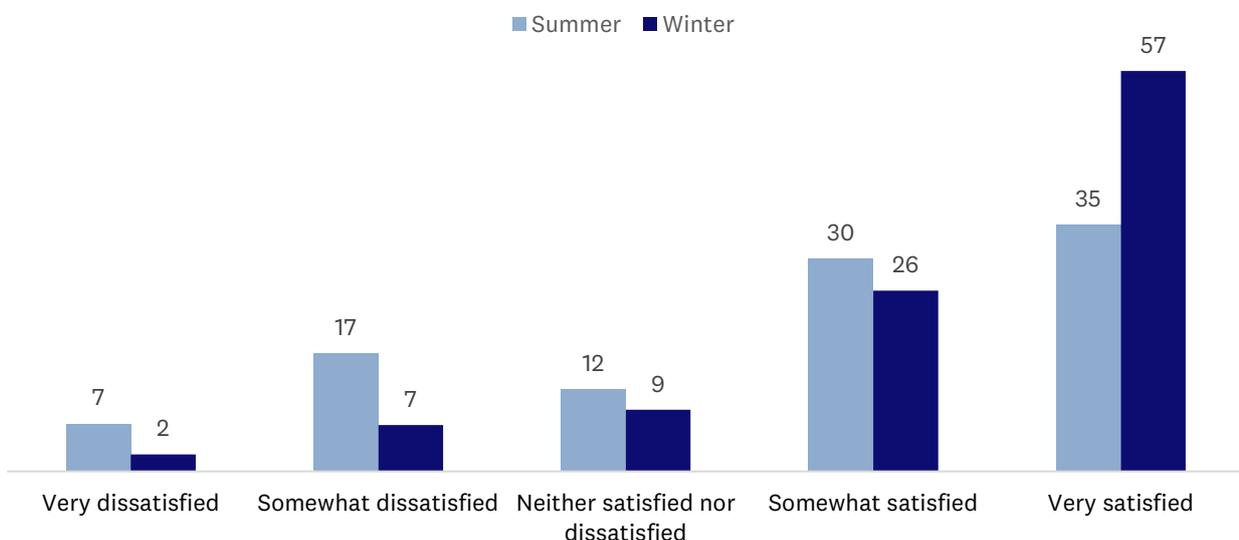
## 1.2 Survey results

Participants were asked to rate their level of satisfaction with five aspects related to the indoor environment in their home: temperature inside their home in summer, temperature inside their home in winter, shade in and around their home, airflow through their home (e.g. through windows, doors, ventilation system), and humidity. Results for the first three aspects are discussed below and results for airflow and humidity are discussed in Section 2.2 of this same chapter.

### Satisfaction with the temperature inside their home

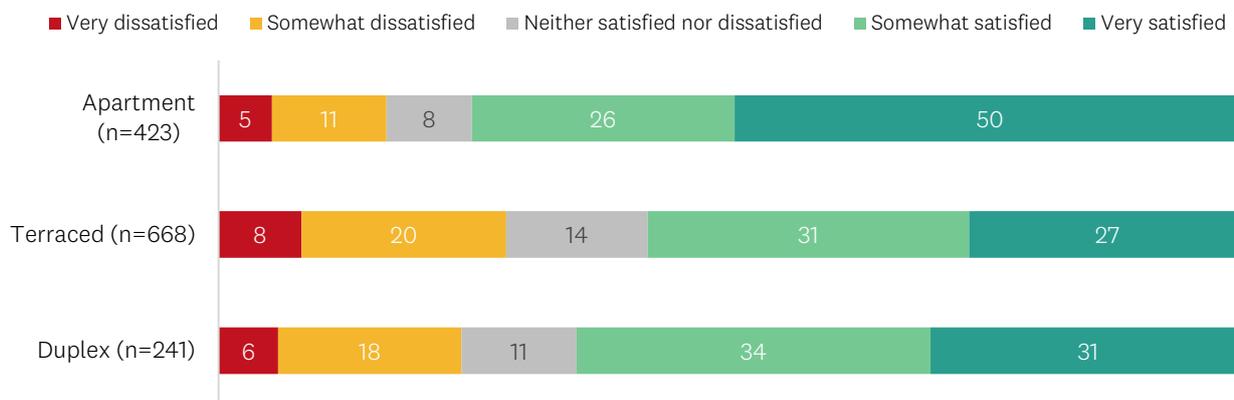
Participants’ satisfaction with temperature inside their home in winter was higher than in summer – over half (57%) stated they were ‘very satisfied’ with the temperature in winter, compared with 35 per cent ‘very satisfied’ in summer (Figure 2).

Figure 2: Participant satisfaction with the temperature inside the home in summer and winter (n=1332) (%)



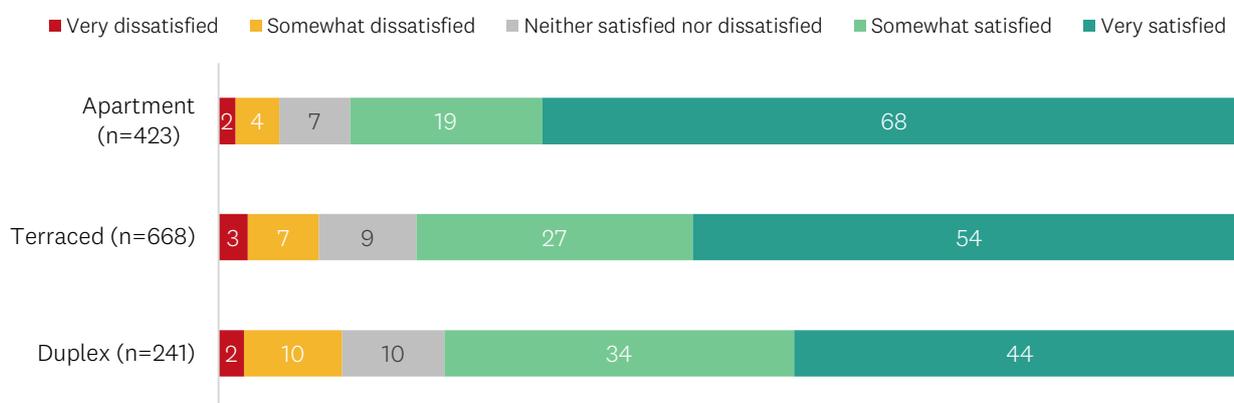
Satisfaction with temperature inside the home in summer varied across housing typologies. Those living in terraced houses (20%) or duplexes (18%) were more likely to have reported being ‘somewhat dissatisfied’ with the temperature inside their home in summer than those living in apartments (11%). Conversely, those in apartments were more likely to have reported being ‘very satisfied’ (50%) with the temperature inside their home than those living in terraced houses (27%) or duplexes (31%).

**Figure 3: Participant satisfaction with temperature inside the home during summer, by typology (%)**



Fewer differences in satisfaction with the temperature inside the home in winter are seen across the three housing typologies. The participants living in apartments are again more likely to have reported being ‘very satisfied’ (68%) with the temperature inside their home in winter than those living in terraced houses (54%) or duplexes (44%).

**Figure 4: Participant satisfaction with the temperature inside the home in winter, by typology (%)**



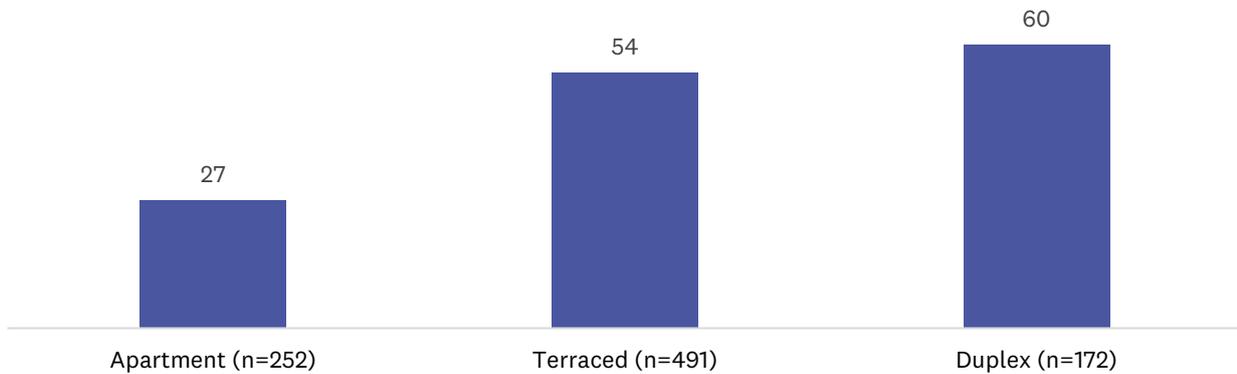
### Modifications to improve temperature

Participants were asked to indicate whether they had made any changes to their home since they had moved in, from a list of six options which included ‘improved temperature’.<sup>10</sup>

<sup>10</sup> Question 26 also asked participants whether they had made changes to the kitchen (Chapter 4); to improve privacy (discussed in this chapter); to increase storage, e.g. chest of drawers or storage cupboard (79% of participants who made at least one kind of change); permanently repurpose a room (13% of participants who made at least one kind of change); improve accessibility (3% of participants who made at least one change); or changes to anything else. Participants could also indicate that they intended to make changes or that they had made no changes and had no intention to. Just over three-quarters (78%) stated they had made at least one sort of change since they had moved in.

Of the participants in households that reported having made a change to their home, almost half (47%) had made changes to their home to improve temperature. Those living in terraced houses (54%) or duplexes (60%) were more likely to have made changes than those living in apartments (27%).

**Figure 5: Household who have made changes to improve temperature (%)**

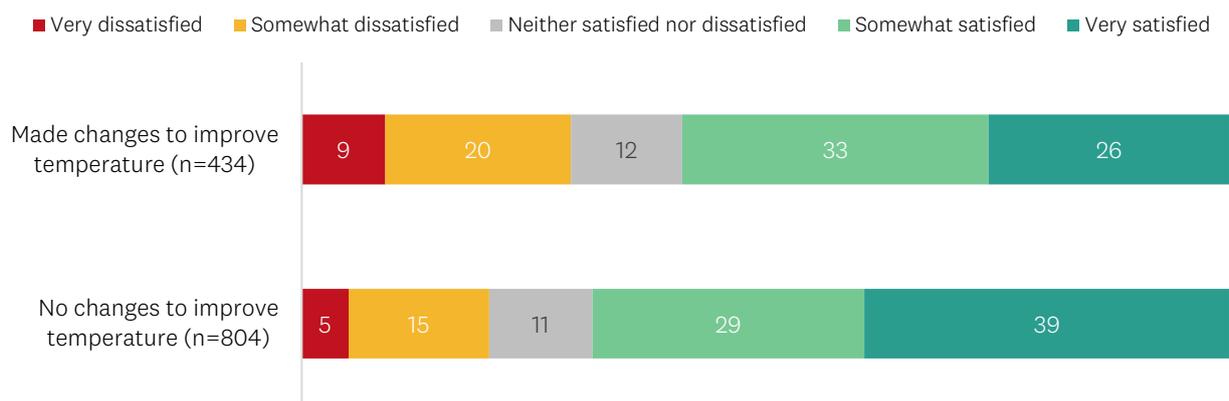


Note: Base is all properties where the participants reported having made at least one change to their home.

Those who had made changes to improve temperature in their home were significantly more likely to be owner-occupiers than renters. Of those who made changes to improve temperature, 94 per cent were owner-occupiers and the remaining 6 per cent renters.

The participants who had not made changes were more likely to have reported being ‘very satisfied’ (39%) compared with those who have made changes (26%).

**Figure 6: Participant satisfaction with temperature inside the home in summer, by changes to improve temperature or not (%)**



Several participants mentioned the changes they had made to improve temperature, in their comments about ‘other’ changes made to their home. Changes included installing window coverings and treatments, changing glazing and installing heat pumps:

*Additional window blinds to filter sun and outdoor patio screen to manage weather.*

*Installing window tint and indoor ventilation system.*

*Added secondary glazing, for noise and temperature control.*

*Installed 4 heat pumps.*

The internal temperature was mentioned by 6 per cent of participants when describing what they dislike about their home. Many of these comments were about homes being too hot in summer.

*Wasn't designed to stay cool in summer. Didn't come with a heat pump so we had to get one installed for much more than it would have cost during building. Council should make cooling and heating systems mandatory in new-build apartments.*

*Very hot in the bedrooms in the Summer, not enough ventilation upstairs.*

*It's a hot box. Upstairs is consistently between 25-32 degrees through summer. The heat is impossible to move upstairs. The aircon/heat pump is great downstairs but does nothing upstairs.*

Eighteen per cent of participants said they like the temperature of their home, commenting that it was warm, well insulated or had double glazing. These positive comments about the home environment were often explained by the home being new.

*It is newly built, double glazed, warm, airy, well positioned for sun.*

*I also love that it is super light and in the winter very warm.*

*Because it is new, it is both low maintenance and well heated. There is no mould and the temperature stay fairly regular; i.e. it stays reasonably cool in summer, and reasonably warm in winter.*

*The modern insulation, double glazing and heating and cooling.*

The degree of sunshine was mentioned by 7 per cent of participants as something they like about their home.

*Warm and gets good sunlight during winter.*

*It's north facing and we get plenty of morning sun.*

*Lots of natural light.*

One participant commented on the impact of sun exposure on the temperature inside their home:

*My apartment faces west and the sun sometimes on sunsets hits directly towards my place with no place to hide, so I put my blinds fully down in the middle of the day.*

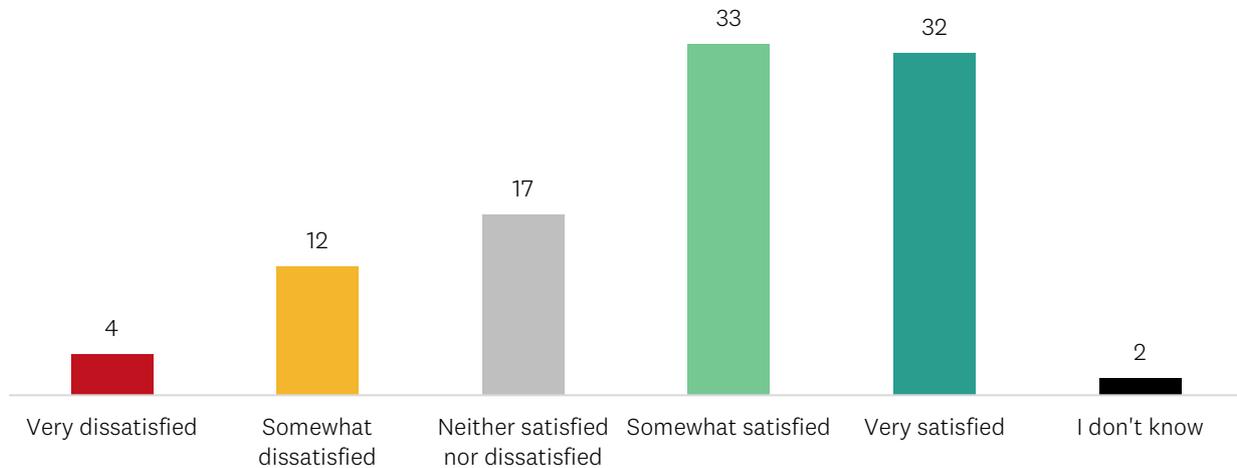
**Figure 7: Apartment with blinds closed**



Source: Google Maps

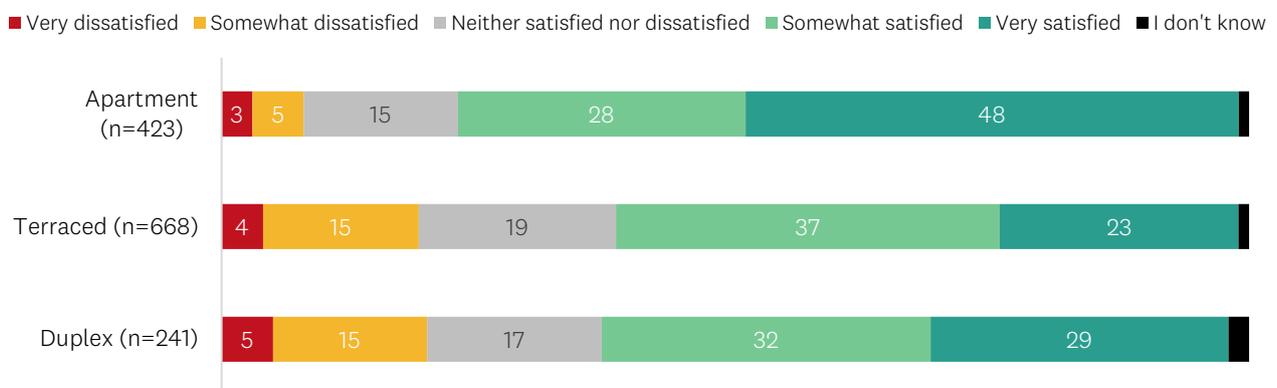
Participants were asked to rate their satisfaction with the amount of shade in and around their home. Two-thirds of participants reported being ‘somewhat’ or ‘very’ satisfied with the amount of shade.

**Figure 8: Participant satisfaction with the amount of shade in and around the home (n=1332) (%)**



The participants living in apartments were more likely to have reported being ‘very satisfied’ (48%) with the amount of shade in and around their home compared with those living in terraced houses (23%) or duplexes (29%). Conversely, those living in terraced houses (15%) or duplexes (15%) were more likely to have reported being ‘somewhat dissatisfied’ compared with those living in apartments (5%).

**Figure 9: Participant satisfaction with the amount of shade in and around the home, by typology (%)**



Some participants reported that they had made modifications to their outdoor living areas to improve the shade of this space. See Chapter 6: Outdoor living spaces for more information.

### 1.3 In-home immersions

As described in Chapter 3, Section 1.3, this study included 20 in-home immersions with participants who had completed a survey.

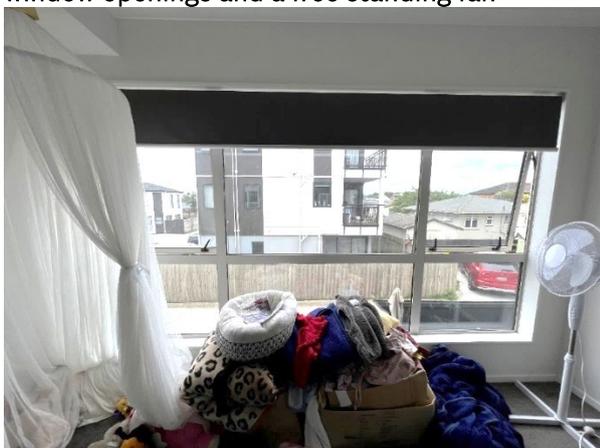
All participants were happy with the warmth and dryness of their homes in the winter, with one person commenting:

*I love the double pane glass. It provides quiet. It provides warmth. We don't have to run a lot of heating in the winter ... because it is a warm house.*

However, managing heat in summer was a challenge for households, particularly in the upper storeys of terraced houses and duplexes. When constructed, only three of the 14 terraced houses and duplexes in the in-home immersions had heat pump or air conditioning units on the ground floor, and none had units on the upper floors.

Participants attributed overheating to the size of windows, small window openings, and a lack of shade (e.g. lack of eaves). The bedroom in Figure 10 shows a window of a size with openings typical of the participating homes. The window takes up most of the exterior wall and two of the six panes open approximately 10cm wide. Figure 11 shows a large bedroom window with small openings. This participant had the curtains partially drawn in effort to increase privacy without preventing airflow.

**Figure 10: Large bedroom window with two small window openings and a free standing fan**



**Figure 11: Curtains partially closed in upstairs bedroom**



Some participants made modifications to their homes, and to how they lived in their home, in response to their homes being too hot in summer. This included keeping blinds closed during the day, and installing ceiling fans and additional air conditioning or heat pump units. Eight of the 14 households in terraced houses and duplexes had retrofitted a heat pump or air conditioning unit into the upper storey of their home, particularly in bedrooms, to cool the room so they could sleep comfortably at night. Other homes had free standing fans and portable air conditioning units in upper-storey rooms. Participants shared that the process of retrospectively installing a heat pump or air conditioning unit was expensive and difficult to do. One participant commented that it cost \$7000 and it was not easy to get permission from the body corporate, as the air conditioning unit and ducting would be installed on the exterior of the building.

Figure 12: Heat pump unit installed in upstairs bedroom for cooling



Figure 12: Closed blinds, ceiling fan and ducted air conditioning vents in spare bedroom



Figure 13: Closed blinds, ceiling fan and ducted air conditioning vents in spare bedroom



Figure 14: Heat pump unit installed in upstairs bedroom for cooling



Figure 15: Portable air conditioning unit in bedroom



Figure 17: Blind closed during the day in a spare bedroom to manage temperature



Retrofitting air conditioning units requires space for ducting, which for one household was placed inside a wardrobe, therefore reducing storage space (Figure 18).

Figure 16: Air conditioning duct in wardrobe



## 2 Ventilation and humidity

This section discusses ventilation and humidity in the home. Regulations and best practice guidelines are described first. Results from the survey and in-home immersions follow.

### 2.1 Regulations and best practice guidelines

Airflow or ventilation is the natural movement and change of fresh air in internal spaces created by using windows (or doors) that can be opened, to create a comfortable indoor environment. Cross-ventilation is the movement of air through an internal space (or spaces) between one external opening such as a window or door and another. Fresh air movement through a dwelling is important because it contributes to thermal comfort, increases passive cooling opportunities, and creates a comfortable and healthy indoor environment. Generally, as a dwelling gets deeper, effective airflow reduces.

Humidity is the concentration of water vapour in the air inside the dwelling and can affect both thermal comfort and indoor air quality. High humidity or damp air can encourage the growth of mould and bacteria, cause condensation on windows and walls, and result in odours in poorly ventilated spaces.

#### **Auckland Unitary Plan**

No specific standards relating to airflow/ventilation or humidity are contained in the AUP. However, a resource consent application for four or more medium density dwellings requires an assessment of the orientation and location of windows “to optimise privacy and encourage natural cross ventilation within the dwelling”.<sup>11</sup>

#### **Auckland Design Manual (ADM) and best practice guidance**

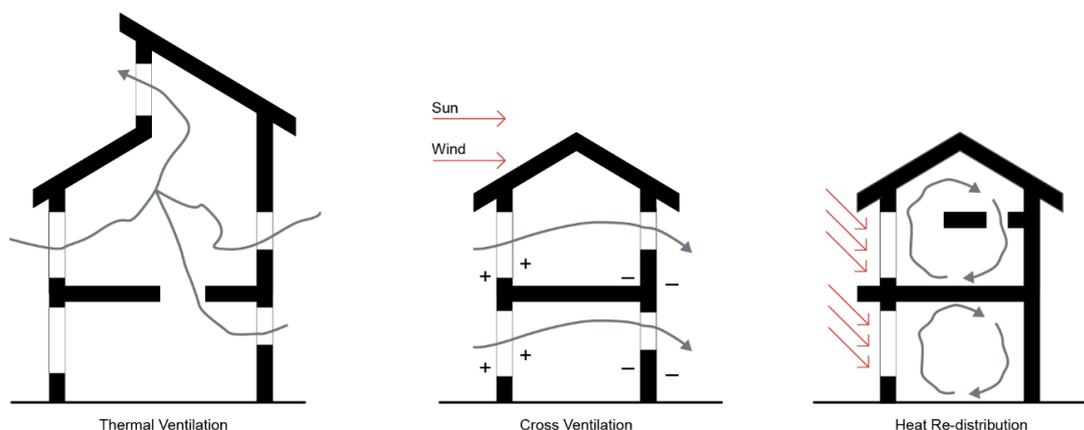
The ADM recommends that sun, light and air movement through a dwelling is optimised, with windows on all external walls. Dual aspect homes will allow for the movement of air through the dwelling (cross ventilation) with windows and doors positioned to take advantage of cooling summer breezes, while avoiding prevailing winter winds.<sup>12</sup> It is more challenging in single aspect homes such as apartments (e.g. only one external wall) to provide opportunities for natural ventilation.

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<sup>11</sup> E.g. Mixed Housing Urban Assessment Criterion H5.8.2(2)(e)(i).

<sup>12</sup> *Auckland Design Manual*, Terraced Housing Design, Section 7.5.2 Ventilating the house.

Figure 17: Ventilation and heat distribution through a dual aspect dwelling



Source: *Auckland Design Manual*, Terraced Housing Design, Section 7.5.2 Ventilating the house.

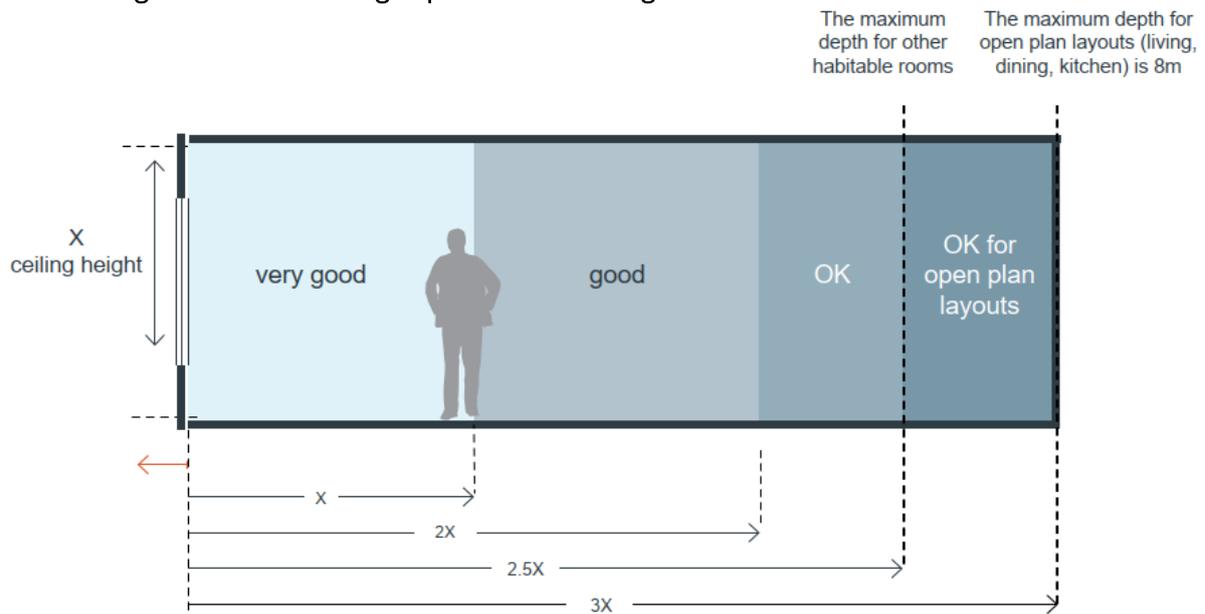
The New South Wales Apartment Design Guide and Low Rise Housing Diversity Design Guide include similar recommendations,<sup>13, 14</sup> namely that:

- Buildings should include windows with an openable area equal to 5 per cent of the floor area to achieve sufficient ventilation.
- Buildings should maximise natural ventilation opportunities by the provision of adjustable windows with large effective openable areas, and a variety of window types such as awning windows and louvre windows to provide safety and flexibility.
- Ceiling fans should be installed to help create air movement.
- Ceiling heights of 2.7m are provided for habitable rooms to improve natural ventilation and daylight access.
- The depth of a single aspect apartment or terraced house relative to the ceiling height directly influences the quality of natural ventilation and daylight access. The maximum depth of open plan layouts that combine living, dining and kitchen spaces is 8m, as illustrated in Figure 20.

<sup>13</sup> New South Wales Department of Planning and Environment. (2015). *New South Wales Apartment Design Guide*, Objectives 4B.1-3 & 4C.1.

<sup>14</sup> New South Wales Department of Planning and Environment, (2020). *Low Rise Housing Diversity Design Guide for complying development*, Sections 31(3), (4), (5) & (9).

Figure 18: NSW guidance on dwelling depth relative to height



Source: New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Figure 4D.3.

The National Medium Density Design Guide recommends large opening windows on either side of the house for effective cross ventilation and passive cooling to reduce energy consumption and greenhouse gas emissions.<sup>15</sup> A minimum ceiling height of 2.7m is also recommended to improve cross ventilation.

### Section 35 monitoring

No specific monitoring analysis was undertaken of airflow/ventilation and humidity.

### Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Ope (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Assessment of how effective the size and placement of windows and doors to encourage cross ventilation is not a major consideration at the resource consent stage.
- Single aspect terraced houses or apartments require more detailed consideration to ensure natural cross ventilation is provided for.

## 2.2 Survey results

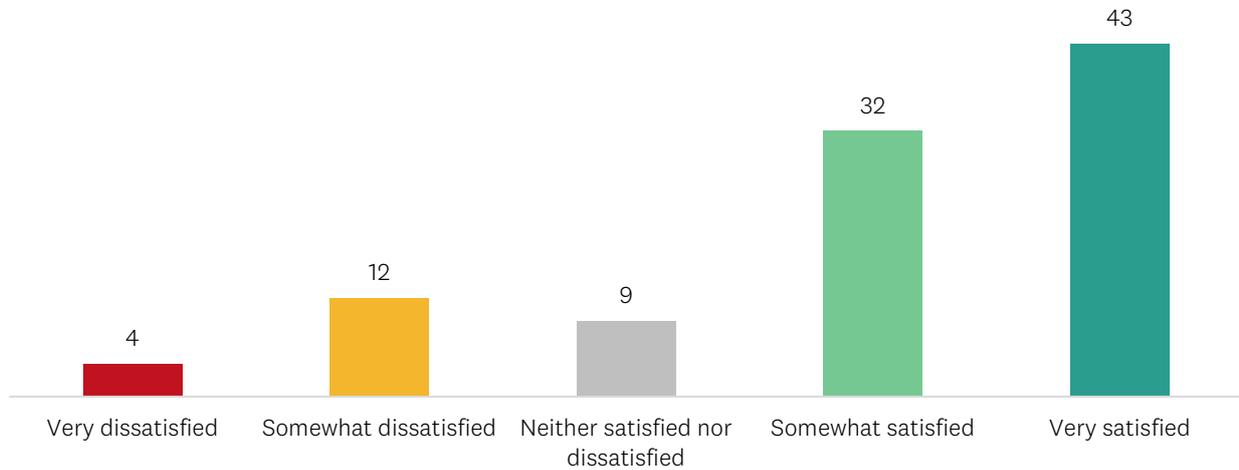
As mentioned in Section 1.2 above, the survey participants were asked to rate their level of satisfaction with five aspects related to the indoor environment in their home, including airflow through their home (e.g. through windows, doors, ventilation system) and humidity. Results for these aspects are discussed below.

<sup>15</sup> Ministry for the Environment, (2023). *National Medium Density Design Guide*, Section 6(c) and Rule of Thumb.

**Airflow**

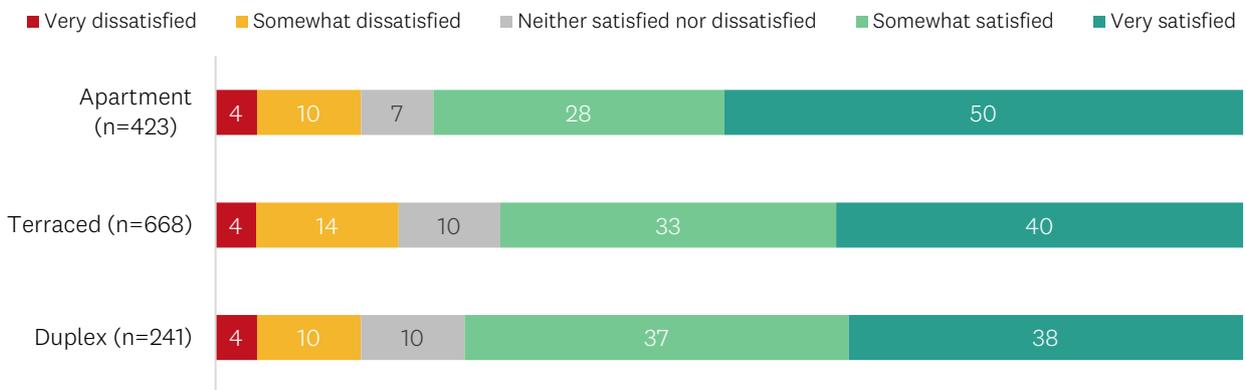
Overall, participants are satisfied with the airflow through their homes with 75 per cent reporting being ‘somewhat’ or ‘very’ satisfied.

**Figure 19: Participants’ rating of satisfaction with airflow through their home (n=1332) (%)**



Small differences are seen in satisfaction with airflow across the three housing typologies. Those living in apartments were more likely to have reported being ‘very satisfied’ (50%) than those living in terraced houses (40%) or duplexes (38%).

**Figure 20: Participant satisfaction with airflow through the home, by typology (%)**



Airflow or ventilation issues were mentioned by a few participants when asked what they dislike about their home.

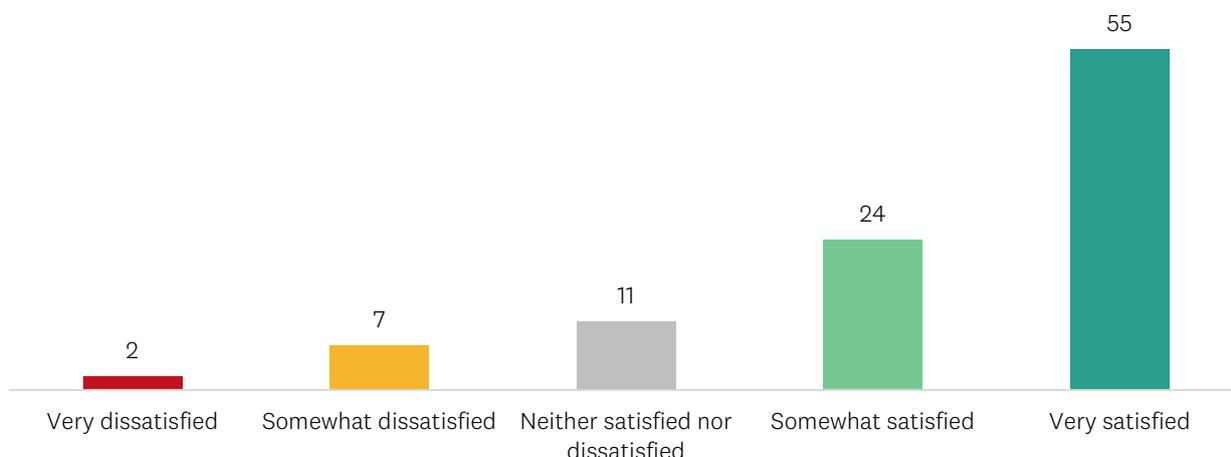
*Difficulty getting through airflow for cooling in summer.*

*Lack of air circulation. Can get stuffy.*

*Lack of ventilation and natural airflow in the bedrooms.*

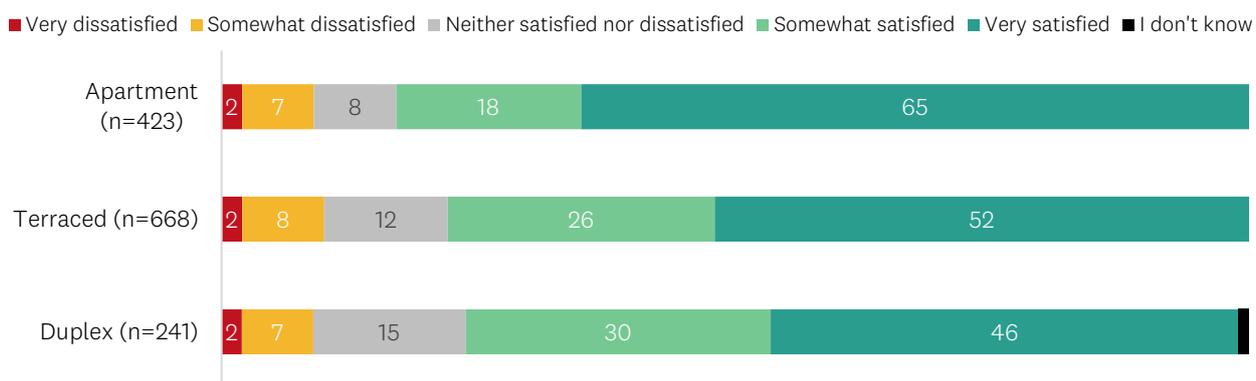
Participants reported high satisfaction with humidity inside their homes with 55 per cent of participants being ‘very satisfied’.

Figure 21: Participant satisfaction with humidity inside the home (n=1332) (%)



Few differences in satisfaction with humidity are seen across the three housing typologies. Those living in apartments were more likely to have reported being ‘very satisfied’ (65%) than those living in terraced houses (52%) or duplexes (46%).

Figure 22: Participant satisfaction with humidity inside the home, by typology (%)



Liking that their home is dry or has good humidity was mentioned by 8 per cent of participants.

*Temperature and humidity is good.*

*It's dry, retains heat well.*

*New, clean, warm, dry. No mould or drafts.*

*It is a lot better than my previous house. House is not damp, insulation is very good.*

Thirteen participants reported making modifications to improve ventilation or manage humidity. This included installing ventilation systems, removing latches to open windows, and managing bathroom moisture.

*Had an HRV put in for dampness.*

*Shower domes on showers, removed safety latches on windows for more airflow.*

*Added new better quality extractor fans to the 2 bathrooms as the previous ones weren't strong enough and I was concerned about moisture ... and then will get 2 heat pumps installed (upstairs and downstairs to combat the heat of summer in west facing windows).*

## 2.3 In-home immersions

Achieving airflow through homes was challenging for many of the participants living in terraced houses and duplexes. Many attributed this to restrictions on how much windows could be opened,<sup>16</sup> and their need for windows to always remain open to support temperature regulation. In turn, this resulted in unintended consequences of odour, sound and rain entering the home (Figure 25).

Figure 23: Windows kept open for airflow can result in rain on windowsill

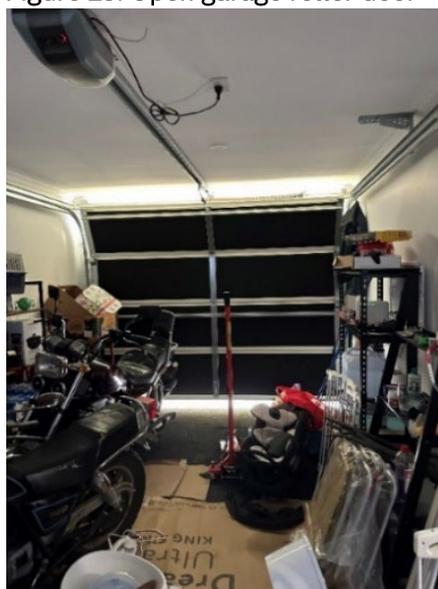


One household had created an intricate system to create airflow using open windows and keeping the garage roller door slightly open (Figure 26 and Figure 27).

Figure 24: Open window in laundry at back of garage



Figure 25: Open garage roller door



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<sup>16</sup> New Zealand Building Code Acceptable Solution and Verification Methods F4/AS1.2.1.1 Safety from Falling requires a maximum window opening of 100mm where there is a possible height of fall from an open window which is more than 1000mm.

## 3 Visual privacy

This section discusses visual privacy within and around the home; i.e. households being able to use their homes and outdoor living spaces without being (or being perceived to be) overlooked or watched. Regulations and best practice guidelines are described first. Results from the survey and in-home immersions follow.

### 3.1 Regulations and best practice guidelines

Visual privacy is specific to the design and layout of each dwelling and site, and its relationship to surrounding properties and spaces. Privacy is also influenced by the type of activities undertaken in a space, how often they occur, and the privacy expectations of occupants.

#### Auckland Unitary Plan

The AUP requires the effects of development to be managed to provide adequate privacy both within a site and to adjacent neighbours. Standards to achieve this include:

- Alternative height in relation to boundary – “minimising overlooking and privacy effects to immediate neighbours”<sup>17</sup>
- Outlook – “ensuring a reasonable standard of visual privacy between habitable rooms of different buildings on the same or adjacent sites”<sup>18</sup>
- Front, side and rear fences and walls – “provide privacy for dwellings while enabling opportunities for passive surveillance of the street or adjoining public place”.<sup>19</sup>

The need for privacy also needs to be balanced against the provision of passive surveillance or windows of active internal rooms overlooking the street and other public spaces. The AUP requires an assessment as to “the extent to which development achieves attractive and safe streets and public open space by providing doors, windows and/or balconies facing the street and public open spaces” as well as “windows being orientated and located to optimise privacy”.<sup>20, 21</sup>

#### Auckland Design Manual (ADM) and best practice guidance

The ADM, New South Wales Apartment Design Guide and Low Rise Housing Diversity Design Guide all recommend a minimum back-to-back distance of 12m between dwellings,<sup>22, 23, 24</sup> with the NSW Apartment Design Guide also applying this setback to the edge of balconies.

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<sup>17</sup> E.g. Mixed Housing Urban Standard H5.6.6 Alternative height in relation to boundary, Purpose Statement.

<sup>18</sup> E.g. Mixed Housing Urban Standard H5.6.12 Outlook, Purpose Statement.

<sup>19</sup> E.g. Mixed Housing Urban Standard H5.6.15 Front, side and rear fences and walls, Purpose Statement.

<sup>20</sup> E.g. Mixed Housing Urban Assessment Criterion H5.8.2(2)(c)(i).

<sup>21</sup> E.g. Mixed Housing Urban Assessment Criterion H5.8.2(2)(e)(i).

<sup>22</sup> *Auckland Design Manual*, Terraced Housing Design, Section 3.4 Building separation and outlook.

<sup>23</sup> New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Objective 3F-1.

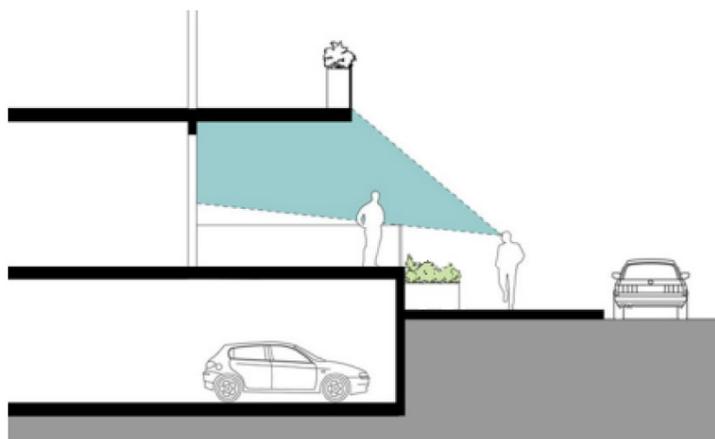
<sup>24</sup> New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 30 Visual privacy.

The ADM further recommends that if terraced houses are separated by less than 15m, and more generally for apartment buildings, that the following additional design solutions are applied to achieve adequate levels of privacy:<sup>25</sup>

- offsetting windows on elevations that face each other
- staggering the building line or incorporating fins between dwellings
- recessed balconies and semi-solid or solid balustrades
- louvres or screen panels on windows and/or balconies
- fencing
- vegetation/planter boxes
- pergolas and other shading devices to limit overlooking into private open space.

The ADM recommends elevating the ground floor of a building by up to 0.6 metre to improve occupant privacy, particularly where the front yard is less than 3 metres. This elevation helps to raise the occupants above the eye level of passers-by, thus improving privacy.

**Figure 26: Raising the ground floor of a dwelling above the street level can improve privacy**



Source: *Auckland Design Manual*, Residential Design Element R5: Visual privacy.

The National Medium Density Housing Guidelines and Public Housing Design Guidance recommend that the window locations are considered to ensure adequate privacy and outlook as well as design methods such as offset windows, use of screens and setbacks, and placing more sensitive room uses such as bedrooms on upper floors.<sup>26</sup> The Public Housing Design Guidance also discourages the use of glazed sliding doors for the main entrance to the dwelling for privacy reasons,<sup>27</sup> and that visual privacy is maintained between homes and any common circulation spaces.<sup>28</sup>

<sup>25</sup> *Auckland Design Manual*, Terraced Housing Design, Section 3.5 Respect the neighbours, and Apartment Building Design, Section 3.4 Designing for privacy.

<sup>26</sup> Ministry for the Environment. (2023). *National Medium Density Design Housing Guide*, Section 2(D).

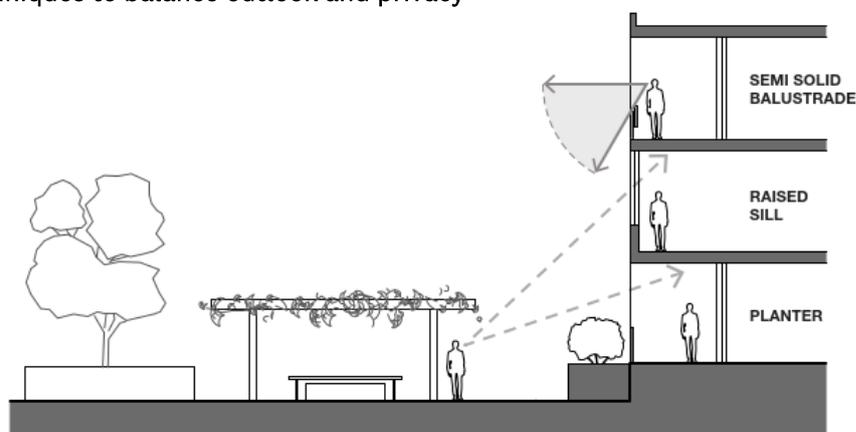
<sup>27</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 3.4.

<sup>28</sup> *Ibid*, Section 3.1.

The Victoria Apartment Design Guide requires building setbacks to improve privacy and avoids outlook towards the side of narrow sites.<sup>29</sup> Design techniques such as oblique windows, sill and balustrade heights to limit direct views downwards (Figure 29); pergola and shading devices to screen views to dwellings and private open spaces; operable external blinds or screens to habitable room windows to enable flexibility in outlook and privacy; and landscaping are all recommended to provide privacy.

It is noted that all the design guidance focuses on privacy between windows and balconies of facing buildings or a building and the street, but do not appear to address the privacy impacts of accessways (vehicle and/or pedestrian) adjacent to windows of dwellings, which is an increasingly common site layout in Tāmaki Makaurau / Auckland.

**Figure 27: Design techniques to balance outlook and privacy**



Source: State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines*, Section 3 Guide to windows.

### **Section 35 (s35) monitoring**

The council's s35 monitoring found that:<sup>30</sup>

- Primary living areas with outlook spaces over driveways or carparking areas resulted in poorer quality outlook and privacy for residents.
- Half of the developments had 50-100 per cent of their dwellings facing adjoining sites, with potential privacy issues (visual and acoustic) arising from the configuration and location of outdoor living spaces, including balconies.
- Where dwellings are set back a short distance from the street, with their main living room outlook over the street, this could create privacy conflicts with residents drawing their blinds/curtains or erecting higher fences, which compromised the attractiveness and passive surveillance of the street.

<sup>29</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Section 1 Siting and building arrangement.

<sup>30</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, pages (viii), (ix), 41 and 69-71.

### Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- A tension between passive surveillance and privacy where windows of internal living areas (lounge, dining and bedrooms, in particular) directly face and overlook a public (e.g. street or park) or semi-public space (e.g. shared driveway, pedestrian accessway or communal carpark). This tension can lead to windows being covered with blinds or similar, due to the proximity of people looking into the dwelling. This is exacerbated by the lack of a buffer such as the front yard setback required between a dwelling and the street, or between dwellings and shared vehicle or pedestrian accessways and parking.
- Large floor-to-ceiling glazing, particularly on upper-floor bedrooms, reduces privacy for occupants as well as reducing room flexibility for furniture placement.

Figure 28: Blinds closed on living room and bedroom windows that overlook the street



Source: Google Maps.

Figure 29: Floor-to-ceiling bedroom glazing with frosted glass on lower pane for privacy



Source: TMDO, Auckland Council.

Figure 30: Outlook from internal living space over shared driveway and public street with blinds closed

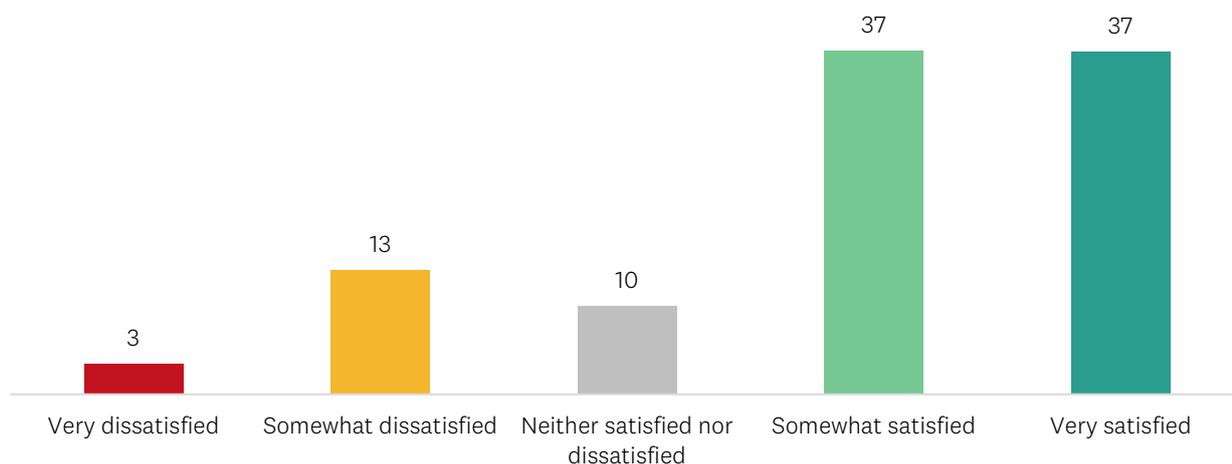


Source: TMDO, Auckland Council.

### 3.2 Survey results

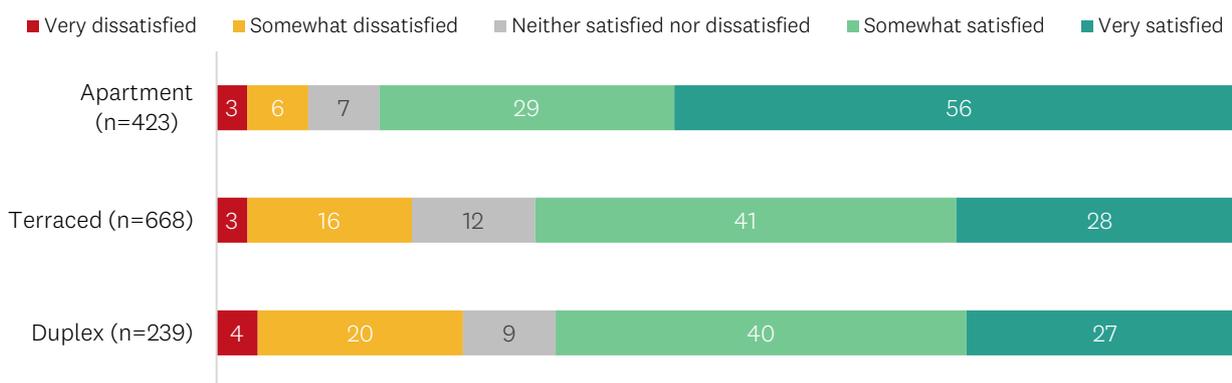
Participants were asked to rate their level of satisfaction with the privacy inside their home.<sup>31</sup> Overall, participants reported high satisfaction with privacy inside their homes with only 16 per cent reporting being ‘somewhat’ or ‘very’ dissatisfied.

Figure 31: Participants’ rating of satisfaction with privacy inside the home (n=1330) (%)



Some differences in satisfaction with privacy are seen across the three housing typologies. The participants living in apartments were more likely to have reported being ‘very satisfied’ (56%) than those living in terraced houses (28%) and duplexes (27%). Conversely, those living in terraced houses (16%) or duplexes (20%) were more likely to have reported being ‘somewhat dissatisfied’ than those living in apartments (6%).

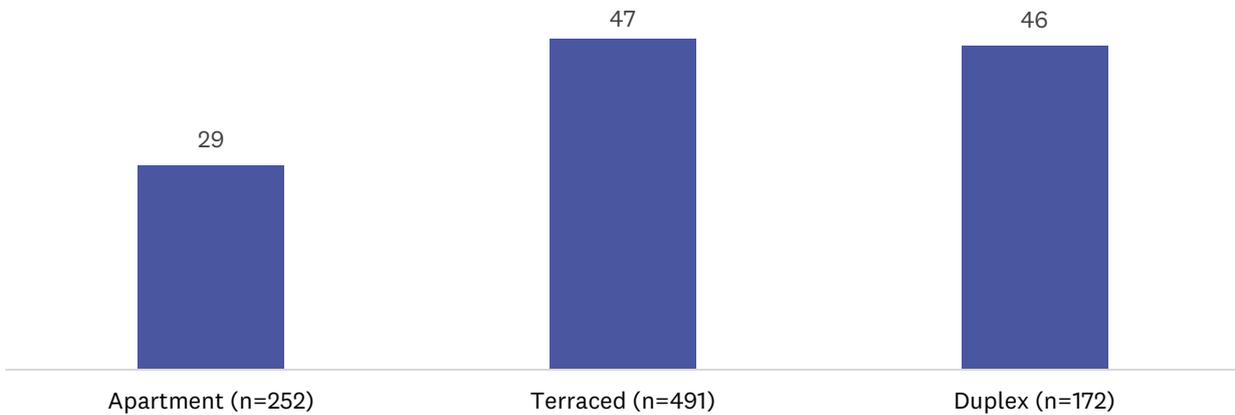
Figure 32: Participants’ rating of satisfaction with privacy inside the home, by typology (%)



<sup>31</sup> Question 24 also asked participants to rate their levels of satisfaction with privacy in outdoor living areas (e.g. deck, patio or balcony). Results to that question are discussed in Chapter 6, Section 2.3.1.

Almost half (42%) of the households who reported having made at least one change to their home since they had moved in had made a change to improve privacy. As Figure 35 shows, households living in terraced houses (47%) or duplexes (46%) were more likely to have made changes to improve privacy than those living in apartments (29%).

**Figure 33: Proportion of participants who had made changes to improve privacy (%)**



Note: Base is all the properties where participants had made at least one change to their home.

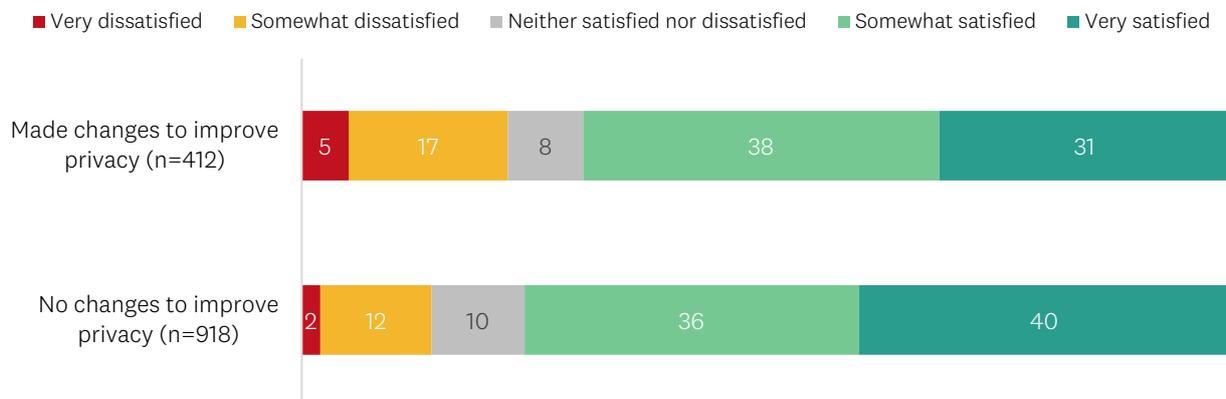
Changes made to improve privacy included:

*Extended height of fence to have privacy from [name of organisation] tenants.*

*Sheer curtains for privacy.*

Significantly more participants who had made changes to improve privacy reported being ‘somewhat’ (17%) or ‘very’ dissatisfied (5%) with the privacy inside their home compared with those who have not made changes. Those who had not made changes were more likely to have reported being ‘very satisfied’ (40%) with the privacy inside their home compared with those who had made changes (31%).

**Figure 34: Participant satisfaction with privacy inside the home, by changes to improve privacy or not (%)**



Nine per cent of participants noted a lack of privacy as being something dislike about their home.

*Not much privacy due to floor-to-ceiling windows everywhere.*

*Lack of privacy at the front of the house which is the living space. Anyone can look in if I don't have the blinds down.*

Five per cent of participants mentioned privacy as something they like about their homes.

*Can't see inside of house from neighbours. Street is not busy, pretty quiet around complex.*

*Privacy and how quiet the neighbourhood is.*

### 3.3 In-home immersions

Participants employ different techniques to improve visual privacy inside their homes. This includes adding window coverings such as blinds, curtains and sun filter film, and keeping blinds and curtains closed during the day.

Coverings on windows overlooking driveways, footpaths or streets are commonly kept closed to prevent others from looking in. By extension, this prevents the household from looking out and 'keeping an eye' on the public or communal space (i.e. prevented passive surveillance).

One household's home was at the end of a block of terraced houses, only accessible by a shared pedestrian path. They had the blind pulled down on their kitchen window which overlooks the shared pedestrian path. Their description demonstrates how members of a household can have different perspectives on privacy:

*It's more my husband who doesn't like to be seen. So, I would normally lift it up especially when I am cooking ... but my husband doesn't like the thought of it, you know, people can just see in ... there are a lot of people walking down there especially during weekdays, because this is the handiest place for those delivery trucks.*

Figure 35: Kitchen with closed blind overlooking path



A participant whose glass front door was separated from the street by their car pad and outdoor living space had added frosting and a net curtain to the door and window (Figure 38). They also had a bookshelf positioned near the entranceway to further increase the sense of privacy. The front door and adjacent window were classified as their primary outlook to comply with the AUP outlook requirements (the distance between the rear window and fence was too short to comply; see floor plan below).

Figure 36: Glass front door with net curtain and frosting on window.



One household living in a terraced house had their kitchen in the middle of the ground floor, dining at the front and lounge at the rear. The floor-to-ceiling window in their dining room overlooked a shared driveway (Figure 39). The homes in their block had alternating floor plans, whereby the lounge and dining space swapped locations. They explained that they preferred their situation of the dining space overlooking the shared driveways:

*We preferred this layout [dining at front] to that one [lounge at front] because our lounge room was here [at the back of the house] and not there by the front door. We didn't want to be sitting where everybody's walking past.*

This household ate their meals in the lounge and used their dining space for hobbies, as discussed in Chapter 4: Indoor spaces for living.

'Landscape buffers' are strips of planted areas between windows and spaces used by the public or neighbours. These are intended to increase the sense of privacy experienced by households so that blinds can stay open and households can look out to 'keep an eye' on the street/shared space (i.e. passive surveillance). The terraced houses in this block have some planting along the shared driveway including in front of the large windows. However, the low height and narrow width of this planting is insufficient to have an impact on participants' experience of privacy.

Figure 37: Dining space with overlook over the shared driveway with narrow landscape buffer



Another household in a terraced house had their lounge at the front of the home, which looked out over their car pad and the public street. They used sheer curtains during the day to create privacy and solid curtains at night (Figure 40). They commented that:

*Yeah, the sheers are always there, we can see outside but the sheers make it quite hard to see inside. [The house] didn't come with anything [installed] ... when we were home ... people would walk past and see in, and we're like 'Okay, that's a bit weird', and then we just put some sheers in.*

Figure 38: Sheer curtains kept closed during the day for privacy reasons; solid curtains closed at night



Some households have issues with privacy in their bedrooms when these rooms are above ground level. This was an issue both for participants living in terraced homes and in apartments. While it may be practically difficult for strangers to look into these bedrooms, the possibility of being seen is uncomfortable for some participants. To mitigate this issue, participants keep their blinds closed (Figure 41 and Figure 42).

Figure 39: Closed bedroom blind on floor-to-ceiling window (first-floor terraced house)



Figure 40: Blind closed in bedroom for privacy (third-floor apartment)



One participant who lives in a ground floor apartment has a floor-to-ceiling window in the guest bedroom, which overlooks the shared carpark. The parking space in front of the window belongs to a neighbour and their own carpark was adjacent, in front of their kitchen window (Figure 43). This participant keeps the blinds closed in the guest bedroom.

Figure 41: Blind closed in guest bedroom overlooking carpark allocated to another unit in complex



One household described issues with the proximity of their kitchen to their neighbours' balcony, which was their neighbours' outdoor living space. The balcony is set back 1.3m from the common boundary. They explained that they always have the blind down to provide privacy:

*When they're [neighbours] in their outdoor space [balcony], because it's also raised up a bit, they can see directly into our kitchen ... so we are never in here without the blind down. I don't remember the last time I've opened it actually. It definitely makes things lighter in here which is lovely and while I wish I could have it open more; it is just purely from a 'not feeling like you're living in a fish bowl' perspective.*

Figure 42: Blind closed to create privacy from neighbouring outdoor living space



Figure 43: Blind open showing neighbour's balcony and outdoor living space looking directly into kitchen



## 4 Sound and sound proofing

This section discusses sound and sound proofing in the home with regard to aural (sound) privacy. Regulations and best practice guidelines are described first. Results from the survey and in-home immersions follow.

### 4.1 Regulations and best practice guidelines

Sound transmission between neighbouring dwellings and outdoor living spaces can occur due to the arrangement of internal and external uses. Acoustic privacy requires the reduction of noise transmission between external and internal spaces and requires consideration of site context, surrounding uses, building separation and the internal arrangement of buildings. Reducing internal and external noise impacts is important for occupant wellbeing and amenity.

#### Auckland Unitary Plan

There are no standards or assessment criteria in the AUP for the design of residential dwellings in relation to sound or sound proofing for MDH. Noise impacts are typically only considered where a non-residential activity seeks to establish in a residential zone, or residential dwellings are located within an Aircraft Noise Overlay.

However, the AUP does more broadly require residential dwellings to be designed to meet the day-to-day needs of residents, by providing privacy;<sup>32</sup> this could be interpreted to include both visual and aural privacy. The fence and wall standard also seeks to provide privacy for dwellings,<sup>33</sup> and could be interpreted to include aural privacy.

#### Auckland Design Manual (ADM) and best practice guidance

There is no specific guidance in the ADM regarding the design of MDH to mitigate noise.

The National Medium Density Design Guide recommends that for more peaceful living, the internal layout of a dwelling should have good acoustic separation from external and internal noise sources.<sup>34</sup> This can be achieved by placing similar household activities either side of a common wall between houses, matching noisy areas and quiet areas side-by-side. Bathrooms, storage areas and wardrobes can be used as noise buffers within houses.

The New South Wales Low Density Housing Diversity Design Guide,<sup>35</sup> Apartment Design Guide,<sup>36</sup> and Victoria Apartment Design Guide all have similar recommendations and also that adequate building separation is provided for. They further recommend that where dwellings are joined by party walls, that acoustic insulation is achieved with double or acoustic glazing, acoustic seals, using materials

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<sup>32</sup> E.g. Mixed Housing Urban Policy H5.3(5)(a).

<sup>33</sup> E.g. Standard H5.6.15 Front, side and rear fences and walls – Purpose Statement.

<sup>34</sup> Ministry for the Environment, (2023). *National Medium Density Design Guide*, Section 6(H).

<sup>35</sup> New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 3P Acoustic privacy.

<sup>36</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*. Part 4H Acoustic privacy.

with low noise penetration properties, and providing continuous walls to ground level outdoor living spaces.

Some guidelines also include recommendations for acoustic treatment where a building is near major roads or railway lines and beneath flight paths.<sup>37</sup> This includes louvres on balconies to allow natural ventilation but also some noise attenuation. More fully enclosed ‘wintergardens’ are another design option to reduce road and rail noise.

### Section 35 monitoring

There was no specific monitoring of sound within dwellings as part of this analysis. However, there was an observation that acoustic privacy of multiple adjoining outdoor living spaces was harder to mitigate than visual privacy, particularly with balconies at upper levels.<sup>38</sup>

### Design observations

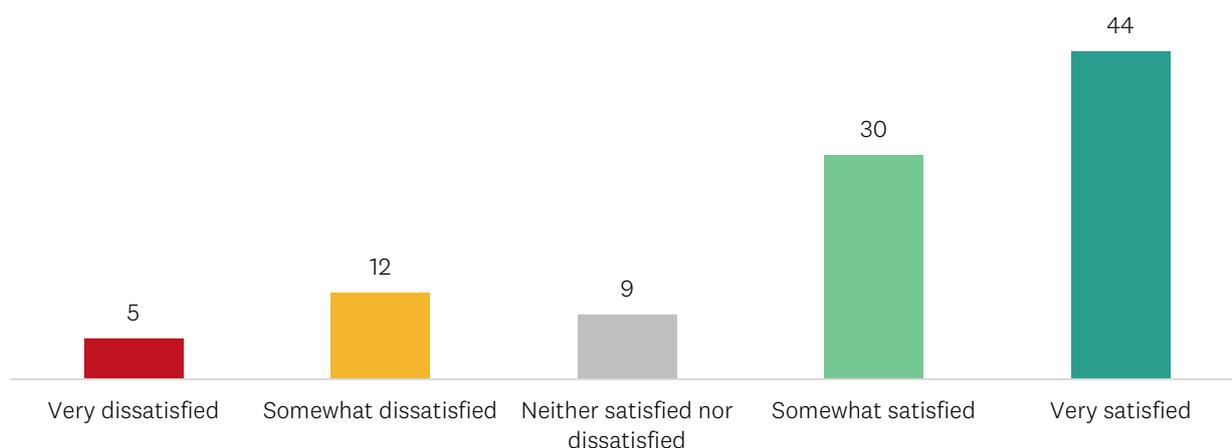
The following design matters have been observed by the Tāmaki Makaurau Design Ope (Urban Design Unit) in their technical review and monitoring of MDH applications:

- Potential acoustic privacy issues exist between adjacent outdoor living spaces, particularly where outdoor spaces are side by side and back to back.
- Noise on arterial roads may also have an impact on acoustic privacy within outdoor living spaces.

## 4.2 Survey results

The survey participants reported relatively high satisfaction with sound proofing on walls shared with neighbours.<sup>39</sup> Three-quarters (74%) of participants are ‘somewhat’ or ‘very’ satisfied with sound proofing and only 15 per cent were ‘somewhat’ or ‘very’ dissatisfied.

Figure 44: Participants’ satisfaction with sound proofing on walls shared with neighbours (n=1330) (%)



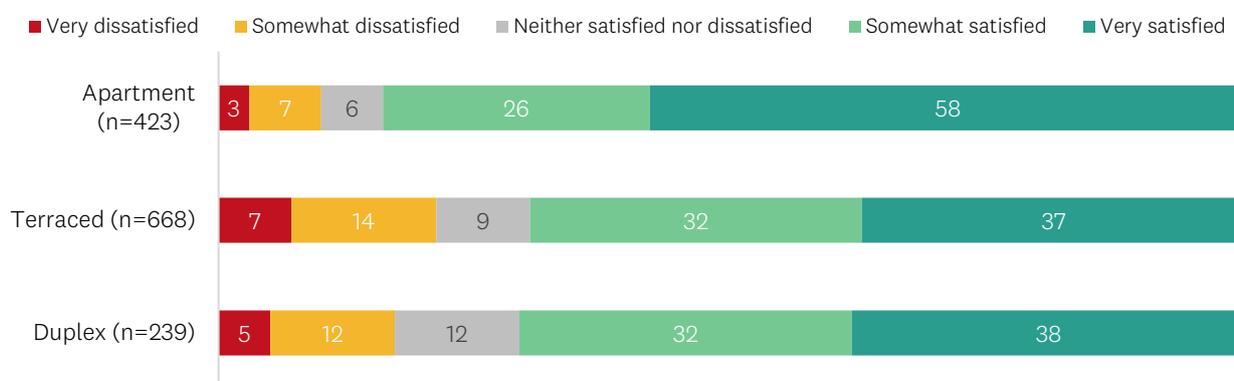
<sup>37</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Section 4J Noise and pollution.

<sup>38</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, page 79.

<sup>39</sup> Question 24 also asked participants to rate their satisfaction with sound in outdoor living areas. Results are presented in Chapter 6, Section 2.3.1.

Satisfaction with sound proofing on walls shared with neighbours was higher among those living in apartments (58% ‘very satisfied’), compared with those in terraced houses (37% ‘very satisfied’) or duplexes (38% ‘very satisfied’).

**Figure 45: Participant satisfaction with sound proofing on walls shared with neighbours, by typology (%)**



When describing what they like about their home, 8 per cent of participants mentioned that their home was quiet or had sound proofing:

*Concrete slab internal wall to neighbours so no noise. Secure private patios and fenced garden.*

*Everyone is caring and friendly. Even when we are inside, we cannot hear our neighbours, etc.*

When describing what they dislike about their home, 10 per cent of participants mentioned noise generated by neighbours or lack of sound proofing:

*House is close to neighbour and can sometimes hear them talking.*

*The noisy neighbour; we can hear our neighbour’s child banging the walls.*

*When you are outside, everyone can hear you.*

*Noise/not enough soundproof wall between the next to house: not perfect enough for soundproof wall. Sometimes [in] the rooms next to neighbours’ rooms, you can hear through the door their banging door sound or sliding door sound between the one of our bedrooms and their bedroom. No soundproof wall between our laundry area and their lounge area as you can hear and feel the home theatre speaker’s vibration. You can hear [the] connected house’s noise – that means they can hear our sound as well. So have to be careful in a sense of having the idea that this is not a standalone house, and it is terraced houses, so I have to be more quiet and have to be more careful. But if you close all windows fully, they maybe cannot hear us though as I feel very quiet.*

### 4.3 In-home immersions

Most of the households in the in-home immersions were happy with the level of sound proofing of intertenancy walls within their homes. Some commented that traffic noise and loud music did travel between homes.

One household in a terraced house commented in relation to intertenancy wall noise that:

*We haven't heard a single noise from the neighbours, and they said the same thing. Like after a year of living here, they're like, 'No we haven't heard you once.'*

However, the same household found sound travelling between open windows was an issue, which also affected temperature control:

*We actually got ducted air conditioning installed upstairs and a big factor for that was the fact that our neighbours had their windows open at all times during the night and we'd hear everything. The next summer we got fans, which was helpful-ish, and then the next summer we got air conditioning and now our windows just stay closed.*

Many households commented on noise travelling between outdoor spaces more easily, and that conversations and activities within outdoor spaces were somewhat restricted by this, if the household wanted to be considerate of their neighbours.

## 5 Perceptions of safety and sense of community

This section discusses perceptions of safety and sense of community in and around the home. Regulations and best practice guidelines are described first. Results from the survey and consented plan analysis follow. The in-home immersions did not explore perceptions of safety and community with participants; therefore, this section does not include any reference to the immersions.

### 5.1 Regulations and best practice guidelines

MDH often includes communal elements such as shared driveways or pedestrian accessways, apartment entrances, communal open space, refuse and recycling storage, and parking areas. These areas create opportunities for informal interaction between residents, creating a sense of community. Buildings that adjoin these areas can provide passive surveillance or ‘eyes’ which overlook to increase safety for residents and visitors. Passive surveillance is where windows of active rooms such as the kitchen, dining and living rooms overlook communal spaces, and provide informal opportunities for surveillance. This is most successful when provided from ground floor rooms, and bedrooms are generally to be avoided due to their increased privacy needs.

#### Auckland Unitary Plan

The AUP encourages medium density dwellings to overlook public spaces and provide opportunities for passive surveillance.<sup>40</sup> This includes “the extent to which development achieves attractive and safe streets and public open space by providing doors, windows and/or balconies facing the street and public open spaces”.<sup>41</sup>

#### Auckland Design Manual (ADM) and Best Practice Design Guidance

The ADM recognises the contribution that MDH can have to the feeling of safety and security when visual connections and passive surveillance is provided over the street and adjacent public spaces.<sup>42</sup> It recommends locating living areas to overlook public or communal spaces, as well as casual views of common areas such as communal open space, lobbies and hallways in apartments, pathways and parking areas.

The National Medium Density Design Guide recognises the importance of views out of a dwelling which provide outlook and eyes over communal areas and the street. It recommends that generous windows are provided facing the street and communal spaces from regularly used rooms such as kitchens or living rooms at ground level, with rooms requiring more privacy, such as bedrooms, to be located on upper levels.<sup>43</sup>

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<sup>40</sup> E.g. Mixed Housing Urban Policy H5.3(3)(a).

<sup>41</sup> E.g. Mixed Housing Urban Assessment Criterion H5.8.2(2)(c)(i).

<sup>42</sup> *Auckland Design Manual*, Terraced Housing Design, Section 4.4. Apartment building design.

<sup>43</sup> Ministry for the Environment, (2023). *National Medium Density Design Guide*, Section 2D.

The *Kāinga Ora Ngā Paerewa Hoahoa Whare Design Requirements* require that site design facilitates passive surveillance, clear and intuitive layout and connections, and a sense of ownership by demonstrating adherence to Crime Prevention Through Environmental Design (CPTED) principles.<sup>44</sup>

All of the Australian design guides require habitable rooms facing the street and or internal circulation routes (shared driveways and pedestrian accessways), and where outdoor living space faces the street, that fence and balustrade design still allows for views and passive surveillance.

### **Section 35 (s35) monitoring**

The s35 monitoring observed that “dwellings with smaller distances from the street often resulted in drawn blinds or higher fences which can compromise the attractiveness of the street frontage and passive surveillance benefits”.<sup>45</sup>

### **Design observations**

The following design matters have been observed by the council’s Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- The spatial arrangement of dwellings on a site are informed by a number of AUP standards including the front yard, outdoor living space and outlook from internal living areas. The co-location of outdoor living space, outlook and front yards can create site layout efficiencies (essentially ‘borrowing’ land from the public street for outlook) with outdoor space and outlook oriented towards a public street. Outlook over a driveway is also common due to the reverse manoeuvring requirements of carparking aligning with the 6m outlook standard. This reduced proximity to the street or driveway can create poor privacy outcomes, with additional screening (fencing or blinds being drawn), thereby reducing any passive surveillance benefits.
- Kitchens are encouraged to overlook the street or shared accessway as it typically presents less privacy conflicts than dining or lounges.
- No buffer space between dwellings and shared accessways and carparking areas can lead to privacy conflicts, with blinds/curtains being closed.

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<sup>44</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Section A1.3.1.

<sup>45</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, page 69.

Figure 46: Kitchen windows and glazed front doors overlooking a shared pedestrian accessway, and landscape buffer



Figure 47: Communal open space overlooked by front doors and windows of dwellings



Source: Both images TMDO, Auckland Council.

Figure 48: Front doors and kitchen windows overlooking a shared pedestrian accessway



Figure 49: Lack of buffer space between a shared pedestrian accessway and dwelling resulting in additional trellis screening being placed over windows



Figure 50: Landscaped buffer providing privacy to windows overlooking a shared pedestrian accessway



Source: All images TMDO, Auckland Council.

## 5.2 Survey results

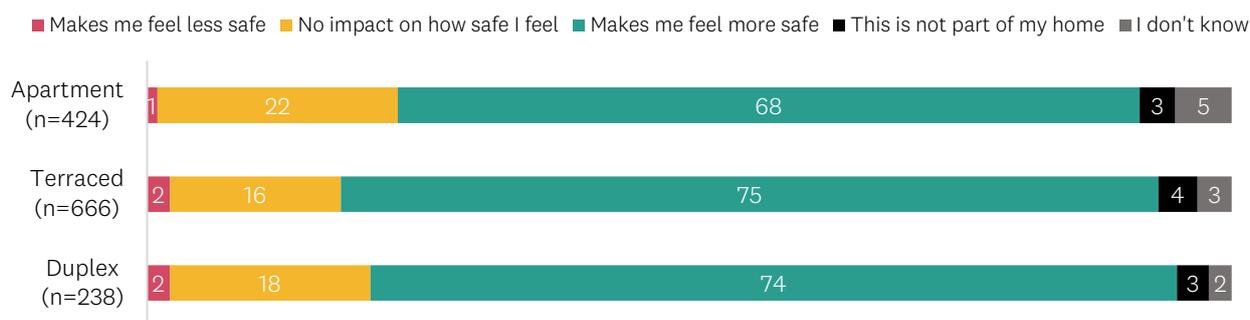
The survey participants were asked to indicate the extent to which a range of features of their home, building or complex made them feel more – or less – safe, including having a sense of community with their neighbours within their building, complex or row of houses, being able to see people at their front door (e.g. through a peephole or window at the front of their home), and windows overlooking footpaths, driveways or common areas.

### Sense of community

Overall, close to three-quarters (73%) of participants reported that a sense of community with their neighbours made them ‘feel more safe’, while 18 per cent reported this has ‘no impact’ on how safe they feel.<sup>46</sup>

The participants living in apartments (22%) were slightly more likely to have reported that this has ‘no impact’ on how safe they feel than those living in terraced houses (16%) (Figure 53).

**Figure 51: Participant rating of the impact of having a sense of community within the building/complex/row of houses on perceptions of safety, by typology (%)**



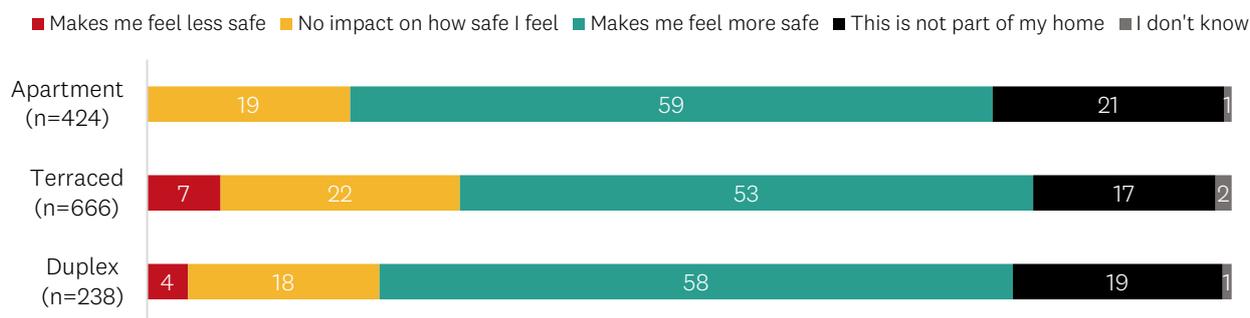
### Front doors

Participants were also asked about the impact of being able to see people at their front door through a peephole or window at front of their home. Half the participants (56%) reported that this makes them feel ‘more safe’, 20 per cent reported this had ‘no impact on how safe I feel’, and a similar proportion (19%) said it was not a feature of their home.

As Figure 54 below shows, small proportions of those living in a terraced house and in a duplex reported that being able to see people at their front door makes them ‘feel less safe’ (7% and 4%, respectively).

<sup>46</sup> Question 41 asked: ‘Which of the following features of your home, building or complex make you feel more or less safe?’ The feature reported here is: ‘having a sense of community within your complex/building/row of terraced houses/with your neighbours’.

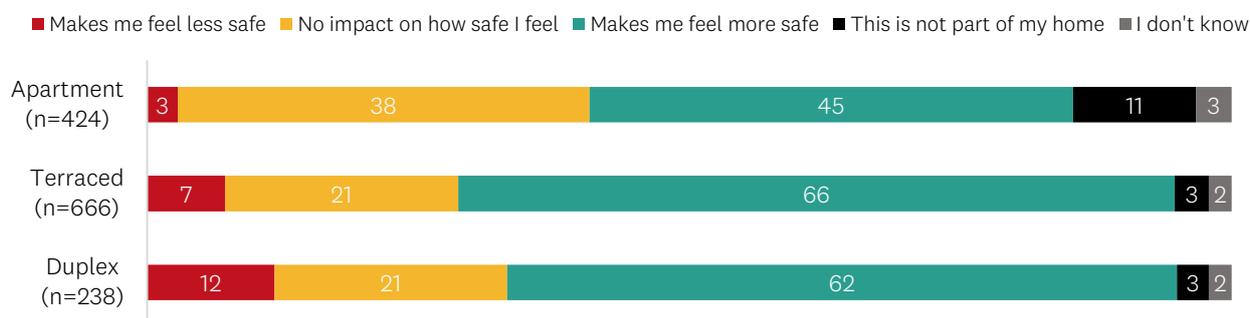
**Figure 52: Participant rating of the impact of being able to see people at your front door on perceptions of safety (%)**



### Windows overlooking footpaths and driveways

Over half (58%) of participants reported that the presence of windows overlooking footpaths, driveways or common areas makes them ‘feel more safe’, while 27 per cent reported this has ‘no impact’ on how safe they feel. As with being able to see people at the front door, the participants living in terraced houses (7%) and duplexes (12%) were more likely to have reported that the presence of windows overlooking footpaths makes them feel ‘less safe’ than those living in apartments (3%).

**Figure 53: Participant rating of the impact of windows overlooking footpaths, driveways or common areas on perception of safety (%)**



## 5.3 Consented plans

As described in Chapter 3, this study included analysis of the consented floor plans for 110 properties whose households had participated in the survey.

The existence of windows in living spaces overlooking footpaths, driveways or common areas is used as an indicator of passive surveillance or ‘eyes’ overlooking the spaces, which in turn is anticipated to contribute to users of those spaces feeling safer. Eight in ten (82%) properties were found to have windows in living spaces overlooking footpaths, driveways, or common areas, and 18 per cent did not.

## 6 Summary

Environmental factors discussed in this chapter are found to be interrelated. The connections between temperature, ventilation and privacy formed a strong theme in the in-home immersions, and reinforces the results from the survey. The issues with these factors are most prevalent in terraced houses and duplexes because of having second and third storeys that are warm in summer and found to be difficult to cool. The temperature of terraced houses in the middle of a row of terraced houses is more challenging to regulate passively as these dwellings typically have only two sides with openable windows, compared with four or more sides of a standalone house.

### Temperature

Twenty-eight per cent of the participants living in terraced homes and 24 per cent of those in duplexes report being ‘somewhat’ or ‘very’ dissatisfied with the temperature inside their home in summer, compared with 16 per cent of those living in apartments. Dissatisfaction with temperature in winter is lower, with 6 per cent of those living in apartments, 10 per cent in terraced houses and 12 per cent in duplexes being ‘somewhat’ or ‘very’ dissatisfied with temperature in winter.

Seven per cent of participants described the amount of sunlight their home gets as something they like about their home. The orientation and size of windows is likely to contribute to these participants enjoying sunlight in their home. The solar orientation and size of windows can also contribute to homes becoming too warm. This was commented on by one participant in the survey and several households who participated in the in-home immersions. Some immersion households were found to have blinds or curtains partially or entirely closed during the day in efforts to block sunlight as a means of temperature control.

Ventilation, or the processes of getting cool air moving through the home, is an important component of temperature regulation as well as an aspect of the home environment. In addition to supporting temperature regulation, ventilation affects humidity/dryness, can bring odour from outside into the home, and enables the sensation of a breeze/‘fresh air’ or reduces the feeling of being ‘stuffy’.

Participants report greater satisfaction with airflow through their home compared with temperature (75% ‘somewhat’ or ‘very’ satisfied with airflow compared with 65% ‘somewhat’ or ‘very’ satisfied with temperature in summer) and few differences were seen in satisfaction across the three housing typologies (14% of those living in apartments and duplexes and 18 per cent of those in terraced houses are ‘somewhat’ or ‘very’ dissatisfied with airflow). Airflow is a contributing factor to temperature and impacts other aspects of a home (e.g. humidity, feeling ‘stuffy’); this is interpreted to explain the higher degree of satisfaction with airflow.

The in-home immersion participants described how they generated airflow through their homes by opening windows and doors (including garage doors, internal doors and ranch sliders). Some participants dislike the way their windows open because the opening provides insufficient airflow. The most common type of window in the homes of the immersion participants is awning windows with security latches that control how wide the windows can be opened (a requirement of the

Building Code). At least one participant described removing the security latches to increase the opening width and increase airflow.

Modifications to improve temperature were the most commonly reported change that participants had made to their home. Close to half the participants living in terraced houses (42%) and duplexes (46%) had made changes to improve temperature, suggesting issues with temperature are more prevalent in these housing typologies, probably due to their having two to three levels. In comparison, just 17 per cent of those living in apartment, which tend to be a single level, had made changes to improve temperature. Even so, dissatisfaction with temperature in summer remains for those who had made changes in an effort to improve temperature, with 29 per cent of those who had made modifications to improve the temperature of their home reporting that they were ‘somewhat’ or ‘very’ dissatisfied with temperature inside their home in summer.

Modifications reported in the survey included installation of heat pumps or air conditioning units (often in second or third floor levels) and changes to window coverings (including blinds/curtains or window tinting). The in-home immersions also found that some participants had made these kinds of modifications, and uncovered challenges such as a high financial cost, receiving permission from body corporates for the external piping/condenser unit, ducting infringing on storage capacity of wardrobes, and placement of external units in outdoor living spaces. (See also Chapter 6, Section 2.4 on site facilities in outdoor living spaces.)

Reliance on heat pumps and air conditioning units as ‘active’ mechanisms to cool homes in summer is of concern from the perspective of climate resilience. This suggests that homes are not being designed in ways that enables passive temperature management in summer. It is observed that Australian design guidance is more sophisticated in its management of temperature (particularly cooling) within the home. As our climate changes, Auckland may experience hotter temperatures, which could make the uncomfortable temperatures currently experienced in summer worse and may contribute to detrimental heat-related health outcomes.

Active mechanisms to cool homes have a high power cost (both financial cost to the household and in terms of demand on the power grid) and push warm air into the neighbourhood. Further investigation into how this situation may contribute to urban heat island effects and design solutions, including consideration of green space, are intended. Design solutions could include building and window orientation, window sizes and openings, sun shading and solar control devices, as well as inclusion of planting and green space.

### **Visual privacy**

Satisfaction with privacy inside the home is high with 74 per cent of the survey participants being ‘somewhat’ or ‘very’ satisfied. Those living in apartments are more likely to be ‘very satisfied’ (56%) compared with those in terraced houses (28%) or duplexes (27%). Despite this, notable proportions of the survey participants reported making modifications to their homes to improve privacy (37% of those living in terraced houses, 34% in duplexes and 19% in apartments). Modifications include adding window coverings and increasing the height of fences in outdoor living areas.

Some of the in-home immersion participants described feeling at risk of being seen in their private home space because of windows overlooking shared spaces (e.g. shared driveways, public streets) or

neighbours' outdoor living spaces. This finding was supported by a small, but notable, proportion of the survey participants who reported that having windows overlooking footpaths, driveways or common areas made them feel 'less safe' (12% of the participants living in duplexes and 7% in terraced houses). Closed blinds/curtains are implemented by some of the in-home immersion participants as a way of improving privacy, as are frosted window coverings. Participants are closing blinds/curtains in upstairs bedrooms and kitchens, dining and lounges overlooking a shared space or neighbour's home.

Modifications to improve privacy, such as keeping blinds closed, conflict with the AUP expectation of passive surveillance (i.e. windows overlooking public/shared spaces that allow the household to see out). The concept of keeping an eye on people passing as a principle of Crime Prevention Through Environmental Design (CPTED) may be new to households moving into MDH. Careful consideration of how such principles are applied in MDH is needed to ensure that the intended outcome of safety is achieved without compromising household comfort and sense of privacy. A landscape buffer between windows and semi-public spaces such as vehicle or pedestrian accessways (a similar concept to the AUP front yard), as shown in some of the in-home immersions, has potential to mitigate privacy concerns and enable blinds to be open to facilitate looking out.

Section 35 (s35) monitoring reports that residents are closing the blinds of their main living space when this overlooks a street. This is interpreted in the s35 monitoring to be in an effort to improve privacy, but it also notes how this behaviour compromises the attractiveness of the street. Results from the in-home immersions supports this interpretation as it found the behaviour of closing blinds/curtains can be for the purpose of privacy and to manage temperature. In addition to having an impact on the attractiveness of the street, closed blinds/windows signal a lack of passive surveillance, which could enable anti-social behaviours and/or compromise building a sense of community.

### **Aural privacy**

The survey participants reported high satisfaction with sound proofing on the walls they share with their neighbours (74% 'somewhat' or 'very' satisfied). As with other aspects of the home, the participants living in apartments tend to have higher satisfaction with aural privacy than those living in terraced houses or duplexes (58% of those in apartments reported being 'very satisfied' compared with 37% in terraced houses and 38% in duplexes). Sound from neighbours across outdoor living spaces was an issue for some. (See also Chapter 5, Section 2.3.1 for more information on aural privacy.)

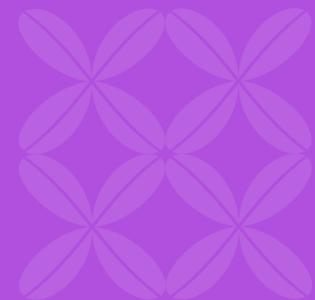
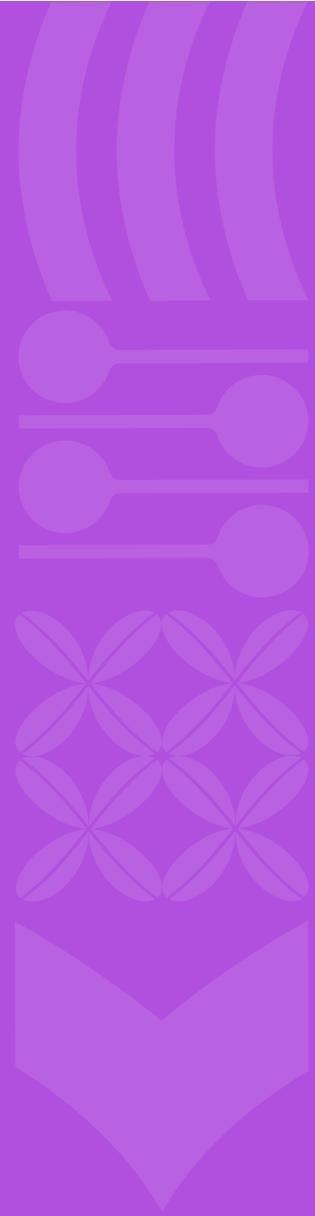
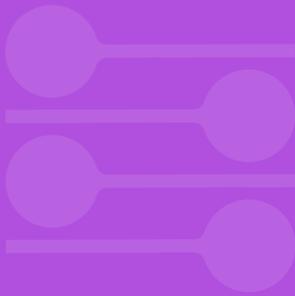
Ten per cent of the survey participants commented that a lack of aural privacy was something they dislike about their homes. Some participants attributed this to a lack of soundproofing on intertenancy walls, while others said the problem of hearing neighbours or being heard by neighbours was manifested by sound travelling through open windows and doors. As mentioned previously, open windows and doors facilitate airflow through the home and is an important component of temperature regulation, as well as providing other benefits. A 'cost' of open windows described by the survey participants is hearing their neighbours and expecting their neighbours to be able to hear them. Households that participated in the in-home immersions also described the challenge of wanting to open windows for airflow and temperature control but hearing their neighbours through

these openings, and so some choose to keep their windows closed and have installed ceiling fans/AC units instead.

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 8

# Carparking and vehicle storage



Kathryn Ovenden and Melanie McKelvie

September 2024, Technical Report 2024/6





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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### **Introduction to this chapter**

This chapter discusses the storage of vehicles owned by households, including parking. Vehicles owned include cars, bikes (e-bikes, pushbikes and children’s bikes), motorbikes and other types of vehicles. Section 1) focuses on cars and carparking, beginning with a description of regulations and best practice guidance before presenting results from the survey and in-home immersions. Section 2 discusses the storage of bikes, also starting with a description of regulations and best practice guidance followed by results from the survey and in-home immersions. Survey results about the storage of other vehicles (e.g. motorbikes, mobility scooters) are presented in Section 3. Finally, Section 4 contains a summary.

# 1 Cars and carparking

## 1.1 Regulation and best practice guidelines

### 1.1.1 Auckland Unitary Plan

From February 2022, councils were directed to remove any minimum carparking requirements (except accessible parking) from their district plans by Policy 11 of the National Policy Statement on Urban Development.<sup>1</sup> As the majority of dwellings included in this study would have been consented prior to this date, it is relevant to consider the parking standards in the AUP prior to this time, which are set out in Table 1 below.

Table 1: Auckland Unitary Plan carparking requirements prior to 20 February 2022

	Number of carparks					
	THAB		MHU		MHS	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Studio or 1-bedroom	0	1 per dwelling	0	No maximum	0.5 per dwelling (rounded down)	No maximum
2 or more bedrooms	0	2 per dwelling	1	No maximum	0.5 per dwelling (rounded down)	No maximum
Visitor parking	0	0.2 per dwelling	No minimum	No maximum	No minimum	No maximum

Source: *Auckland Unitary Plan*, Chapter E27 Transport, Standard E27.6.2 Number of parking and loading spaces, and Tables E27 6.2.3 and E27.6.2.4.

While the AUP no longer requires minimum carparking in the residential zones, this does not prevent developers from providing carparking. Where carparking is provided, it is subject to minimum standards relating to the dimension of the carparking space and manoeuvring from that space.<sup>2</sup> Lighting is also required for 10 or more parking spaces and associated manoeuvring areas and pedestrian routes, for the safety of users during the hours of darkness.<sup>3</sup>

<sup>1</sup> National Policy Statement on Urban Development (May 2022).

“Policy 11: in relation to carparking:

(a) The district plans of tier 1, 2 and 3 territorial authorities do not set minimum carparking rate requirements, other than for accessible car parks...”.

<sup>2</sup> *Auckland Unitary Plan*, Chapter E27 Transport, Standard E27.6.3.4(a).

<sup>3</sup> *Auckland Unitary Plan*, Chapter E27 Transport, Standard E27.6.3.7.

### 1.1.2 Auckland Design Manual (ADM) and best practice guidance

The *Auckland Design Manual* (ADM) currently does not contain any guidance on carparking as it is under review to respond to the NPS-UD and Medium Density Residential Standards.

The Ministry of Housing and Urban Development's *Public Housing Design Guidance for Community Housing Providers and Developers* recommends that where a site is not located within walking distance of a local centre or rapid transport network, a carparking ratio of one carpark per dwelling is appropriate,<sup>4</sup> which is consistent with the *Kāinga Ora Ngā Paerewa Hoahoa Whare Design Requirements* (hereafter referred to as the *Kāinga Ora Design Requirements*).<sup>5</sup> The *Kāinga Ora Design Requirements* also require that carparking provision for multi-unit developments aligns with the anticipated occupant numbers, household mix and proximity to public transport.<sup>6</sup> This means that more than one carpark per dwelling may be provided.

Both guidelines have minimum dimensions for garages, with the *Public Housing Design Guidance* requiring 3m width x 5m length excluding any laundry or storage facilities, to accommodate a medium to large sized vehicle,<sup>7</sup> whereas the *Kāinga Ora Design Requirements* require a 3.5m width and 5m length.<sup>8</sup> Provision for electric charging points is recommended to future-proof dwellings by the *Public Housing Design Guidance*.<sup>9</sup>

The *National Medium Density Design Guide* recommends supporting sustainable transport modes like walking, cycling and public transport. However, if carparking is provided, it is recommended that it is located away from the front yard and in a common location. If a garage is provided, then the distance between the garage and the street boundary or shared accessway is short enough to discourage vehicle parking across accessways or deep enough to fully accommodate a parked vehicle.<sup>10</sup> Future-proofing provision, including managing the fire risk, for electric vehicle charging is also recommended.<sup>11</sup>

The *Apartment Design Guidelines for Victoria* recommend that carparking is consolidated, with provision for pedestrian and cyclist access, as well as access for emergency and delivery vehicles.<sup>12</sup>

Both the *New South Wales Apartment Design Guide* and *Low Rise Housing Diversity Design Guide for complying development* acknowledge that parking should be determined in relation to the

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<sup>4</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 2.3 Carparking need.

<sup>5</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirements*, Section A3.3.1A(i).

<sup>6</sup> Ibid, Section A3.3.1.B(i).

<sup>7</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 3.5.5 Garages.

<sup>8</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirements*, Section A3.3.1A(ii).

<sup>9</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 3.5.4 Electric vehicle charging points.

<sup>10</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 2(G).

<sup>11</sup> Ibid, Section 3(H).

<sup>12</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Section 1 Guidance to access.

availability, frequency and convenience of public transport.<sup>13, 14</sup> In relation to apartments, provision for alternative forms of transport such as car share, motorcycles and bicycles should also be considered and that where less carparking is provided, councils should not provide on-street resident parking permits.

## 1.2 Section 35 (s35) monitoring

The s35 monitoring did not analyse the provision of carparking, but did consider the safety and functionality of site access and circulation for pedestrians and vehicles and observed that:<sup>15</sup>

- Only a quarter of developments that provided a footpath were separated from the driveway with a kerb or other barrier, and only half were designed to avoid the reverse space of cars.
- Some developments had front doors opening directly into the shared driveway.
- Some forms of parking such as centralised communal parking were not adequately designed for pedestrian safety.

## 1.3 Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- There is an increased number of developments with no onsite carparking provided, resulting in a significant numbers of cars parking on public streets, and illegally parking over berms and footpaths (Figure 1 and Figure 2).
- Where onsite parking is provided, it is often insufficient for the number of vehicles per household, with unanticipated and 'creative' parking occurring within driveways (often blocking pedestrian access) or areas intended for landscaping or outdoor living space (Figure 3).
- There is an increasing use of communal carparking areas rather than individual garages due to site layout efficiencies and increased yield.
- Provision of visitor parking or loading spaces for delivery vehicles is uncommon.

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<sup>13</sup> New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Section 3J Bicycle and car parking.

<sup>14</sup> New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 3N Car and bicycle parking.

<sup>15</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, pages x- xi.

Figure 1: Parking across public road berm and footpath



Source: TMDO, Auckland Council.

Figure 2: Parking over footpaths and berms



Source: TMDO, Auckland Council.

Figure 3: Footpath to front door and landscaped front yard being used as second parking space.



Source: TMDO, Auckland Council.

Figure 4: Front yard landscaping and outlook from living areas converted to concrete pad to allow for additional parking



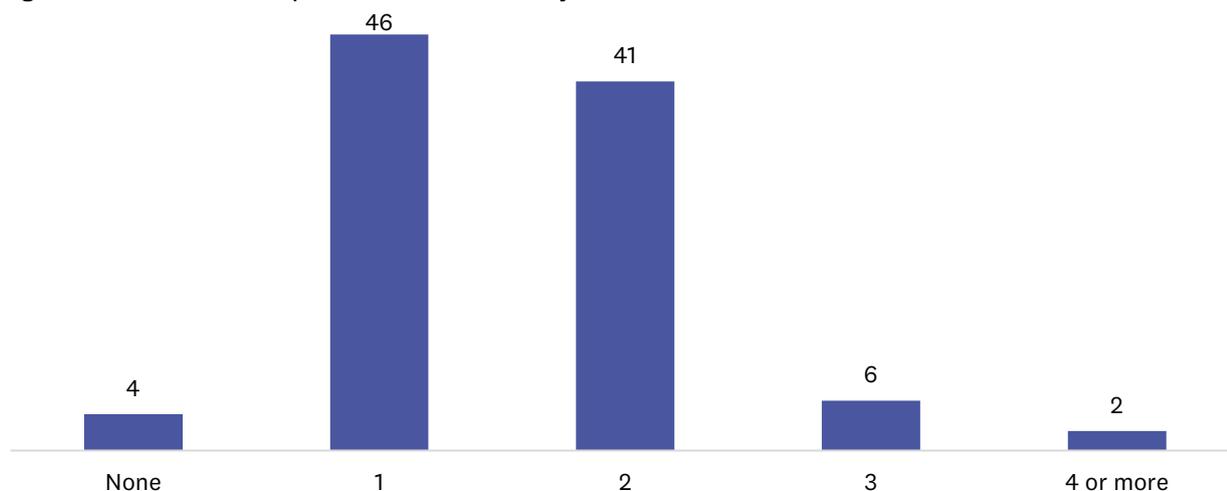
Source: TMDO, Auckland Council.

## 1.4 Survey results

### 1.4.1 Cars in the household

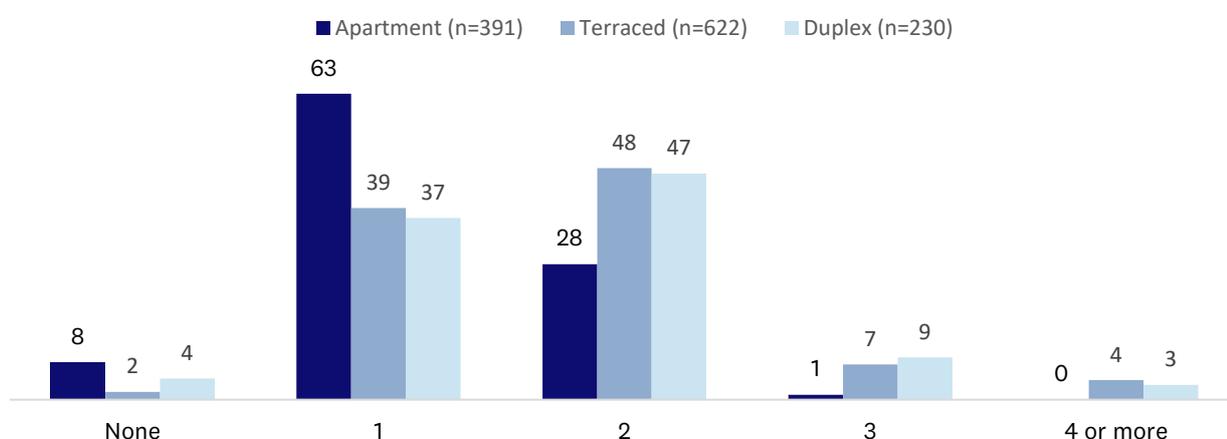
Most (96%) of the household reported having at least one car (could be petrol, diesel, hybrid or electric cars). Close to half (46%) had one car, 41 per cent had two cars, 6 per cent had three cars and the remaining 2 per cent had four or more cars.

Figure 5: Number of EV, petrol, diesel and/or hybrid cars in a household (n=1243) (%)



Those living in apartments were more likely to have no cars (8%) compared with those in a terraced house (2%), and those living in apartments were also more likely to have one car (63%) compared with those in a terraced house (39%) or a duplex (37%). Conversely, those living in terraced houses or duplexes were more likely to have two or three cars in the household compared with those living in an apartment.

Figure 6: Number of cars in the household, by typology (%)

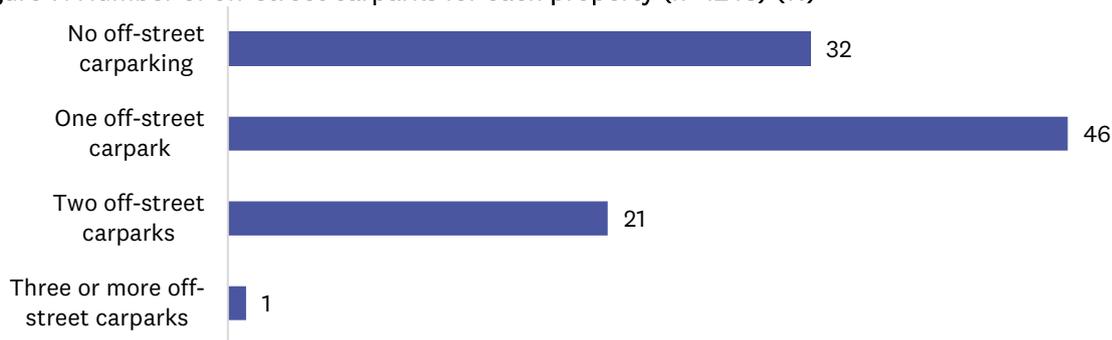


### 1.4.2 Amount of carparking

Auckland Council rating data shows that a third (32%) of the properties from whom we received a survey response have no off-street parking,<sup>16</sup> 46 per cent have one off-street carpark and 21 per cent have two off-street carparks.

<sup>16</sup> Off-street parking is defined as ‘a garage or other permanent structure, or a permanent standing established specifically for parking. It excludes access ways to garages or carparks.’ This definition is interpreted to include private garages for terraced homes/duplexes, basement garages in apartment buildings, outdoor carparking areas in terraced housing/duplex complexes, and parking pads outside terraced houses/duplexes which could be covered (i.e. carport).

Figure 7: Number of off-street carparks for each property (n=1243) (%)

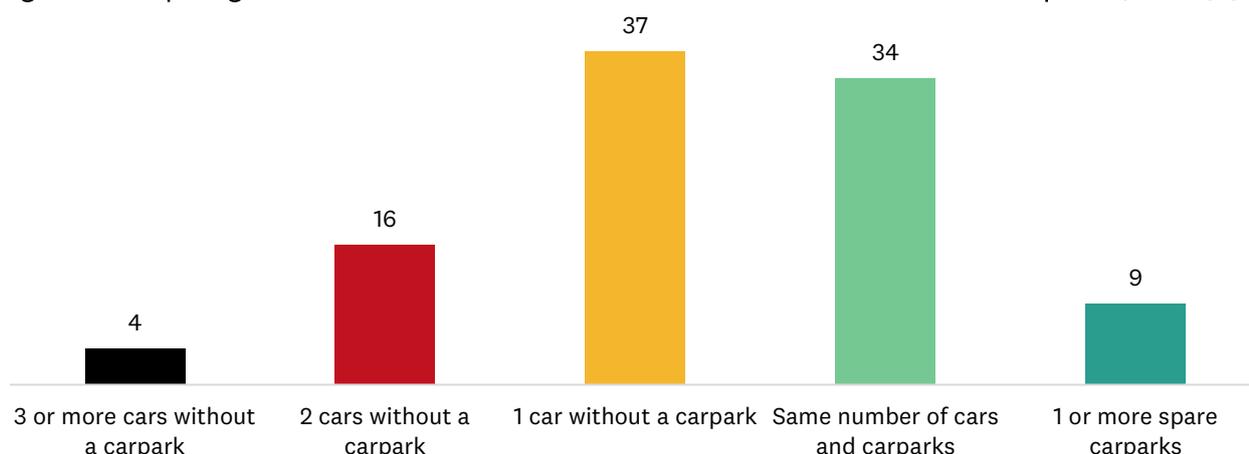


Note: Fourteen properties (1%) have no off-street carparking data and are not shown in the chart.

Source: Auckland Council rating data.

A comparison of the number of cars reported to be owned by the survey participants with the number of off-street carparks indicates that most properties have insufficient off-street parking for the number of cars in the household. As Figure 8 shows, 57 per cent of households had one or more cars but no off-street carpark, 34 per cent had the same number of cars and off-street carparks, and only a small proportion (9%) were calculated to have one or more spare carparks.

Figure 8: Comparing number of cars in the household with the number of off-street carparks (n=1179) (%)



Note: Base is all households with at least one car.

The participants living in apartments were more likely to have the same number of cars and carparks (43%) than those living in terraced houses (33%) or duplexes (29%). Conversely, the participants living in terraced houses (18%) or duplexes (20%) were more likely to have two cars without a carpark compared with those in apartments (9%). There are a variety of reasons that could explain these differences, including: the ability of garages compared with apartment basement carparking to be used for other purposes; the location of homes in proximity to public transport which tends to best serve locations near the city centre; and the life stage of participants in different typologies (e.g. those in apartments tend to be older and may not require cars for all members of the households).

### 1.4.3 Types of carparking

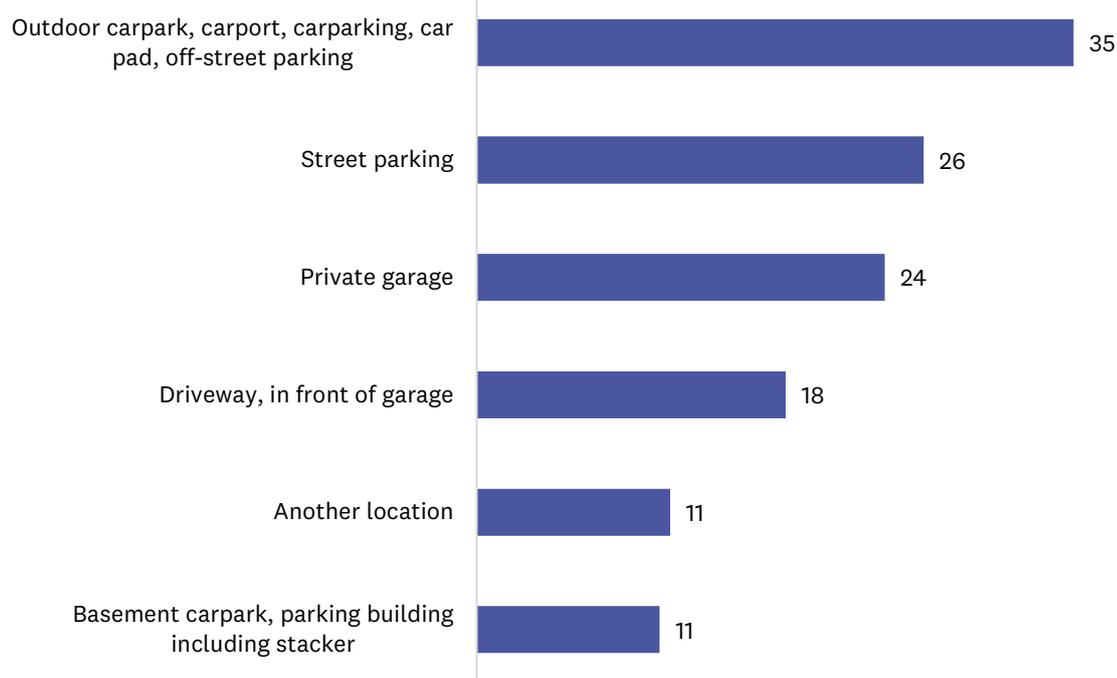
Participants were asked to describe (in an open ended response field) where they store the vehicles owned by themselves or others in their household.

Petrol, diesel or hybrid cars were reported to be stored in a range of locations (Figure 9). A third (35%) of participants stored their car in some form of outdoor off-street parking such as a carpark, carport or car pad; a quarter (24%) stored their car (or cars) in a private garage; and a quarter (26%) stored their car (or cars) on the street.

Some of the participants living in apartments and terraced houses/duplexes reported storing their cars in a ‘private garage’. For those living in apartments, this garage is likely to be in the basement of their apartment building, whereas for those living in a terraced house or duplex, this is likely to be a garage as part of the ground floor of their home or a separate garage building at the rear of the property (e.g. off a rear accessway).

The small proportion of households who reported having and using a garage for their car supports the finding discussed in Chapter 4 on the uses of garages for purposes other than carparking, including storage (of items other than cars), laundry and indoor living activities (e.g. exercise, hobbies). (See also the following section for further information about the uses of garages for carparking.)

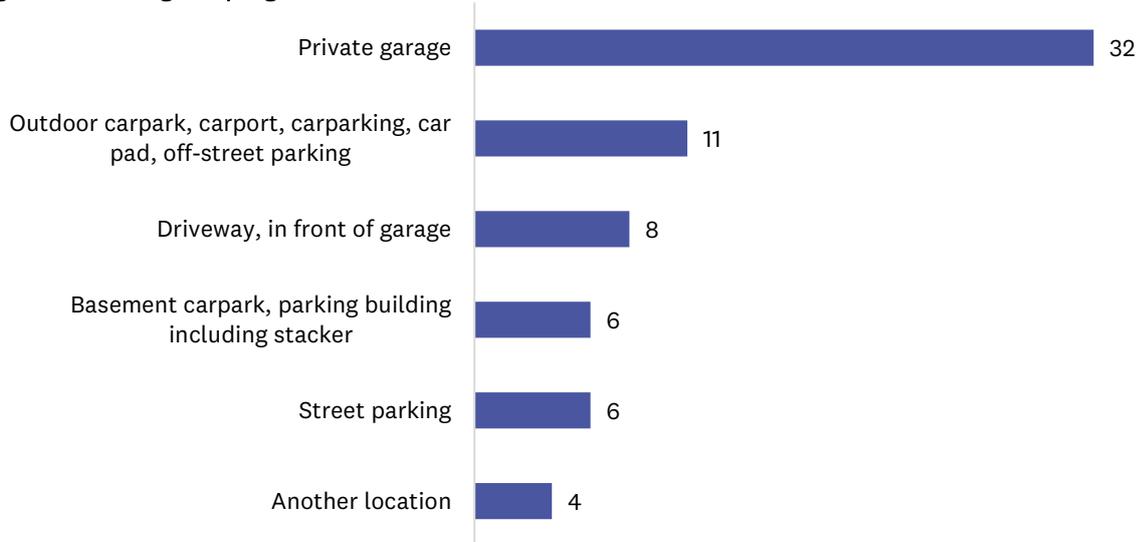
**Figure 9: Participants’ reported storage of petrol, diesel or hybrid cars (n=1152) (%)**



- Notes: 1. Base is all properties where the household owns at least one petrol, diesel or hybrid car.  
 2. Multiple responses allowed; therefore, total does not sum to 100.

Sixty-six households reported owning a plug-in electric car. Half (32) store this vehicle in a private garage (Figure 10). While this sample size is too small to draw firm conclusions, these findings suggest it is more common for EVs to be stored in a garage compared with petrol, diesel, or hybrid vehicles. This difference in parking practices may be influenced by charging EVs from power points within a garage.

Figure 10: Storage of plug-in electric cars (n=66) (counts)



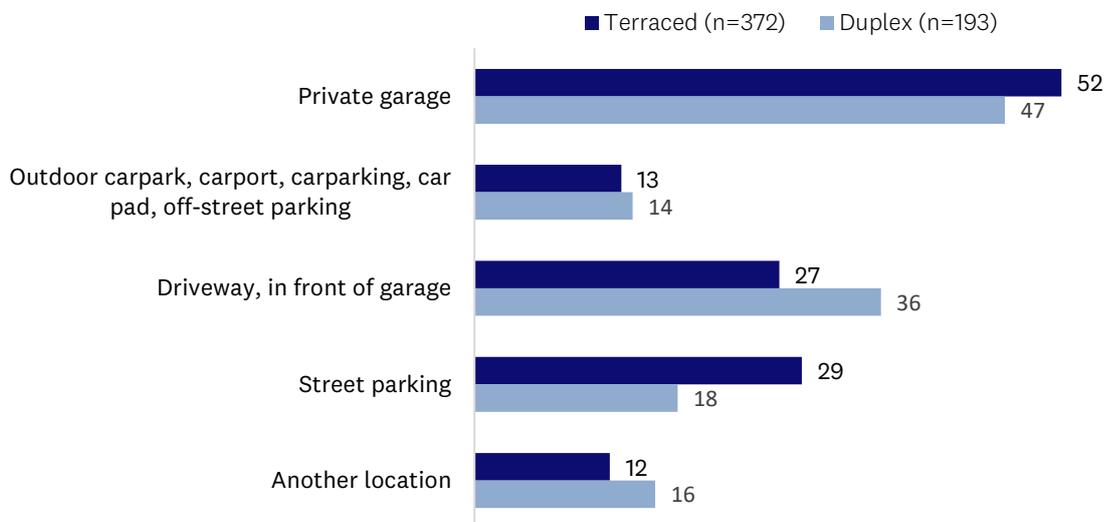
#### 1.4.4 Uses of garages for carparking

In Chapter 4, Section 1.4.2 and Section 1.5.5 are descriptions of how the survey and in-home immersions participants with a garage use this space for a range of purposes, which sometimes includes carparking. This section describes how the survey participants in a terraced house or duplex with a garage, and who have one or more cars, store their cars.

Just over half (53%) of the participants living in a terraced house or duplex reported having a garage in their home. Garages were more common in duplexes (69% had a garage) than terraced houses (47%).

Of those who reported having a garage, only half (50%) reported parking a car in their garage (Figure 11). Close to a third (30%) park on the driveway or in front of their garage, and a quarter (25%) park on the street.

Figure 11: Participants reported storage of cars for homes with a garage, by typology (%)



- Notes: 1. Base is all properties with a garage.
- 2. Multiple responses allowed; therefore, total does not sum to 100.

As Figure 6 showed, fifty-nine per cent of those living in a terraced house or duplex had two or more cars in the household. Of those living in a terraced house or duplex, 39 per cent have one car in the household, 47 per cent have two cars and 12 per cent have 3 or more cars.

When considering households with one car and a garage, 59 per cent reported storing their car in the garage. This means that 41 per cent of one-car households with a garage are not using their garage for carparking.

Half (51%) of the households with two cars and a garage report storing a car in their garage. Again, this means that half of these garages (49%) are not being used for carparking. Furthermore, if it is assumed that most of these garages can store only one car (based on the result of the consented plan analysis; see Section 1.5) then the second car is almost always parked elsewhere.

#### **1.4.5 Satisfaction with carparking**

The survey participants were asked to rate their level of satisfaction with how they store their vehicles.<sup>17</sup>

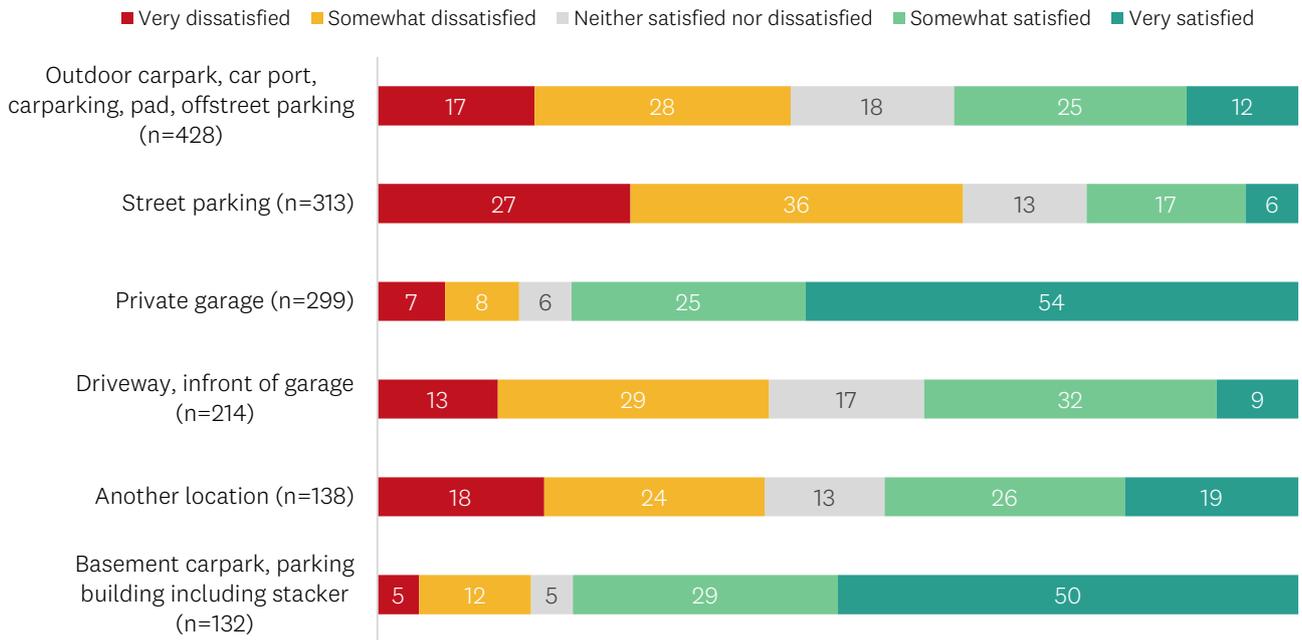
As Figure 12 shows, there is a clear relationship between levels of satisfaction with the storage of their petrol, diesel or hybrid cars and the type of storage participants are using. For example, the participants who said they park their car in a private garage or basement carpark were significantly more likely to have reported being ‘somewhat’ or ‘very satisfied’ with their carparking (79% respectively), compared with those who park their car on the street (23%).

Two-thirds (63%) of those who park a car on the street reported being ‘very’ or ‘somewhat’ dissatisfied with this form of storage.

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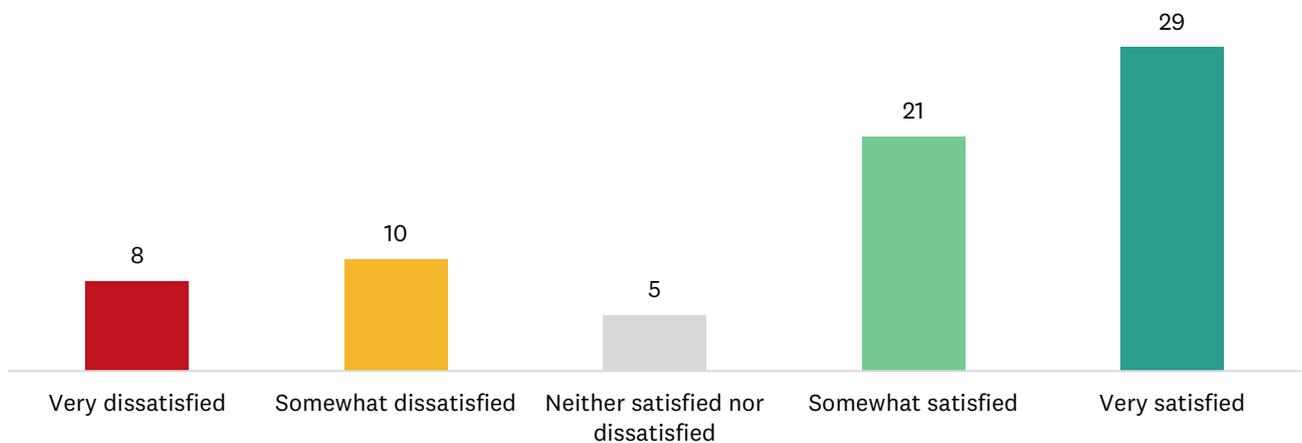
<sup>17</sup> Question 30 asked ‘Thinking about protection from the elements, security from theft or vandalism, proximity to your home or access to charging for electric vehicles, how satisfied are you with how you store your vehicle? The question was asked for the following vehicle types if participants indicated having this type of vehicle owned by members of their household: petrol, diesel or hybrid car; plug-in electric car; adult pushbike, e-bike or scooter; child bike or scooter; motor bike or moped/scooter; trailer boat or campervan; mobility scooter.

**Figure 12: Participant satisfaction with storage of petrol, diesel or hybrid cars, by different storage locations (n=1234) (%)**



The participants with EVs reported relatively high satisfaction with how their vehicle(s) is stored. As Figure 13 shows, most of the participants with an EV reported being ‘somewhat’ or ‘very’ satisfied.

**Figure 13: Participant satisfaction with storage of EVs (counts)**



As the following section discusses, these differences in satisfaction are in part due to security and proximity of garage/basement parking compared with street parking.

### 1.4.6 Participants’ comments on carparking

When asked to describe what they like and dislike about their home, many participants commented on carparking.

A small proportion (3%) of participants mentioned carparking as something they like the most about their home; for example:

*Plenty of space for parking.*

*Secured and easily accessible carparking.*

Many of these comments were about the existence/availability of carparking at their home or having a garage; for example:

*I have a garage.*

This study found that garages are often not used for carparking, and are an important, if unintended, place for 'living', as well as storage (See Chapter 4, Section 1.4.2). Half of those with a garage (which is half of those living in terraced houses or duplexes) reported using their garage for carparking. Also, as discussed further on, some participants could not fit their car or vehicle into the garage as the space was too small.

When asked what they dislike about their homes, carparking was the most frequently mentioned topic, with 20 per cent of the comments being about carparking issues within their building/complex/property, 6 per cent about street parking, and 3 per cent about visitor parking. Carparking issues were more likely to be mentioned by participants who live in a terraced house (24%) or duplex (25%), than by participants who live in an apartment (12%). Likewise, carparking issues were more likely to be mentioned by participants living in South/East (27%) or West (26%) Auckland than by participants living in Central Auckland (14%)<sup>18</sup>. These spatial differences may be impacted by the varied provision of public transport around the region.

The survey participants' comments are presented in the following broad themes: not enough parking space, impacts of on-street parking by residents, a lack of reliable and accessible public transport in their area, and while not directly about carparking, traffic and roading issues in the surrounding area were mentioned as things that participants did not like about living in their home, and so are mentioned here.

These issues are interrelated, and participants sometimes mentioned more than one issue in their comment.

### **Not enough parking space**

Some commented that there was simply not enough parking space or suggested that there was an insufficient number of carparks for the number of cars in a home.

*The lack of parking available.*

*One carpark per unit.*

*No off-street parking.*

Others commented that their garage was too small for their car.

*Parking space is a bit tight (or our car is too big 😊).*

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<sup>18</sup> See Chapter 3, Section 3 which demonstrates the relationship between housing typologies and location.

*The entrance into the garage, can't get a car in there and neither can the rest of the neighbours. Single garages have either the car in or used as storage space as the storage inside the house is limited.*

*Garage is too small to park car in so need to park in shared driveway.*

Some described themselves, or observing their neighbours, using their garages for storage or other purposes (e.g. living space). This finding was reflected in the households with garages who participated in the in-home immersions.

*Office, laundry, racking storage and guest bed are all in garage.*

*The fact that the neighbours have 2-3 cars [in] each household and DO NOT use their garages to store their cars, therefore all park on half of the shared driveway creating congestion.*

**Figure 14: Cars parked on shared driveway in front of garages**



*The neighbours who park on the shared road [driveway] having repurposed their garages to be lounges and bedrooms because they want their vehicles to be 'safe', disregarding that it blocks the access of their neighbours from using their own garages across the drive and will make a huge problem if we ever have a fire call out here.*

Source: TMDO, Auckland Council.

### **Impacts of on-street parking**

The lack of off-street dedicated parking is resulting in cars being parked on the street.

*If I have more than one car in household or any visitors, they have to fight for on-street parking. Half the street outside our home is 120min limit, which means visitors have to move cars or get parking tickets.*

*The parking is not efficient – would be great if each apartment had two parks each as opposed to one. One of our cars has to park on the road along with lots of other cars from the area.*

*The lack of parking inside the complex and on the street. It is an unreasonable expectation for households to have only one car in Auckland.*

**Figure 15: Cars parked on berm**



*Lack of parking, meaning the neighbours and their visitors park on the berm.*

Source: Google Maps.

**Figure 16: Cars parked along street**



*The parking situation!!!!!! Since moving in, this area has become more and more populated and there's not nearly enough parking for residents :(*

Source: Google Maps.

On-street parking is resulting in several related issues.

Some participants are concerned about the security of their cars from theft and vandalism.

*My partner's car has been stolen from that street carpark lot, so we're always nervous parking out there.*

*No off-street parking and having to park wherever a park can be found. No protection to keep an eye on the vehicles. Every time you leave, it's 'Will my car be there?'*

*Lots of cars get broken into around here.*

The volume of residents' cars on the street is limiting the ability of visitors to park on street.

*Lack of parking! Makes it so hard to invite friends and family over as hardly any parking around, meaning people have to park often very far away making it super inconvenient to visit. Also many houses (this one included) double park on driveway (as nowhere else to park second car) but this means footpaths are then blocked, making it trickier when walking/biking with the kids.*

*No visitor parking for my visitors as street parking outside being used by nearby townhouse developments who use their garages as extra rooms.*

*The lack of on-street parking can also be frustrating at times, especially when we have friends coming over. The trouble is that the rest of Manukau is paid parking so people going to jury service, working in Manukau or catching the train from Manukau use our area as [a] free parking lot. It would be great if we had a neighbourhood parking permit scheme like they have in suburbs close to the main city centre.*

In some cases, insufficient legal street parking is resulting in cars parking illegally (e.g. on footpaths and berms). As the comments below indicate, some participants feel that streets with many (legally and/or illegally) parked cars can create dangerous conditions for driving, walking and children playing.

*Too many cars illegally parked which makes walking difficult without walking on the road.*

*No place to park car safely and it's a busy area with dark streets, so I can't safely go out at night in my car.*

*The extra cars parked out on the street which is causing a hazard when leaving the complex. Cars leaving can't see past the cars parked out on the street.*

*Extremely poor parking set up. Inadequate parking spaces for residents, meaning people are parking illegally and obscuring driveways and footpaths and obscuring traffic flow. Turning facility into main complex unsafe, results in illegal driving, some near-miss car accidents occurring.*

*Too many cars. Cars are parked everywhere in breach of the rules, all over the footpath. I wish council would come and police it. Attempts to curb this has meant massive blow ups, so the committee seems to have given up. Cars drive too fast. It should be 10kms/hr. There's no communal space. It was built for families but there's nowhere for kids to play. They have to play on the road, which is dangerous if a car goes fast.*

**Figure 17: Cars and wheelie bins blocking footpaths**



Source: TMDO, Auckland Council.

### **Lack of public transport**

The need for cars and carparking due to a lack of reliable public transport in their area was raised by some participants.

*The houses were built with not enough parking space and my area is far away from train and bus. I get the point that council wants us to use public transport but it's a joke at the moment. Some houses own four cars and they only have one carpark driveway. Whoever designed this road/parking layout doesn't have much common sense of future-proofing.*

*The fact that my apartment is one of the few that doesn't have a parking space with it. I walk to work and use public transport often, but I still need a car to get around Auckland. Public transport is not good enough to get rid of my car yet. This means, despite owning my apartment, I have to rent a carparking space from someone else and I am aware that I may not have this space forever.*

*The complex doesn't reflect how majority of Auckland families require two cars, especially since our complex is far from many things and the main road to the complex is a highway that hasn't been upgraded to be used safely for people to walk or bike to the nearest transportation hub/train stations and shopping/dining area.*

### **Traffic and roading in general area**

Traffic issues outside their home and in the local area were mentioned by 13 per cent of participants when they were asked what they dislike about their home. Traffic noise was a common comment in this theme:

*The traffic noise as we live on a main road.*

*Proximity to delivery entrance for supermarket next door. Loud trucks idle outside and often use their horns.*

*Street noise due to close proximity to motorway. House was not built soundproof.*

*The very noisy cargo train operates almost 24/7.*

General congestion or safety issues with surrounding public roads, including traffic speed, was also mentioned:

*The roads are so narrow and sometimes this creates congestion.*

*The speed of traffic on the road where the garage entrance to the apartment complex is located.*

*We are on a busy street which is noisy from traffic and racing cars which needs to be controlled.*

Some mentioned a lack of footpaths:

*Lack of footpaths – have to drive to go for a walk safely.*

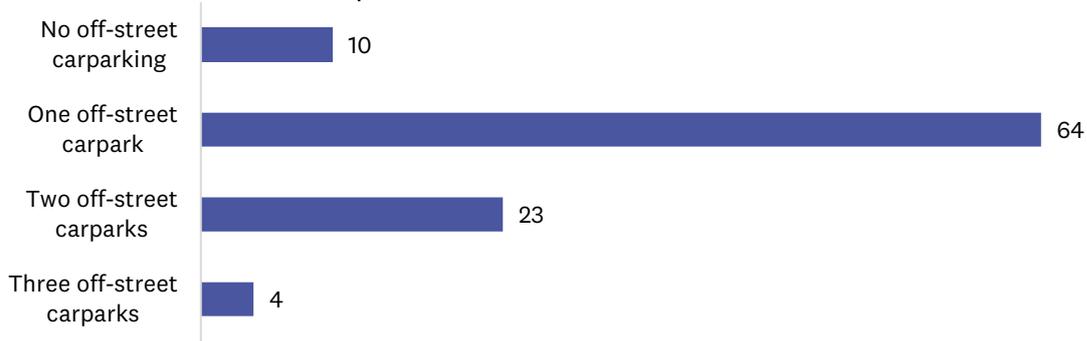
## **1.5 Consented plans**

As described in Chapter 3, this study included analysis of the consented floor plans for 110 properties whose households had participated in the survey.

Analysis of the consented plans included the number and type of carparks for each property. Ninety per cent of plans analysed had one or more off-street carparks. Two-thirds (64%) had one off-street carpark, 23 per cent had two off-street carparks, and 4 per cent had 3 off-street carparks.

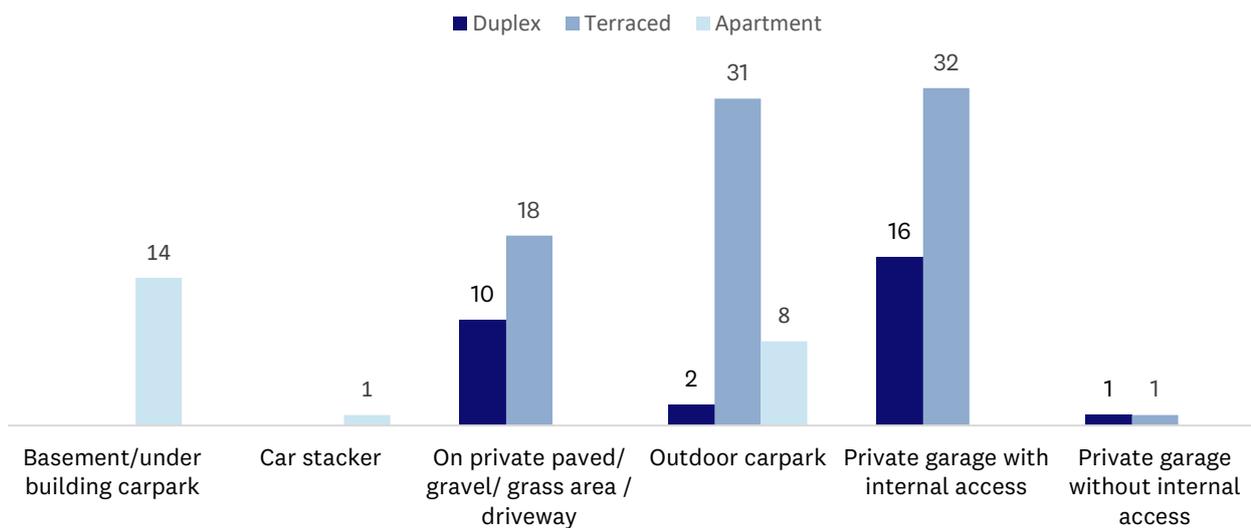
Apartments were more likely to have no off-street carparking (23%) than terraced houses (8%) and duplexes (0% – all had at least one carpark).

Figure 18: Number of off-street carparks (n=110) (%)



The type of carparking varies between apartments and terraced houses/duplexes. Carparking for apartments is more likely to be in a basement or otherwise underneath the apartment building (14 out of 23 apartment carparks). In contrast, attached houses tend to have outdoor carparks or private garages (Figure 19). All the private garages had space to park one car, except for one garage which was large enough to fit two cars.

Figure 19: Types of carparking, by typology (counts)



## 1.6 In-home immersions

As described in Chapter 3, Section 1.3, this study included 20 in-home immersions with participants who had completed a survey. (See Chapter 3, Section 7 for more details on the 20 properties and households who took part in the immersions).

There was a range of carparking options across the participating households. Six properties had a garage, although only two of these garages were used for carparking. Six properties had a car pad (i.e. a parking space often in front of their home) and five had a carpark (i.e. one carparking space in a basement or open-air carpark shared with their neighbours). Three homes did not have any off-street carparking.

Cars owned by the household that were not able to be parked on off-street carparking were parked on nearby public streets, driveways or in modified front yards. Some households with a car pad in front of their home had modified the landscaping to accommodate more vehicles. Figure 20 shows a

grass lawn covered in bark to accommodate a third vehicle and the grass strips in Figure 21 have been replaced with stones to allow easier car access. A second car can be parked in front of the footpath to the front door, on top of the low curbed triangle planter space.

Figure 20: Parking for three cars was created at this duplex by placing bark over the lawn



Figure 21: Grass was replaced with stones to improve access to parked car, and second car parks across footpath and planter space (as indicated by dashed white box)



Some participants described parking in very precise ways to fit their car in front of their garage (which is used for other purposes; see Chapter 4: Indoor spaces for living).

Figure 22: Cars parked at angles in front of garages along shared driveway



Figure 23: Car parked at precise angle and distance from garden bed and garage door to prevent blocking shared driveway



One household explained that their outdoor living space, which fronts a shared driveway, enables them to park their car in front of the garage as it provides space to undertake a three-point turn (Figure 24). While they had a garage, this was used for storage, laundry and storing their motorbikes. They would like to allow their daughter to play in the outdoor living space when she is older, but feel they will need to install a fence, which would then limit their ability to manoeuvre a car in front of the garage.

The resource consented plans for this home showed a deck, landscaped area and low wall in the outdoor living space, but this was not delivered, as Figure 24 shows.

Figure 24: Car parked at angle outside garage and outdoor living space that provided manoeuvrability



Some participants reported access issues if they parked their cars as intended in their carpark. For example, Figure 25 illustrates how the size of the carpark prevents these participants from opening their car doors.

Figure 25: Lack of space to open car door in carpark



Like the survey participants, some of the in-home immersion participants expressed concern at the lack of parking for visitors:

*Parking! Parking is my biggest issue right!! ... It's huge for me ... as you can imagine, once you start inviting friends over, where are they parking?*

*Getting parking ... is really difficult. For [daughter's] first birthday, we had to use my dad's place rather than here because it's just too small and there's just not enough parking for the number of people we wanted to invite ... the logistics of transport and stuff has been really interesting.*

## 2 Bikes and bike storage

### 2.1 Regulations and best practice guidelines

#### **Auckland Unitary Plan (AUP)**

Where a dwelling is not provided with a dedicated garage, one bicycle parking space is required per dwelling.<sup>19</sup> Visitor (short-stay) bicycle parking is also required at a rate of one visitor bicycle park per 20 dwellings.

Council released the Independent Hearings Panel’s decision on Plan Change 79 – Transport on 9 August 2024<sup>20</sup>. This requires that long-stay bicycle parking is located and designed in a manner that is not part of a required outdoor living space, and is sheltered from the weather, lockable and secure.

#### **Auckland Design Manual (ADM) and best practice guidance**

The design guidance referred to in this report all recommend that bicycle parking is secure, dry/weatherproof, provide charging facilities (or future-proof for charging) and be easily accessible. The ADM recommends that bicycle parking is considered early in the design process and should be as easy to access as vehicle parking.<sup>21</sup>

The Kāinga Ora Design Requirements recommend that when bicycle parking is provided in apartment developments, that it is adequate for the number of occupants, is secure, weatherproof and easily accessible, is located as close as possible to the main entry, and includes a power outlet for charging. Short-term secure bicycle parking is also recommended at a ratio of one cycle park for every 10 dwellings.

Public Housing Design Guidance encourages provision for mobility scooter parking where the intended residents are likely to use mobility scooters.<sup>22</sup> The Kāinga Ora Design Requirements further recommends that parking for mobility scooters includes manoeuvring space to at least one side of the scooter.<sup>23</sup>

### 2.2 Section 35 (s35) monitoring

The council’s s35 monitoring did not analyse the provision of bicycle parking.

---

<sup>19</sup> *Auckland Unitary Plan*, Chapter E27 Transport, Standard E27.6.2(6).

<sup>20</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/Pages/details.aspx?UnitaryPlanId=145>

<sup>21</sup> *Auckland Design Manual*, Mixed Use Development Design, Section 5.9 Bicycle parking.

<sup>22</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developer* (Version 2\_1 web), Section 3.5.6 Cycle and mobility scooter parking.

<sup>23</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Section A3.4.1.

## 2.3 Design observations

The following design matters have been observed by the council’s Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

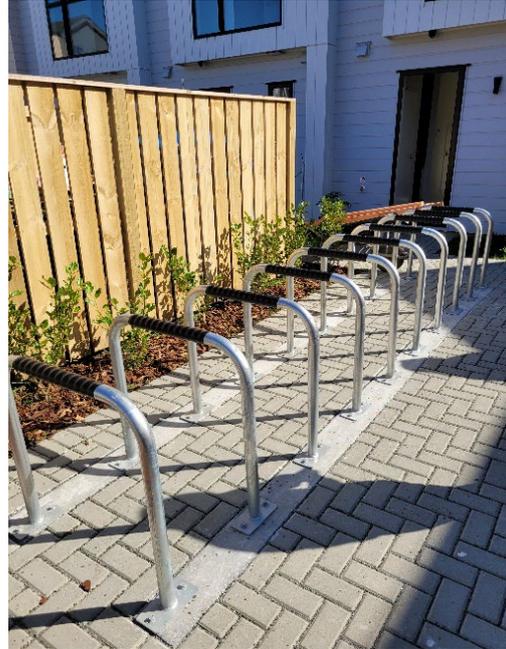
- Where bicycle parking is required for residents, it is often not secure or weatherproof (such as Figure 27 below), and is therefore not well used by residents.
- Bicycle parking can be provided in rear outdoor living areas, but this requires the bike to be moved through the dwelling.
- Bicycle parking is not well considered at site design stage and is often an afterthought, rather than being located and designed to be as accessible as carparking to support mode shift.

Figure 26: Secure and weatherproof communal bike storage for residents, with e-charging facilities



Source: TMDO, Auckland Council.

Figure 27: Communal Sheffield bike stands for residents are neither secure nor weatherproof



Source: TMDO, Auckland Council.

Figure 28: Communal resident bike parking room within an apartment building

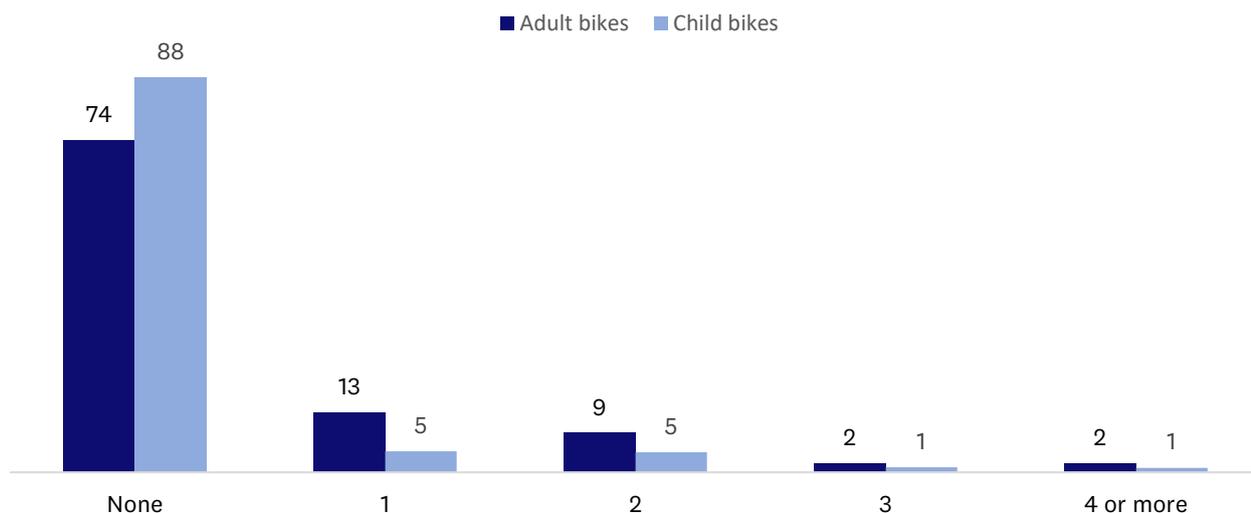


Source: Google Maps.

## 2.4 Survey results

As Figure 29 shows, a quarter (26%) of the households reported owning at least one adult pushbike, e-bike or scooter and about one in ten (12%) own at least one child bike or scooter. The small proportion of households with child bikes is likely reflecting the relatively small proportion of households with children (25% of the participating households). Forty-one per cent of households with children have one or more child bikes.

Figure 29: Proportion of households with adult and child bikes or scooters (n=1243) (%)

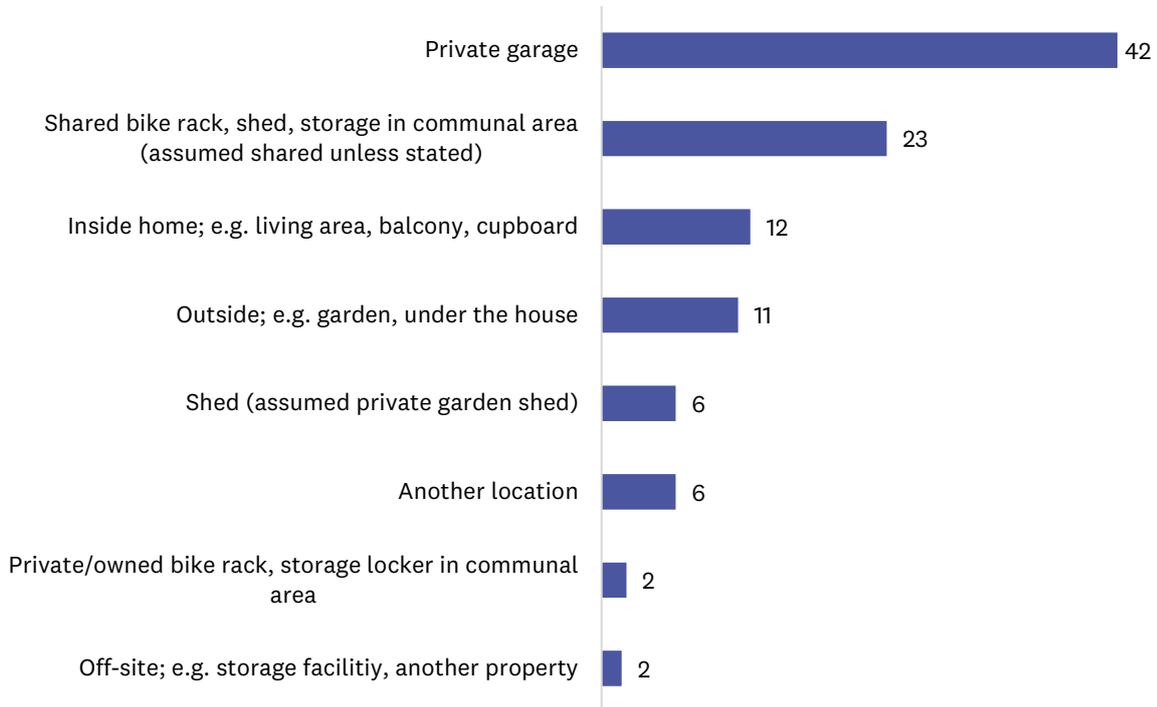


### 2.4.1 Bike storage

The survey participants were asked to describe where they store their pushbikes, e-bikes or scooters.

Forty-two per cent of households store their adult pushbikes, e-bikes or scooters in a private garage. Close to a quarter (23%) store their adult bike or scooter in a shared bike storage area (e.g. bike rack, shed). Close to 10 per cent of households store an adult bike inside their home (12%) or outside, such as in the garden or under their house (11%).

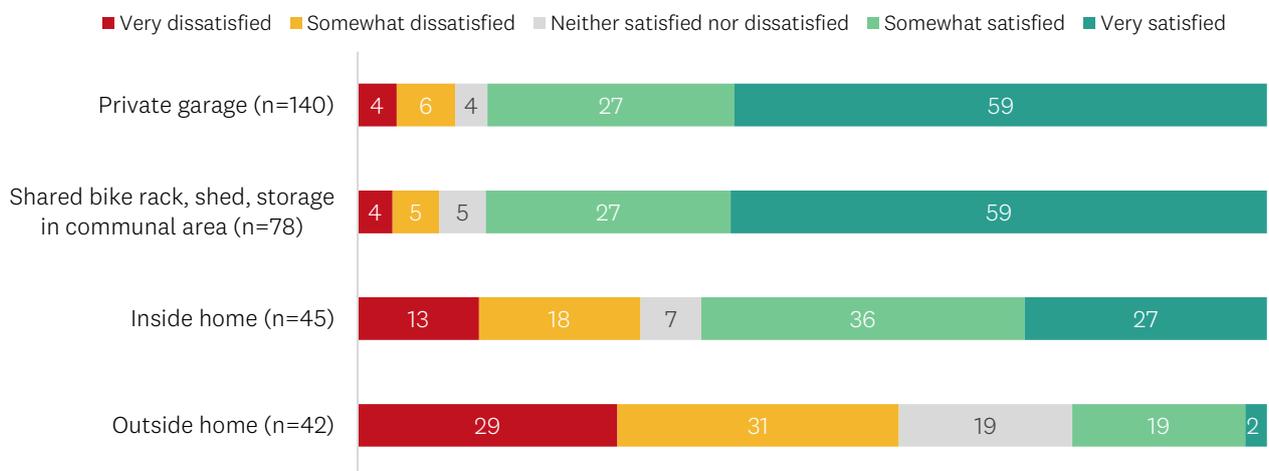
Figure 30: Storage for adult pushbikes, e-bikes or scooters (n=319) (%)



Notes: 1. Base is all properties where the household has at least one adult pushbike, e-bike or scooter.  
 2. Multiple responses allowed; therefore, total does not sum to 100.

Participants who store their adult pushbike, e-bike or scooter in a private garage or shared storage area tend to be satisfied with this storage solution (86% ‘somewhat’ or ‘very’ satisfied for both). Close to a third (31%) of participants who store their adult pushbike, e-bike or scooter inside their home are dissatisfied and the remaining two-thirds (63%) are satisfied. Those storing their adult pushbike, e-bike or scooter outside the home have the greatest dissatisfaction, with 60 per cent being ‘very’ or ‘somewhat’ dissatisfied.

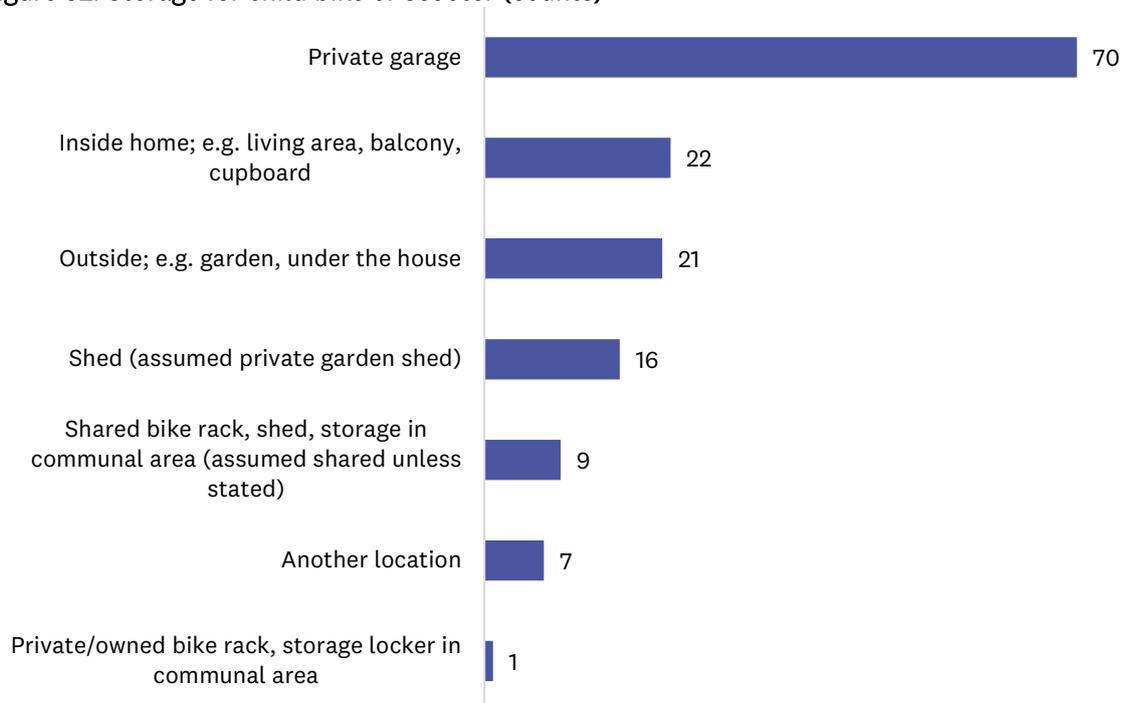
Figure 31: Participant satisfaction with adult pushbike, e-bike or scooter storage, by location (%)



Notes: 1. Base is all properties where the household has at least one adult pushbike, e-bike or scooter.  
 2. Chart shows storage locations with more than 40 responses.

The largest number of participants with a child bike or scooter store this in a private garage. Twenty-two households store a child bike or scooter inside their home (e.g. in a living area, balcony or cupboard) and 21 store these items outside (e.g. in the garden, under the house).

**Figure 32: Storage for child bike or scooter (counts)**



The participants with a child bike or scooter were asked about their satisfaction with the storing of their bike/scooter. Eight-four per cent of the participants who store their child bike/scooter in a private garage are ‘somewhat’ or ‘very’ satisfied, 9 per cent ‘somewhat’ or ‘very’ dissatisfied, and the remaining 7 per cent are ‘neither satisfied nor dissatisfied’ with this storage location.

As Figure 32 shows, small proportions of participants reported storing their children’s bikes or scooters in other locations, which limits the ability to assess satisfaction with these other locations.

## 2.5 In-home immersions

Seven of the 20 households who participated in the in-home immersions own an adult bike or scooter, and/or a child bike and/or scooter.

They store their bikes in a range of locations, including their outdoor living space, garage and facilities in their complex (e.g. Sheffield racks and basement garage hanging racks), as the images below show.

Figure 33: Bike stored against a fence in an outdoor living space



Figure 34: Bikes stored in garage on hanging racks and leaning against wall

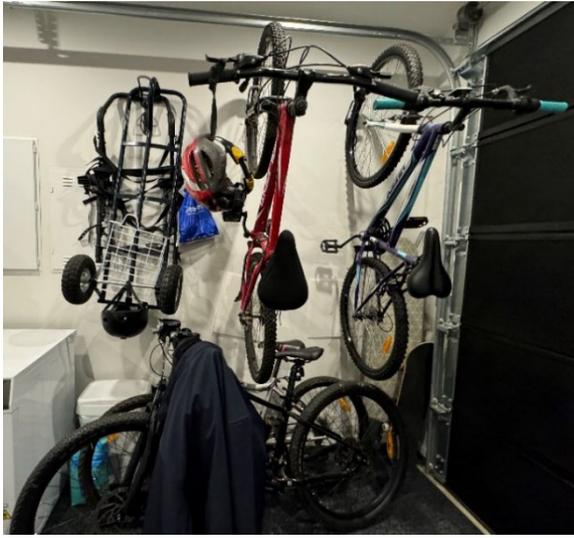


Figure 35: Bikes and scooter stored by Sheffield racks in apartment building



Note: Bikes pictured not owned by the participant.

Figure 36: Bike storage in apartment building



Note: Bikes pictured owned by both participants and others in the apartment building.

### 3 Other vehicles

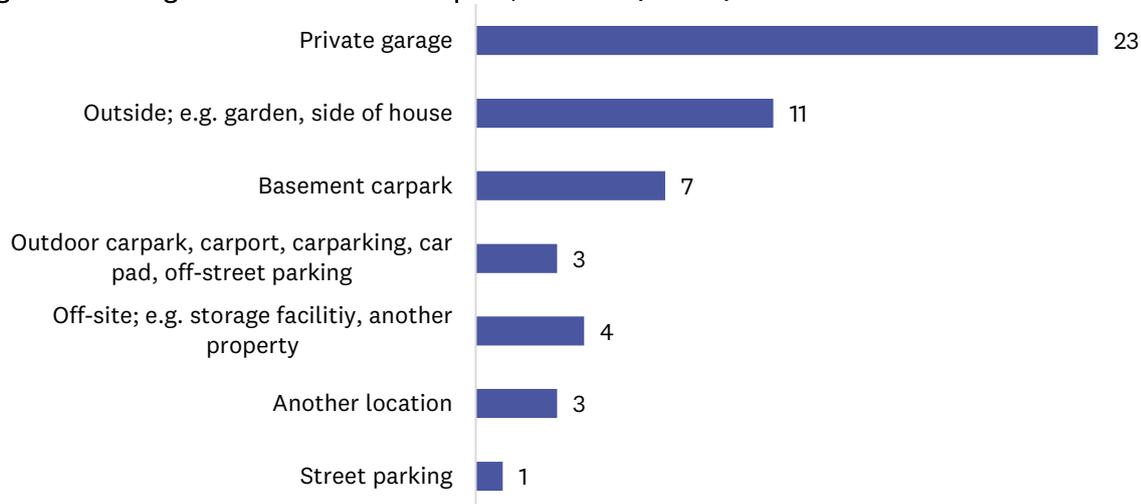
The survey asked participants whether they owned other vehicles, or others in the household did, how many they owned, and how they stored these vehicles. As Table 2 shows, 52 households owned at least one motorbike or moped/scooter, 17 owned at least one trailer, boat or campervan, and three households had a mobility scooter.

Table 2: Other types of vehicles owned, by household

Type of vehicle	Number who owned one	Number who owned two	Total
Motorbike or moped/scooter	46	6	52
Trailer, boat or campervan	12	5	17
Mobility scooter	2	1	3

The survey participants were asked to describe in an open ended response where they store these vehicles at their home. Almost half of the 52 who reported owning a motorbike or mopeds/scooters said they store them in their garage, and about a fifth store their other vehicles outside.

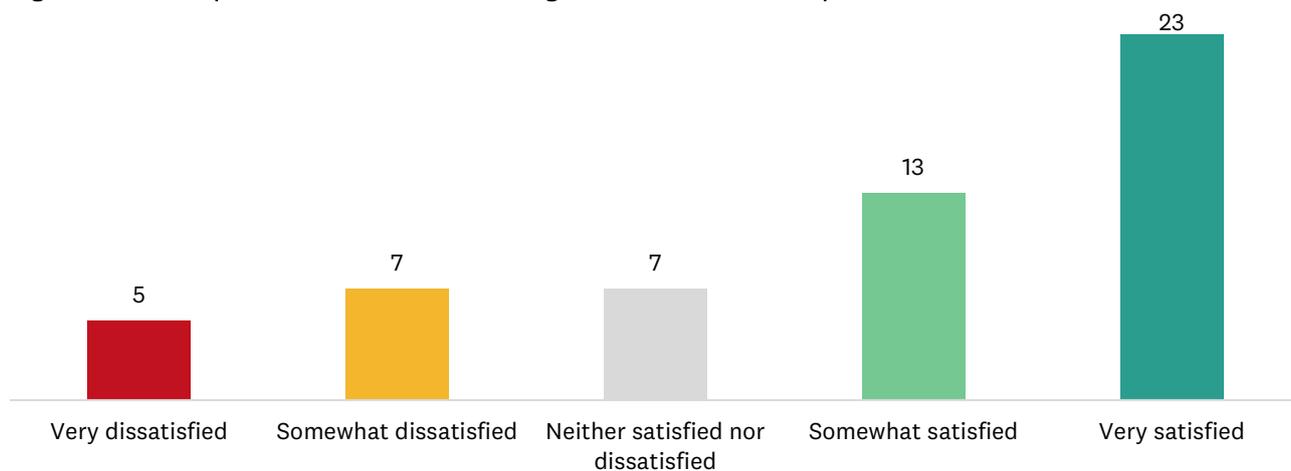
Figure 37: Storage for motorbikes or mopeds/scooters (counts)



Most of the households who own a trailer, boat or campervan reported storing this off-site, such as in a marina or storage facility. Two store their vehicle outside and two in a private garage. The three mobility scooters are stored in a basement carpark or private garage.

Participants were asked to rate their satisfaction with storage of their ‘other’ vehicles. Most of the participants who own a motorbike or moped/scooter are ‘somewhat’ or ‘very’ satisfied with how this is stored (Figure 38).

Figure 38: Participant satisfaction with storage for motorbike or moped/scooter (counts)



A similar pattern is seen with storage for trailers, boats, caravans and mobility scooters. Ten of the 17 participants who reported having a trailer, boat or caravan and all three participants with a mobility scooter are ‘somewhat’ or ‘very’ satisfied.

## 4 Summary

The research found that there is generally not enough off-street parking for the number of vehicles that the participants own. This results in ‘created’ carparks (e.g. on front yards) and renders on-street parking an issue for many, including visitors. When garages are part of a home, they can be too small to fit participants’ cars and may be required for additional functions (e.g. laundry and storage), which can further limit the space for carparking.

Only a third of the surveyed households had the same number of cars and off-street carparks. Fifty-seven per cent of the households had more cars than off-street carparks, and 49 per cent had two or more cars. This results in cars being parked on public roads, shared driveways and front yards in unanticipated ways (i.e. parking on berms, footpaths, blocking shared driveways). Such parking has implications for the security of vehicles from theft and vandalism, the ability for visitors to park nearby, and the pedestrian experience (including safety) of the site and the neighbourhood. These challenges are compounded by the tendency for attached MDH (terraced homes and duplexes) to be on narrow public streets which are not designed to accommodate the same volume of parking as a wider suburban street.

Over a third (35%) reported parking a car in an outdoor carpark or car pad, a quarter (26%) used street parking, a quarter used a private garage (24%), and 18 per cent used their driveway or outside their garage. These relatively high proportions of outdoor parking (i.e. car pads, carparks, driveways) aligns with TMDO’s observations of a shift towards these types of parking that enable greater intensification as less space is required for individual driveways and car manoeuvring areas. Reducing the floor area of a home by not including a garage or basement carpark, or reducing the number of carparks provided, enables land to be used for higher value purposes and removes a significant cost for higher density developments.<sup>24</sup>

The participants who park their petrol, diesel or hybrid car in a private garage or in an apartment building basement carpark are the most satisfied with their storage location (Figure 12). Those parking a car on the street are the least satisfied, and those parking in an outdoor carpark/car pad or on their driveway have an intermediate degree of satisfaction.

Half of the households living in terraced houses and duplexes reported having a garage, and half of those with a garage reported using their garage to park a car. The diverse uses of garages as spaces for living has been discussed in Chapter 4: Indoor Spaces for Living. Further to these non-carparking uses of garages, some participants said that the garage in their home is too small to comfortably fit their vehicle. Size limitations and use of garages as a space for living or to enable living (e.g. storage) limits the ability for garages to function as off-street carparking. Consequently, the number of properties that functionally have no off-street parking is greater than the third of properties reported in Figure 7.

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<sup>24</sup> As is a purpose of the NPS-UD. Source: <https://environment.govt.nz/assets/Publications/Files/car-parking-factsheet.pdf>

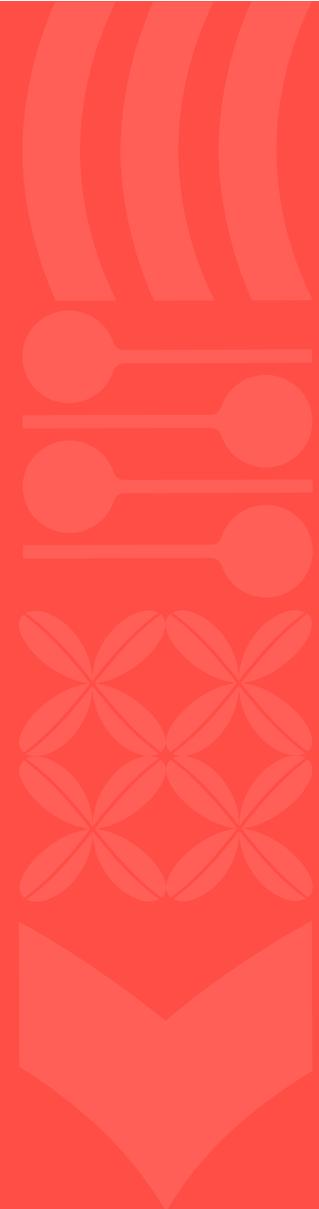
Some participants mentioned needing a car due to a lack of public transport. Research undertaken by Auckland Council in 2023 found that small proportions of Auckland drivers enjoy driving and suggested that driving is a prevalent mode of transport only because it is ‘the least bad’ option (Ovenden & Allpress, 2024). A more efficient and reliable public transport system has potential to be a predominant transport mode for Aucklanders and would reduce the need for multiple private vehicles in each household. The recent removal of carparking minimums by the NPS-UD for all residential zones does not reflect the accessibility of those zones to public transport and can create challenges where households are reliant on private vehicle use, placing additional pressure on local streets to accommodate parking.

Most of the participating households did not own bikes, e-bikes or scooters at the time of the survey. Only a quarter of households had one or more adult bikes and 12 per cent had one or more child bikes. Private garages were the most reported location where participants stored both adult and child bikes. Close to a quarter of participants reported storing adult bikes in a shared storage area (e.g. bike cage, bike racks).

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 9

# Shared facilities



Kathryn Ovenden and Melanie McKelvie

September 2024, Technical Report 2024/6





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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## **Introduction to this chapter**

This chapter considers aspects of medium density housing (MDH) that emerge when homes are part of an apartment building or a housing complex with shared facilities. This includes shared spaces such as communal outdoor living spaces, vehicle and pedestrian accessways, centralised car parking or basement garages, lighting and waste management. These features are not present in low density standalone houses and are more diverse than in high density apartment buildings.

Section 1 explains how a ‘housing complex’ is defined in this study and provides some examples.

Section 2 is a short section that outlines how the survey identified which participants live in a complex and how many participants report their home being part of a complex.

Section 3 focuses on complex and building management, and Section 4 on waste management. They both start with a description of relevant regulations and best practice guidelines before presenting results of the survey and in-home immersions. The survey results presented in these two sections are from questions that were asked of all the survey participants.

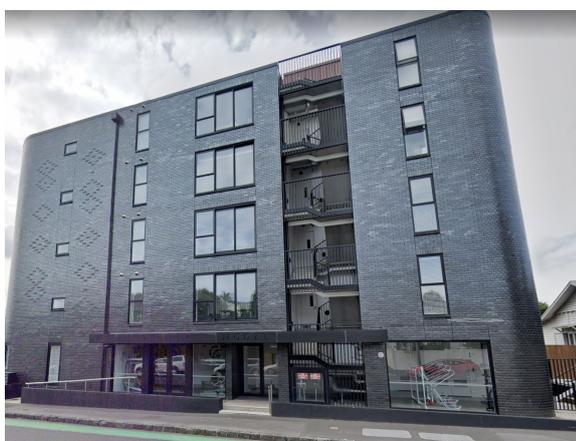
The sections that follow on shared living facilities (Section 5), lighting (Section 6), pedestrian safety and wayfinding (Section 7), mail and other deliveries (Section 8), building or complex access (Section 9), and perceptions of safety from assault, harassment or theft (Section 10), all begin with a description of regulations and best practice guidelines before presenting results of the survey. The survey results presented in these sections are from questions that were only asked of participants who reported they live in an apartment building or a terraced house/duplex that is part of a housing complex. Section 5 also contains results from the consented plan analysis and in-home immersions.

Section 11 contains a summary of the results presented in this chapter.

# 1 Definition of a ‘housing complex’

Medium density homes can exist within a ‘complex’ or in a building with shared facilities (such as pools, lounges or communal outdoor space) and shared spaces (such as vehicle and pedestrian accessways, centralised car parking or basement garages, lighting and waste management arrangements). Apartment buildings are straightforward to identify as a typology and two examples are shown in Figure 1 and Figure 2.

Figure 1: Communal bike storage (ground floor) and shared stairwell at an apartment building



Source: Google Maps.

Figure 2: Swimming pool and communal outdoor living space at an apartment building



Source: Google Image, credit to Michelle Waring.

Homes that are part of a complex are more challenging to identify. Terraced houses, duplexes and standalone houses can all be part of a housing complex. In this study, homes that are part of a complex were defined as having shared facilities such as rubbish collection or outdoor living areas, in addition to shared driveways or footpaths. Homes with only a shared driveway or footpath were classified as not being part of a complex. It is acknowledged that terraced houses and duplexes are often accessed by shared vehicle and pedestrian accessways, which will be subject to a legal mechanism such as a jointly owned access lot or right of way easement.

Homes that are part of a complex can either be properties with a unit title (subject to the Unit Titles Act 2010) or can be freehold.<sup>1</sup> When freehold, owners of properties may form a residents’ association (also known as an incorporated society) to manage shared property and services (e.g. accessways, rubbish collection) (see Section 3 for more detail). However, residents’ associations are not always legally required to be established and shared accessways do not have to be jointly owned. Instead accessways can be part of one freehold title and others in the complex have an easement which allows them to travel over the accessway owned by their neighbour.

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<sup>1</sup> See Chapter 2, Section 4 for more information on forms of property ownership.

The figures below illustrate various housing complexes of terraced houses and duplexes that would be classified as being part of a complex, and not part of a complex for this study. These demonstrate the wide variety of site layouts, sizes of complexes/numbers of dwellings, and shared facilities.

**Figure 3: Example of a housing complex with a private road, centralised carparking, communal bike sheds, communal waste storage areas, and a communal outdoor space**



Source: Nearmap Urban Aerial Imagery (NZTM).

**Figure 4: Private road**



**Figure 5: Communal outdoor living space**



Figure 6: Shared pedestrian access and communal bike storage shed



Source: TMDO, Auckland Council.

Figure 7: Centralised carpark



Figure 8: Example of a housing complex with a JOAL (Jointly Owned Access Lot), centralised parking, lighting, landscape treatment and pedestrian access



Source: TMDO, Auckland Council.



Source: Nearmap Urban Aerial Imagery (NZTM).

Figure 9: Example of a housing complex with a communal outdoor living space, communal building and shared parking

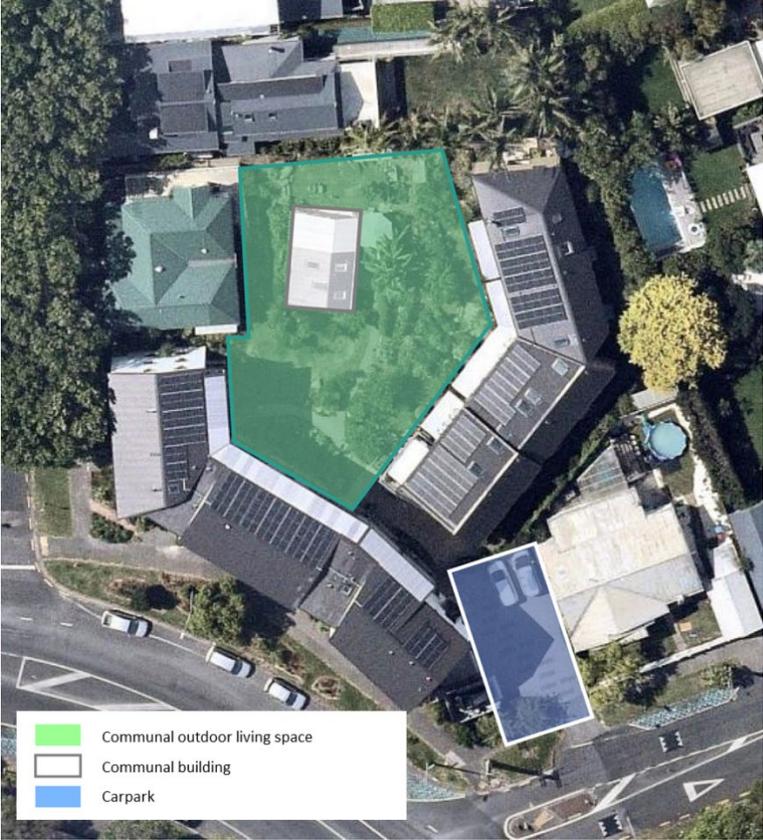


Figure 10: Example of a housing complex with a shared vehicle accessway, centralised carpark, and pedestrian accessway



Source: Nearmap Urban Aerial Imagery (NZTM).

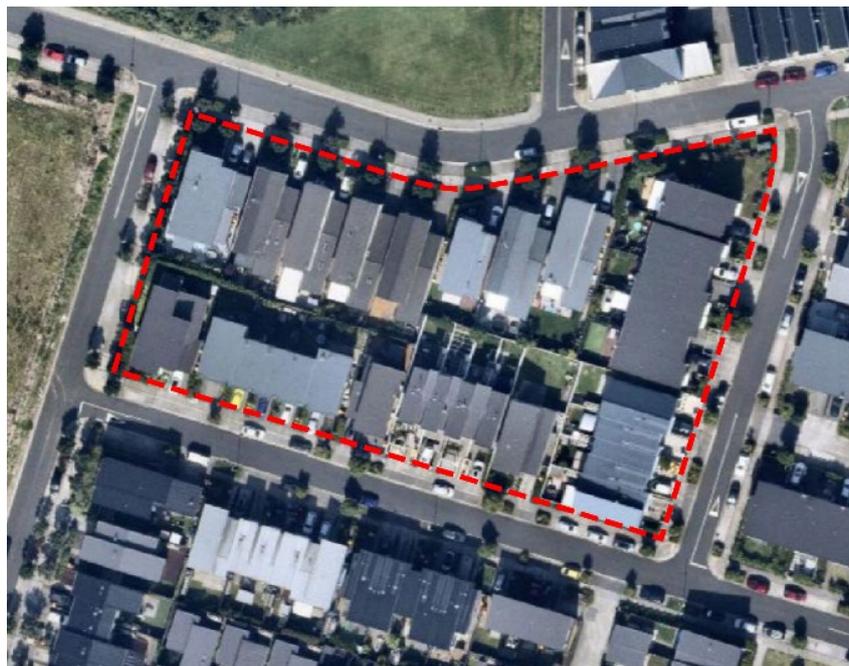
Figure 11: Example of terraced houses with a shared driveway, which is not a housing complex in this study



Figure 12: Example of a terraced houses with a shared pedestrian accessway, which is not a housing complex in this study



Figure 13: Example of a block of terraced houses that are accessible from a public street and are not part of a complex



Source: Nearmap Urban Aerial Imagery (NZTM).

## 2 Identifying who lived in a complex

The survey asked participants to identify which kind of home they live in, choosing from an apartment, a terraced house or townhouse, a duplex (semi-detached), a standalone house, or something else (see Appendix 5: Survey questionnaire).

Those who said they live in an apartment were automatically categorised as living in an apartment building with shared facilities, and were asked a series of questions about the apartment building they live in.

Participants who said their home was a terraced house or a duplex<sup>2</sup> were asked to indicate whether the home they lived in was part of a complex, or not, by selecting one of the two options below:

- 1) Your home might be part of a complex of other homes with some shared facilities such as driveways/footpaths, rubbish collection or outdoor living areas. (My home is part of a complex)
- 2) You home might only share a driveway/footpath or not share any facilities with your neighbours. (My home is NOT part of a complex)

If the participant selected the first option, they were asked questions about the complex they lived in. If they chose the second option, they were not asked questions about living in a complex.<sup>3</sup>

A total of 424 participants were identified as living in an apartment and 308 in a complex. As Chapter 3: Research method and sample explains, multiple people in a household could submit a survey response. The 424 survey responses from apartments represent 391 unique apartments and the 308 survey responses from homes inside a complex represent 285 unique terraced houses or duplexes (i.e. attached homes). A total of 676 homes (391 apartments and 285 terraced houses/duplexes) are reported by the survey participants to be part of either an apartment building or a housing complex.

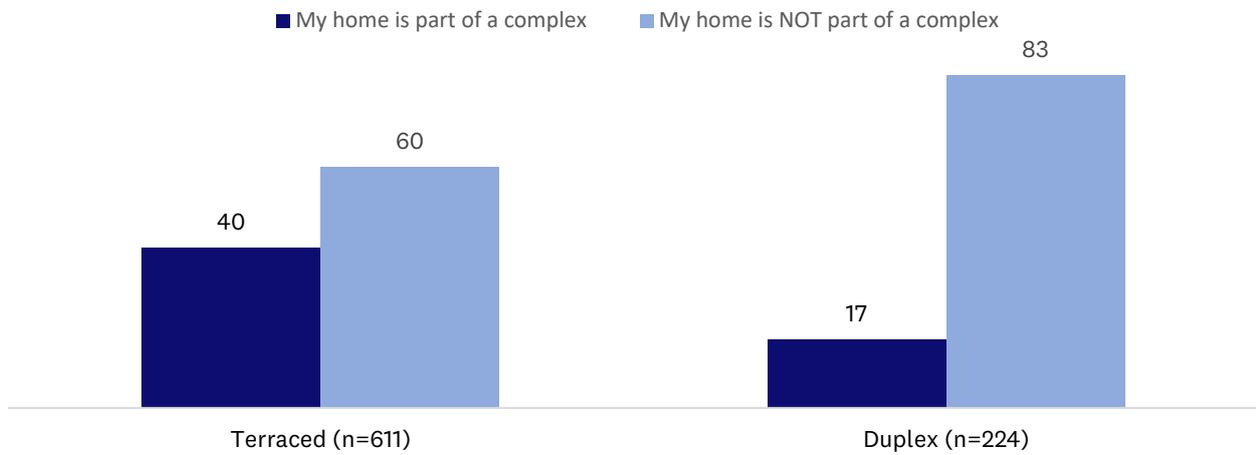
As Figure 14 shows, four in ten participants reported their terraced house is part of a complex (n=247 terraced houses) and 17 per cent of duplexes (n=38) were reported to be part of a complex.

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<sup>2</sup> This question was also asked of participants who said they live in a standalone house. As Chapter 3 explains, these survey responses have been excluded from this report.

<sup>3</sup> It is acknowledged that shared driveways and pedestrian accessways are a communal element of a development, but for the purposes of this research were not categorised as living in a complex unless they were present in addition to other shared elements such as shared waste facilities, communal living space, etc.

Figure 14: Proportion of homes reported to be part of a complex (or not), by typology (%)



The homes that were reported as not part of a complex may have a communal element such as a shared driveway or footpath.

The next two sections (Section 3 and Section 4) report results from questions that were asked of all the survey participants, while the following sections report results from questions asked only of the participants who said they live in an apartment or that their home is part of a complex. Due to the small number of duplexes that were part of complexes, responses from these participants have been combined with those living in terraced houses that were part of a complex.

### 3 Complex and building maintenance

Apartments or homes that are part of a complex can have access to a range of shared facilities, which require coordinated management. Apartment buildings are typically held in unit title ownership, where the land underneath the building is collectively owned, and which are required to have a body corporate, under the Unit Titles Act 2010. Body corporates manage, for example, maintenance of the building exterior and shared spaces (such as hallways, stairs, lifts, carparks), rubbish collection, and insurance for the building. All unit title owners are members of the body corporate and nominate a body corporate committee (comprised of members) to make decisions about the management of shared property, in accordance with annual budgets and rules of the body corporate.

Terraced houses and duplexes are typically held in freehold title ownership with joint ownership or easements over shared areas such as vehicle and pedestrian accessways. A common entity such as a residents' society/association or incorporated society may be established to ensure ongoing maintenance of those co-owned shared facilities, if required by a condition of subdivision consent.<sup>4</sup> The constitution can set out rules for things such as pets, gardens, alterations to buildings, parking and how levies are collected to maintain communal assets. These entities typically have lower ongoing costs compared with a body corporate. If a residents' association or incorporated society is not established (which is likely for smaller scale developments of fewer than 10-15 dwellings), residents may informally work with their neighbours to manage shared areas.

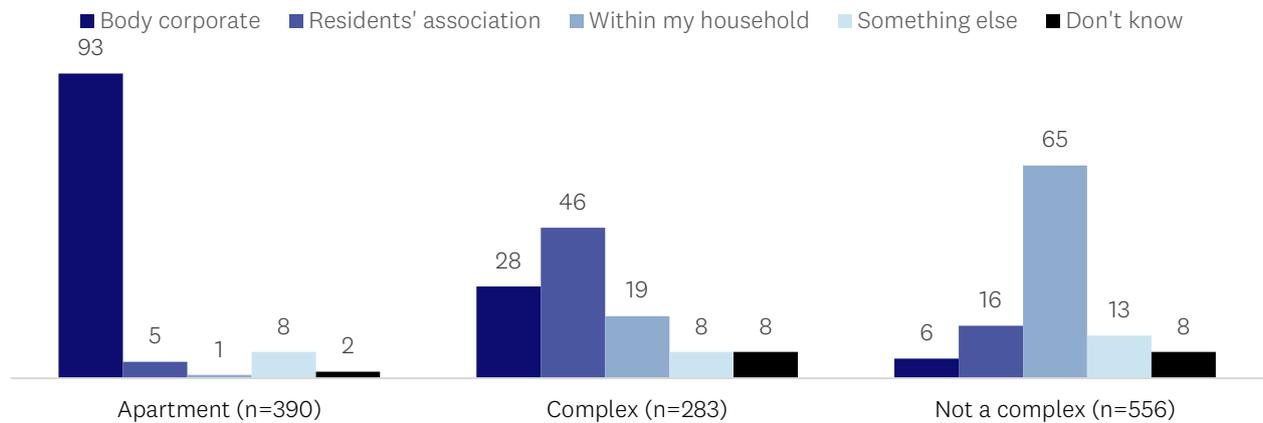
Participants were asked to indicate from a range of options how the maintenance of their home, including driveways and footpaths, is managed. Maintenance was defined as including building washing, painting external walls, maintaining gardens, rubbish collection or repairing driveway surfaces. Participants could choose more than one option.

As expected, responses to this question varied by housing typology (Figure 15). Most of the participants (93%) living in apartments reported that maintenance was managed by a body corporate. Close to half (46%) of the households living in terraced houses and duplexes inside a complex are managed by a residents' association and 28 per cent reported having a body corporate. Two-thirds (65%) of those not living in a complex report maintenance is managed by members within their household. Six per cent of participants overall reported they 'don't know' how their home is managed.

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<sup>4</sup> An incorporated society (also known as residents' society) and a residents' association is required to be registered under the Incorporated Societies Act 2022 and is authorised by law to run its affairs. Each society has its own constitution advising of rules including members obligations and restrictions, the requirement to pay membership levies, and the requirement for a financial year-end audit. Minimum membership under the Act is 10 members.

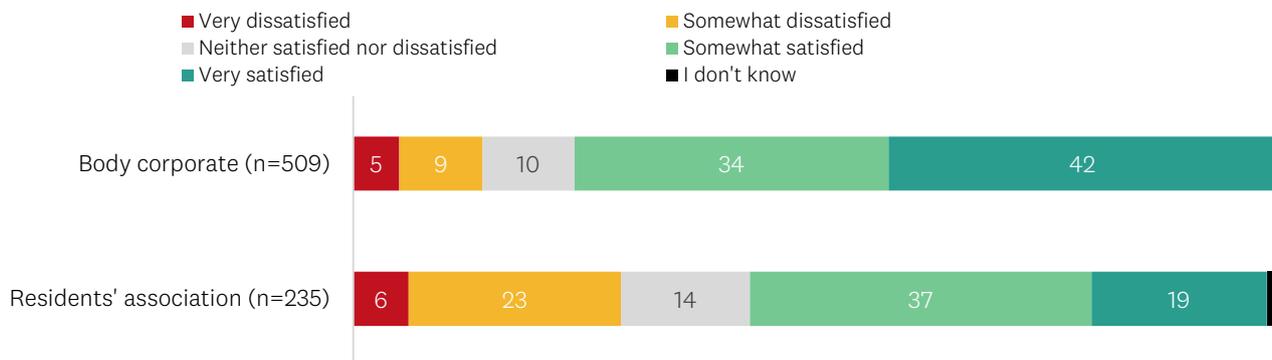
Figure 15: Participant reported management of their building/complex/property, by type of home (%)



- Notes: 1. 'Something else' includes landlord, informally with other residents, no mechanism (unmanaged) and other.  
 2. Multiple responses allowed; therefore, total does not sum to 100.  
 3. 'Complex' and 'not a complex' includes attached homes (i.e. terraced houses and duplexes).

If participants reported that the maintenance of their home was managed by a body corporate or residents' association, they were asked about their satisfaction with maintenance. Those who report being managed by a body corporate were more likely to be 'very satisfied' (41%) compared with those who report having a residents' association (23%). Similarly, those managed by a residents' association were more likely to be 'somewhat dissatisfied' (23%) compared with those managed by a body corporate (9%).

Figure 16: Participant satisfaction with the management of building/complex/property maintenance, by type of management (%)



Five per cent of participants commented on management issues as something they dislike about their home. Within this theme, some participants expressed disagreement with body corporate or residents' association rules (some of which related to site facilities in outdoor living areas; see Chapter 6: Outdoor living spaces):

*The fact that the development rules allow for residents to have up to two cats and or dogs in each apartment.*

*Body corp rules that are too stringent.*

*Hanging out our laundry to dry! Body Corp rules are strict so we have to get creative when hanging out our bed sheets on our small deck.*

*Body corporate. Unnecessary restrictions on how we use our private space (e.g. washing line bans, modifications to install shade/shelter, installing EV chargers in our private carparks).*

*Unable to put heat pump to help with heat issues in summer (40 degrees in summer in main bedroom) because body corp says the ducts are ugly and doesn't fit aesthetic of the community but no one in community agrees.*

A few of participants were dissatisfied with how their body corporate or residents' association operated:

*The difficulty to get things organised amongst the residents' association; e.g. maintenance of common areas.*

*Body corporate is useless [at] fixing issues.*

*The plants are not well maintained by the residents' society and sometimes when you park the car by it, I get scratches from the plants, what bad choice of plants and what a waste of space.*

*Sometimes the "building managers" are not accessible or are to listen.*

Some mentioned a lack of management:

*No formal arrangement in place for managing shared driveway and garden, and coordination of maintenance of the building; i.e. painting of building. No body corporate in place.*

*There isn't a body corp that maintains shared areas and we are of the few home owners that care. So it costs us to maintain it for everyone.*

*Lack of residents' association to undertake future maintenance requirements, and ability to form one as unable to identify all owners.*

A few participants had positive comments about their building/complex management:

*Has a body corp so I don't have to worry about the maintenance.*

*Well looked after by Body Corp.*

*It looks very stylish and is well maintained by our Body Corporate.*

*Body corp arranges most things!!*

## 4 Waste management

This section presents research findings about waste management. The section begins with an overview of regulations and best practice guidelines before presented the survey results (Section 4.2) and in-home immersions results (Section 4.3). All the survey and in-home immersions participants were asked about waste management in their home.

### 4.1 Regulations and best practice guidelines

The appropriate storage and removal of domestic rubbish, recycling and food scraps is an essential consideration for MDH and should be planned early in the design process. Poor consideration of waste management can create a major source of inconvenience and annoyance for residents, as well as increase the ongoing running costs of a development.

#### Auckland Unitary Plan

The Auckland Unitary Plan (AUP) includes a policy that requires “accommodation to be designed to meet day to day needs of residents by ... providing ... the amenities necessary for those residents”.<sup>5</sup> This is further supported by an assessment criterion to “provide the necessary waste collection and recycling facilities in locations conveniently accessible and screens [sic] from streets and public open space”.<sup>6</sup>

#### Waste Management and Minimisation Bylaw 2019

The Waste Management and Minimisation bylaw (WMMB) helps to manage and minimise rubbish, recycling and compost, and includes rules about kerbside collections and requirements for multi-unit developments of 10 or more dwellings.<sup>7</sup>

All dwellings are required to be provided with an area for the storage of main rubbish, recycling and food scrap bins. This area must be large enough to store all waste produced onsite. This can include individual waste bins stored on individual sites, individual waste bins stored communally or shared waste bins stored communally. A waste management plan must be provided for any MDH development of 10 or more dwellings,<sup>8</sup> including details of the long-term management of these spaces and collection methods.

#### Draft Waste Management and Minimisation Plan 2024

Auckland Council’s Draft Waste Management and Minimisation Plan 2024 (WMMP) sets the direction and work to manage and reduce waste.<sup>9</sup> (The draft closed for consultation in March 2024 and is

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<sup>5</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban Policy H5.3(5)(b).

<sup>6</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban Assessment criterion H5.8.2(2)(e)(iv).

<sup>7</sup> Auckland Council. *Waste Management and Minimisation Bylaw 2019*.

<sup>8</sup> *Ibid*, Part 3, Subpart 2 Approvals, Clause 20(1)(b).

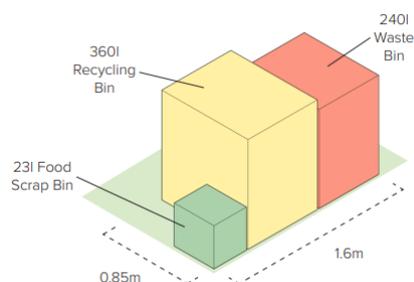
<sup>9</sup> Auckland Council. (2024). *Draft Waste Management and Minimisation Plan 2024*. Available at <https://akhaveyoursay.aucklandcouncil.govt.nz/waste-management-and-minimisation-plan-2024-2030>

expected to be approved in late 2024.)<sup>10</sup>. The WMMP sets out the aspiration for Tāmaki Makaurau/Auckland to be zero waste by 2040. The WMMP has an action to “support Aucklanders to use kerbside recycling and food scraps effectively and to shift to rates-funded collection services”. All rateable dwellings pay a rates contribution towards Auckland Council waste disposal services. This means that currently MDH without a kerbside waste collection make a rates contribution for this service and also pay for their private waste collection service. The WMMP describes an action to continue working with body corporates, the waste industry, property developers, owners and occupiers of multi-unit developments (i.e. housing complexes and apartment buildings with 10 or more properties) to meet their waste collection needs and the requirements of the WMMP. This action is anticipated to result in MDH using an Auckland Council provided waste collection service instead of requiring a private collection.

### **Auckland Design Manual and best practice guidance**

The *Auckland Design Manual* (ADM) provides detailed guidance for the location and design of waste storage areas, with regard to the WMMP, the New Zealand Building Code (2024) and the AUP.<sup>11</sup> This includes provision for 1.4m<sup>2</sup> of space allocated per dwelling for the onsite storage of refuse, recycling and food scrap bins, as shown in Figure 17 below.

**Figure 17: Total waste bin storage area (1.4m<sup>2</sup>)**



Source: *Auckland Design Manual*, Residential Design Element R7: Design for waste.

The ADM also provides guidance in relation to the location and accessibility of waste storage areas and the design and durability of the enclosure to ensure it is screened from view of any surrounding dwellings, outdoor living spaces and public spaces.

All the New Zealand and Australian design guidance referred to in this report recommend that waste areas are conveniently located, appropriately sized for the number of dwellings, screened from view of the street and communal areas, unobtrusive and accessibly located for collection. The *New South Wales Apartment Design Guidelines* and the *Apartment Design Guidelines for Victoria* also

<sup>10</sup> Ibid.

<sup>11</sup> *Auckland Design Manual*, Residential Design Element R7 – Design for waste.

recommend that apartments have adequate space within the dwelling (up to two days' worth of waste and recycling) for the storage and separation of waste, recycling and food waste.<sup>12, 13</sup>

### **Section 35 (s35) monitoring**

The s35 monitoring noted that utilities such as rubbish bins are being placed in private outdoor living areas, and reducing the functionality and amenity of those spaces, which essentially become service courts.<sup>14</sup>

### **Design observations**

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Individual bins stored outside the front door can reduce opportunities for landscape treatment and result in public streets, vehicle and pedestrian accessways being dominated by bins.
- Space for individual bins on the public street berm on collection day is constrained, particularly for narrow or rear sites, and can obstruct pedestrian access.

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<sup>12</sup> New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Objective 4W-2.

<sup>13</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Standard D23 or B45.

<sup>14</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 Monitoring*, B2.3 A quality built environment, page 78.

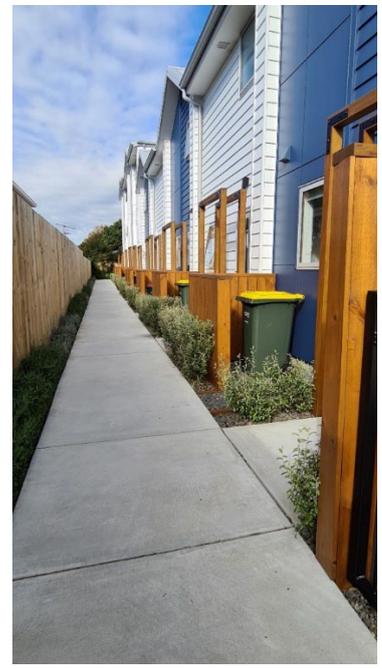
Figure 18: Unscreened individual bins stored outside front door



Figure 19: Communal bin enclosure that is screened and weatherproof



Figure 20: Screened individual bins storage along pedestrian accessway to front door



Source: TMDO, Auckland Council.

Figure 21: Street with rubbish bins



Source: Google Maps.

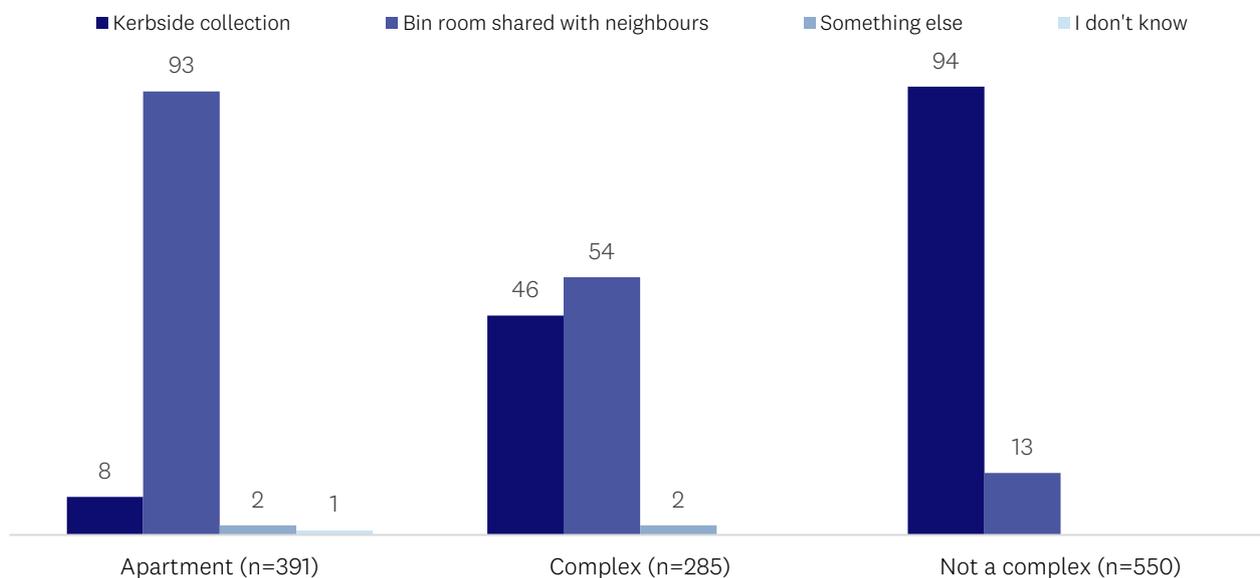
## 4.2 Survey results

The survey participants were asked to indicate how waste such as rubbish, recycling and composting was collected, from two options: Auckland Council kerbside collection or a bin room/shared space with their neighbours that is collected by a private company. They could also specify another method of waste collection or indicate that they did not know.

As Figure 22 shows, most of the households in apartments (93%) reported that waste is collected in a bin room/space shared with their neighbours. Those living in complexes were almost evenly split

between kerbside collection (46%) and a bin room/shared space (54%). Households in terraced houses or duplexes that are not part of a complex tend to have a kerbside collection (94%).

**Figure 22: Waste management for the property, by typology (%)**



Notes: 1. Multiple responses allowed; therefore, total does not sum to 100.

2. 'Complex' and 'not a complex' includes attached homes (i.e. terraced houses and duplexes).

A small proportion of households (5%) reported two kinds of waste management for their home. Some participants explained they have, for example, kerbside collection for landfill waste and a communal collection for organic waste.

Issues relating to waste were mentioned by a small proportion (3%) of participants when asked about what they dislike about their home. Comments within this theme included bin storage issues (for both large wheelie bins and small bins inside):

*Lack of bin storage.*

*The bins need to be rolled down a set of stairs and it is very noisy.*

*The smell in the rubbish collection area.*

Lack of organic/garden waste collection and space for composting were also mentioned:

*No collection of garden waste.*

*Nowhere to put a compost system very easily. I have improvised by borrowing space from a neighbour.*

*No central compost/food scrap collection.*

Issues with neighbours can be problematic:

*People constantly not know how the bin system works.*

*The communal rubbish area is very annoying as others leave all sorts of rubbish that Green Gorilla won't take.*

*Residents who don't have the same standards re our refuse room – can't seem to put the right things in the right bins or simply dump whatever, wherever because they are too lazy to step up.*

Some participants cited issues with rubbish collection service including having to pay for a private company to collect waste:

*Have to pay for high rates and still pay for communal bins on top.*

*We pay for rubbish in council rates but aren't using that service as pay privately and can't get a rebate! No way we could have council bins as developer didn't design in a way there would be room for 14 Rubbish & 14 Recycle bins on site.*

Other issues included:

*Very unsatisfied when the rubbish trucks have to manoeuvre left and right to collect the bins, troublesome for the workers and hōhā for us as I have to call the council multiple times for them to come collect the red lid bins. I feel that they are stressed by how the roads are designed as it's so narrow, and the extra space for pedestrian is too unnecessary.*

*Too many rubbish bins – 8 units = 16 bins and no space on footpath.*

### **4.3 In-home immersions**

As described in Chapter 3, Section 1.3, this study included 20 in-home immersions with participants who had completed a survey.

Participants shared where they store their rubbish inside their home before it is transferred to an Auckland Council kerbside bin or shared bin. Kitchen rubbish is stored in a range of locations including on bench tops (for food waste), and in built-in and freestanding bins. Participants were generally satisfied with the capacity of their kitchens to accommodate rubbish bins.

Figure 23: Food scraps bin and soft plastic recycling on kitchen bench

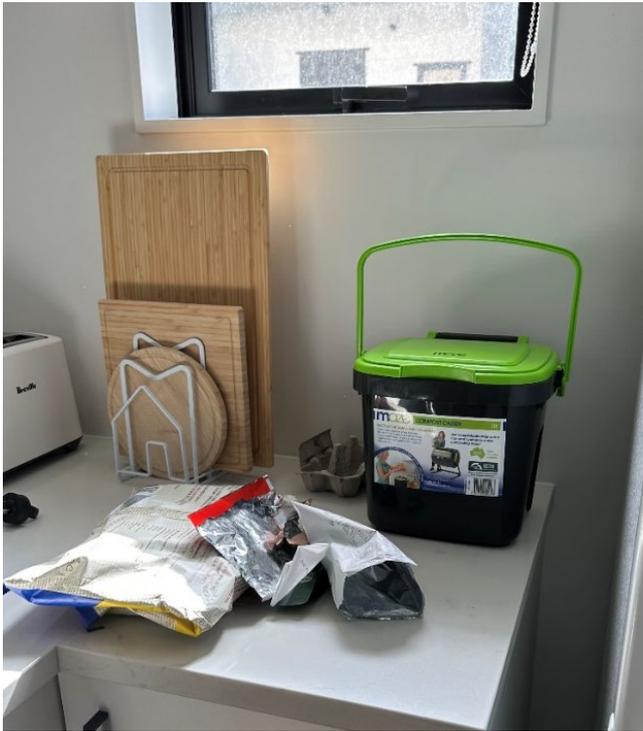


Figure 24: Food scraps bin on kitchen bench



Figure 25: Built in rubbish bins used for landfill and recycling and food scraps bin on kitchen bench



Figure 26: Freestanding kitchen rubbish bin



The in-home immersions found a range of locations where either Auckland Council kerbside bins or shared bins for private collection were stored. Some complexes had communal bin storage sheds or spaces, which were often located in the carpark (Figure 27 and Figure 28). Bins stored in these locations were collected by a private company which would be managed by the body corporate or residents' association.

**Figure 27: Communal bin storage**

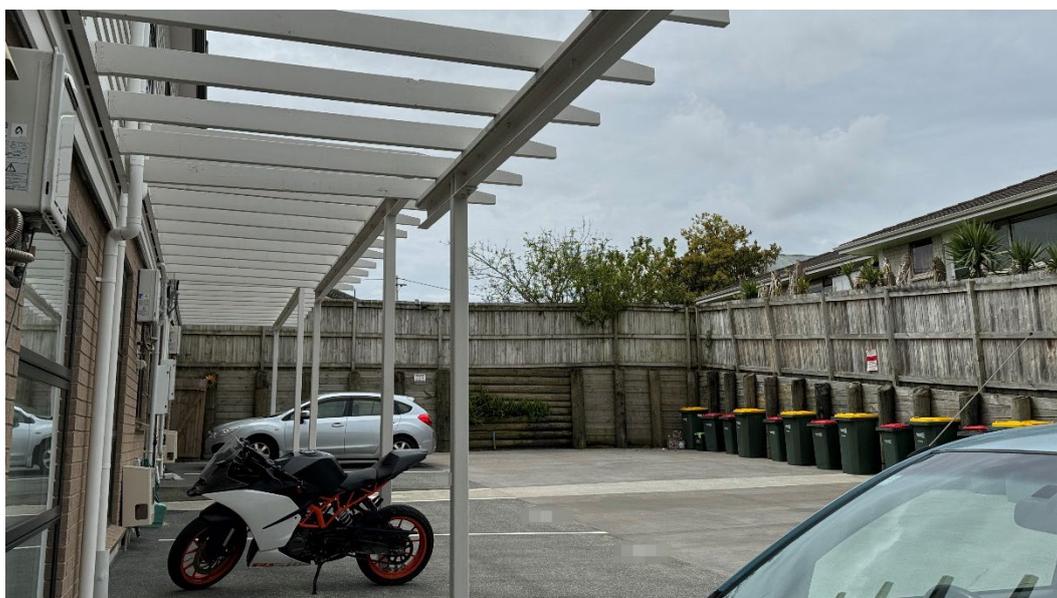


**Figure 28: Communal bin storage**



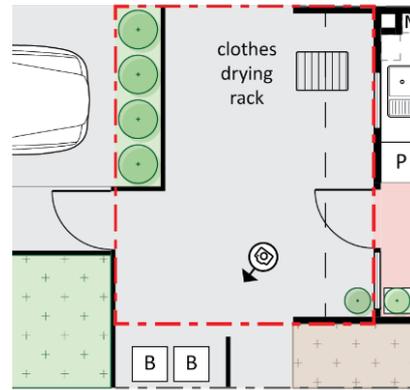
One participant living in a walk-up apartment used Auckland Council kerbside bins, which were lined up against a retaining wall in the shared carpark (Figure 29). These were wheeled down the shared driveway to the public road on collection day.

**Figure 29: Auckland Council kerbside bins stored in carpark of apartment building**



Other households whose homes were not part of a complex stored their Auckland Council kerbside bins on their property. Bins were stored in a range of locations including, in one example, a dedicated bin storage area that was fenced to separate the bins from the outdoor living space (Figure 30).

Figure 30: Auckland Council kerbside bins enclosed by fencing for a home on a public road



Some households lacked dedicated storage for their Auckland Council kerbside bins and so these were stored by front doors (Figure 31), in outdoor living spaces (Figure 32) and in garages (Figure 33).

Figure 31: Auckland Council kerbside bins stored by front door

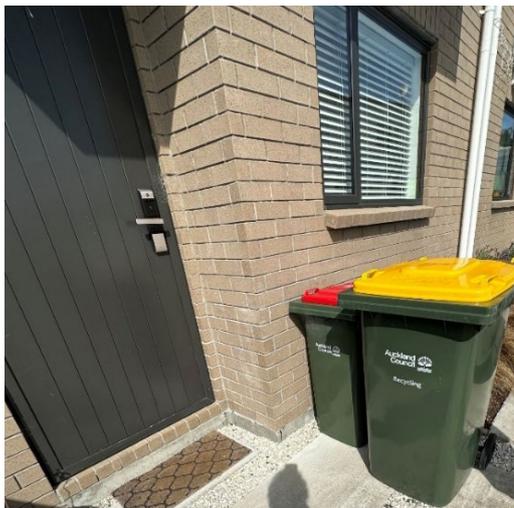
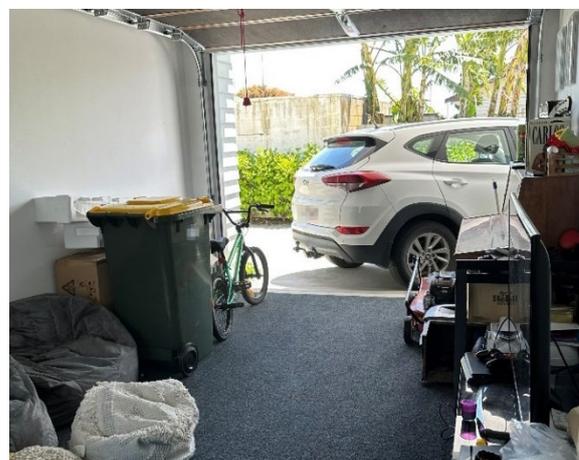


Figure 32: Auckland Council kerbside bins in outdoor living space by front door



Figure 33: Auckland Council kerbside bins in planted area by garage and recycling bin stored inside garage



## 5 Shared living facilities

Following a description of relevant regulations and best practices guidelines, Section 5.2 presents survey results on shared living facilities. These questions were only asked of survey participants who reported they live in an apartment or an attached home that was part of a complex. Section 5.3 discusses the results from analysis of the consented plans and Section 5.4 focuses on findings from the in-home immersions.

### 5.1 Regulations and best practice guidelines

Shared living facilities such as communal open space create opportunities for social interaction and building communities. Opportunities to play, relax, garden and exercise can all improve people’s mental and physical health and can contribute to a sense of community. They can also increase perceptions of safety, with more people keeping an eye out for each other.

#### Auckland Unitary Plan

The Auckland Unitary Plan (AUP) does not require any shared living facilities such as communal open space for MDH unless it is for an Integrated Residential Development,<sup>15</sup> which is required to provide “supporting communal facilities such as recreation and leisure facilities”. The size and design of those communal facilities is not specified in the AUP.

#### Auckland Design Manual (ADM) and best practice guidance

The ADM recommends that shared living facilities such as communal open spaces are carefully designed as an ‘outdoor room’ including:<sup>16</sup>

- consideration of both day and nighttime use, including lighting
- provision of appropriately sized, furnished and located formal and informal play spaces that are suitable for the number of intended occupants and future resident demographics, particularly children of different ages
- the space being appropriately landscaped, and contain facilities including trees for shade in summer
- clearly distinguishing between communal spaces for services (e.g. rubbish collection, outdoor laundry drying spaces) and communal amenity areas
- using soft and hard landscaping to define areas.

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<sup>15</sup> An integrated residential development is defined in the Auckland Unitary Plan Chapter J1 Definitions as “A residential development on sites greater than 2,000m<sup>2</sup> which includes supporting communal facilities such as recreation and leisure facilities, supported residential care, welfare and medical facilities (inclusive of hospital care), and other non-residential activities accessory to the primary residential use. For the avoidance of doubt this would include a retirement village.”

<sup>16</sup> *Auckland Design Manual*, Apartment Building Design Guide, Section 5.2 Communal outdoor spaces.

All design guidance referred to in this research report acknowledge the benefits of communal spaces including:

- creating opportunities for residents to interact with each other, creating a sense of community and belonging<sup>17</sup>
- creating an important amenity resource that provides for outdoor recreation opportunities, connection to the natural environment and ‘breathing space’ between dwellings in larger scale developments<sup>18</sup>
- wider environmental benefits of retaining larger trees and vegetation areas for biodiversity and stormwater management<sup>19</sup>
- spaces such as food gardens can help support a more diverse community<sup>20</sup>
- encourage interaction and improve safety.<sup>21</sup>

The design of communal spaces should consider:

- locating the space in the centre of the development so that it is overlooked by residents and ideally accessible from any common indoor areas
- adequately sizing the space for the number of people anticipated to use the space, the age and ability of residents, and the proximity of other facilities in the surrounding area<sup>22</sup>
- locating the space for physical comfort; and consider facilities that would be enjoyed by residents such as communal BBQs, seating and play equipment<sup>23</sup>
- safety, security, passive surveillance and privacy.<sup>24</sup>

Table 1 below sets out the recommended minimum areas for communal facilities where relevant.

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<sup>17</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Section A2.2 Communal outdoor recreation areas, and Section B3.1 Shared space provision and configuration.

<sup>18</sup> New South Wales Department of Planning and Environment (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 3Y Communal areas and open space.

<sup>19</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 5(C).

<sup>20</sup> Ibid.

<sup>21</sup> Ibid.

<sup>22</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1). Section A2.2 Communal outdoor recreation areas, and Section B3.1 Shared space provision and configuration.

<sup>23</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 3.6.2 and Appendix 2 Needs assessment tool: Outdoor recreational spaces and child active spaces.

<sup>24</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1) Section A2.2 Communal outdoor recreation areas, and Section B3.1 Shared space provision and configuration.

Table 1: Best practice guidance for size of communal facilities

Auckland Unitary Plan	Auckland Design Manual	National Medium Density Design Guide	Public Housing Design Guidance and Kāinga Ora Design Requirements	NSW Apartment Design Guide	NSW Low-Rise Housing Diversity Design Guide	Victoria Apartment Design Guide
<p>Communal facilities such as recreation and leisure facilities are required for residential development to be deemed an Integrated Residential Development on sites greater than 2000m<sup>2</sup>. No minimum size requirement.</p>	<p>Recognises value of communal outdoor living spaces and recommends that it is sized relative to the number of residents, appropriately designed and landscaped in response to context.</p>	<p>Recognises value of communal open space and recommends design useable communal space greater than 5m in diameter.</p>	<p>Adequately sized communal spaces are provided for multi-unit development. Type and size specific to each site and development brief.</p>	<p>Minimum area equal to 25% of the site area. Can include internal communal areas such as pools or gyms.</p>	<p>Recognises benefits of communal open space; size, location and design dependent on context and scale of development.</p>	<p>10 or more dwellings: 30m<sup>2</sup> minimum landscaped communal outdoor open space.</p> <p>13 or more dwellings: Additional 2.5m<sup>2</sup> per dwelling or 220m<sup>2</sup> up to a maximum of 250m<sup>2</sup>. Additional 2.5m<sup>2</sup> per dwelling can be provided indoors or outdoors and consist of multiple areas of communal open space.</p>

Sources:

- Auckland Unitary Plan, Chapter J1, Definitions.
- Auckland Design Manual, Apartment Building Design, Section 5.2 Communal outdoor spaces, and Terraced Housing Design, Section 5.3 Communal outdoor spaces.
- Ministry for the Environment. (2023). *National Medium Density Guide*, Section 5, Rule of thumb.
- Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 3.6.
- Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), Section 3.1 Shared space: Provision and configuration.
- New South Wales Department of Planning and Environment. (2015). *Apartment Design Guide*, Part 3 Siting the Building, 3D Communal and public open space, Design criterion 3D-1.1.
- New South Wales Department of Planning, Industry and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, Section 3Y Communal areas and open space.
- State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Section 1 Communal open space.

## Design observations

The following design matters have been observed by the council’s Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Provision of communal open space is not common, and when provided, the AUP lacks any guidance on the size and design of communal spaces.
- Unless communal space is a primary consideration at site planning stage, it is often ‘leftover’ spaces that are not appropriately located or designed.
- Where communal open space is provided, ongoing management and maintenance must also be considered.

Figure 34: Privately owned communal open space containing a playground, basketball court, BBQ and seating area and lawn space created as part of an integrated residential development and managed by a residents’ society



Source: TradeMe Property.

Figures 35 and 36: Communal indoor and outdoor rooftop living space of an apartment building



Source: Ockham.

Figure 37: Communal outdoor living space with fruit trees and garden beds of an apartment building



Source: Ray White.

## 5.2 Survey results

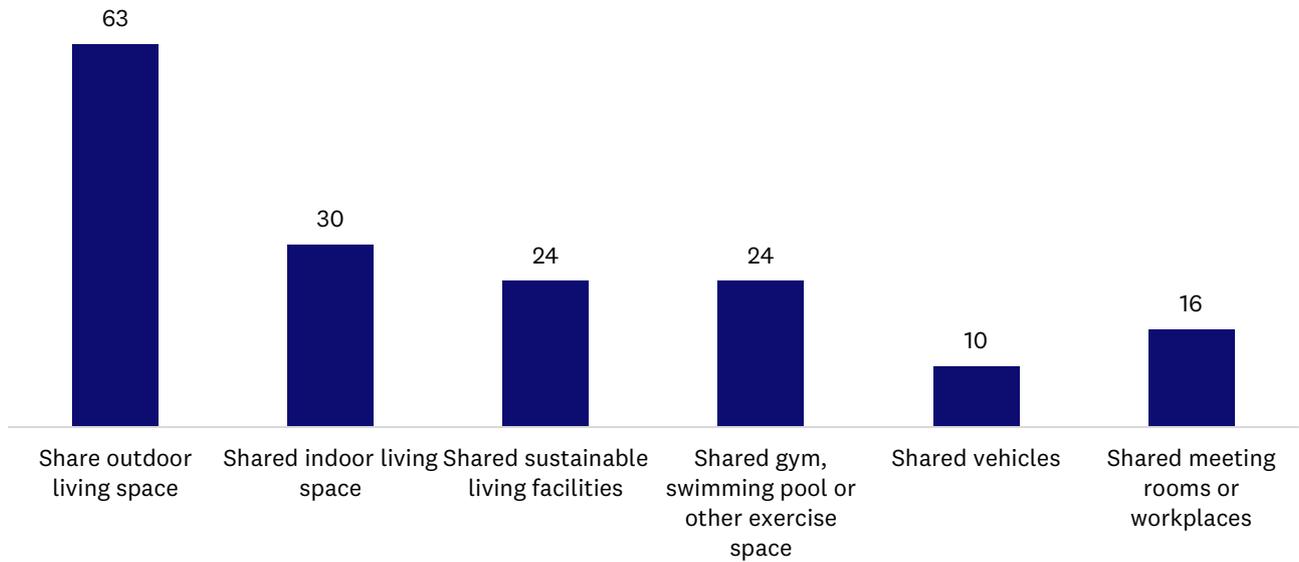
The participants living in an apartment or complex were asked to rate how satisfied they were with facilities that they shared with their neighbours, from a list of five possible options. If the facility was not part of their building or complex, they could state this by answering 'I don't have this/I don't know'. In addition, if the participants lived in an apartment, they were asked to rate their satisfaction with any shared meeting rooms or workspaces.<sup>25</sup>

The proportion of homes in apartment buildings and complexes with shared facilities are similar (Figure 38 and Figure 39). Households living in apartments buildings are more likely to have a shared outdoor living space (63%) than those living in a complex (53%).

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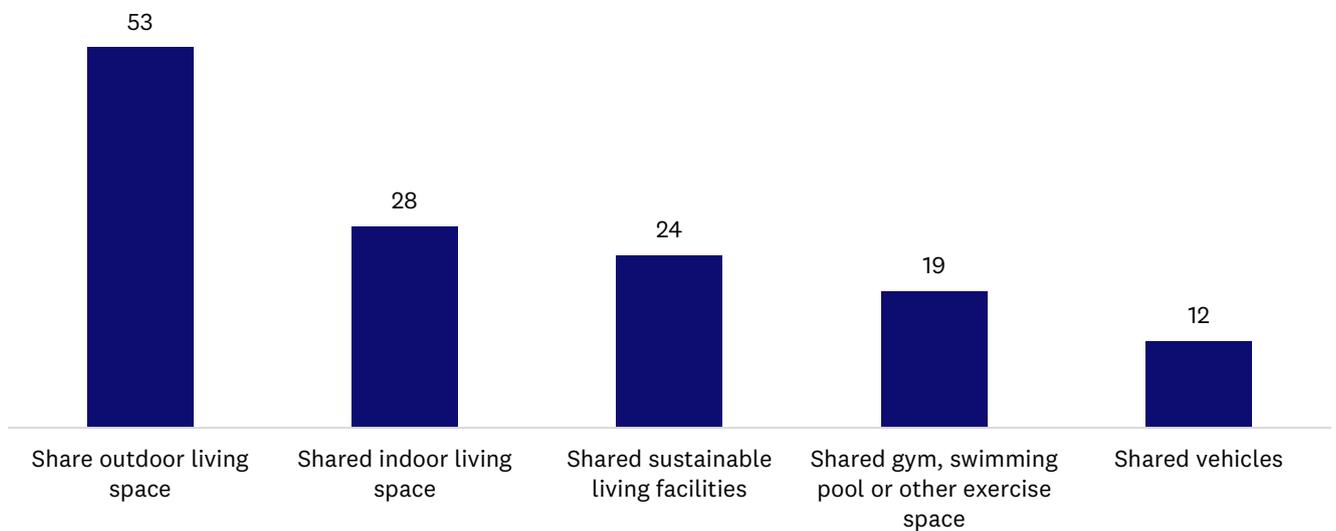
<sup>25</sup> If a participant answered the question by providing a satisfaction rating, this was interpreted to mean that the facility was part of their apartment building or complex.

Figure 38: Shared facilities interpreted to be in apartment buildings (n=391) (%)



Notes: 1. 'Sustainable living facilities' may include, for example, rainwater harvesting, solar panels, EV charging station or composting.  
 2. 'Shared vehicles' may include, for example, CityHop cars (car sharing service), e-scooters or bikes (e.g. JUMP, Lime).

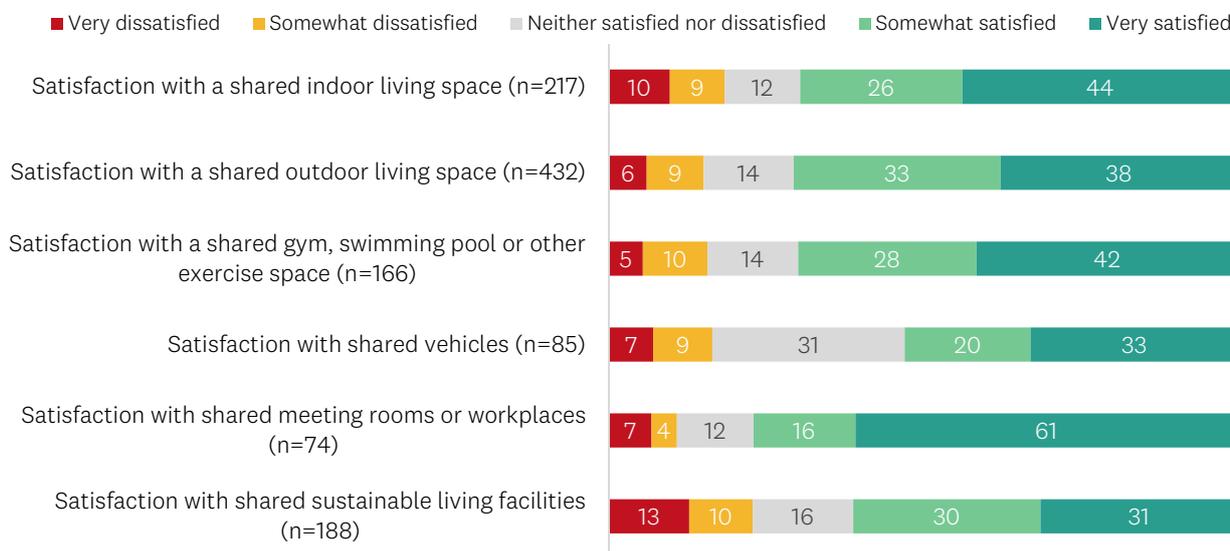
Figure 39: Shared facilities interpreted to be in a complex of terraced houses/duplexes (n=285) (%)



Notes: 1. 'Sustainable living facilities' may include, for example, rainwater harvesting, solar panels, EV charging station or composting.  
 2. 'Shared vehicles' may include, for example, CityHop cars (car sharing service), e-scooters or bikes (e.g. JUMP, Lime).

A relatively large proportion of the participants who had shared facilities in their complex or building reported satisfaction with these facilities.

**Figure 40: Satisfaction with shared facilities (%)**



Note: Base is all the participants who live in a complex with a shared facility.

When asked what they like about their home, a handful of participants described aspects of their communal outdoor living space.

*The outdoor pool, pavilion, garden & green space, trees, view, terrace, good and sociable neighbours. Good use of technology e.g. a shared property management app where I can log maintenance requests for the building manager, report emergencies and book the pavilion; a WhatsApp group with other apartment owners to discuss topics e.g. plantings, where is the trolley now, invitation to drinks in the pavilion.*

*Space inside the home is generally adequate for most activities, but is highly supplemented by access to a shared garden house (approx. 50m<sup>2</sup> – useful for some hobby activities and when having a larger gathering of friends/family), larger shared garden (~600 m<sup>2</sup> – gives space for growing veg & fruit trees, having lawn and play space and having some denser native plantings), shared guest bedroom with ensuite bathroom (means we can have more people over to stay).*

*I have a garden plot in the community garden and a worm farm so can grow some veges and herbs.*

*Kids playing in the courtyard.*

### 5.3 Consented plans

As described in Chapter 3, this study included analysis of the consented floor plans for 110 properties whose households had participated in the survey.

Few properties in the sample were found to have any shared living facilities in the complex or building. A communal outdoor living space was the most common kind of facility present (22 properties; Table 2). In some cases, the consented plans showed fewer shared facilities than survey participants indicated were present in their responses. This could be due to consented plans lacking information about facilities (e.g. shared vehicles), or changes to the building/complex between the time of consent and survey data collection.

**Table 2: Counts of properties with shared facilities in the complex/building**

Type of facility	Facility present	Facility absent	Status of facility unknown
Shared indoor space	8	101	1
Shared outdoor space	22	88	-
Shared vehicles including cars and bikes	1	57	52
Shared exercise areas including gym, pool	4	106	-
Shared laundry including washing lines	2	107	1

### 5.4 In-home immersions

A small number of participants live in homes that have access to shared living spaces. One participant lives in an apartment building that has a communal pool and decked area. They had used this space in the past but found it can get crowded and so prefer to swim elsewhere.

**Figure 41: Communal outdoor living space as part of an apartment building**



Three households had access to an outdoor space that was part of their housing complex, and that was also accessible to the public. One of these communal outdoor living spaces is a grassed area with low planting around the edges (Figure 42). An adult daughter in this household said about the space:

**Figure 42: Communal outdoor living space with grassed area**

*We would use it if there was a basketball court or something. That was what my sister was hoping. But now, people just walk the dogs and we walk around the courtyard after dinner.*



A household in a terraced housing complex had a shared outdoor living space with garden beds (Figure 43), and one of the household members enjoyed spending time contributing to the upkeep of the gardens.

**Figure 43: Communal outdoor living space with grassed area and community garden beds**



A third household with a shared outdoor living space lived in a walk-up apartment (Figure 44). They described how once during summer, households in the complex came together to have a picnic on the grass. However, most of the time they were too busy at work or school and did not find time to use this space.

Figure 44: Communal outdoor living space in walk-up apartment complex



## 6 Lighting

This section first outlines regulations and best practice guidelines about lighting before presenting results of the survey. All 732 participants who reported they lived in an apartment building or in a housing complex were asked questions about lighting.

### 6.1 Regulations and best practice guidelines

Lighting has a positive effect on personal safety and on reducing levels of crime (Farrington & Welsh, 2002; Nasar & Jones, 1997), and so should be a primary consideration and integral to the overall design of a residential development.<sup>26</sup> The New Zealand industry standard for lighting sets out performance and design requirements for pedestrian areas and acknowledges that lighting is an effective counter measure to the fear of crime.<sup>27</sup>

#### Auckland Unitary Plan (AUP)

The AUP requires lighting to be provided where there are 10 or more parking spaces which are likely to be used during the hours of darkness, with adequate lighting (Section E24) to be provided to access and manoeuvring spaces and pedestrian routes.<sup>28</sup> Plan Change 79 (PC79) provides clarity on ‘adequate’ lighting by requiring compliance with the relevant Australia New Zealand Standard AS/NZS 1158.3.1:2020.<sup>29</sup> Auckland Council released the Independent Hearings Panel’s decision on Plan Change 79 – Transport on 9 August 2024.<sup>30</sup>

#### Auckland Design Manual (ADM) and best practice guidance

The ADM recommends that lighting is provided so that people can identify another person from at least 15m distance and that communal areas (including carparking areas) are lit appropriately to provide visibility after dark but also that that lighting should not create nuisance for residents.<sup>31</sup>

Other best practice design guidance recommends that lighting is:

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<sup>26</sup> Ministry of Justice. (2005). *National Guidelines for Crime Prevention through Environmental Design in New Zealand*, Part 1: Seven Qualities of Safer Places.

<sup>27</sup> AS/NZS 1158.3.1:2020 *Lighting for roads and public spaces*, Part 3.1 Pedestrian area (Category P) lighting – Performance and design requirements, Foreword.

<sup>28</sup> *Auckland Unitary Plan*, Chapter 27 Transport, Standard E27.6.3.7 Lighting.

<sup>29</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/Pages/details.aspx?UnitaryPlanId=145>

<sup>30</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/Pages/details.aspx?UnitaryPlanId=145>

<sup>31</sup> *Auckland Design Manual*, Design for Safety, Section 6.2 Best practice for lighting.

- provided to all entry doors and pedestrian access routes from the street and carparking, driveways, parking and any common areas,<sup>32</sup> to enhance wayfinding and community safety,<sup>33</sup> and to enable it to be used by day and night<sup>34</sup>
- integrated with passive and active security measures and natural surveillance<sup>35</sup>
- designed to avoid light spill and disturbance to neighbours<sup>36</sup>
- designed in accordance with Australia New Zealand Standard AS/NZS 1158.3.1 Lighting for Roads and Public Spaces.<sup>37</sup>

### **Section 35 (s35) monitoring**

No specific monitoring of lighting was undertaken as part of the s35 monitoring.

However, the section 32 analysis supporting Plan Change 79 found that fewer than 47 per cent of the developments that rely on pedestrian-only access had any form of lighting.<sup>38</sup> For developments accessed by private vehicle access, only 39 per cent of developments provided any lighting detail at resource consent stage.<sup>39</sup>

### **Design observations**

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Lighting is generally not well considered at site planning stage with poor regard for placement. It often conflicts with other design elements such as trees/landscape treatment, including placement of lighting infrastructure within pedestrian paths.
- Solar bollards appear to be preferred by developers as they do not require mains power, but unless of a high quality with adequate access to sunlight, these will not provide adequate lighting.
- Sensor lighting on front doors of individually owned dwellings is common but is reliant on individual owners/occupants maintaining lighting for the benefit of wider residents.

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<sup>32</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Section 3.9.3.

<sup>33</sup> Ministry for the Environment. (2023). *National Medium Density Design Guide*, Section 5(G).

<sup>34</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Guidance to communal open space (6).

<sup>35</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), C2.3 Lighting.

<sup>36</sup> Ibid.

<sup>37</sup> New South Wales Department of Planning and Environment. (2020). *Low Rise Housing Diversity Design Guide for complying development*, 2.3F-2, Design criteria 49.

<sup>38</sup> Proposed Plan Change 79 – Transport to the Auckland Unitary Plan, Section 32 – Evaluation report (August 2022), page 13.

<sup>39</sup> Ibid., paragraph 143.

Figure 45: Solar light bollards provided to communal pedestrian accessway



Source: TradeMe Property.

Figure 46: Light poles to a communal car parking court and pedestrian pathways



Figure 47: Light poles to a pedestrian accessway and carpark



Source: TMDO, Auckland Council.

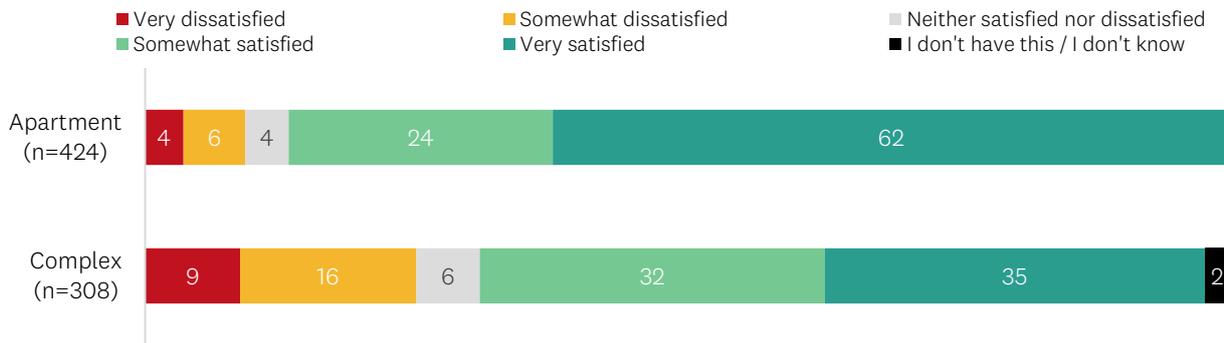
Source: TMDO, Auckland Council.

Note: Placement within footpath has occurred due to lighting not being considered at the same time as the design of the carpark, footpath and private garden areas.

## 6.2 Survey results

Overall, almost nine in 10 of the participants living in an apartment (87%) and over two-thirds of those living in a complex (67%) are ‘somewhat’ or ‘very satisfied’ with the lighting in and around their complex/building. As Figure 48 shows, satisfaction with lighting varied significantly by housing typology. Participants living in apartments were more likely to report they are ‘very satisfied’ (62%) compared with those in a complex (35%). Furthermore, those living in a complex were more likely to report they are ‘somewhat’ (16%) or ‘very’ dissatisfied (9%) with lighting compared with those in living apartments (6% and 4%, respectively).

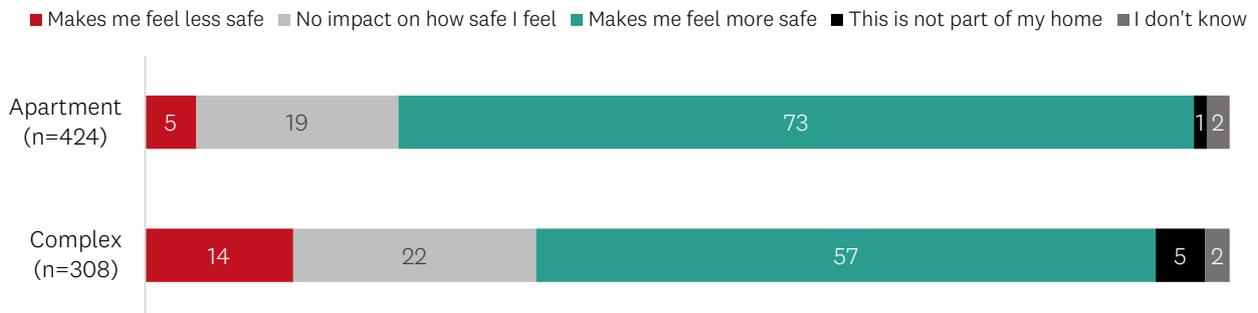
Figure 48: Participant satisfaction with lighting in and around your complex/building, by type of home (%)



Note: Base is all the survey participants who were living in apartments or complexes.

Participants were asked about how lighting in shared areas impacts their perception of safety. Two-thirds (67%) reported that lighting makes them ‘feel more safe’. Those living in apartments were more likely to report lighting makes them ‘feel more safe’ (73%) compared with those living in a complex (57%). Those living in complexes were more likely to report lighting makes them feel ‘less safe’ (14%) compared with those in apartments (5%). This could be the result of insufficient lighting in these complexes.

Figure 49: Impact of lighting along footpaths, hallways, driveways, car parks or other shared areas on perception of safety, by type of home (%)



Note: Base is all the survey participants who were living in apartments or complexes.

Some participants mentioned a lack of lighting as something they dislike about their home:

*No light outside of my home, very dark – lighting makes participant feel ‘less safe’*

*Poor lighting on the stairs – lighting makes participant feel ‘less safe’*

*Poor lighting in carpark – lighting has ‘no impact’ on participant’s feelings of safety*

Two participants reported an excess of light as something they dislike about their home:

*There is far too much external lighting and this affects my ability to sleep. I have complained to the residents’ assoc – to no avail. I also hate that neighbours leave security lights on at night (making the lighting situation even worse –lighting has ‘no impact’ on participant’s feelings of safety*

*Too much security lighting – lighting has ‘no impact’ on participant’s feelings of safety*

## 7 Pedestrian safety and wayfinding

This section covers aspects of pedestrian safety and wayfinding in apartment buildings and housing complexes. Regulations and best practice guidelines are presented first, followed by survey results. The participants who reported they live in an apartment building or in a housing complex were asked questions about these topics.

### 7.1 Regulations and best practice guidelines

Complexes typically include accessways (vehicle and/or pedestrian) which lead from the public street to the front doors of homes. These accessways are used by households and visitors and for deliveries. Shared pedestrian paths may also be provided between homes and communal spaces such as grouped carparking areas, letterboxes and refuse storage areas. The ease by which people, and particularly visitors (including postal and courier deliveries), can find their way through a site (known as ‘wayfinding’), can be reduced when the complex is not served by a public street, particularly when there are multiple points of entry to a site and internal circulation routes.

Pedestrian safety and driveway runovers have long been recognised as an avoidable threat to the lives of children, particularly in New Zealand (Hsiao et al., 2009; Murphy et al., 2002; Roberts et al., 1995) with four to five children dying and more than 20 hospitalised each year from an event of this type.<sup>40</sup> Fifteen children aged between 0 and 14 years died in Auckland due to driveway runovers between 2009 and 2018.<sup>41</sup>

Separate pedestrian access is associated with a reduced risk of driveway injury, with the presence of a separate pedestrian footpath from a home to the public footpath associated with a more than twofold reduction in the risk of a driveway injury happening (Shepherd et al., 2010). Other built environment factors, including driveway length and the amount and type of parking provided, also contribute to the risk of driveway runovers.<sup>42</sup> This research has informed subsequent guidance and standards for driveway and pedestrian access design by Safekids Aotearoa, Starship Children’s Hospital and the Accident Compensation Corporation,<sup>43</sup> Kāinga Ora,<sup>44, 45</sup> and most recently, Auckland Council (via Plan Change 79 – Transport – see below) to reduce driveway runover incidents.

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<sup>40</sup> Safekids Aotearoa. (n.d.) *Preventing driveway runovers: Ten things to think about*. Retrieved 23 July 2024 from [https://media.starship.org.nz/download-infographic-driveways-10-things-to-think-about%3E%3E/Infographic\\_Driveways\\_10\\_Things\\_to\\_Think\\_About.pdf](https://media.starship.org.nz/download-infographic-driveways-10-things-to-think-about%3E%3E/Infographic_Driveways_10_Things_to_Think_About.pdf)

<sup>41</sup> Auckland Council. *Section 42a Hearing Report for Proposed Plan Change 79 – Amendments to the Transport Provisions, to the Auckland Unitary Plan*, Attachment 7 – Dr Julie Chambers, Pedestrian Safety Expert Report, pages 984-1035.

<sup>42</sup> Ibid.

<sup>43</sup> Safekids Aotearoa. (n.d.) *Preventing driveway runovers: Ten things to think about*. Retrieved 23 July 2024 from [https://media.starship.org.nz/download-infographic-driveways-10-things-to-think-about%3E%3E/Infographic\\_Driveways\\_10\\_Things\\_to\\_Think\\_About.pdf](https://media.starship.org.nz/download-infographic-driveways-10-things-to-think-about%3E%3E/Infographic_Driveways_10_Things_to_Think_About.pdf)

<sup>44</sup> Kāinga Ora Homes and Communities. (n.d.). *Keeping your children safe on driveways factsheet*. Retrieved 23 July 2024 from <https://kaingaora.govt.nz/assets/Tenants-and-communities/Documents/Driveway-Safety-factsheet.pdf>

<sup>45</sup> Kāinga Ora Homes and Communities. (n.d.). *A guide to driveway safety for property owners* (Developed by Housing New Zealand in partnership with Safekids Aotearoa, New Zealand Transport Agency, New Zealand Police and Roadsaf Nelson

## Auckland Unitary Plan (AUP)

Residential amenity and safety are relevant considerations in the assessment of MDH in both the Mixed Housing Suburban, Mixed Housing Urban and Terraced Housing and Apartment Buildings zones and the E27 Transport chapters of the AUP.<sup>46, 47</sup> The residential zone provisions require consideration of residential amenity and safety as a matter of discretion.<sup>48</sup>

The AUP currently requires a 1m pedestrian path to be provided on shared vehicle accessways serving 6 to 10 rear sites, which is allowed to be located within the vehicle carriageway and distinguished with a raised curb or different surface treatment.<sup>49</sup> A resource consent is required where a shared vehicle accessway serves more than 10 rear sites.

Plan Change 79 (PC79) amends this standard, and requires a grade separated (i.e. kerbed) footpath to be provided alongside a shared driveway serving four or more dwellings or rear lots, and a grade separated footpath provided from a communal carparking area to the dwellings. This pedestrian access is subject to maximum gradient standards to ensure accessibility for a range of users, including prams, wheelchairs and mobility scooters.<sup>50</sup> This is considered necessary to provide safe and practical pedestrian access, in accordance with the NPS-UD directive of a “well-functioning urban environment” and Policy 1’s expectation of “good accessibility”.<sup>51</sup> Council released the Independent Hearings Panel’s decision on Plan Change 79 – Transport on 9 August 2024.<sup>52</sup>

## Auckland Design Manual (ADM) and best practice guidance

The ADM does not provide any specific guidance on pedestrian safety but does provide general Crime Prevention Through Environmental Design (CPTED) guidance to create safer environments through avoidance of blind corners or dark alcoves near entrances, lifts, stairwells and within carparks, corridors and walkways.<sup>53</sup> This includes ensuring clear sightlines, and well-lit routes for all shared or communal open space areas.

The Apartment Design Guidelines for Victoria recognise that entering and exiting an apartment building should be a welcoming, safe experience for pedestrians, cyclists and drivers. It recommends that pedestrian and cyclist access is prioritised and clearly delineated from vehicle access.<sup>54</sup>

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Bays). Retrieved 23 July 2024 from <https://kaingaora.govt.nz/assets/Tenants-and-communities/Documents/A-guide-to-driveway-safety-for-property-owners-brochure.pdf>

<sup>46</sup> E.g. *Auckland Unitary Plan*, Chapter H5 Residential – Mixed Housing Urban Zone, Matter of discretion H5.8.1(2)(a)(ii) and (iii).

<sup>47</sup> E.g. *Auckland Unitary Plan*, Chapter E27 Transport, Matter of discretion E27.8.1(9)(c).

<sup>48</sup> E.g. *Auckland Unitary Plan*, Chapter H5 Residential - Mixed Housing Urban Zone, Matter of discretion H5.8.1(2)(a)(ii) and (iii).

<sup>49</sup> *Auckland Unitary Plan*, Chapter E38 Subdivision, Standard E38.8.1.2 (3) and (4).

<sup>50</sup> Proposed Plan Change 79, Closing remarks on behalf of the Auckland Council, (8 December 2023), Standard E27.6.6(1)(b) and (c).

<sup>51</sup> Proposed Plan Change 79, Closing remarks on behalf of the Auckland Council, (8 December 2023), Standards E27.6.6(1) and (5).

<sup>52</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/Pages/details.aspx?UnitaryPlanId=145>

<sup>53</sup> *Auckland Design Manual*, Design for Safety, Section 10.1 Residential CPTED guidelines.

<sup>54</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Guidance to Access, Standard (D11 or B40).

The *Kāinga Ora Ngā Paerewa Hoahoa Whare Design Requirements* expects pedestrian access to facilitate safe movement and wayfinding for residents and visitors.<sup>55</sup> This includes the width and design of paths, stairs and entrances to buildings. Circulation routes should facilitate wayfinding and be well defined and easily identifiable, including at night. This includes provision of signage and numbering. Kāinga Ora also recommend in their driveway safety guidance that pedestrians are provided with a safe route to the building, separated from the driveway and vehicles.<sup>56</sup>

The *Public Housing Design Guidance for Community Housing Providers and Developers* recommends that homes are easily accessible and have clear and legible entryways, including separation between pedestrian pathways and the driveway.<sup>57</sup> It also specifically recommends for townhouses that any visitor access is along a route clearly demarcated and separated from any private or shared open space.

### **Section 35 (s35) monitoring**

The s35 monitoring found that:<sup>58</sup>

- Some forms of parking such as centralised communal parking areas are not adequately designed for pedestrian safety within the site. This suggests that the AUP is not managing on-site pedestrian safety effectively or efficiently, with respect to pedestrian access and circulation.
- Half of the developments surveyed had access footpaths located in the reversing space of cars.
- The majority of developments avoided having front doors opening directly onto a driveway.

### **Design observations**

The following design matters have been observed by the council's Tāmaki Makaurau Design Ope (Urban Design Unit) in their technical review and monitoring of resource consent applications MDH:

- Private vehicle and pedestrian accessways serving MDH generally enable greater yield than provision of public streets. However, provision of safe pedestrian access under the operative AUP standards is difficult to achieve as there is no current requirement for dedicated pedestrian footpaths separated from driveways and parking areas.
- MDH that is reliant entirely on pedestrian access (i.e. no onsite vehicle access or parking) can result in very narrow pedestrian accessways, restricting access for the range of users that

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<sup>55</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1), A3.1 Pedestrian circulation.

<sup>56</sup> Kāinga Ora Homes and Communities. (n.d.). *A guide to driveway safety for property owners* (Developed by Housing New Zealand in partnership with Safekids Aotearoa, New Zealand Transport Agency, New Zealand Police and Roadsafes Nelson Bays), Design Principle 2: Provide a safety route for pedestrians. Retrieved 23 July 2024 from <https://kaingaora.govt.nz/assets/Tenants-and-communities/Documents/A-guide-to-driveway-safety-for-property-owners-brochure.pdf>

<sup>57</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers* (Version 2\_1 web), Sections 3.4-3.6.

<sup>58</sup> Auckland Council. (2022). *Auckland Unitary Plan Section 35 monitoring*, B2.3 A quality built environment, page xi.

might reasonably be expected (including emergency service providers) and create potential entrapment spots.

- Increasing reliance on private accessways also means that dwellings don't have letterboxes to assist with wayfinding (as letterbox banks are located at the street due to NZ Post requirements).

Figure 50: Letterbox and site map for pedestrian wayfinding



Figure 51: Signage for pedestrian wayfinding



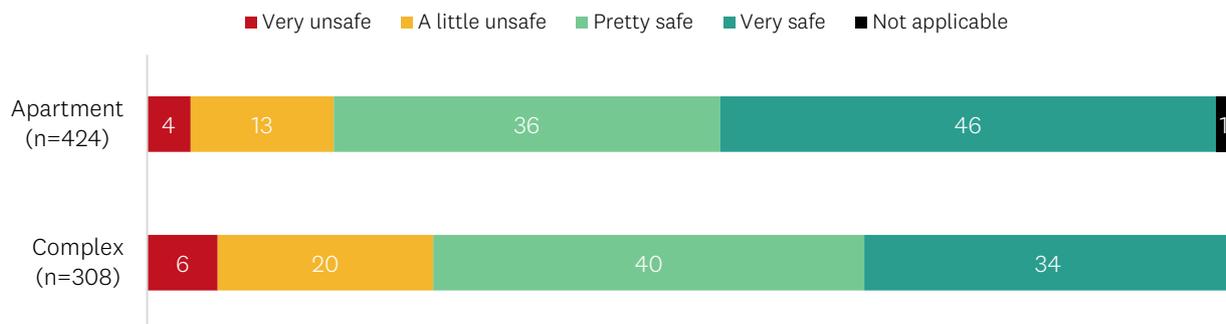
Source: TMDO, Auckland Council.

## 7.2 Survey results

The survey asked participants questions about their perceptions of safety and the ability for visitors to find their way around (i.e. wayfinding). Results are discussed below.

Overall, participants reported feeling safe from traffic accidents in and around their building or complex. Participants living in a complex were more likely to have reported feeling 'a little unsafe' (20%) than those living in apartments (13%). In contrast, those living in apartments were more likely to have reported feeling 'very safe' (46%) than those living in complexes (34%).

Figure 52: Perceptions of safety in and around the building/complex from traffic accidents, by type of home (%)

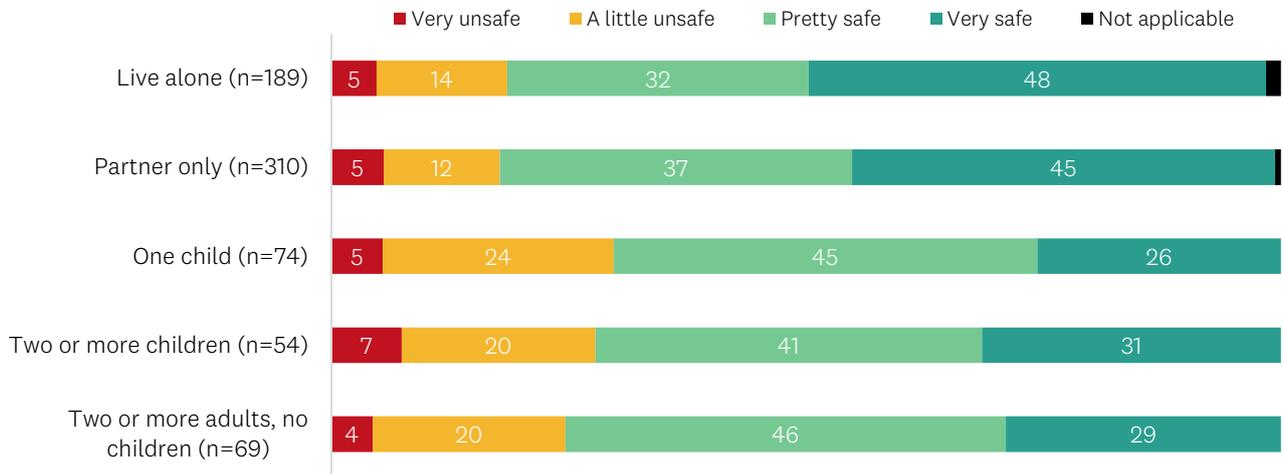


Notes: 1. Base is all the participants living in apartments or complexes.

2. 'Not applicable' describes participants without carparking or a driveway in their building/complex.

Minor differences in perceptions of safety from traffic accidents are seen across different household compositions. Participants who live alone (48%) or with a partner only (45%) were more likely to have reported feeling ‘very safe’ than those with one child (26%).

**Figure 53: Perceptions of safety in and around the building/complex from traffic accidents, by household composition (%)**



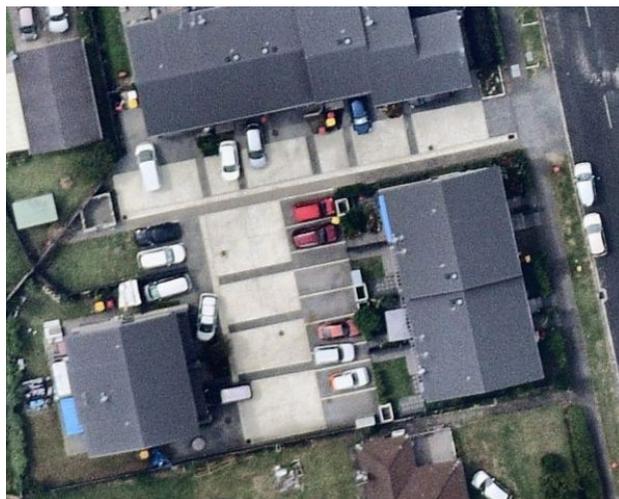
- Notes: 1. Base is all the participants living in apartments or complexes.  
 2. ‘Not applicable’ describes participants without carparking or a driveway in their building/complex.

Some participants commented about pedestrian safety concerns when asked about what they dislike about their homes:

*Parking spaces and constant traffic on road makes it little unsafe for kids – ‘A little unsafe’ from traffic accidents*

*E-scooters zooming along the footpath right outside my front door (have nearly been hit) – ‘A little unsafe’ from traffic accidents*

**Figure 54: Cars parked in carparking area**



Source: Nearmap Urban Aerial Imagery (NZTM).

*Sharing parking as the other residents drive fast while we have kids – ‘Very unsafe’ from traffic accidents*

**Figure 54: Cars parked in front of garages along shared driveway**



Source: Google Maps.

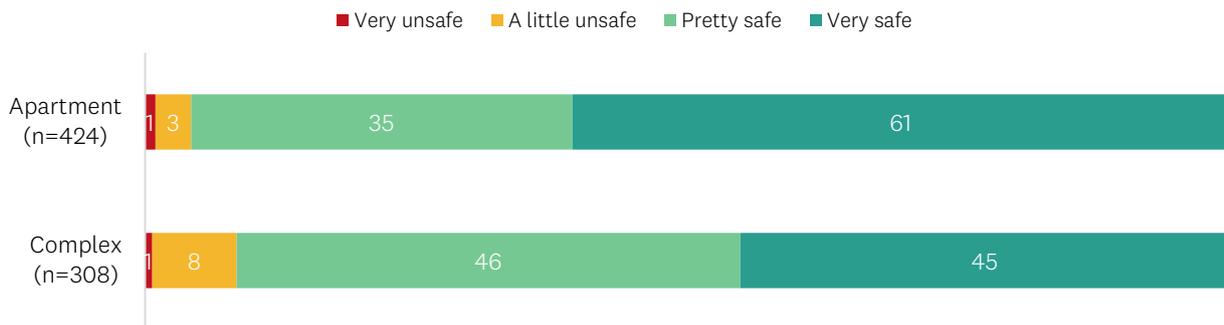
Some commented on vehicle safety concerns, often these related to their home being near or on main roads:

*The speed of traffic on the road where the garage entrance to the apartment complex is located – ‘A little unsafe’ from traffic accidents*

*Turning out onto Mt Eden road is dangerous because of parked cars blocking line of sight, solution would be yellow lines around area or a traffic light – ‘Pretty safe’ from traffic accidents*

Participants were asked about their perceptions of safety from trips, slips or falls in spaces shared with their neighbours. Only one in ten participants (9%) reported feeling ‘a little’ or ‘very unsafe’. Participants living in complexes were more likely to have reported feeling ‘a little unsafe’ (8%) than those living in apartments (3%).

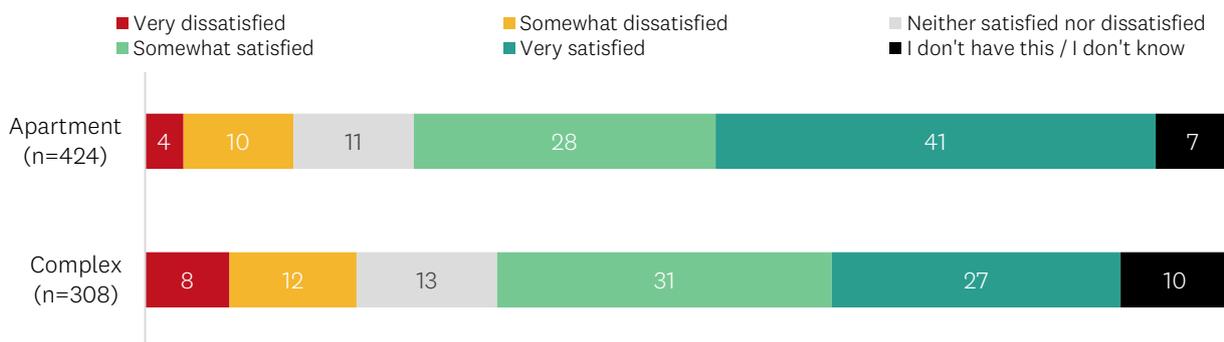
**Figure 55: Perception of safety from trips, slips of falls in spaces shared with neighbours, by type of home (%)**



Note: 1. Base is all the participants living in apartments or complexes.

Close to two-thirds of participants reported being ‘somewhat’ or ‘very’ satisfied with the ability for visitors to find their way around or inside their building or complex. Participants living in a complex (terraced house or duplex) were more likely to have reported being ‘very dissatisfied’ (8%) than those living in an apartment building (4%). Those living in apartment buildings were more likely to have reported being ‘very satisfied’ (41%) than those living in a complex (27%).

**Figure 56: Satisfaction with ability for visitors to find their way around or inside the building/complex, by type of home (%)**



Note: Base is all the participants living in apartments or complexes.

## 8 Mail and other deliveries

This section describes mail and delivery of other items. Regulations and best practice guidelines are presented first, followed by survey results. Participants who reported they live in an apartment building or in a housing complex were asked questions about this topic.

### 8.1 Regulations and best practice guidelines

#### Auckland Unitary Plan (AUP)

The AUP does not contain any specific standards relating to provision for mail deliveries, other than via policy that requires accommodation to be designed to meet day-to-day needs of residents.<sup>59</sup>

#### Auckland Design Manual (ADM) and best practice guidance

The ADM provides guidance on mailboxes for apartment buildings,<sup>60</sup> including locating them adjacent to the main entrance, in a common collection area, and integrated into a wall. The public side of the mailboxes should be vandal-resistant and secure.

The Apartment Design Guidelines for Victoria recommend that mailboxes are adequate in size, durable, weather protected, located for convenient access, and integrated into the overall design of the development.<sup>61</sup>

The Kāinga Ora Design Requirements include letterbox specifications,<sup>62</sup> including locating at the street frontage or laneway in a manner that is integral to the site and building circulation, and wayfinding strategy.

#### Section 35 (s35) monitoring

No monitoring of the provision of mailboxes or other delivery areas was undertaken.

#### Design observations

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- The increased reliance on private shared accessways to serve mainly terraced and duplex housing, rather than public streets, means that large banks of letterboxes are typically located at the driveway entrance, rather than outside each dwelling. It is understood that this

<sup>59</sup> *Auckland Unitary Plan*, Residential – Mixed Housing Urban Zone, Policy H5.3(5).

<sup>60</sup> *Auckland Design Manual*, Apartment Building Design, Section 7.4.1 Building entrance.

<sup>61</sup> State of Victoria Department of Environment, Land, Water and Planning. (2021). *Apartment Design Guidelines for Victoria*, Standard (D22 or B52).

<sup>62</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement (Version 1.1)*, A2.3 Outdoor Service Areas, A2.3.4 Letterbox.

is mainly due to the requirements of NZ Post. This can mean that wayfinding, passive surveillance over the mailboxes, security and ease of delivery of larger parcels is reduced.

**Figure 57: Letter box bank at the start of a private driveway, at the public street edge, serving 35 dwellings**

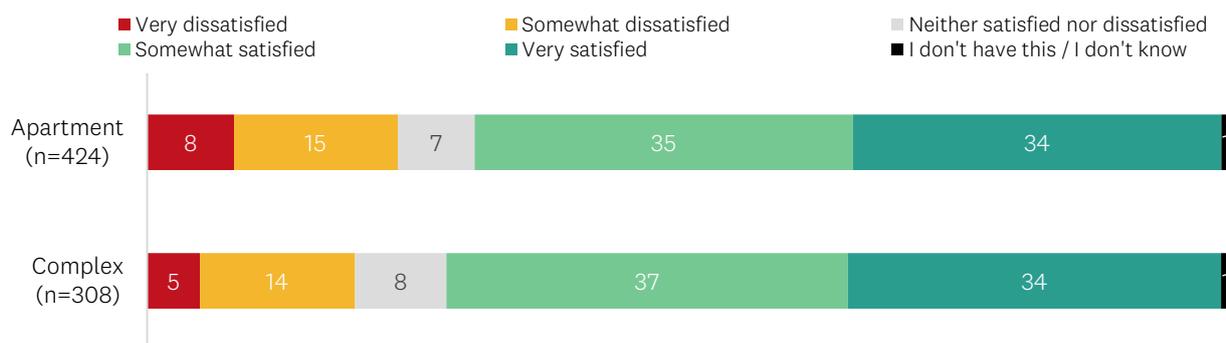


Source: TMDO, Auckland Council.

## 8.2 Survey results

One in five (21%) participants reported being ‘somewhat’ or ‘very’ dissatisfied with the ability of couriers and postal workers to deliver items to their homes. No significant differences were found between apartments and complexes.

**Figure 58: Satisfaction with the ability for couriers and postal workers to deliver items, by type of home (%)**



Note: Base is all the participants living in apartments or complexes.

Participants were asked about their perceptions of safety from theft or vandalism of mail and other deliveries. Almost half (47%) reported feeling ‘a little’ or ‘very unsafe’ and some described mail theft as something dislike about their home:

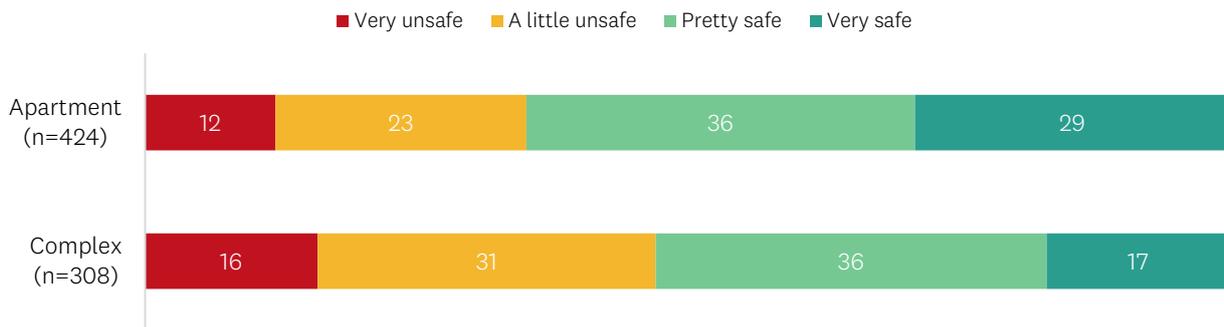
*That it is not as safe as it could be – vulnerable to theft particularly of mail/deliveries – ‘Very unsafe’ from mail theft*

*Theft with packages being delivered and mail – ‘Very unsafe’ from mail theft*

*Security outside the complex. Have had thefts from car park and lobbies (mail boxes) – ‘Very unsafe’ from mail theft*

As with other safety perceptions, those living in apartments were more likely to have reported feeling ‘very safe’ (29%) than those living in complexes (17%), and those living in complexes were more likely to have reported feeling ‘a little unsafe’ (31%) than those living in apartments (23%). This could be due to apartments having the potential for a centralised lobby and mail facilities with security access within the building whereas complexes typically have individual mailboxes at the street entrance.

**Figure 59: Perceptions of safety from theft, or vandalism of mail and other deliveries, by typology (%)**



Note: Base is all the participants living in apartments or complexes.

## 9 Building or complex access

Access for residents and visitors to a MDH complex or building such as an apartment can be designed and managed in a variety of ways, to improve security for residents.

### 9.1 Regulations and best practice guidelines

The location and design of access to a building or complex has an impact on residents' feeling of safety when using the entrance.

#### **Auckland Unitary Plan (AUP)**

The AUP provides broad discretion in the assessment of MDH to consider “residential safety”,<sup>63</sup> including an assessment as to whether the “development achieves attractive and safe streets and public open spaces by ... providing safe pedestrian access to buildings from the street”.<sup>64</sup>

#### **Auckland Design Manual (ADM) and best practice guidance**

The ADM provides general guidance on the design of building entrances, including that the entrance has functional access, is safe and has good shelter and lighting.<sup>65</sup>

#### **Design observations**

The following design matters have been observed by the council's Tāmaki Makaurau Design Open (Urban Design Unit) in their technical review and monitoring of resource consent applications for MDH:

- Communal pedestrian access often has limited passive surveillance or 'eyes' overlooking.
- It is common to have continuous row of garage doors at ground level and no active rooms overlooking accessways.
- Use of access control measures such as gates and pin codes are often a response to poor site layout.

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<sup>63</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban, Matter of Discretion H5.8.1(2)(a).

<sup>64</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban, Assessment criteria H5.8.2(2)(c)(v).

<sup>65</sup> *Auckland Design Manual*, Apartment Building Design, Section 7.4.1 Building entrance.

Figure 60: Access control to a rear pedestrian lane serving terraced dwellings



Source: TMDO, Auckland Council.

Figure 61: Intercom and swipe card access into an apartment building

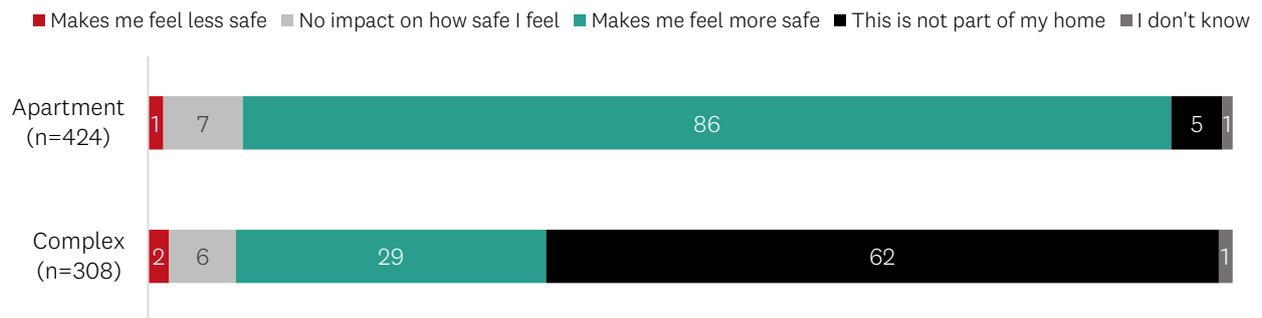


Source: Auckland Council.

## 9.2 Survey results

Participants were asked how the access to their building or complex (such as use of swipe cards, PIN numbers or security gates) impacts their perceptions of safety. A feature that restricts access was found to be more frequently reported by participants living in apartment buildings than by those living in complexes. Those who do have such an access feature tended to report this makes them feel ‘more safe’.

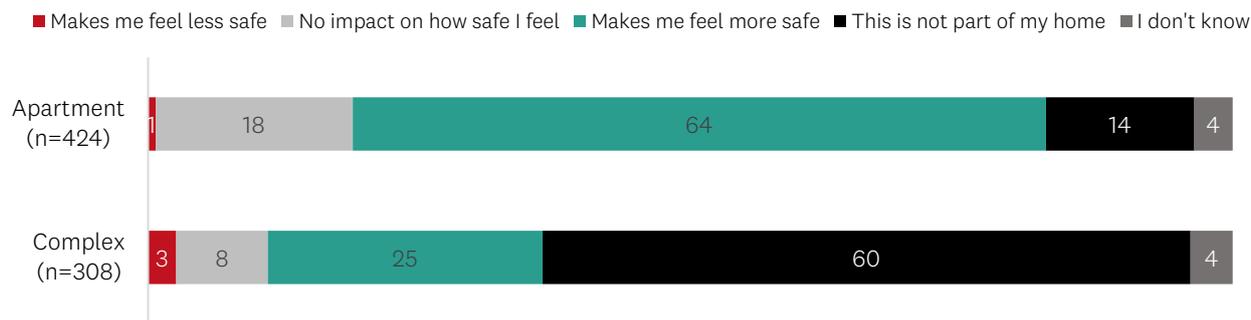
Figure 62: Impact of building/complex access (e.g. swipe card, PIN, security gates) on perceptions of safety, by type of home (%)



Note: Base is all the participants living in apartments or complexes.

Participants were asked about the impact of a video or audio intercom on their perceptions of safety. Intercoms appear to be uncommon in homes that are part of a complex, with only 36 per cent of participants living in complexes reporting having an intercom, whereas they are common in apartments (82% of participants living in an apartment reported having an intercom). Large proportions of those that do have an intercom reported that this makes them feel ‘more safe’.

Figure 63: Impact of a video or audio intercom on perceptions of safety, by type of home (%)



Note: Base is all the participants living in apartments or complexes.

Building/complex access and intercoms were mentioned by some participants as things they like the most about their homes, because of the sense of safety these provide:

*Very safe area and apartment complex. Video and swipe card access and only to floors you need. Your swipe card does not get you to every floor if you don't need to be there – intercom and complex access makes participant 'feel more safe'*

*Can only get onto your floor of residence via lift or stairs. Outside intercom system for family /friends/tradespeople. Can buzz them into building and up to your apartment floor only. Like the security – intercom and complex access makes participant 'feel more safe'*

*Safety. The key system works really well that only my floor and access my floor so there is no one walking around outside my place – complex access makes participant 'feel more safe'*

Others mentioned a lack of security as something dislike about their home:

*No security access setup such as camera, barriers, swipe card, etc. – access makes participant 'feel less safe'*

Some participants reported secure access as something that makes them 'feel more safe' but it can also be a nuisance or a point of frustration when the technology does not work as intended:

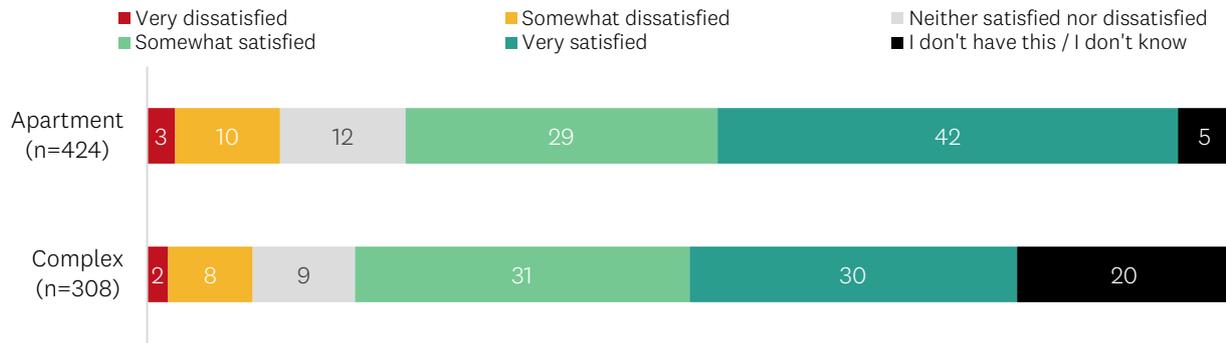
*Swipe entry can be a pain when carrying things – access made participant 'feel more safe'*

*Need to improve security of main entries into the complex – at the moment people can easily reach over for the button to release the pedestrian gate and the fences can easily be climbed – access made participant 'feel more safe'*

*Fingerprint scanner constantly malfunctioning – access made participant 'feel more safe'*

Participants were asked about their satisfaction with the ability for visitors and tradespeople to enter their building/complex. Two-thirds of participants overall are satisfied with the ability for visitors and tradespeople to enter their building/complex. One in five (20%) participants in a complex reported they either don't have this or don't know. This could be interpreted as these complexes lacking a gate or other entry barrier to the complex.

Figure 64: Satisfaction with ability for visitors and tradespeople to enter your building/complex, by type of home (%)



Note: Base is all the participants living in apartments or complexes.

# 10 Perceptions of safety from assault, harassment or theft

## 10.1 Regulations and best practice guidelines

### Auckland Unitary Plan (AUP)

Residential amenity and safety are relevant considerations in the assessment of MDH in both the Mixed Housing Suburban, Mixed Housing Urban and Terraced Housing, and Apartment Buildings zones of the AUP.<sup>66</sup>

### Auckland Design Manual (ADM) and best practice guidance

The ADM sets out Crime Prevention Through Environmental Design (CPTED) principles for residential development including:<sup>67</sup>

- having windows of active internal rooms overlook streets and communal spaces (passive surveillance)
- ensuring fencing and landscaping maintains visual connections between the ground floor rooms and the street/accessway or communal spaces
- ensuring pedestrian routes as the shortest, most direct route with clear lines of sight, with no dead ends or entrapment areas
- building entrances being easily visible and identifiable.

The Kāinga Ora Design Requirements have an expectation that site design and layout protects and promotes residents' safety, security and privacy.<sup>68</sup> This includes passive surveillance, clear and intuitive layout and connections, and a sense of ownership by demonstrating adherence to CPTED principles.

Similar broad safety and CPTED expectations are set out in the Australian design guides referenced in this report.

## 10.2 Survey results

Participants were asked about their perceptions of safety from assault, harassment or theft when moving through their building or complex. Overall, a quarter (27%) reported feeling 'a little' or 'very unsafe'. Participants living in apartments were more likely to have reported feeling 'very safe' (58%)

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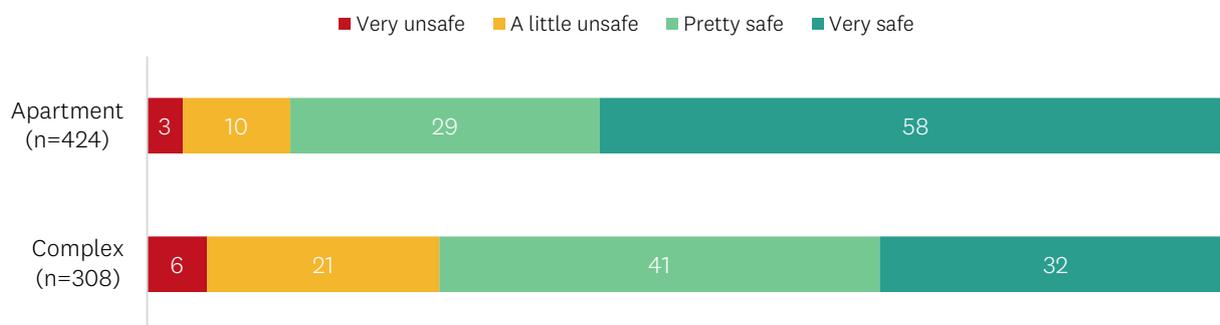
<sup>66</sup> E.g. *Auckland Unitary Plan*, Mixed Housing Urban zone, Matter of discretion H5.8.1(2)(a)(ii) and (iii).

<sup>67</sup> *Auckland Design Manual*, Designing for Safety, 10.1 Residential CPTED guidelines.

<sup>68</sup> Kāinga Ora Homes and Communities. (2024). *Ngā Paerewa Hoahoa Whare Design Requirement* (Version 1.1) Section A1.3 Site response: Safety, security and privacy.

than those living in complexes (32%), while participants living in complexes were more likely to have reported feeling ‘a little unsafe’ (21%) than those living in apartments (10%).

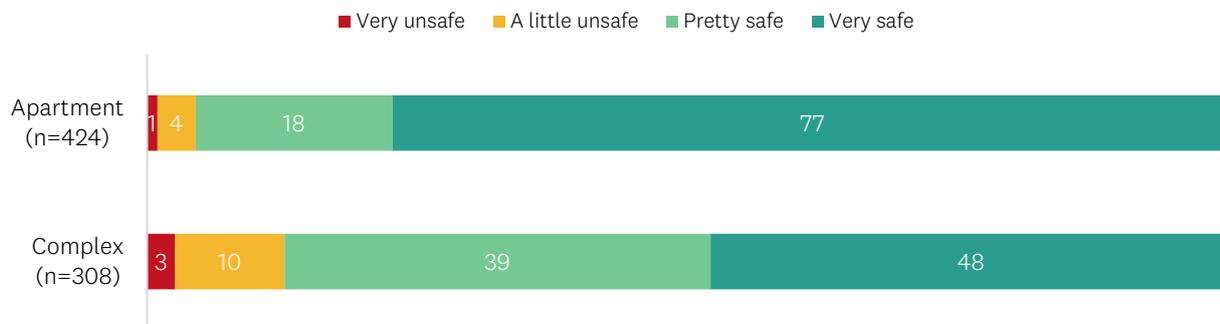
**Figure 65: Perception of safety from assault, harassment or theft when moving through the building/complex, by type of home (%)**



Note: Base is all the participants living in apartments or complexes.

Participants were asked about their perception of safety when inside their private home or apartment. Overall, perceptions of safety are high, with nine in ten (87%) participants reporting they feel ‘pretty’ or ‘very safe’. Those living in an apartment, again, are more likely to have reported feeling ‘very safe’ (77%) compared with those living in a complex (48%), and those living in a complex are more likely to have reported feeling ‘a little unsafe’ (10%) compared with those living in an apartment (4%).

**Figure 66: Perception of safety from assault, harassment or theft when inside the home/apartment, by type of home (%)**



Note: Base is all the participants living in apartments or complexes.

Sixteen per cent of participants mentioned something related to security or safety as something they like about their home, and 8 per cent mentioned something relating to security or safety as something they dislike about their homes.

Those who like the security or safety of their home mentioned different aspects of their homes that related to this theme. These comments include feeling safe because of being surrounded by neighbours:

*The safety of being surrounded by my neighbours.*

*Security of having neighbours attached.*

or because they were part of a complex/building:

*It's more safe than free standing house.*

*It's new, I feel mostly safe in a complex environment.*

*Living in a complex I feel safe.*

*Feeling of safety being in a gated community.*

Others like the 'lock and leave' lifestyle:

*Living in an apartment gives us the freedom to "lock and leave" and enjoy our beautiful outdoors.*

*Lock up and leave security.*

# 11 Summary

This chapter covered several aspects of homes that are part of complexes or buildings with facilities shared with neighbours.

As expected, the majority (93%) of households living in an apartment reported their building is managed by a body corporate. Households living in attached homes as part of a complex reported a variety of ways their complex is managed, with 46 per cent having a residents' association and 28 per cent a body corporate. The participants with a body corporate are significantly more likely to be 'very satisfied' with their management compared with those with a residents' association. Several reasons may explain these differences including the degree of formality required of a body corporate through the Unit Titles Act 2010 compared with a residents' association, and differences in the scope of responsibility. For example, a body corporate is responsible for the maintenance and upkeep of the entire exterior of the building, any internal common property and any commonly owned land, whereas a residents' association only relates to management and maintenance of communal areas, such as shared driveways and carparking areas.

The functioning of a body corporate or residents' association was a theme in participants' descriptions of what they like and dislike about their homes. Some enjoyed having a mechanism that managed aspects of their home, so they did not have to. Others expressed disagreement with the rules imposed by their body corporate/residents' association, and some were dissatisfied with how well their body corporate/residents' association was maintaining their shared property.

Some participants reported having shared living facilities, such as a communal outdoor living space or gym, as part of their building/complex. Fifty-eight per cent of the participants living in an apartment building or complex reported having a communal outdoor living space, making this the most reported type of shared facility. The participants who reported having any form of shared facilities generally are satisfied with these facilities. Chapter 4: Indoor Spaces for Living and Chapter 5: Outdoor Living Spaces identified several limitations of the private indoor and outdoor living spaces often resulting from the size of these spaces, infringement of household items or storage furniture, and whether there is a spare bedroom, garage or flexi-room in the home. Some of these limitations have potential to be mitigated through the provision of shared living spaces. For example, if a lounge or dining space in a home is unable to accommodate a group of visitors, a communal lounge or outdoor living space could host groups of people.

Participants were asked about their satisfaction with lighting in and around their complex/apartment building. Eighty-six per cent of participants living in apartments and 67 per cent of those living in a complex were 'somewhat' or 'very satisfied' with lighting. Participants living in apartments were more likely to be 'very satisfied' (62%) than those living in a complex (35%). Some participants commented on the amount of lighting in and around their building/complex when asked what they dislike about their home. Some of these comments described an excess of lighting, whereas others were concerned about a lack of lighting. The council has introduced changes to the AUP (Plan Change 79 – Amendments to the Transport Provisions to provide greater clarity on the type of lighting to be

provided in residential developments),<sup>69</sup> both for the safety of users as well as management of light spill to neighbours within a complex.

A quarter (26%) of participants living in a complex and 17 per cent of those living in an apartment reported feeling 'very unsafe' or 'a little unsafe' from traffic accidents. Households with children reported feeling less safe compared with those without children. These differences could be due to households with children being more likely to live in attached homes. The design of car parking, vehicle and pedestrian access in attached home complexes and apartments is different, as is the proximity of car spaces to pedestrian access into homes. For example, apartment buildings tend to have a basement carpark and an entirely separate pedestrian entrance into the building, whereas attached housing complexes often have shared vehicle accessways which are also used by pedestrians to travel through the complex. Plan Change 79 requires that for residential developments of four or more dwellings, pedestrian routes separate from the vehicle accessway (through a raised kerb) are provided from the public street to the front door of a home, and from a centralised parking area to the front door. This change is supported by evidence that pedestrian safety, and in particular the avoidance of child driveway runovers and death, is best achieved by separating vehicles and pedestrians.<sup>70</sup> Built environment factors that have been shown to contribute to driveway runover events include shared driveways, more frequent vehicle movements, properties with multiple parking spaces, driveways exiting onto quiet or less busy roads (such as cul-de-sacs) and where the driveway length exceeds 12m.<sup>71</sup> The high volume and creative parking solutions of cars discussed in Chapter 6: Carparking and vehicle storage presents pedestrian safety risk factors that support the pedestrian safety concerns of participants.

Generally, participants reported feeling safe in their homes. A few commented when describing what they like about their home was the sense of safety from being within a secure complex or being near their neighbours.

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<sup>69</sup> Source: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/Pages/details.aspx?UnitaryPlanId=145>

<sup>70</sup> Auckland Council. *Section 42a Hearing Report for Proposed Plan Change 79 – Amendments to the Transport Provisions, to the Auckland Unitary Plan*, Attachment 7 – Dr Julie Chambers, Pedestrian Safety Expert Report, pages 984-1035.

<sup>71</sup> Shepherd et al. (2010). Driveway runover, the influence of the built environment: A case control study, *Journal of Paediatrics and Child Health*, 46(12), 764-766. <https://doi.org/10.1111/j.1440-1754.2010.01835.x>

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

## Chapter 10

# Discussion and recommendations



Kathryn Ovenden and Melanie McKelvie

September 2024, Technical Report 2024/6





## **Overview of the Life in Medium Density Housing in Tāmaki Makaurau / Auckland report**

The *Life in Medium Density Housing in Tāmaki Makaurau / Auckland* study was undertaken by Auckland Council's Economic and Social Research and Evaluation team and Tāmaki Makaurau Design Ope (TMDO) in 2023. The primary purpose of the research was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH).

The results of this research will support everyone involved in the delivery of housing in Auckland (including Auckland Council, central government, developers) to improve future MDH, and ultimately the wellbeing of Aucklanders, through consenting processes, design guidance and land use planning. It will also enable better informed choices by Aucklanders looking to live in MDH.

This study involved a number of methods including a rapid literature review, geospatial analysis to identify recently developed MDH across the Auckland region, an online survey of 1337 participants living in MDH, analysis of the consented plans of 110 properties whose residents participated in the survey, and 20 in-depth in-home immersions which collectively provides a comprehensive view of how people experience their MDH.

This report is divided into 10 chapters and 13 appendices:

Main report:

- Chapter 1: Introduction
- Chapter 2: Legislation and policy context
- Chapter 3: Research method and sample
- Chapter 4: Indoor spaces for living
- Chapter 5: Storage, laundries and bathrooms
- Chapter 6: Outdoor living spaces
- Chapter 7: Indoor environment
- Chapter 8: Carparking and vehicle storage
- Chapter 9: Shared facilities
- Chapter 10: Discussion and recommendations

Appendices:

- 1: References
- 2: NPS-UD and Auckland Regional Policy Statement objectives and policies
- 3: Survey invitation letter and reminder postcard
- 4: Survey consent form
- 5: Survey questionnaire
- 6: Standalone houses excluded from the sample
- 7: Survey sample characteristics
- 8: In-home immersion screener survey
- 9: In-home immersion discussion guide
- 10: Design attributes for analysis of consented plans
- 11: Map of broad geographic study areas
- 12: Study limitations
- 13: Codes for open ended responses

Each chapter is provided as a separate PDF and can be accessed on the Knowledge Auckland website. A summary report with key findings is also available on the Knowledge Auckland website.

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# 1 Discussion

The primary purpose of the study was to investigate how Aucklanders are experiencing living in recently built medium density housing (MDH),<sup>1</sup> with the intention of using the results to bring about improvement to future MDH. The findings of this research will be shared with the MDH development community (i.e. developers, architects, planners, urban designers, professional organisations and central government) as well as within the Auckland Council group, to ensure that opportunities and potential design solutions to improve the lived experiences of MDH households are explored across the entire planning, design and delivery system.

The results presented in this report demonstrate that experiencing life in MDH is multi-faceted, and that MDH is working better for some households than others. The study offers explanations as to why this may be and suggests how MDH could better meet the needs of a wide range of Auckland households. A quality compact approach is a core direction in Auckland Council's Future Development Strategy. For the outcomes resulting from this direction to be realised (e.g. adaptive to climate change, protect the natural environment, equitable infrastructure investments), MDH must meet the needs of a diverse range of households.

Recently built MDH is not always achieving the intention in the *Auckland Unitary Plan* (AUP) of housing meeting the day-to-day needs of households. MDH may better meet these needs if it was to, for example, include built-in storage (e.g. for food, linen), have living spaces with layouts that accommodate standard sized furniture, and maximise spaces that can be used in different ways (e.g. provision of flexi-rooms or larger lounges instead of additional bathrooms). Overcoming the issues identified in this study are critical to mitigate poor wellbeing outcomes (e.g. overcrowding, social isolation) that can result from households living in homes that cannot accommodate their needs.

The rest of this chapter discusses the key findings from the study.

## **MDH is working well for some households and improvements are required to work for others**

This study found that recently built MDH in Tāmaki Makaurau is meeting some of the needs of some households. Households of one person living alone or living with a partner only were more likely to report aspects of their home are 'meeting' or 'more than meeting' their needs, compared with households with children. This general trend of more positive responses from smaller households, particularly those without children, is echoed across the results reported throughout this report.

A quarter of households who participated in the survey live with at least one child, 39 per cent of households comprise of two adults (partners), and 22 per cent of participants live alone.<sup>2</sup> The

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<sup>1</sup> In this study, recently built MDH is defined as having received a CCC after November 2016 (when AUP became operative in part) and is a terraced house, duplex or apartment (as defined by the participants). See the Executive Summary at the beginning of this report for more detail.

<sup>2</sup> See Chapter 3: Research method and sample for a discussion on household composition.

remaining 14 per cent of households have two or more adults and no children (e.g. these households may be flatmates, adult children living with parents, or elderly parents living with their adult children). That only a quarter of households have children, along with differences in satisfaction, could be interpreted to mean that current MDH in Auckland would need improvement to better accommodate the needs of households with children.

MDH and higher density housing is not fundamentally unable to meet the day-to-day needs of households with children, and by extension low density housing is not always able to meet these needs either. Households with children live in higher density housing in many other places around the world. Design limitations of the MDH considered in this study, such as storage capacity for household items and only one dedicated space for living activities, can result in households relying on spare bedrooms and garages (if they have them), and outdoor living spaces to make their home function.<sup>3</sup> Households with children are less likely to have spare bedrooms and could benefit from additional or larger living spaces even more than households of adults (because adults may have greater capacity to utilise third-places or have interests that result in spending time out of their home).<sup>4</sup>

The arrangement of rooms and general inability of MDH to enable significant modifications to the home (e.g. extensions to add additional bedrooms or living spaces) restricts its ability to accommodate changes in the needs of a household (e.g. additional household members or changing mobility). This limitation could generate a higher turnover in MDH compared with lower density homes, which may have greater ability to accommodate such changes. As a result, there is a need for a diverse range of MDH to be constructed with regard to numbers of bedrooms,<sup>5</sup> and the inclusion of dedicated spaces that can be used for a range of activities (e.g. study to work from home, hobby, exercise, play space).<sup>6</sup> Evidence shows that there is demand for a range of housing types including medium and high density typologies (Yeoman & Akehurst, 2015)<sup>7</sup>. However, without greater variation, the number of Aucklanders who can comfortably reside in MDH may be restricted, and lower density homes, which exist in a wider variety, will continue to be required.

Achieving a quality compact urban form is reliant on an increasing proportion of new development being of medium and high density housing typologies. Having sufficient diversity within these higher density housing typologies will be key to accommodating the diverse needs of Auckland households and achieving this outcome.

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<sup>3</sup> As discussed in Chapter 4: Indoor spaces for living, Chapter 5: Storage, laundries and bathrooms, and Chapter 6: Outdoor living spaces.

<sup>4</sup> A 'third-place' is a place outside the home ('first-place') or work place ('second-place') where people spend time with others, such as a café or community centre.

<sup>5</sup> In this study, 89 per cent of apartments were reported to have one or two bedrooms, while 77 per cent of terraced houses and 72 per cent of duplexes had two or three bedrooms. See Chapter 4, Section 2.

<sup>6</sup> In this study, 93 per cent of MDH had only one indoor living space (see Chapter 4, Section 1.2) and spare bedrooms were important spaces to accommodate a range of activities.

<sup>7</sup> Respondents undertaking a discrete choice modelling exercise chose from a range of dwelling types. Of those who could afford to buy or rent in the exercise, just over half (52%) chose detached dwellings as their final choice, 25% chose an attached dwelling (a joined unit), 15% chose a low-rise apartment, and 8% chose a high-rise apartment.

## **A range of issues creates challenges for meeting the day-to-day needs in MDH**

The AUP assessment matters intend to ensure homes are meeting the day-to-day needs of households by being a sufficient size. This report demonstrates that spare bedrooms and creative use of other rooms unintended as spaces for living (e.g. garages, spare bathrooms) are critical in MDH meeting the day-to-day needs of households. There are a range of issues, described below, resulting in this outcome. Resolving the identified issues is anticipated to better enable MDH to meet the day-to-day needs of households (as intended in the AUP) and to aid households in using spaces in their home as intended (such as using their garage for car parking instead of as a space for living) and as desired (such as being able to host friends and whānau).

### **Limited built-in storage reduces the functionality of spaces for living**

A key finding of this study was that storage is inadequate for many households, and requirements for storage impacts on almost every space within a home. Over half of all participants reported that they have insufficient storage for general household items, linen,<sup>8</sup> kitchen equipment and food,<sup>9</sup> and for occasional items.

Some kitchens were not fit for purpose as they did not have a pantry, which resulted in participants adding cupboards to dining spaces or garages. This can reduce the use of the dining spaces for dining and garages for carparking. Results from the in-home immersions found that storage in many kitchens was insufficient, difficult to access, or culturally inappropriate (e.g. Feng Shui practice is to store rice in a container outside of a cupboard). Furthermore, some approaches to food storage were possibly not food safe (e.g. food being stored in a cupboard alongside a hot water cylinder). This resulted in households adding storage furniture (e.g. shelving, cupboards, freezers) to their dining space, lounge and sometimes their garage. The space occupied by this furniture meant that other items, such as dining tables or sufficient seating for the household, were unable to fit in dining spaces and lounges, and garages were unable to be used for carparking.

Analysis of consented plans found that, on average, homes had close to a cubic metre less built-in storage per bedroom than the *Auckland Design Manual* (ADM) recommended minimum – and the ADM generally recommends storage volumes half that of other design guidance considered in this study.<sup>10</sup> The in-home immersions uncovered the impact of lacking built-in storage: linen is stored in wardrobes and suitcases in hallways, while many households have added storage cupboards into spare bedrooms and garages. Participants also shared how they use spare bathrooms and the largely unused bathtubs for storage.

These results demonstrate how a lack of dedicated built-in storage for household items is resulting in household items being stored in ways that impacts the useability of other spaces. Wardrobes storing linen, for example, have less capacity to store clothes and shoes, resulting in additional storage

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<sup>8</sup> See Chapter 5: Storage, laundries and bathrooms.

<sup>9</sup> See Chapter 4, Section 1.2.2 Kitchens.

<sup>10</sup> See Chapter 5, Section 1.1, Section 2.1 and Section 3.1 for more details on design guidance considered for household storage, laundries and bathrooms, respectively.

requirements. When bedrooms and garages are used for storing, for example, suitcases and as places for extra storage cupboards, then it is difficult for these rooms to also provide a space for sleeping or storing vehicles, respectively.

The average size of a ground-level outdoor living space in the consented plans analysed was 34m<sup>2</sup> for terraced houses, which is larger than the 20m<sup>2</sup> AUP minimum.<sup>11</sup> However, outdoor living spaces were found in some in-home immersions to have storage sheds containing suitcases and other household items, reducing the functional size and in some cases usability of this outdoor space for living activities (e.g. socialising, play). Storage for shoes and bikes, and drying laundry were also accommodated for in outdoor living spaces. Built-in indoor storage and dedicated laundry facilities appropriate for different typologies (e.g. service courtyard for terraced houses or communal laundries in apartment buildings) may better suit these needs and enable outdoor living spaces to function as spaces for eating, socialising and play.

The size of outdoor living spaces, dining spaces, lounges and garages in the MDH included in this study are found to be unable to accommodate both the added storage and their intended functions. Overall, this study finds that in-built storage provision in MDH is inadequate for the basic requirements of most households, with day-to-day items being stored in unintended spaces, thus affecting the functionality of those spaces.

### **The design of lounges can result in limited functionality and additional spaces are required to accommodate activities important to the household**

Most homes (89%) were reported by survey participants to have one indoor living space comprising a kitchen, lounge and dining space. Satisfaction with the size of lounges and dining spaces is greater in households without children, who are more likely to have a spare bedroom that can accommodate other activities. Households without a spare bedroom may place a greater demand on their lounges and dining spaces to accommodate a wide range of activities, which the spaces are struggling to accommodate, resulting in lower satisfaction ratings.

As is discussed in Chapter 4: Indoor spaces for living, lounges are often found to only afford watching TV, eating, and play by young children due to the room's size and shape and location of power points, doors and windows. In addition to infringement by added storage, these spaces are often unable to accommodate furniture positioned in ways to facilitate conversation or social activities such as board games, hobbies (e.g. musical instruments, computer games, crafts), exercise or play by older children. Consequently, such activities are performed elsewhere in a home, such as in a spare bedroom, outdoor living space or garage.

Dining spaces were reported by over a third of survey participants to 'somewhat' or 'not at all' meet the needs of the household. The in-home immersions found that eating meals together as a household in a dining space was important for a small number of participants but the majority preferred to eat meals in their lounge watching TV. However, dining spaces continue to be important as spaces for hobbies (e.g. board games and Lego), having a conversation, and acting as an extension

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<sup>11</sup> See Chapter 6: Outdoor living spaces.

of the kitchen bench. Dining spaces, compared with lounges, tended to have greater flexibility in how furniture could be arranged and the activities they could accommodate. This way of using dining spaces is unlikely to be a reality for only households living in MDH and encourages a reconceptualisation of ‘dining spaces’ as being multi-functional spaces rather than assuming they are solely for dining around a table in design guidelines.

Large proportions of participants reported that having friends and whānau visit is important to them.<sup>12</sup> However, it was not always easy to do this due to a lack of space, and some reported a lack of visitor carparking. This finding highlights a risk to wellbeing (social, mental, physical and spiritual) and a potential shift in the demand of other spaces to accommodate activities (e.g. public spaces, communal spaces or third-places). For example, some in-home immersion participants described hosting guests elsewhere, such as at a family member’s larger standalone home or a restaurant.

### **Spare bedrooms, flexi-rooms and garages are multi-functional spaces critical to a well-functioning home**

Spare bedrooms and flexi-rooms are reported by participants to accommodate a diverse range of activities, including being used as a guest bedroom, study/office space, teenager hang-out space and media room, and for hobbies, exercise, drying laundry and storage. This diversity of uses may be due to bedrooms and flexi-rooms having a door that allows them to be separated from other spaces or members of the household, unlike lounges in open plan layouts.

Just over half (53%) of the participants living in a terraced house or duplex reported having a garage in their home. Of those with at least one car and a garage, only half (50%) reported storing at least one car in their garage. Garages are reported to be used for storage, exercise, laundry and hobbies. Of the five in-home immersion households with a garage, only the two homes with a larger garage used this space for a car. All garages were used for storage (for food and kitchen appliances, shoes, clothing, garden equipment, bikes, wheelie bins, sports equipment) and other activities (e.g. laundry, exercise, hobbies, hang-out space).<sup>13</sup>

The overall size, number and arrangement of rooms in MDH may be indicating to prospective households that additional bedrooms, flexi-rooms or a garage are necessary to overcome limitations on activities they expect to be able to undertake in the home, due to the small size and inflexibility of the lounge. In-home immersion participants showed how the arrangement of furniture to accommodate the activities important to them in their lounge was challenging due to the location of power points, windows and doors, and the need for circulation space (e.g. hallways, staircases and access to outdoor living spaces). Households with children were more likely to have reported that the number of indoor living spaces ‘does not meet the needs at all’ or ‘somewhat meets the needs’ compared with households without children. Only 11 per cent of participants overall reported having a second living space (i.e. a flexi-room) and households with children were more likely to have no spare bedrooms that could be used as a living space. The provision of larger lounges or additional living

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<sup>12</sup> See Chapter 4, Section 1.4.3 for a discussion of activities in the home.

<sup>13</sup> See Chapter 4, Section 1.4.2 and Section 1.5.5 for a discussion of uses of garages as spaces for living, and Chapter 8, Section 1.4.4 for uses of garages for carparking.

spaces could be a solution to this and may not necessarily require an increase in total floor area if better design of circulation space and storage solutions are also considered.

### **Greater bathroom amenity than recommended in best practice guidance is creating ‘spare bathrooms’**

Analysis of the 110 consented plans found that over half of the 2-bedroom homes have two bathrooms or a bathroom and a WC (i.e. two toilets, and one or two showers/baths).<sup>14</sup> Similarly, over half of the 3-bedroom homes have either three bathrooms, or two bathrooms and a WC (i.e. three toilets and at least two showers/baths). This is more bathroom amenity than is recommended by all three of the New Zealand best practice guidance considered in this study.<sup>15</sup> Furthermore, the *Public Housing Design Guidance* states that “if these standards are exceeded, i.e. additional bathrooms are proposed to be provided, HUD-New Supply would strongly encourage early engagement to ensure that the development still represents value for money.”<sup>16</sup>

In-home immersion households with surplus bathrooms – for example, the participant who lives alone in a 1-bedroom apartment with a flexi-room and two bathrooms (i.e. two toilets and two showers) – shared how they were using their spare bathrooms as spaces for storage or drying laundry. The quarter (23%) of the survey participants who reported that the number of bathrooms in their home is ‘more than meeting’ their needs may have spare bathrooms which they are using in ways similar to the in-home immersion households.

The floor area consumed by additional bathroom amenity, and the relative expense in fitting out a bathroom, could perhaps be better allocated to other purposes, such as storage or a flexi-room, to partially mitigate the issues previously described with lounges.

### **The allocation of floor area does not align with best practice guidelines, and the size of spaces for living are not meeting the needs of close to half of the survey participants in households with children**

Forty-seven per cent of the households with one child and 53 per cent of the households with two or more children reported that the size of their lounge ‘does not meet’ or ‘somewhat meets’ the needs of their household. Thirty-eight per cent of all survey participants reported that the size of their kitchen and 41 per cent reported that the size of their dining space ‘does not meet’ or ‘somewhat meets’ the needs of their household. Consented plan analysis found that the average floor area of kitchen, lounge and dining spaces are smaller than the ADM minimum recommendation guidelines, by 7m<sup>2</sup> on average for 2-bedroom homes and 11m<sup>2</sup> on average for 3-bedroom homes. This finding helps to explain the notable proportion of participants who reported that the sizes of their kitchens, lounges and dining spaces are less than ‘meeting the needs’ of their household.

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<sup>14</sup> See Chapter 5, Section 3 Bathrooms.

<sup>15</sup> ADM recommends one bathroom for 2-bedroom homes and two bathrooms for 3-bedroom homes (ADM does not distinguish between a bathroom and a WC). The *Public Housing Design Guidelines* and *Kāinga Ora Design Guidelines* recommend one toilet and one shower for 2-bedroom homes, and two toilets (including one WC) and one shower and one bath for 3-bedroom homes.

<sup>16</sup> Ministry of Housing and Urban Development. (2023). *Public Housing Design Guidance for Community Housing Providers and Developers*, Section 4.6.1.

The consented plan analysis found that the net floor area of homes is similar to the ADM recommended net floor area.<sup>17</sup> Two-bedroom homes average 59.6m<sup>2</sup> (62m<sup>2</sup> is recommended) and 3-bedroom homes averaged 77.6m<sup>2</sup> (82m<sup>2</sup> is recommended). On the surface, this may seem to conflict with finding that kitchen, lounge and dining spaces combined are on average 10m<sup>2</sup> smaller than guidelines. The difference, however, can be attributed to the floor space allocated to bathrooms (which is on average 3m<sup>2</sup> greater than the ADM recommendation), as well as slightly larger bedrooms (1m<sup>2</sup> greater than recommended) and wardrobes (1m<sup>2</sup> greater than recommended).

In undertaking an analysis of consented plans and comparing these to design guidelines, it was noted that most design guidelines do not include circulation space (e.g. hallways, staircases) and that circulation space takes up a large proportion of floor space in narrow multi-level houses. Analysis also found that circulation space accounts for varying proportions of total floor area across housing typologies as multi-level homes have staircases and typically greater lengths of hallways than single-level homes.<sup>18</sup> The AUP defines a minimum net internal floor area for studios (30m<sup>2</sup>) and one or more bedrooms (45m<sup>2</sup>), but it does not clearly define how staircases in homes are measured (i.e. if staircases are counted twice, once for each level, or once for the entire home). Developing tailored standards and design guidance for each MDH typology would address this issue and is consistent with the Section 35 (s35) monitoring that found that “the generic set of residential standards that apply to standalone homes as well as terraces and apartments are inadequate for complex medium to large scale developments.”<sup>19</sup>

It is acknowledged that increasing the size and/or quality of fitout in a home comes at a financial cost. There is a risk that policy requiring larger or higher quality homes reduces housing affordability. In other words, housing affordability (as an indicator of economic wellbeing) is traded-off with social, cultural and environmental wellbeing. However, not all changes that improve how well homes meet the needs of households come at a financial cost and the value of good design also has economic benefits. For example, making the best use of space within the home, designing spaces to accommodate standard sized furniture, integrated storage solutions, and having fewer or smaller bathrooms to allow for an increase in space for living may be cost-neutral or even cost-positive, and if they improve usability and satisfaction, are also likely to improve initial and/or resale values.

## **The challenge of managing heat without compromising privacy or contributing to an urban heat island effect**

A quarter of the participants living in terraced houses (28%) and duplexes (24%) reported being ‘somewhat’ or ‘very’ dissatisfied with the temperature inside their home in summer.<sup>20</sup> Overheating is a challenge for MDH, with reports of homes costing twice as much to cool over summer as they do to heat in winter, in addition to the high cost of retrospectively installing mechanical ventilation systems (Gibbens, 2024). The temperature of terraced houses is challenging to regulate in summer,

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<sup>17</sup> When including only the spaces for which there is guidance in the ADM (i.e. kitchen, lounge, dining space, bedrooms, bathrooms, wardrobes). The ADM lacks guidance for circulation space (i.e. hallways and staircases), flexi-rooms and garages.

<sup>18</sup> Note that staircases are counted twice when calculating gross floor area, once for each storey.

<sup>19</sup> Auckland Council. (2022). *Auckland Unitary Plan, Section 35 Monitoring*, B2.3 A quality built environment, page v.

<sup>20</sup> See Chapter 7: Indoor environment.

as they typically have only two sides with openable windows, compared with four or more sides of a standalone house. Large windows with small openings, a lack of eaves and poor consideration of solar orientation and solar gain all contribute to higher than desirable internal summer temperatures.

<sup>21</sup> Australian design guidance is more sophisticated in the management of temperature (particularly cooling) within the home compared with New Zealand guidance, and there are opportunities to use many of these approaches in improving guidance in Auckland, particularly considering expected impacts from climate change.

Modifications to improve summer temperature were the most reported change that participants had made to their home. Over half the participants who had made at least one change to their home in terraced houses (54%) and duplexes (60%) had made changes to improve temperature.

Modifications reported in the survey included installation of heat pumps or air conditioning units (often in second or third levels, which are the hottest areas in the home and also typically where the bedrooms are located) and changes to window coverings (including installation of blinds/curtains or window tinting). In-home immersion participants showed that blinds were often drawn in some rooms as a way of managing heat. Eight of the 14 households living in terraced houses/duplexes had retrofitted a heat pump or air conditioning unit into the upper level of their home, particularly in bedrooms, to cool the room so they could sleep comfortably at night.

Reliance on heat pumps and air conditioning units as active mechanisms to cool homes in summer suggests that MDH are not being designed in ways that enable passive temperature management. Marriage (2022) claims the H1 Energy Efficiency clause in the Building Code, which regulates energy efficiency of a build, can result in overheating when applied to MDH. This is of concern from the perspectives of wellbeing, household outlay and ongoing running costs, as well as climate resilience. Auckland is expected to experience hotter temperatures as our climate changes,<sup>22</sup> and there is a risk of heat resulting in detrimental health outcomes. Reliance on active mechanisms to cool homes not only has a high power cost (both financial and demand on the power grid) but also releases warm air into the neighbourhood, exacerbating heat impacts for others. Further investigation into how this situation may contribute to urban heat island effects and design solutions, including consideration of green space, are recommended. Design solutions such as those required in Australian best practice guidance could include building and window orientation, window sizes and openings, sun shading and solar control devices.

## **Perceptions and experiences of privacy within a home are variable**

High proportions of households said they were ‘somewhat’ or ‘very’ satisfied with privacy inside their home, and notable proportions reported they had made changes to their homes to improve visual privacy.<sup>23</sup> In-home immersion participants showed how they close blinds/curtains as a way of improving privacy in upstairs bedrooms, kitchens, dining spaces and lounges where windows were

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<sup>21</sup> The amount of heat received passively from the sun in New Zealand is greatest on a large north-facing window, which receives the greatest number of hours of direct sunlight, compared with a small north-facing window or a large south-facing window.

<sup>22</sup> Auckland’s temperature is expected to increase by about 0.6°C by 2040 (Pearce et al., 2020).

<sup>23</sup> See Chapter 7, Section 3 Visual privacy.

visible from a shared or public space (e.g. vehicle or pedestrian accessway or street). In-home immersion participants described being uncomfortable and ‘on display’, leading to the permanent use of window coverings and/or frosted windows to improve internal privacy. Section 35 monitoring reported residents are closing blinds in their lounge or dining space when this room overlooks a street. This is interpreted in the s35 report to be in efforts to improve privacy and notes how this behaviour compromises the attractiveness of the street frontage and passive surveillance benefits.

Having windows that overlook public or shared spaces permanently covered with blinds/curtains/frosted glass and similar treatments, undermines the intended benefits of those windows providing opportunities for passive surveillance. The Crime Prevention Through Environmental Design (CPTED) principle of passive surveillance may be new to households moving into MDH from lower density standalone houses. Careful consideration of how such principles are applied is warranted to ensure that the intended outcome of wider public safety is achieved without compromising household comfort and feelings of privacy. A more considered design approach through the inclusion of landscape buffers or elevation of the private space to transition from public/semi-public to private spaces could mitigate participants’ privacy concerns and encourage window coverings to be open during the day, providing the benefit of passive surveillance without negatively impacting interior privacy.

It is recommended that further consideration is given to how the interface between the windows of homes and public spaces (e.g. streets), semi-public spaces (e.g. shared accessways) and neighbouring properties is better managed to ensure adequate privacy for households while also providing for passive surveillance.

## **Outdoor living spaces are highly valued, but functionality can be compromised**

The ADM and AUP acknowledge that outdoor living spaces are an important component of MDH to offset smaller indoor living spaces and as a key component in delivering a high-quality built environment. The simple existence of an outdoor space being a part of their homes was a theme in participants’ comments when describing what they like about their home.<sup>24</sup> However, this study found that the functionality of outdoor living spaces can be compromised due to a lack of privacy, poor access from indoor living spaces, limited space, and the space available being consumed by site facilities and storage. Overcoming these issues is anticipated to better enable households to use their outdoor living space as a space for ‘living’ outdoors.

A third (32%) of participants reported being ‘very dissatisfied’ or ‘somewhat dissatisfied’ with privacy in their outdoor living space. Those living in attached homes (i.e. terraces houses and duplexes) were more likely to be ‘very dissatisfied’ compared with those living apartments. Participants reported making changes to their outdoor living space to improve privacy, such as increasing the height of fencing or adding screens to permeable pool fencing.

Greater consideration to the indoor-outdoor flow could better enable outdoor living spaces to act as an effective extension of the (limited) indoor living space. Outdoor living spaces are ideally accessed

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<sup>24</sup> See Chapter 6: Outdoor living spaces.

via the living areas of a home. While the lack of direct connection of ground-level outdoor living spaces to indoor living spaces was an issue for only a small proportion of survey participants (12%), when this was an issue for the in-home immersion households, it had a large impact on how the household experienced living in their home.<sup>25</sup>

The in-home immersions found that some households use their outdoor living spaces for storage of household items such as shoes, suitcases and sport equipment. This use of space, in addition to site facilities such as external heat pump units and washing lines, can reduce the space remaining for activities such as play, dining and having a conversation. Outdoor living spaces could be improved by better accommodating household storage and other site facilities either inside the home or in dedicated service areas separate from the outdoor living space.

In addition to the functional size of the outdoor living space being compromised by site facilities, consented plan analysis shows that while many spaces were greater than the 20m<sup>2</sup> minimum required by the AUP, satisfaction for the size of the outdoor living space is low. Forty-three per cent of participants reported the size of their outdoor living spaces is ‘somewhat’ or ‘not at all meeting’ the needs of the household. Households with children were more likely to have reported that the number and size of outdoor living spaces ‘somewhat’ meets the needs of the household, than households without children. Private outdoor living spaces in MDH may not be practically able to be of a size that enables households to do the activities they would like to do outdoors. Instead, homes as part of a complex or apartment building may benefit from having a communal outdoor living space, and all households may benefit from greater provision of public open space. The larger size of these communal outdoor living spaces could enable social gatherings and more active activities (e.g. sport, play). The *New South Wales Apartment Design Guide* and the *Apartment Design Guide for Victoria* both have minimum requirements for communal living spaces.<sup>26</sup>

## **Carparking is creating issues**

There appears to be a mismatch between the design of MDH and delivery of transport amenity (i.e. private carparking, street parking and public transport). This mismatch was also found by research investigating a master planned community in Takanini (Reid et al., 2019).

There has been a general reduction in the number of carparking spaces provided for each medium density home since the removal of carparking minimum standards in the AUP in all residential zones (regardless of public transport provision or walking and cycling infrastructure),<sup>27</sup> and through the efforts of developers to deliver affordable housing because carparking and access for cars (e.g. driveways) takes up land and floor area, and both are expensive. The purpose of this change is to enable development particularly in locations where non-car transport modes (i.e. walking, cycling and public transport) provide access to employment, services and amenities.<sup>28</sup> However, most (96%)

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<sup>25</sup> See Chapter 6, Section 2.3 Environmental aspects of outdoor living spaces.

<sup>26</sup> See Chapter 9, Section 5.

<sup>27</sup> This change to the AUP was the result of the National Policy Statement on Urban Development 2020.

<sup>28</sup> Source: <https://environment.govt.nz/assets/Publications/Files/car-parking-factsheet.pdf>

households were reported by participants to have a least one car, and 49 per cent of households had two or more cars.<sup>29</sup>

Fifty-seven per cent of the households who had participated in the survey have more cars than off-street car parks.<sup>30</sup> Half (53%) the terraced houses and duplexes were reported to have a garage, and only half (50%) the households with a garage and at least one car reported using their garage for car parking. As described earlier, garages are important spaces for storage, laundry and other activities, which limits the remaining space in garages for car parking. Having more cars than off-street car parks and only half the garages being used for car parking is resulting in cars being parked on public roads, shared driveways and front yards in undesirable ways (i.e. parking on berms and footpaths, and blocking shared driveways). This is negatively impacting the security of vehicles from theft and vandalism, the ability for visitors to park nearby (and therefore the ability to host visitors), the loss of landscaped areas to car parking, and the pedestrian experience (including safety) of the housing complex/shared accessways and the neighbourhood.

Some participants mentioned needing a car due to a lack of public transport, suggesting that if barriers to using public transport were mitigated, the number of cars owned by a household could decrease. There are many possible barriers to shifting transport modes, such as the non-existence of a service that goes to the desired location at the right time, safety concerns, or it taking longer than private car (see Ovenden & Allpress, 2024). Improving the perception of public transport in areas where MDH has already been established, and enabling more development in locations where the provision is planned or is already established, could reduce the need for multiple cars in each household. Improved parking management could also help reduce the adverse impacts on wellbeing, walkability, safety and amenity from poor parking behaviours.

Resolving this mismatch in provision of transport amenity for MDH will require a collaborative effort between those in the transport and housing sectors.

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<sup>29</sup> See Chapter 8, Section 1 Cars and car parking. Note that the survey did not collect data on participants' share of different transport modes. This could be investigated by further research.

<sup>30</sup> Off-street car parks can include, for example, garages, carports, car pads, basement car parks or outdoor car parks.

## 2 Recommendations

The findings from this study are recommended to be used by all stakeholders in the MDH sector, such as developers, design professionals and the Auckland Council group, to bring about improvements to the future delivery of MDH in Tāmaki Makaurau / Auckland, so that MDH can best meet the diverse needs of a growing population, including the needs of households with children and multi-generational living.

Several recommendations for Auckland Council emerge from these findings.

### **Auckland Design Manual**

The ADM is being updated to reflect the changing design approach to MDH under national legislation. It is recommended that the ADM is also updated to address the issues identified in this report, including:

1. Separate guidance for different MDH typologies (duplexes, terraced houses and apartments), to reflect their different spatial arrangements, number of levels and functional needs such as storage.
2. Guidance to address the privacy needs of households in MDH, particularly in their living spaces and bedrooms, while also considering CPTED outcomes.
3. Guidance for outdoor living spaces to consider activities (e.g. dining, play), green space, shade, privacy, site facilities, and visual and aural privacy.
4. Guidance for communal living spaces, both indoor and outdoor, to allow for a broader range of activities that are difficult to undertake in small private living spaces.
5. Guidance to address homes overheating, including the role of legislation such as the Building Act 2004.
6. Guidance to ensure that pedestrian access along shared accessways is protected from parking so that walking and other active modes of transport are as easy, accessible and safe as private vehicle usage.

### **Auckland Unitary Plan**

7. It is recommended that the findings and recommendations of this research are taken into consideration when the AUP review commences in 2026. This includes incorporation of relevant ADM design guidance set out above, through policies, standards, matters of discretion and assessment criteria.

### **Policy/strategy**

It is recommended that Auckland Council consider the broader benefits and impacts of MDH at a neighbourhood scale, including:

8. The effects of new development, including MDH, on microclimates, including factors such as water-sensitive design, urban heat island effect (including tree canopy, building orientation, surface treatment and shade provision), and air quality.

9. Integration of land use and how people get around Auckland in a sustainable way that meets our emission targets, particularly focusing on non-private-car modes.
10. Consideration of carparking in public spaces including streets and neighbourhoods, given ongoing reduced private supply.

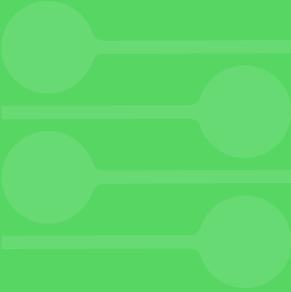
**Advocacy**

11. It is recommended that consideration be given to repeating the approach of this study within the next 5 years to continue to capture the lived experiences of MDH households.

It is recommended that Auckland Council works with central government and other agencies to improve the lived experiences of MDH households. Enacting these recommendations will require a coordinated commitment between Auckland Council, including CCOs, and the development sector.

Life in Medium Density Housing  
in Tāmaki Makaurau / Auckland

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## 2 National Policy Statement on Urban Development and Auckland Regional Policy Statement objectives and policies

### National Policy Statement on Urban Development (2020)

The National Policy Statement on Urban Development (NPS-UD) requires the Council, among other things, to make decisions that contribute to ‘well-functioning urban environments’. The NPS-UD objectives and policies of particular relevance to this research include (emphasis added):

**Objective 1:** New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.

**Policy 1:** Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum:

- (a) have or enable a variety of homes that:
  - (i) meet the needs, in terms of type, price, and location, of different households; and
  - (ii) enable Māori to express their cultural traditions and norms; and
- (b) have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and
- (c) have good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and
- (d) support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets; and
- (e) support reductions in greenhouse gas emissions; and
- (f) are resilient to the likely current and future effects of climate change.

### Regional Policy Statement and Proposed Plan Change 80

As set out in Chapter 2 of this report, changes were proposed to the Auckland Regional Policy Statement (RPS) in response to the NPS-UD directive for “a well-functioning urban environment” as set out in Proposed Plan Change 80 (PC80). A decision on this plan change was released on 30 August 2023,<sup>1</sup> and is currently subject to appeal at the time of writing.<sup>2</sup>

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<sup>1</sup> <https://www.aucklandcouncil.govt.nz/HearingDocuments/pc80-dec-2023-06-13.pdf>

<sup>2</sup> Beachlands South Limited Partnership v Auckland Council – ENV-2023-AKL000181.

The operative RPS and PC80 RPS objectives and policies relevant to this research are set out below (changes proposed by PC80 are shown in underline):

## **Chapter B Regional Policy Statement**

### **B2. Tāhuhu whakaruruhau ā-taone – Urban growth and form**

#### **B2.1. Issues**

Growth needs to be provided for in a way that does all of the following:

(1A) contributes to well-functioning urban environments;

(1B) improves resilience to the effects of climate change.

#### **B2.2.1. Objectives**

(1A) A well-functioning urban environment that enables all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.

(1) A well-functioning urban environment with a quality compact urban form that enables all of the following:

- (a) higher-quality urban environment;
- (b) greater productivity and economic growth;
- (c) better use of existing infrastructure and efficient provision of new infrastructure;
- (d) good accessibility for all people, including by improved and more efficient public or active transport;
- (e) greater social and cultural vitality;
- (f) better maintenance of rural character and rural productivity; and
- (g) reduced adverse environmental effects; and
- (h) improved resilience to the effects of climate change.

#### **B2.3. A quality built environment**

##### **B2.3.1. Objectives**

(1) A well-functioning urban environment with a quality built environment where subdivision, use and development do all of the following:

- (a) respond to the intrinsic qualities and physical characteristics of the site and area, including its setting;
- (b) reinforce the hierarchy of centres and corridors;
- (c) contribute to a diverse mix of choice and opportunity for people and communities;
- (d) maximise resource and infrastructure efficiency;

- (e) are capable of adapting to changing needs; and
- (f) has improved resilience to the effects of climate change.

(2) Innovative design to address environmental effects is encouraged.

(3) The health and safety of people and communities are promoted.

### **B2.3.2. Policies**

(1) Manage the form and design of subdivision, use and development so that it contributes to a well-functioning urban environment and does all of the following:

- (a) supports the planned future environment, including its shape, landform, outlook, location and relationship to its surroundings, including landscape and heritage;
- (b) contributes to the safety of the site, street and neighbourhood;
- (c) develops street networks and block patterns that provide good access and enable a range of travel options;
- (d) achieves a high level of amenity and safety for pedestrians and cyclists;
- (e) meets the functional, and operational needs of the intended use;
- (f) allows for change and enables innovative design and adaptive re-use; and
- (g) improves resilience to the effects of climate change.

(3) Enable a range of built forms to support choice and meet the needs of Auckland's diverse population.

### 3 Survey invitation letter and reminder postcard

Figure 1: Initial invitation letter (main wave)

10 March 2023



**Kia ora, Hello, Talofa lava, Mälô e telei, Ni hão, Namaste**

You, and others in your household, are invited to take part in a survey about your home. The survey will take about 15 minutes to complete.

The purpose of this research is to understand how Aucklanders experience living in their homes. The research findings will help Auckland Council to ensure new housing works well for the needs of different households.

**Who can take part?**

We invite you and anyone aged 18 or above who has lived in this address for 3 months or more to complete this survey.

Each member of the household should complete the survey on their own, with support if required. Your participation in the survey is voluntary.

**What will the survey ask about?**

The survey asks about your household (e.g. how many people live in your home), your home (e.g. how many bedrooms are in your home), and your experiences living in your home (e.g. what about your home do you like the most).

**How to take part**

Scan the QR code



OR

Go to: [aklhousingsurvey.co.nz](http://aklhousingsurvey.co.nz)

Your household's unique code: **83DCEFB7**

To thank you for participating, you can enter a prize draw to win one of three \$100 Prezzy cards or a donation to a charity of your choice (terms and conditions apply).

Thank you for your help.

Ngā mihi nui  
Jonathan Bengé  
Head of Research, Evaluation and Monitoring

Private Bag 92300, Auckland 1142 | [aucklandcouncil.govt.nz](http://aucklandcouncil.govt.nz) | Ph 09 301 0101

Why is my household invited?	This invitation has been sent to a random selection of properties built since 2016. These properties were identified using data held by Auckland Council. Your name (associated with the property address) was obtained from the Electoral Roll.
Online surveys don't work for me, can I complete the survey another way?	You can complete a paper copy of the survey and return it to us by post. Email us at <a href="mailto:housingresearch@aucklandcouncil.govt.nz">housingresearch@aucklandcouncil.govt.nz</a> or call 09 301 0101 to request a paper copy.
Is the survey confidential?	Your participation in the survey is confidential, but not anonymous. This means the researchers analysing the data will know your address and this information will be securely stored.
What will happen with the information I provide?	Your survey responses will be combined and reported alongside other responses. No addresses, names or any other identifiable information will be used in reporting.  Your survey responses might be combined with other information about your home such as the property title, unitary plan zone or building consent data.
Where can I see the research report?	The report will be published on the Knowledge Auckland website: <a href="http://www.knowledgeauckland.org.nz">www.knowledgeauckland.org.nz</a> The survey will ask if you would like to receive a copy of the report.
I changed my mind and want to withdraw or edit my responses, what do I do?	Email us at <a href="mailto:housingresearch@aucklandcouncil.govt.nz">housingresearch@aucklandcouncil.govt.nz</a> Your survey responses can be edited, or you can choose to withdraw from the research up to 1 May 2023, after which all survey responses will be combined for analysis.
Does this research comply with the principles of the Privacy Act 2020?	All research by Auckland Council complies with the 13 principles of the Privacy Act 2020. If you have any questions about your privacy, email us at <a href="mailto:privacy@aucklandcouncil.govt.nz">privacy@aucklandcouncil.govt.nz</a>
I have another question, comment or concern about this research	Email us at <a href="mailto:housingresearch@aucklandcouncil.govt.nz">housingresearch@aucklandcouncil.govt.nz</a> or call 09 301 0101.



Figure 2: Reminder postcard (front).

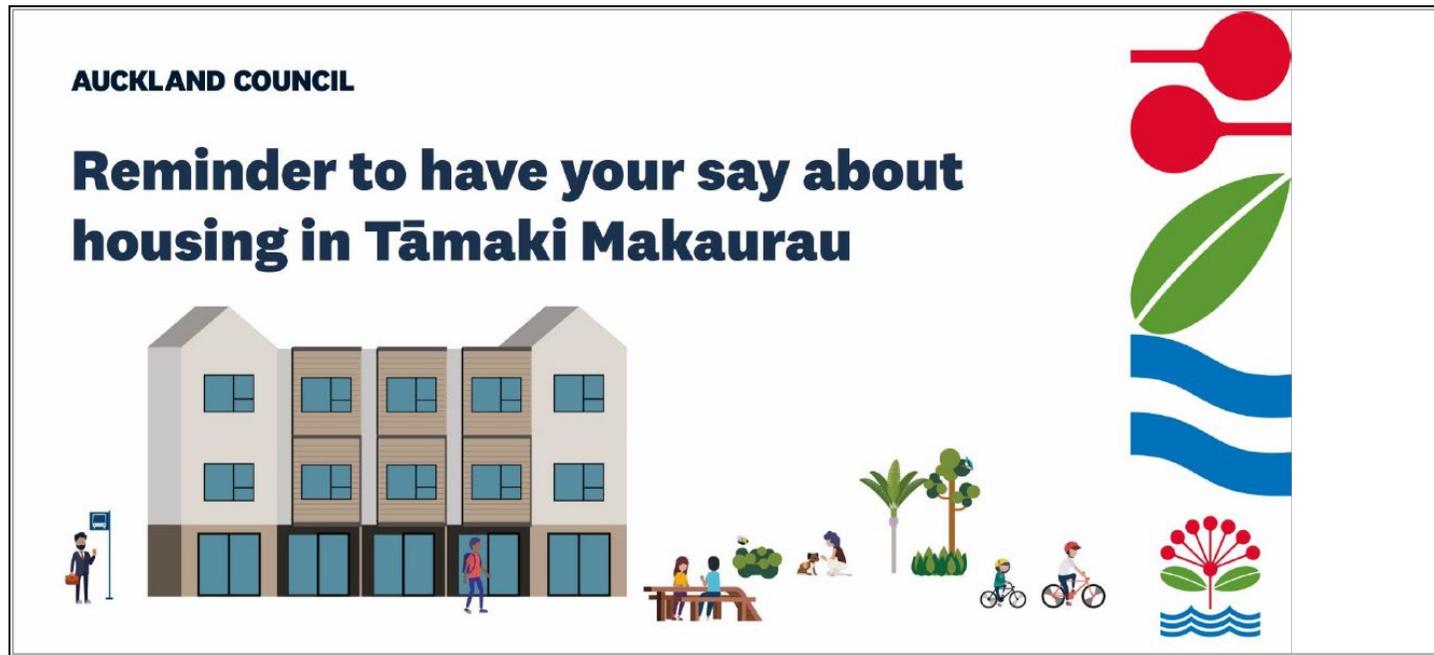
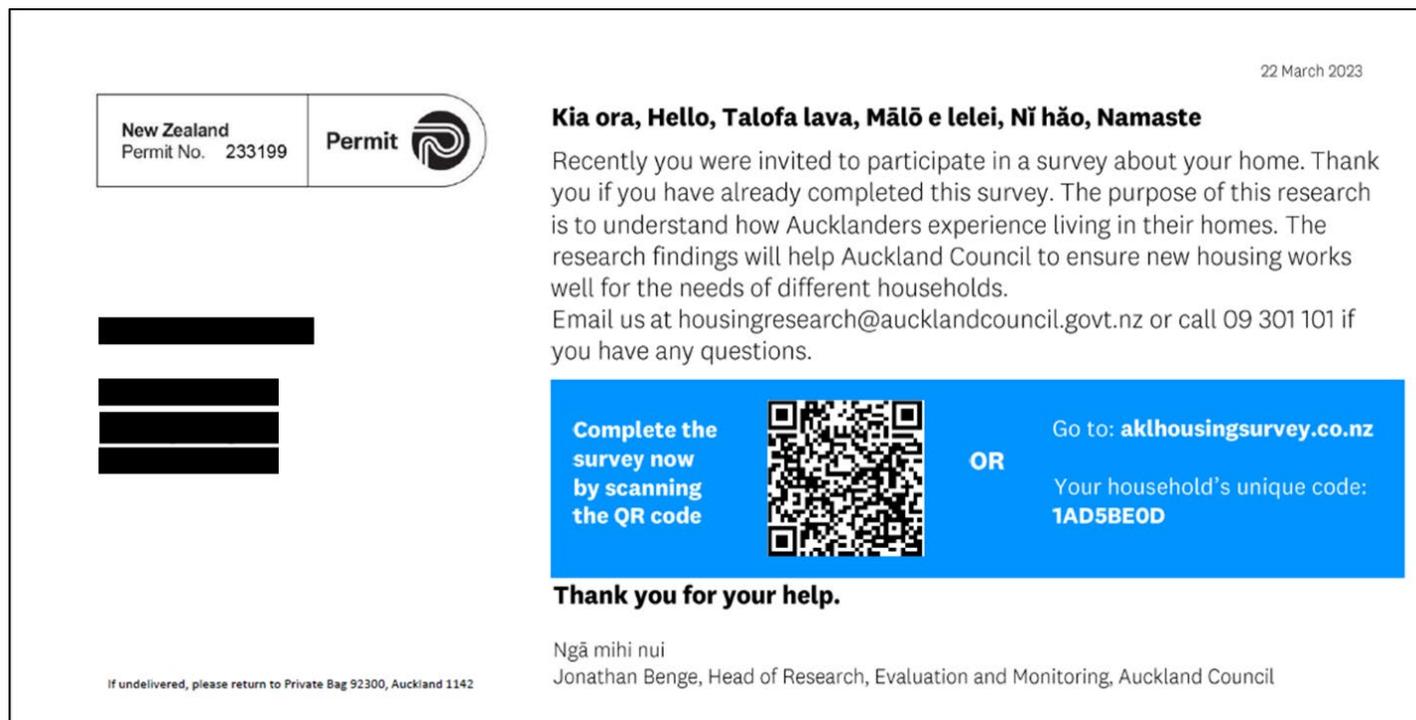


Figure 3: Reminder postcard (back).



## 4 Survey consent form

At the beginning of the online survey, participants were required to consent to the following by clicking the ‘select to confirm’ buttons. All statements required consent for the participant to continue through the survey.



**Kia ora, Hello, Talofa lava, Mālō e lelei, Nǐ hǎo, Namaste**

Thank you for taking part in this survey about your home.

The purpose of this research is to understand how Aucklanders experience living in their homes. The research findings will help Auckland Council to ensure new housing works well for different Auckland households.

We invite you and anyone aged 18 or above who has lived in this address for 3 months or more to complete this survey. Each member of your household should complete the survey on their own, with support if required.

The survey will take about 15 minutes to complete.

If you have any questions, get in touch with us at [housingresearch@aucklandcouncil.govt.nz](mailto:housingresearch@aucklandcouncil.govt.nz)

Before we can get started, we need to confirm that you know:

Your participation in the survey is voluntary.

Select to confirm

Your participation in the survey is confidential, but not anonymous. This means the researchers analysing the data will know your address and this information will be securely stored.

Select to confirm

Your survey responses might be combined with other information about your home such as the property title, unitary plan zone or building consent data.

Select to confirm

Your survey responses will be combined and reported alongside other responses. No addresses, names or any other identifiable information will be used in reporting.

Select to confirm

Your survey responses can be edited, or you can choose to withdraw from the research up to 1 May 2023, after which all survey responses will be combined for analysis.

Select to confirm

## 5 Survey questionnaire

### Landing page

Kia ora, Hello, Talofa lava, Mālō e lelei, Nǐ hǎo, Namaste

#### Thank you for taking part in this survey about your home.

The purpose of this research is to understand how Aucklanders are experiencing living in their homes. The research findings will help Auckland Council to ensure housing being developed works well for different Auckland households.

We invite you and anyone aged 18 or above who has lived in this address for 3 months or more to complete this survey. Each member of your household should complete the survey on their own, with support if required.

The survey will take about 15 minutes to complete.

If you have any questions, get in touch with us at [\[email address\]](#)

Before getting started, we need to confirm that you know:

- Your participation in the survey is voluntary.
- Your participation in the survey is confidential, but not anonymous. This means the researchers analysing the data will know your address and this information will be securely stored.
- Your survey responses will be combined and reported alongside other responses. No addresses, names or any other identifiable information will be used in reporting.
- Your survey responses might be combined with other information about your home such as the property title, unitary plan zone or building consent data.
- Your survey response can be edited, or you can choose to withdraw from the research up to 1 March 2023, after which survey responses will be combined with others for analysis.

Enter your access code in the box below. You will find the code on your invitation letter. Everyone who lives at your home can use the same access code.

Great! That access code is for the home at [address]. Is this where you are currently living? (single response only)

1	Yes I currently live here
2	No I don't currently live here
3	No, but I have previously lived here
4	Prefer not to say

If response above was option 1 or 4, continue to Q1 and start survey.

If response above was option 2 or 3, thanks and end survey.

**Q1: How long have you lived in your home?**

1	3 months or less
2	4-12 months
3	1-2 years
4	3-4 years
5	5-6 years
6	7 years or more

If response above was option 1 or 6, thanks and end survey.  
All other responses, continue to Q2.

**Q2: Which of the following best describes your home?**

1	Apartment <i>Homes are stacked on top of one another</i>	
2	Terraced house or townhouse <i>Homes are connected vertically</i>	
3	Duplex (semi-detached) <i>Home is connected to one other home</i>	
4	Standalone house (detached) <i>Not connected to other homes</i>	
5	Something else, please specify (open ended response)	

### Q3: Who owns the home you live in?

1	I personally or jointly own it (with or without a mortgage)
2	A family trust owns it
3	Parents/other family members or partner own it
4	A private landlord who is NOT related to me owns it
5	Auckland Council, Kāinga Ora or another State landlord (such as Ministry of Education) owns it
6	A social service agency or community housing provider (e.g. the Salvation Army, New Zealand Housing Foundation) owns it
98	I don't know who owns it

If response above was option 5, thanks and end survey.  
All other responses, continue to Q4.

### Your complex/building

Question asked if response to Q2 was 2, 3 or 4:

### Q4 Which of these most sounds like your home?

1	Your home might be part of a complex of other homes with some shared facilities such as driveways/footpaths, rubbish collection, or outdoor living areas. If this sounds like your home, the following questions are about the wider complex in which you live.  My home is part of a complex
2	Your home might <u>only</u> share a driveway/footpath or not share any facilities with your neighbours. If this sounds like your home, the following questions are about your standalone house or the row of terraced houses/duplex that includes your home.  My home is NOT part of a complex

Wording shown if response to Q2 was 1 'apartment':

Your private apartment is in a building with other private apartments. You might share facilities with others in your building such as hallways, garaging or rubbish collection. Your apartment building might be one of several apartment buildings that share facilities as part of a bigger complex. The following questions are about your apartment building or complex that you share with your neighbours.

Wording shown if response to Q2 was 5 'Something else':

Depending on the type of home you live in, this first series of questions ask about different things.

If you live in an apartment, these questions are about the building or complex you share with your neighbours.

Or

Your home might be part of a complex of other homes with some shared facilities such as driveways/footpaths, rubbish collection, or outdoor living areas. If this sounds like your home, the following questions are about wider complex in which you live.

Or

Your home might only share a driveway/footpath or not share any facilities with your neighbours. If this sounds like your home, the following questions are about your standalone house or the row of terraced houses/duplex that includes your home.

**Q5: How satisfied are you with having the following facilities as part of your building/complex that you share with your neighbours?** (multi-choice)

(This question was asked of all except if answer to Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a complex.)

1	Shared lounge or indoor living space
2	Shared patio, deck, garden, grass space or other outdoor living space/green space
3	Gym, swimming pool, tennis court or exercise space
4	Shared vehicles (e.g. CityHop cars, e-scooters or bikes (e.g. JUMP, Lime))
5*	Meeting room or workspace
6	Sustainable living facilities (e.g. rainwater harvesting, solar panels, EV charging station, composting)

\*Option 5 above only asked if participant lived in apartment.

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied
5	Very satisfied
98	I don't have this shared facility/I don't know

**Q6: Which of the following best describes the shared vehicles part of your building/complex?** (multi-choice)

(This question was asked only if the answer to Q5 included 4)

1	CityHop or other ride share cars
2	Cars jointly owned by residents
3	Lime, JUMP or other e-scooter or bike sharing system
4	E-Scooters or bikes owned by residents
5	Something else; please describe (open ended response)

**Q7: Thinking about your building/complex, how satisfied are you with the following?**

(This question was asked of all except if answer to Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a complex.)

1	Ability for visitors to find their way inside the building/complex
2	Lighting around your building/complex (e.g. footpaths, driveways, carparks or rubbish bin storage areas)
3	Ability for couriers and postal workers to deliver items
4	Ability for visitors and tradespeople to enter your building/complex (e.g. through security gate, swipe access door)
5	Maintenance of outdoor footpaths and driveways within your complex

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied
5	Very satisfied
98	Not applicable/I don't know

**Q8: How is the maintenance of your complex or building managed, including driveways and footpaths? (Maintenance might include building washing, painting external walls, gardens, rubbish collection or repairing driveway surfaces) (multi-choice)**

(Note: This question wording was asked of all except if answer to Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a complex. For those respondents, the question wording was slightly different: **How is the maintenance of your row of terraced houses/duplex or standalone house managed, including driveways and footpaths? (Maintenance might include building washing, painting external walls, or repairing driveway surfaces)**)

1	By a body corporate
2	By a residents association or society
3	By me/others in my household*
4	By my landlord
5	Something else; please specify (open ended response)
6	I don't know

\*If response above was option 3, participants skipped Q9 and went straight to Q10. All other responses continued to Q9.

**Q9: How satisfied are you with how your complex or building is managed, including driveways and footpaths? (Maintenance might include building washing, painting external walls, gardens, rubbish collection or repairing driveway surfaces)**

Note: This question wording was asked of all except if answer to Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a

complex. For those respondents the question wording was: **How satisfied are you with how your row of terraced houses/duplex or standalone house is managed, including driveways and footpaths? (Maintenance might include building washing, painting external walls, or repairing driveway surfaces)**

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied
5	Very satisfied
98	I don't know

**Q10: How is waste such as rubbish, recycling and composting collected?** (multi-choice)

1	Bin room/space shared with my neighbours. Collection by a private company (e.g. Green Gorilla, Rubbish Direct)
2	Auckland Council kerbside collection
3	Something else; please specify
4	I don't know*

\*Answer option 4 was single response.

**Q11: How safe do you feel in and around your building/complex from traffic accidents (involving vehicles and/or pedestrians)?**

(Note: This question wording was asked of all except if Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a complex.)

1	Very unsafe
2	A little unsafe
3	Pretty unsafe
4	Very safe
5	Not applicable; e.g. no carparking, driveways in my building/complex

**Q12: How safe do you feel in and around your building/complex from ... ?**

(Note: This question wording was asked of all except if answer to Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a complex.)

1	Assault, harassment or theft when moving through your building/complex
2	Assault, harassment or theft when inside your home/apartment*
3	Trips, slips or falls in spaces shared with your neighbours
4	Theft or vandalism of mail and other deliverables

\*Wording used varied for typology of home lived in.

## Life in Medium Density Housing in Tāmaki Makaurau / Auckland

Scale used

1	Very unsafe
2	A little unsafe
3	Pretty unsafe
4	Very safe

### Q13: How safe do you feel in and around your building/complex from ... ?

(Note: This question wording was asked of all except if answer to Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a complex.)

1	Assault, harassment or theft when moving through your building/complex
2	Assault, harassment or theft when inside your home/apartment*
3	Trips, slips or falls in spaces shared with your neighbours
4	Theft or vandalism of mail and other deliverables

\*Wording used varied for typology of home lived in.

Scale used

1	Very unsafe
2	A little unsafe
3	Pretty unsafe
4	Very safe

### Q14: Which of the following features of your home, building or complex make you feel more or less safe?

(Note: The following three questions were asked of all respondents.)

1	Being able to see people at your front door (e.g. through a peephole or window at front of your home)
2	Windows overlooking footpaths, driveways or common areas
3	Having a sense of community within your complex/building/row of terraced houses/with your neighbours

(Note: The following questions were asked of all except if answer to Q2 was 2, 3 or 4 and answer to Q4 was 2 – e.g. stated that they lived in a terraced house, duplex or standalone house that was NOT part of a complex.)

4	Amount of lighting along footpaths, hallways, driveways, carparks and other shared areas
5	Video or audio intercom
6	Building/complex access (e.g. swipe card, pin, security gates, intercom)

Scale used

1	Makes me feel more safe
2	No impact on how safe I feel
3	Makes me feel less safe
98	I don't know
96	This is not part of my home

### Your home

The next set of questions are about your home.

If you live in an apartment building, your 'home' for these questions is your private apartment within the apartment building.

If you live in a terraced house/townhouse, duplex or standalone house, your 'home' includes any private outdoor space as well as inside your building.

**Q15: Which of the following rooms or spaces are part of your home?** (multi-choice)

1	Main bedroom
2	Second bedroom
3	Third bedroom
4	Fourth bedroom
5	Fifth bedroom
6	Main indoor living space (in an open plan home, this might include a lounge, dining and kitchen)
7	Second indoor living space or flexi room
8	Third indoor living space or flexi room
9	Large cupboard or indoor storage space - large enough to fit a bike (e.g. attic, under stairs)
10	Study nook or other hallway space
11	Private garage only accessible by your household

**Q16: How well do the number of rooms and spaces in your home meet the needs of your household?**

1	Number of bedrooms
2	Number of bathrooms
3	Number of living spaces (e.g. lounge, dining room, playroom, family room, office/study, media room) (If your home has an open plan kitchen/dining/lounge this counts as 1 living space)
4	Number of outdoor living spaces (e.g. balcony, patio, garden)
5	Number of carpark

Scale used

1	Does not meet needs at all
---	----------------------------

2	Somewhat meets needs
3	Meets needs
4	More than meets needs
99	Not applicable, I don't have this space in my home

**Q17: How well does the size of rooms and spaces in your home meet the needs of your household?**

1	Size of bedrooms
2	Size of kitchen (including amount of bench space)
3	Size of lounge or living room
4	Size of dining room/ space for a dining table
5	Size of any additional living spaces (e.g. playroom, office/study)*
6	Size of outdoor living spaces (e.g. balcony, patio, garden)**

\* Option 5 above only asked if answer to Q15 include 7 or 8.

\*\* Option 6 above only asked if answer to Q16 was option 1, 2, 3 or 4.

Scale used

1	Does not meet needs at all
2	Somewhat meets needs
3	Meets needs
4	More than meets needs
99	Not applicable, I don't have this space in my home

## Room uses

In our homes, rooms can be used for different purposes. A room might be used as a guest bedroom sometimes and other times be a study, playroom, or craft room.

**Q18: How are the rooms and spaces used in your home?**

Select all the options that apply.

Use the arrow button to the right of the room/spaces to select uses for different rooms/spaces.

1	Main bedroom
2	Second bedroom
3	Third bedroom
4	Fourth bedroom
5	Fifth bedroom
6	Main indoor living space
7	Second indoor living space
8	Third indoor living space
9	Large cupboard or indoor storage space
10	Study nook or other hallway space
11	Private garage only accessible by your household

Note: Options displayed were dependent on answer to Q15. E.g. if participants answered Q15 by selecting 1, 2 and 6, this question displayed ‘main bedroom’, ‘second bedroom’ and ‘main indoor living space’.

Options (could choose more than one for each room/space)

1	Bedroom for 1 person
2	Bedroom for 2 people
3	Bedroom for 3 or more people
4	Guest bedroom
5	Lounge/living room
6	Dining
7	Cooking space
8	Playroom
9	Study/office
10	Craft, game or hobby
11	Prayer room
12	Gym or fitness
13	Storage
14	Something else; please describe (open ended response)

## Outdoor living

**Q19: Which of the following outdoor living areas are part of your home?** (multi-choice)

(Note: This question was asked if answer to Q16, Option 4 was 1, 2, 3 or 4 – e.g. indicated that they had outdoor living spaces).

1	Living space at ground level ( e.g. deck, patio, garden)
2	Living space above ground level (e.g. deck or balcony)
3	Rooftop garden or other rooftop space

**Q20: How satisfied are you with the following for your outdoor living space at ground level; e.g. deck, patio, balcony?**

(Note: Wording of this question was dependent on response to Q19. If participants selected option 2, the question was: ‘How satisfied are you with the following for your outdoor living space above ground level; e.g. deck or balcony?’ Similarly, if participants selected option 3, the question was: ‘How satisfied are you with the following for your rooftop garden or other rooftop space?’ If participants indicating having multiple outdoor living spaces, this question was asked for each of the spaces in their home.)

1	Connection to indoor living spaces
2	Sunlight
3	Ease of undertaking maintenance (e.g. gardening, cleaning, lawnmowing)
4	Amount of space or plants (e.g. pot plants, trees, vegetable garden, vertical garden)

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied
5	Very satisfied
98	Not applicable/I don't know

### Site facilities

**Q21: What impact, if any, does the location of these facilities have on your outdoor living spaces?(Thinking about heat, noise, taking up space and general enjoyment of the space.)**

(Note: These questions were asked if answer to Q2 was 2, 3, 4 or 5 and answer to Q16, Option 4 was 1, 2, 3 or 4 – e.g. did not live in an apartment, and indicated that they had outdoor living spaces.)

1	Garden storage shed
2	External heat pump unit
3	Hot water or gas cylinder
4	Rainwater tank
5	Wheelie or large rubbish and recycling bins
6	Outdoor washing line

**Q21a: What impact, if any, does the location of your external heat pump unit have on your private outdoor living space(s)? (Thinking about noise, heat, taking up space, and general enjoyment of the space.)**

(Note: This question was asked of all whose answer to Q2 was 1 and Q16, Option 4 was 1, 2, 3 or 4 – e.g. they live in an apartment and indicated that they had outdoor living spaces.)

Scale used for Q21 and Q21a

1	No impact at all
2	Minor impact
3	Moderate impact
4	Major impact
5	I don't have this facility in my home

**Q22: How satisfied are you with the laundry facilities in your home, building or complex? (Laundry facilities might include washing machine, laundry sink, or space for drying washing including consideration of any body corporate/residents association rules.)**

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied

5	Very satisfied
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### Environment

**Q23: How satisfied are you with the following?**

Please rate each of the following:

1	Temperature inside your home in summer
2	Temperature inside your home in winter
3	Shade in and around your home
4	Airflow through your home (e.g. through windows, doors, ventilation system)
5	Humidity (i.e. dryness/dampness inside your home)

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied
5	Very satisfied
98	I don't know

### Privacy

**Q24: Thinking about the aspects below, how satisfied are you with privacy of your home?**

Please rate each of the following:

1	Privacy inside your home
2	Privacy in outdoor living areas e.g. deck, patio, balcony
3	Sound proofing on walls shared with your neighbours
4	Sound in outdoor living areas

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied
5	Very satisfied

### Internal storage

**Q25: How would you rate the built-in storage for the following items in your home? (Built-in storage refers to the cupboards, shelving or other storage facilities that are fixed into your home. If you live in an apartment, you might have a storage unit in a shared area (e.g. garage). Consider the items stored in this space when answering this question.)**

Please rate each of the following:

1	Clothing and shoes
2	Linen (e.g. sheets, towels, blankets)
3	Kitchen storage for food and equipment (e.g. pots, appliances, microwave)
4	Household equipment (e.g. vacuum cleaner, lawnmower, airing rack, ironing board)
5	Hobby/sport equipment (e.g. sewing machine, golf clubs, collectables, guitar)
6	Occasional use items (e.g. suitcases, Christmas tree)
7	Young children's items (e.g. pram, car seat, highchair, toys)

Scale used

1	No built-in storage for this kind of item
2	Not enough storage
3	Only just enough storage
4	Enough storage
5	More than enough storage
6	I don't have this kind of item

### Modifications

**Q26: Since you moved into your home, have you made any changes? (This includes temporary changes like storage furniture (e.g. bookcases, drawers) or privacy screens.) (multi-choice)**

1	Increased storage (e.g. chest of drawers, cupboard shelving)
2	Improved privacy (e.g. screens fencing, planting)
3	Improved temperature (e.g. heat pump, window coverings)
4	Permanently repurposed a room (e.g. using a living space as a bedroom)
5	Changes to the kitchen (e.g. island bench, storage cabinet)
6	Improved accessibility (e.g. grab rails, level access shower)
7	Changes to something else; please specify (open ended response)
8	Intend to make changes or to make further changes
9	No changes and no intention to make changes*

\*Option 9 was exclusive: if people chose this, they could not choose any others.

## Vehicles

**Q27: Which of the following types of vehicles are owned by yourself or others in your household? (excluding any vehicles shared with your neighbour's e.g. CityHop cars) (multi-choice)**

1	Petrol, diesel or hybrid car
2	Plug-in electric car
3	Adult pushbike, e-bike or scooter
4	Child bike or scooter
5	Motor bike or moped/scooter
6	Trailer boat or campervan
7	Mobility scooter
8	None of the above*

\*Option 8 was exclusive: if people chose this, they could not choose any others.

If participants chose option 8 they skipped to Q31.

**Q28: How many of these vehicles are owned by yourself or others in your household?**

(Note: These options were displayed in turn if the participant had previously selected any of the options 1 to 7 in Q27.)

1	Petrol, diesel or hybrid car
2	Plug-in electric car
3	Adult pushbike, e-bike or scooter
4	Child bike or scooter
5	Motor bike or moped/scooter
6	Trailer boat or campervan
7	Mobility scooter

Scale used

1	1
2	2
3	3
4	4
5	5
6	6 or more

**Q29: Where do you store the following at your home? (If you have more than one of these vehicles and store these in different places, please list the different places in your response.)**

(Note: These options were displayed in turn if participant had previously selected any of the options 1 to 7 in Q27. An open ended response field was displayed next to each option).

1	Petrol, diesel or hybrid car
2	Plug-in electric car
3	Adult pushbike, e-bike or scooter
4	Child bike or scooter
5	Motor bike or moped/scooter
6	Trailer boat or campervan
7	Mobility scooter

**Q30: Thinking about protection from the elements, security from theft or vandalism, proximity to your home or access to charging for electric vehicles, how satisfied are you with how you store your vehicles?**

(Note: These options were displayed in turn if participant had previously selected any of the options 1 to 7 in Q27).

1	Petrol, diesel or hybrid car
2	Plug-in electric car
3	Adult pushbike, e-bike or scooter
4	Child bike or scooter
5	Motor bike or moped/scooter
6	Trailer boat or campervan
7	Mobility scooter

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied or dissatisfied
4	Somewhat satisfied
5	Very satisfied

### Living in your home overall

#### Q31: How important is being able to do the following activities in your home?

1	Hobbies (e.g. craft, music, DIY, gardening)
2	Having friends or whānau visit or hosting parties
3	Having visitors stay overnight
4	Spending time with others in my household (e.g. playing games, having a meal together)
5	Working from home
6	Prayer or other spiritual activity
7	Physical activity (e.g. throwing a ball, yoga, children running around)
8	Having your own space or space to be alone
9	Cooking a meal or baking, including BBQ/outdoor cooking
10	Spending time or playing with pets

#### Scale used

1	Very unimportant
2	Somewhat unimportant
3	Neither important nor unimportant
4	Somewhat important
5	Very important
98	I don't know

#### Q32: Are you able to do the following activities in your home comfortably?

(Note: Participants were only asked to rate options if they had rated any of them 4 or 5 in Q31.)

1	Hobbies (e.g. craft, music, DIY, gardening)
2	Having friends or whānau visit or hosting parties
3	Having visitors stay overnight
4	Spending time with others in my household (e.g. playing games, having a meal together)
5	Working from home
6	Prayer or other spiritual activity
7	Physical activity (e.g. throwing a ball, yoga, children running around)
8	Having your own space or space to be alone
9	Cooking a meal or baking, including BBQ/outdoor cooking
10	Spending time or playing with pets

Scale used

1	Very uncomfortably
2	Somewhat uncomfortably
3	Neither comfortably nor uncomfortably
4	Somewhat comfortably
5	Very comfortably
98	I don't know

**Q33: What about your home makes it uncomfortable to do some of the activities that are important to you?** (Open ended response)

(Note: this question was asked if participants rated at least one activity in Q32 as 1 or 2.)

**Q34: What about your home makes it comfortable to do some of the activities that are important to you?** (Open ended response)

(Note: this question was asked if participants rated at least one activity in Q32 as 4 or 5.)

**Q35: Thinking about your home, including your building/complex, overall how satisfied are you living there?**

Scale used

1	Very dissatisfied
2	Somewhat dissatisfied
3	Neither satisfied nor dissatisfied
4	Somewhat satisfied
5	Very satisfied

**Q36: What about your home, including your building/complex, do you like the most?** (Open ended response)

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**Q37: What about your home, including your building/complex, do you like the least?** (Open ended response)

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### Your household

**Q38: Who lives in your household?** (Your household includes the people and animals who usually live in your home. By ‘your children’, we mean children for whom you are one of the people who has primary responsibility for that child’s care and welfare) (multi-choice)

1	Your parent(s)
2	Your partner/spouse
3	Your pre-school aged child(ren)
4	Our primary school aged child(ren)
5	Your secondary school aged child(ren)
6	Your adult child(ren)
7	Other child(ren) (e.g. grandchild, sibling, cousin)
8	Other adult(s) related to you (e.g. grandparent, cousin)
9	Other adult(s) unrelated to you (e.g. flatmate, boarder)
10	Pets (e.g. cat, dog, rabbit)
11	None of these; I live alone*
12	Prefer not to say*

\* Option 11 and 12 were exclusive: if people chose either of these, they could not choose any others.

**Q39: Including yourself, how many adults usually live in your household?**

(Note: question skipped if answer to Q38 was 11.)

1	1
2	2
3	3
4	4
5	5
6	6
7	7 or more

**Q39a: How many children usually live in your household?**

(Note: question displayed if answer to Q38 was 3, 4, 5 or 7.)

1	1
2	2
3	3
4	4
5	5
6	6
7	7 or more

**Q40: Do you, or someone in your household, have a disability, long-term condition or mental health condition that affects your/their ability to carry out everyday activities?**

1	Yes
2	No
3	Prefer not to say

**Q41: Which of the following describes your household's annual income before tax?**

1	Less than \$20,000 (approx \$380 per week)
2	\$20,001-\$40,000 (approx \$381-\$770 per week)
3	\$40,001-\$60,000 (approx \$771-\$1,150 per week)
4	\$60,001-\$80,000 (approx \$1,151-\$1,540 per week)
5	\$80,001-\$100,000 (approx \$1,541-\$1,900 per week)
6	\$100,001-\$150,000 (approx \$1,901-\$2,890 per week)
7	\$150,001-\$200,000 (approx \$2,891-\$3,850 per week)
8	\$200,001-\$250,000 (approx \$3,851-\$4,800 per week)
9	\$250,001-\$300,000 (approx \$4,801-\$5,770 per week)
10	\$300,001 or over (over approx \$5,771 per week)
98	I don't know
99	Prefer not to say

## Demographics

Q42: What is your age?

1	18-24 years
2	25-29 years
3	30-34 years
4	35-39 years
5	40-44 years
6	45-49 years
7	50-54 years
8	55-59 years
9	60-64 years
10	65-69 years
11	70-74 years
12	75-79 years
13	80+ years
99	Prefer not to say

Q43: What is your gender?

1	Male
2	Female
3	Another gender; please specify (open ended response)
99	Prefer not to say

Q44: Which of the following ethnic group(s) do you belong to? (multiple choice)

1	Pākehā/NZ European
2	Māori
3	Samoan
4	Cook Islands Māori
5	Tongan
6	Niuean
7	Tokelauan
8	Fijian
9	Chinese
10	Indian
11	Other; please specify (open ended response)
99	Prefer not to say

## Wrap up

**Q45:** Would you be interested in participating in further research in early 2023 about you and your household's experience of living in your home? (A koha will be offered to all households who participate in further research.)

1	Yes
2	No

**Q46:** Would you like to be emailed a copy of the report for this project?

1	Yes
2	No

**Q47:** Would you like to enter the prize draw to win one of three \$100 Prezzy cards or a donation to a charity of your choice? The prize will be drawn and winners notified at the end of March 2023. Terms and conditions apply (open the T&Cs link in a new tab to avoid losing your place in the survey.)

1	Yes
2	No

**Q48:** Please provide your contact details. Your contact details will be used for the purposes to which you have agreed (i.e. further research, receiving the report or the prize draw) and will not be provided to any third parties.

Question asked if response to Q46 was 1 (yes) or Q47 was 1 (yes).

--

Thank you for participating in this survey!

END

## 6 Standalone houses excluded from sample

A small proportion of participants living in standalone houses completed the survey (n=94). The responses from these participants have been excluded from the sample used in this report. The decision to exclude these from the sample was informed by looking at each property on Google Street View to assess if these homes would be classified by the study team as standalone houses. Auckland Council rating data was also used to determine housing typology when Google Street View imagery was ambiguous; for example, buildings with a ground level ‘granny flat’ and a primary dwelling on the first level. Participant classification of their home as being ‘standalone’ or otherwise out of scope (e.g. ‘granny flat’, multi-unit buildings) aligned with our assessment, except for one home that was re-classified as an apartment and included in the sample.

Most of the standalone homes were not functionally dissimilar to terraced house and duplexes included in the study in so far as the space between buildings was small, multiple dwellings shared a site, and the footprint of buildings was a similar size and shape. The standalone houses typically were in a row facing the street (see Figure 4) or in a row facing a shared driveway.

Figure 4: Standalone medium density housing with shared rear accessway



The other typical site layout had two standalone houses facing the street (in a ‘sentinel’ formation) and a shared driveway between them that leads to other homes at the back of the site (see Figure 5).

**Figure 5: ‘Sentinel’ standalone homes**



## 7 Survey sample characteristics

This section presents charts displaying characteristics of the survey participants and their household/home. Some participants did not complete the survey demographic questions and so the base for some charts is less than the total participant sample of 1337, or the total household/property sample of 1243.

Figure 6: Participant age (n=1292) (%)

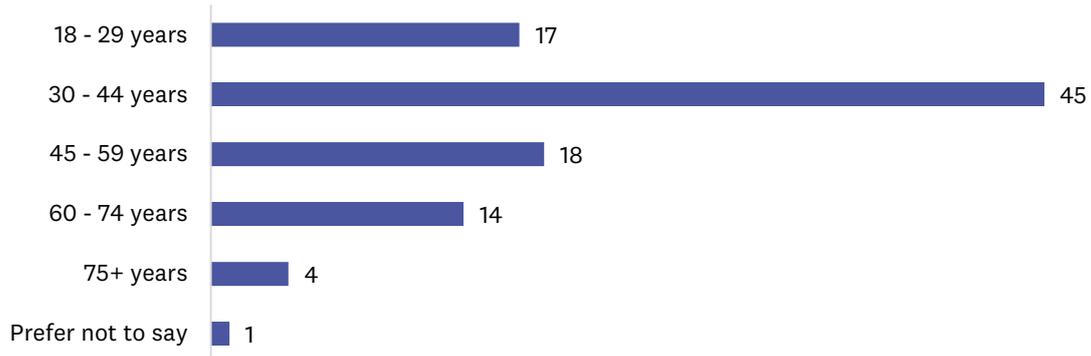
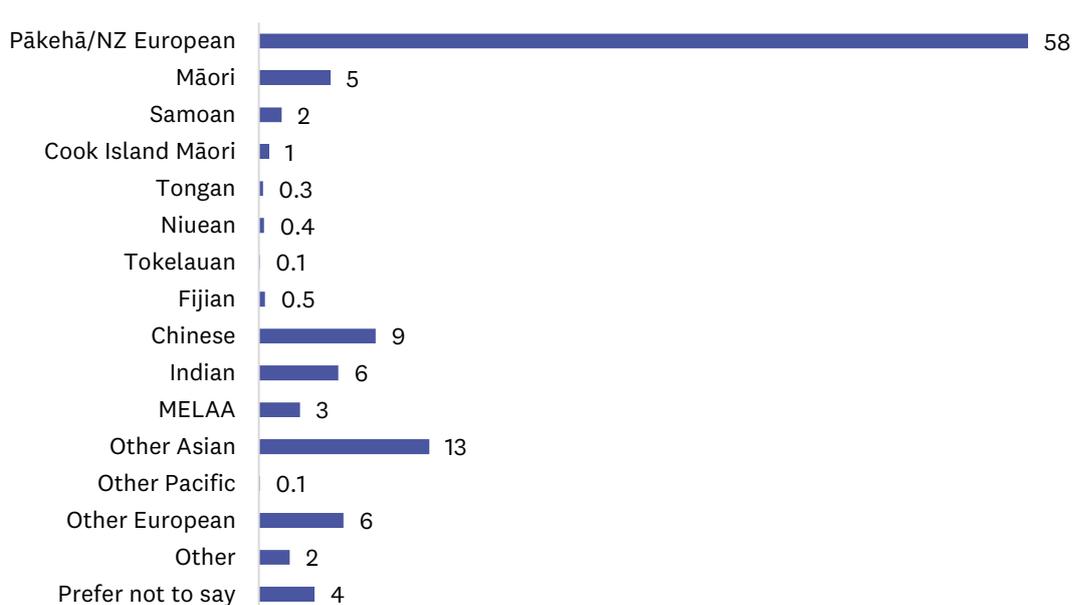


Figure 7: Participant gender (n=1291) (%)



Note: Six participants answered as ‘another gender’, which is less than 1 per cent of the sample and so is not shown on the chart.

Figure 8: Participant ethnicity (n=1281) (%)



Note: Multiple responses allowed; therefore, total does not sum to 100.

Figure 9: Do you, or someone else in your household, have a disability, long-term condition, or mental health condition that affects your/their ability to carry out everyday activities? (n=1206) (%)



Figure 10: Household income (n=1293) (%)

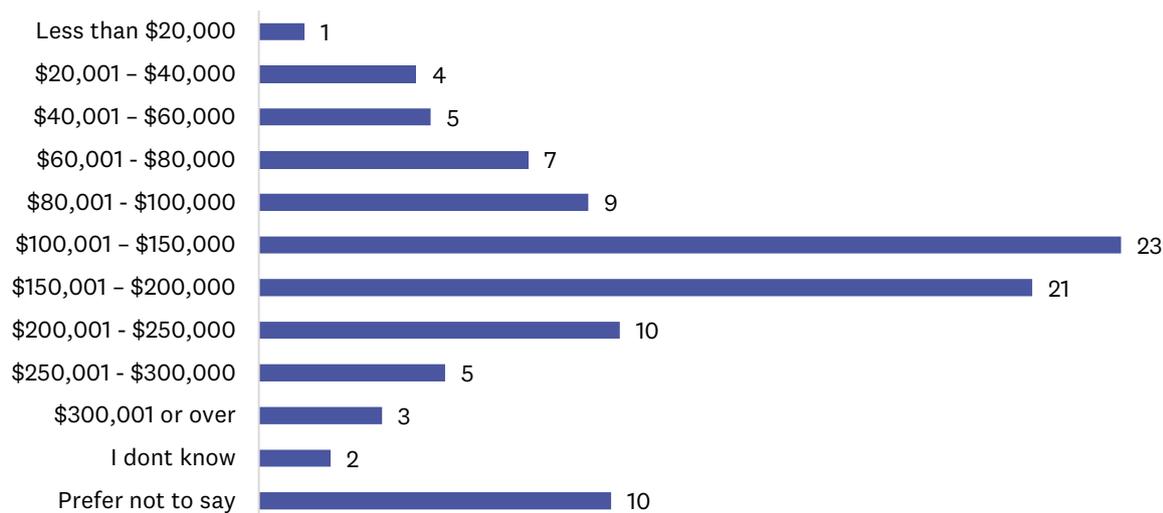
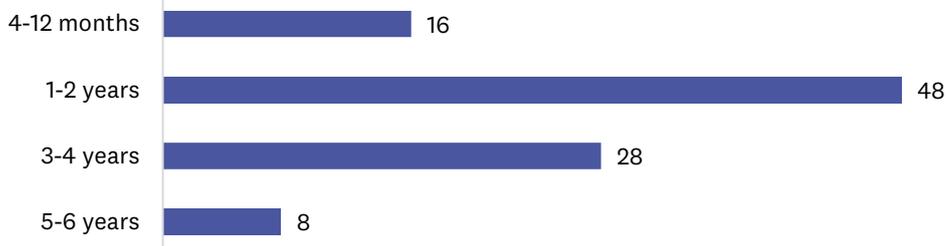


Figure 11: Duration household had lived in the home (n=1243) (%)



Note: Participants who had lived in a home for less than 3 months or longer than 6 years did not qualify to participate in the survey.

Figure 12: Number of people in the household (n=1240) (%)

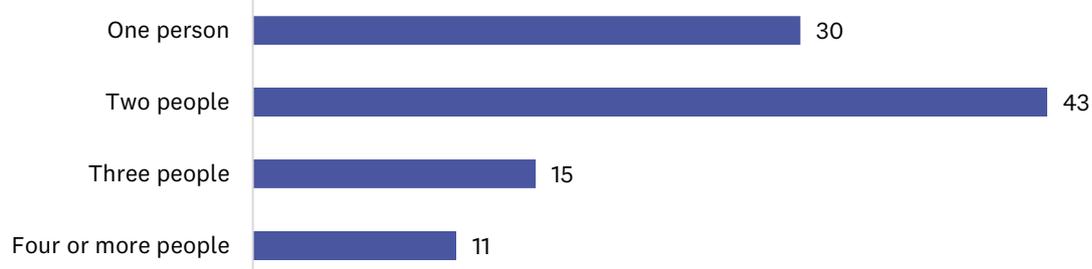
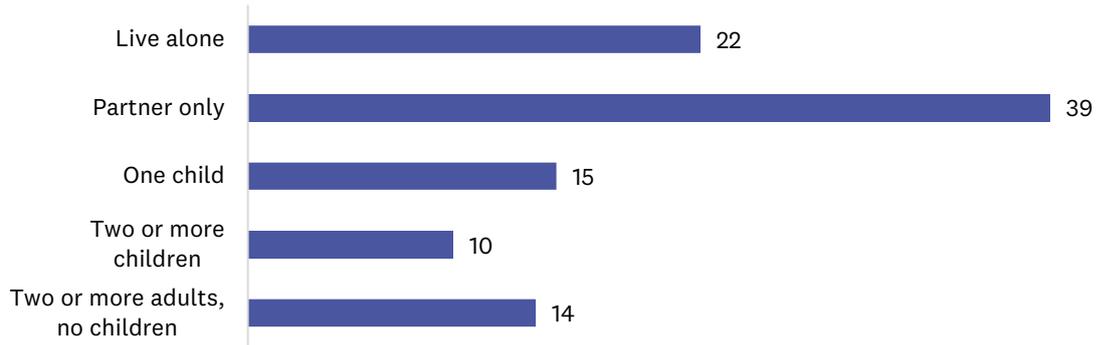
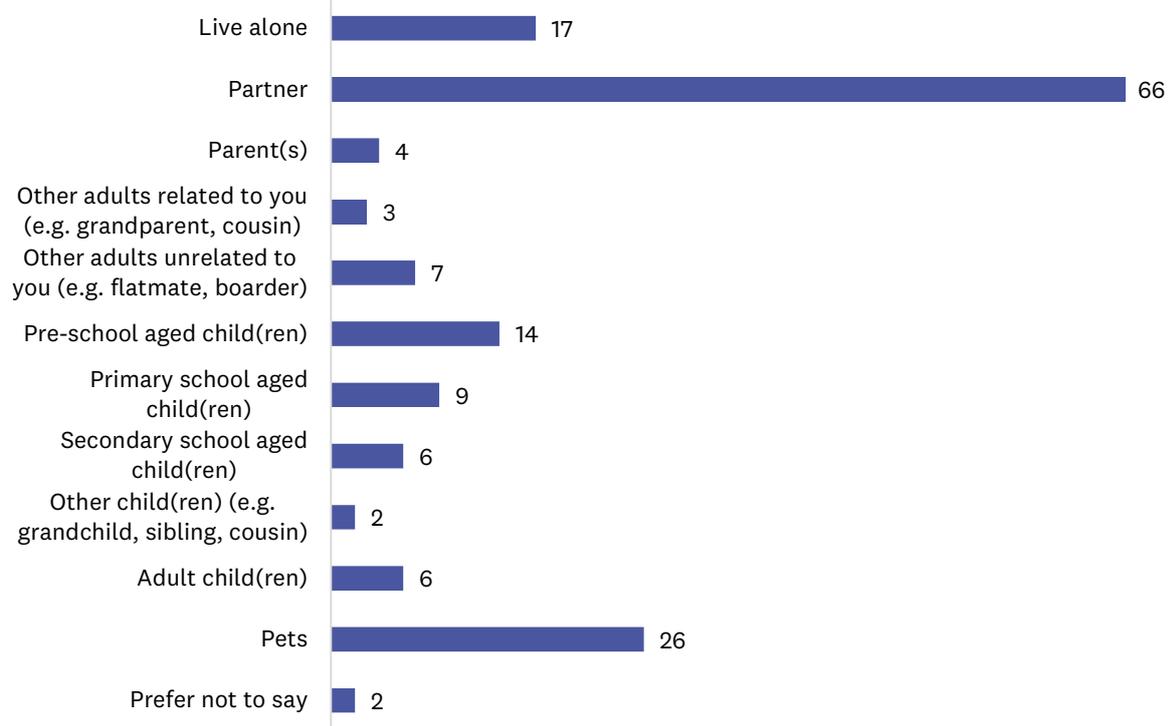


Figure 13: Household composition (n=1178) (%)



Note: 'Live alone' category describes a 1-person household with or without pets.

Figure 14: Detailed household composition (n=1208)



Notes: 1. Multiple responses allowed; therefore, total does not sum to 100.

2. If a 1-person household has a pet, this is not categorised as living alone.

Figure 15: Location of home in Auckland (n=1243) (%)

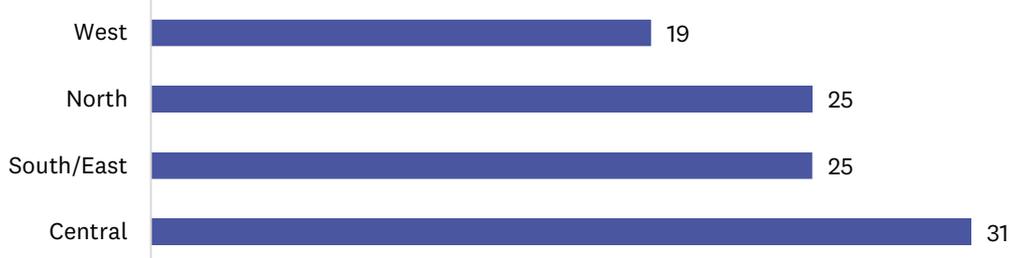


Figure 16: Housing typology (n=1243) (%)

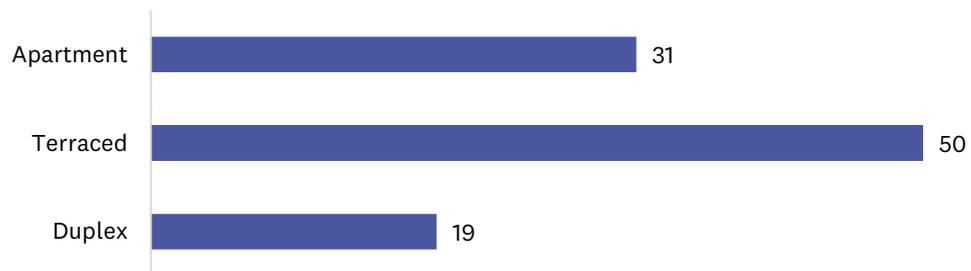


Figure 17: NZ Deprivation Quintile 2018 (n=1234) (%)

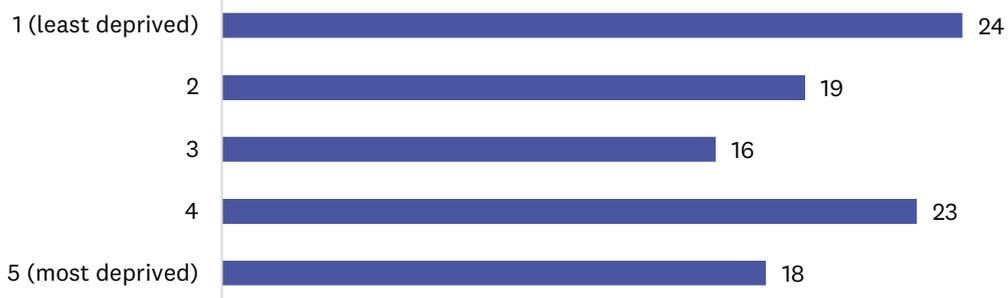
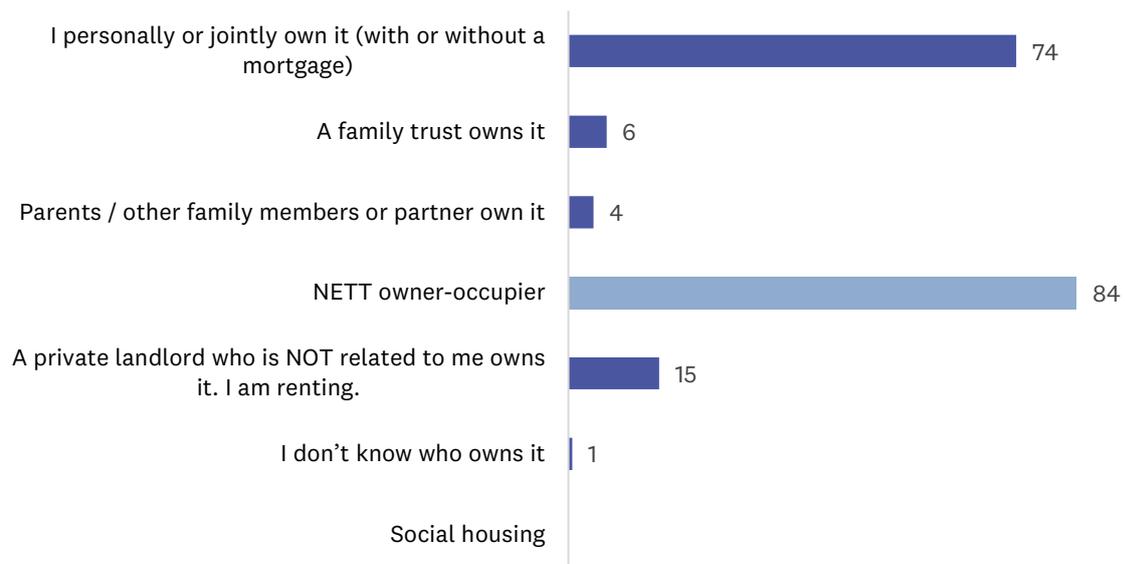


Figure 18: Housing tenure (n=1337) (%)



## 7.1 Survey sub-sample for consented plans

This section displays the demographic characteristics of households and homes selected for the consented plan analysis component of the study. The charts displayed here show characteristics used in the selection of the sub-sample.

Figure 19: Housing typology (%)

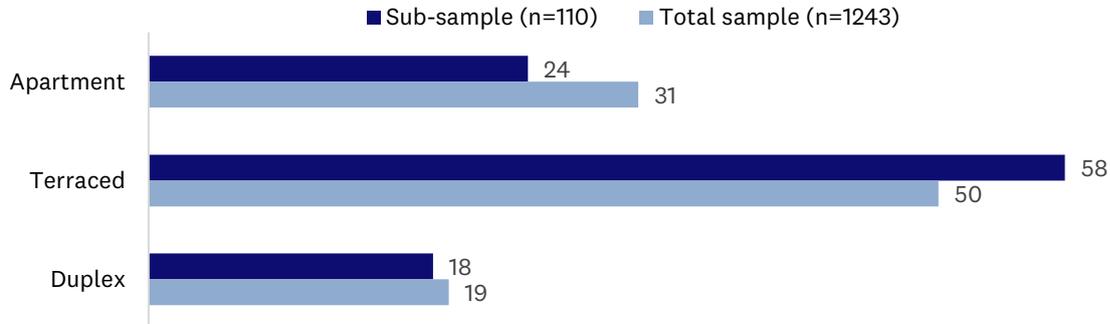


Figure 20: Household composition (%)

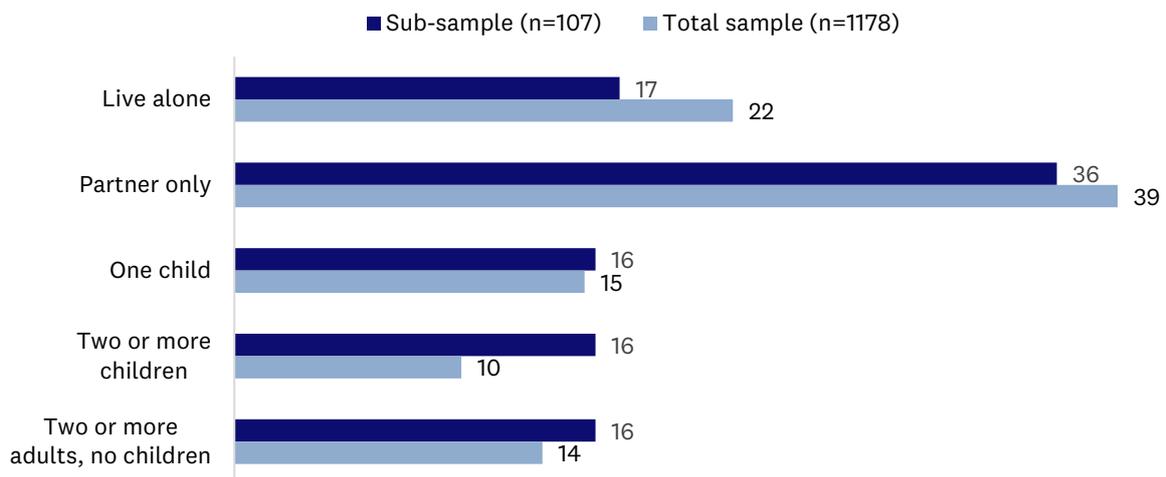
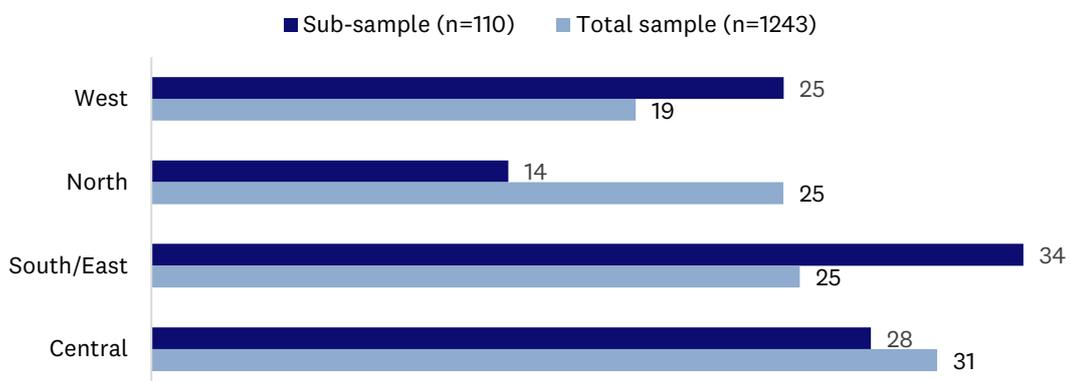


Figure 21: Location of home in Auckland (%)



## 8 In-home immersion screener survey

Kia ora

Thank you for your interest in participating in an interview about your home, we really appreciate it!

Please complete the details in the form below. We are looking to invite a range of households to participate in interviews, so we will use the information you provide us with to invite participation from a diverse range of households. By completing this form, you are not committing to participate in an interview.

If you have any questions, please get in touch at [email] or call our researchers on [number].

---

What is your name?

First name	
Last name	

What is your home address?

--

What is your email address?

--

What is your phone number?

--

Who lives in your household? *Select all that apply*

I live on my own	Exclusive response
Partner	
Parent(s)	
Babies aged under 12 months	
Pre-school aged children	
Primary school-aged children	
Secondary school-aged children	
Adult children	
Other adult(s) e.g. flatmates, boarders, cousins, siblings, friends	
Someone else; please describe	

How long have you lived in your home?

--

Participating in an interview involves two researchers coming to your home for about two hours. We will have a conversation about your home and how you live in it. We would like you to take us on a tour of your home, so you can explain to us what you like/don't like about your home. We are interested to learn about details of your home and would like you to show us all of your home including bathrooms, bedrooms, garages, inside cupboards, and outside areas.

Would you be comfortable participating in this interview?

Yes	
No	

As part of the tour of your home, we would like to take some photographs. These photographs will document design features of your home and how these make living in your home easier or harder. These photos and the data that we would collect with them would be used to discuss how people experience living in medium density housing. We will make sure the photos do not include you or other members of your household, or features that could identify you and where you live. Are you okay with photographs being taken inside and around your home?

Yes	
No	

We welcome all members of your household to participate in the interview, including any children who might like to show us around their rooms. Please describe which (if any) members of your household would like to participate:

--

Our researchers want to make sure we are respectful of you and any pets in your home. Are there any cats or dogs in your home?

Yes	
No	

## Life in Medium Density Housing in Tāmaki Makaurau / Auckland

Interviews will be happening in October and November 2023. When would you be available to participate in an interview? *Please select all that apply*

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning (9am - midday)							
Afternoon (1pm - 5pm)							
Evening (5pm - 9pm)							

Is there anything else you would like to tell us about yourself or your household? (E.g. preferred pronouns, accessibility considerations, or different languages spoken in the household.)

Thank you for completing this form! We will be in touch!

## 9 In-home immersion discussion guide

### Preliminary discussion about household and home

- Tell us a little bit about your household: Length of time here? Living before? Why move? Why here?
- Were your expectations for this home met once you had lived here for a while?

### Home tour general questions

Let's start with favourite space/space you spend the most time in – tell us about how come this space etc.

#### Interior spaces

Tell us about the kinds of things you do in this space: list and talk through...

- How do you do X in this space? [cooking/hobby/rubbish sorting/working from home/playing with kids]
- What do you like about this space? Dislike about the space?
  - What kinds of activities would you like to do, but are unable to do? Changes made?
  - What would make this space better?
- Tell us about the storage in this room – does it meet your needs? Why/why not?
- Tell us about what it is like to do [relevant social/work/leisure activity/utility process]. Talk us through how you do this...
- Have you used this space for something different in the past?
  - How have you changed what you do here? (COVID) Changed furniture around? Why?
- Tell us about the design features of this space and how they work for you and what you do in this space.
  - Light switches, power points, bench space; door openings
- Tell us about how you have used things to make this home.
- Tell us about the noise and privacy aspects of this space.
- Atmospheric question as relevant to the space: warm/light/ventilated/view/changes with seasons
- I notice XXX; tell us about that.

#### Utility systems questions

- Tell us about your system for cleaning/rubbish/cooking/arriving home/hanging with kids and/or partner.
- Specific question about storage according to space: Where do you keep...?
  - Are there any important or additional items you are unable to store?
- Home maintenance
- Socialising

- Access: How do you get things in and out of your home? (e.g. groceries, a new bed, etc.)

#### Exterior spaces

- Show us your outdoor space/s.
  - What about your outdoor spaces works well? What would make it better? (plants, furniture, safety aspects, etc.)
  - Seasonal sunlight/privacy/noise/maintenance of outdoor space.
  - Have you done anything to make it more private/quieter/a better place to be?
  - What activities are you able to do here? Like to do but can't?
- Show us the spaces you share with your neighbours/are communal spaces.
  - What are they, and how do you and your neighbours use them?
  - How often do you see your neighbours here?
  - What works well about sharing these spaces? Challenges? Improvements?
  - Maintenance of shared spaces? Who pays and how?
  - Breezeways around building/complex – how do these impact the environment in your home?
  - Mail systems and access for couriers?
- Show us where you store your car/bikes.
  - What about this carparking/bike storage works well? What would make it better?
    - For on-street parking: How far is your on-street parking from your home? Amount of parking available for household? For visitors? How well does this work? Distance from parking.
  - For complex/apartment: How safe do you feel pedestrians are here? Why?
  - Emergency situations? – How did this work?

#### Wrap up

- Is there anything else you would like to tell us about your experience of living in your home that we haven't talked about?
- Magic Wand?

## 10 Design attributes for analysis of consented plans

The table below describes the attributes extracted from the consented plans of the sample properties.

Table 1: Design attributes extracted from consented plans.

Attribute name	Description	Values/units (if applicable)
Mailout_address	The postal address of the dwelling used to invite participation	
Consent_address_parent_site	Address associated with the building consent for the parent site	
Typology	This is the typology as described by the survey participant	
Legal_description	Legal description of the property	
RC_num	Resource consent number	
RC_date	Date RC was first issued – must be no older than Jan 2015 – must be a MDH defined property	
BC_number	Building consent number	
SUB_number	Scheme plan or SUB plan number	
Data_entry_name	The name of the person who entered data	
Scale_check	Reminder to check the scale on drawings	
Dwelling_type	Type of dwelling based on elevations	Duplex, Terraced, Apartment, Standalone
Num_of_units	Number of residential units included in the consent	
Unit_code	The code that identifies the property within the plans – this could be a Lot number or a Unit number	
Unit_type_code	The code that identifies the floor plans for the unit design	
Apartment_level	Level of apartment	G 1 2 3 4 5... NA
Num_storeys_building	Number of storeys in the building based on elevations (excluding basements)	1 2 3 4 5 6...

Life in Medium Density Housing in Tāmaki Makaurau / Auckland

Attribute name	Description	Values/units (if applicable)
Num_storeys_dwelling	Number of storeys in the private dwelling (for apartments only)	1 2 3
Internal_floor_area_sqm	Total internal floor area measured in metres squared – including garage and non-liveable spaces but excluding balconies and outdoor areas – measure using scaled floor plans	m2
Num_bedrooms	Number of bedrooms in dwelling – a bedroom is defined as a room with a door, a window, a wardrobe and space for a bed	1 2 3 4 5 6...
Size_bed_1_sqm	Floor area of each bedroom – measure area outside of the internal wall (i.e. floor area only, nothing inside walls)	m2
Size_bed_2_sqm	<i>As above</i>	
Size_bed_3_sqm	<i>As above</i>	
Size_bed_4_sqm	<i>As above</i>	
Size_bed_5_sqm	<i>As above</i>	
Num_doublebed	Number of bedrooms that are 7m2 or larger (can fit a queen bed)	1 2 3 4 5 6...
Num_singlebed	Number of bedrooms under 7m2 (can fit a single bed only)	0 1 2 3 4 5 6...
Num_bathrooms	Number of bathrooms in dwelling – a bathroom is defined as a room with a toilet and/or a bath/shower	1 2 3 4 5 6...
Size_bath_1_sqm	Floor area of each bathroom – measure area outside of the internal wall (i.e. floor area only, nothing inside walls)	m2
Size_bath_2_sqm	<i>As above</i>	
Size_bath_3_sqm	<i>As above</i>	
Size_bath_4_sqm	<i>As above</i>	
Num_toilet	Number of toilets in the home	1 2 3 4 5 6...
Num_showerbath	Number of showers and/or baths in the home	2 2 3 4 5 6...
Num_in_living	Number of discrete indoor living areas in dwelling – including lounge/living room, dining, study, flexiroom, landings	1 2 3 4 5 6...
Open_in_living	Is the main living area open plan? – including a kitchen, living and dining space	Yes, No
Size_in_living_1_sqm	Floor area of each indoor living area – in open plan this EXCLUDES the kitchen/dining – measure area outside of the internal wall (i.e. floor area only, nothing inside walls)	m2

Attribute name	Description	Values/units (if applicable)
Size_in_living_2_sqm	As above	
Size_in_living_3_sqm	As above	
Num_lounge	Number of lounge or living spaces with a sitting area – e.g. sitting room/living space/rumpus room/ family room	0 1 2 3 4 5 6...
Num_dining	Number of dining spaces – e.g. table, breakfast bar	0 1 2 3 4 5 6...
Num_study	Number of study/office spaces – including study nooks	0 1 2 3 4 5 6...
Num_liveother	Number of other living spaces – including flexirooms, playrooms, media room, music/hobby spaces	0 1 2 3 4 5 6...
Num_kitchen	Number of kitchen or cooking spaces – including outdoor kitchens, butlers' kitchens – a kitchen is defined as a space with a built-in sink and cooking facility (e.g. built-in BBQ, oven, cooktop)	0 1 2 3 4 5 6...
Kitchen_bench_m	Estimate linear metres of empty kitchen bench that can be used for preparation (i.e. clear of sink/stove) – internal measurements for I and L shape – measure one side of island/peninsular bench	m
Kitchen_bench_type	Type of bench in the kitchen	Island/peninsula, Not island/peninsula
Size_kitchen_dining	Floor area of the kitchen and dining area – measure area outside of the internal wall (i.e. floor area only, nothing inside walls)	m <sup>2</sup>
Num_out_living	Number of outdoor living areas in dwelling – including balcony, deck, patio, grassed area – 20m <sup>2</sup> minimum area to be considered 'outdoor living' – balconies considered 'outdoor living' must be 1.8m min width, 5m <sup>2</sup> for studio or 1 bed, 8m <sup>2</sup> for 2 or more bedrooms – balconies must be accessible from an living area (not a bedroom) to be 'outdoor living'	0 1 2 3 4 5 6...
Num_balcony	Number of balconies and decks above ground level	0 1 2 3 4 5 6...
Num_patio_deck	Number of patio/paved, decked or grassy areas at ground level	0 1 2 3 4 5 6...

Attribute name	Description	Values/units (if applicable)
Size_balcony_total_sqm	Total size of all balconies/decks above ground level – includes all balcony sizes in all instances unless the balcony is less than 1m in depth or accessible from a bedroom and there is another outdoor living space – if the balcony only has access from the bedroom with depth more than 1m and is the only outdoor living space, then it is included	m2
Smallest_balcony_depth	The depth of the balcony with the smallest area – if only one balcony, then record depth of that balcony	m
Size_planted_total_sqm	Total size of all planted areas within outdoor living spaces – exclude small front gardens, sides of houses, etc.	m2
Size_patio_deck_total_sqm	Total size of patio, deck, usable outdoor living space (i.e. big enough to put a chair there)	m2
Turf	Presence of turf in an outdoor living area	Yes, No
Num_carparks	Number of off-street carparks for dwelling including garages, carport, carparks – driveway with minimum 5m to boundary can be considered as carpark	0 1 2 3 4 5 6...
Car_storage_type_1	Type of storage available for cars	Carport, Basement/under building carpark, Outdoor carpark, Car stacker, On private paved/gravel/grass area/driveway, Private garage with internal access, Private garage without internal access, NA
Car_storage_type_2	<i>As above</i>	
Car_storage_type_3	<i>As above</i>	
Communal_bike_storage	Is the bike storage private or in a communal space?	Communal space, Private space

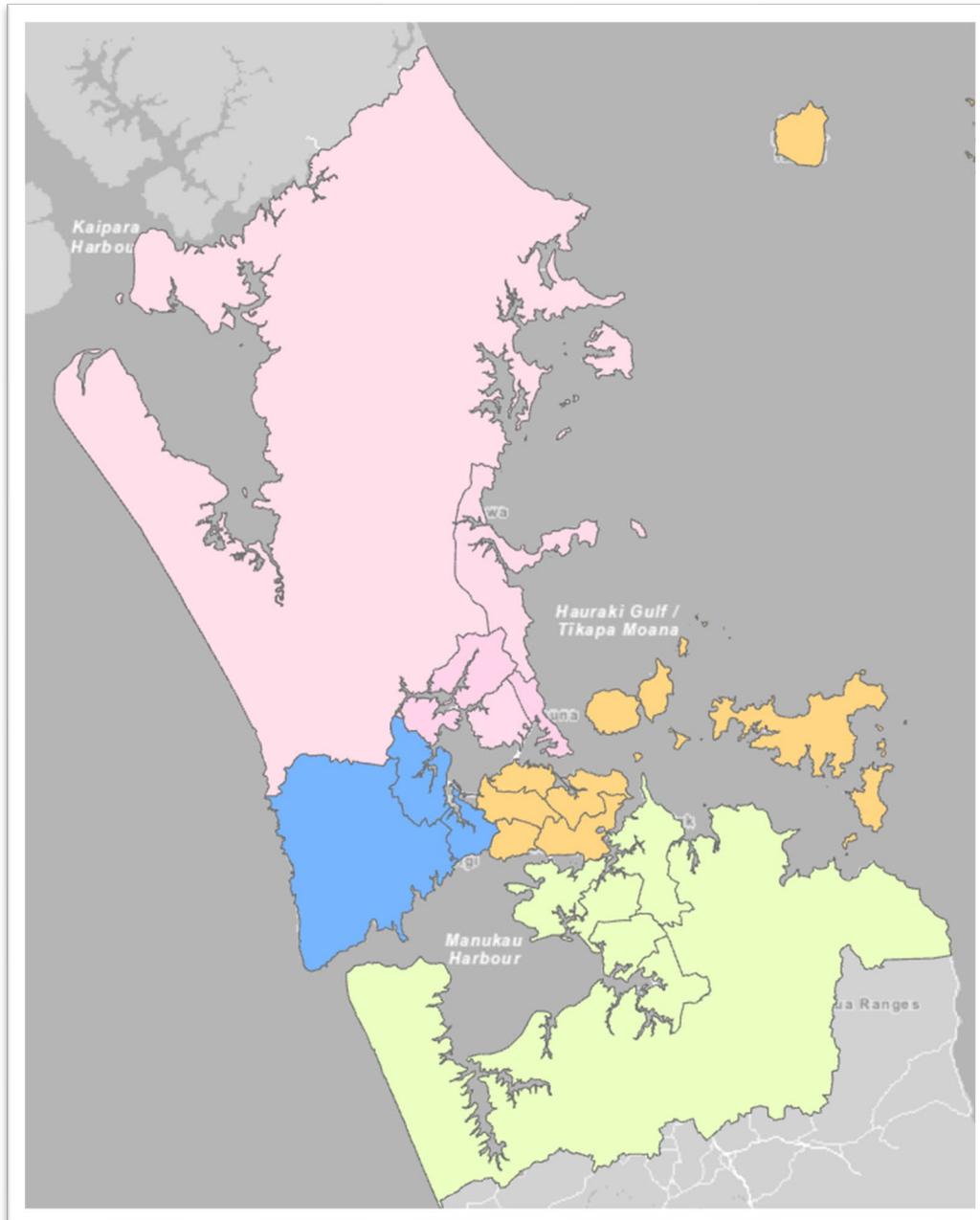
Attribute name	Description	Values/units (if applicable)
Bike_storage_type_1	Type of storage available for bikes – assume garage is place of storage for dwellings with internal garages – for apartment buildings/complexes without private garages, count only dedicated bike parking (e.g. bike room, hanging, bike shed)	Basement/under building dedicated bike area, Private garage with internal access, Private garage without internal access, Bike rack, Storage shed, Sheffield stand, NA
Bike_storage_type_2	<i>As above</i>	
Num_wardrobe	Number of wardrobes in bedrooms	0 1 2 3 4...
Wardrobe_size_1_sqm	Floor area of each wardrobe	m2
Wardrobe_size_2_sqm	<i>As above</i>	
Wardrobe_size_3_sqm	<i>As above</i>	
Wardrobe_size_4_sqm	<i>As above</i>	
Wardrobe_size_5_sqm	<i>As above</i>	
Storage_pantry	A cupboard in the kitchen for the purpose of storing food – usually contains several shelves and is from floor to ceiling in height	Present, Absent, Undetermined
Storage_other	Any other built-in storage – examples: cupboard with shelving for the purpose of storing linen (may be near or in the same cupboard as a hot water tank), cupboards under stairs, storage areas in garages – includes consideration of lockers/communal storage – excludes attic storage	0 1 2 3 4...
Storage_other_area	Total floor area of all storage_others	m2
Size_storage_other_vol_1	Estimated volume of storage based on full floor to ceiling or half (e.g. understairs) height	Full cupboard, Half cupboard, Locker in communal area, Undetermined, NA
Size_storage_other_vol_2	<i>As above</i>	
Size_storage_other_vol_3	<i>As above</i>	
Size_storage_other_vol_4	<i>As above</i>	
Storage_outdoor	An outdoor storage cupboard or shed for storing gardening equipment, outdoor furniture, sports equipment, etc.	Present, Absent, Undetermined
Outdoor_HWC	Is the hot water cylinder in an outdoor living area?	Yes, No,

Attribute name	Description	Values/units (if applicable)
		Undetermined
Outdoor_washingline	Is there a washing line in an outdoor living area?	Yes, No, Undetermined
Outdoor_rainwatertank	Is there a rainwater tank in an outdoor living area?	Yes, No, Undetermined
Outdoor_heatpump	Is there an external heatpump unit in an outdoor living area?	Yes, No, Undetermined
Location_refuse_storage	Location of refuse storage bins	Unknown, None, Outdoor living area, Outside and not outdoor living area, Internal storage, Communal storage
Indoor_outlook_orientation	The outlook from the main indoor living space – i.e. largest glazing in main indoor living.	Private outdoor space, Road/JOAL, Carpark, Communal green space, Public green space
Privacy_indoorliving	Degree of privacy in the indoor living space – high privacy would include visual privacy barriers such as opaque fences/balustrades – medium privacy describes some privacy elements and/or facing communal spaces – low privacy would describe completely open to a public space (e.g. road)	High, Medium, Low, NA
Privacy_outdoorliving	Degree of privacy in the outdoor living space – high privacy would include visual privacy barriers such as opaque fences/balustrades – medium privacy describes some privacy elements and/or facing communal spaces – low privacy would describe completely open to a public space (e.g. road)	High, Medium, Low, NA
Safety_passive	Presence of windows from ground floor active rooms (e.g. dining, kitchen, lounge) overlooking footpaths, driving and common areas (public and private)	Yes, No, Undetermined
Safety_pedestrians	Are pedestrian footpaths vertically separated from vehicle movement areas?	Yes, No, Undetermined, N/A
Shared_in_living	Is there a shared indoor living space such as a lounge?	Yes, No, Undetermined

Attribute name	Description	Values/units (if applicable)
Shared_out_living	Is there a shared outdoor living space such as a garden, patio, decked area?	Yes, No, undetermined
Shared_vehicle	Are there shared vehicles including bikes, cars, scooters?	Yes, No, Undetermined
Shared_exercise	Are there shared exercise facilities such as a gym, swimming pool, tennis court?	Yes, No, Undetermined
Shared_laundry	Are there shared laundry facilities such as washing lines?	Yes, No, Undetermined
Shared_other	Is there another kind of shared facility? Please describe	OPEN

## 11 Map of broad geographic study areas

Figure 22: Auckland area



- Pink – North
- Blue – West
- Green – South/East
- Orange – Central

- Notes: 1. Aotea/Great Barrier was not included in the study and is not shown on the map.  
2. Boundaries between areas are defined by Local Board Areas.

## 12 Study limitations

Several limitations of the study's scope, method and analysis are acknowledged below in three areas: broader context of housing choice and life satisfaction, aspects of the survey method, and data quality.

### Missing context

Our ability to understand the results of the survey would benefit greatly from understanding aspects of the broader context of life in medium density housing (MDH) among Aucklanders, which we did not explore due to time and resource. These topics may be explored in further research.

- Housing choice: There are many factors that people consider and trade off when choosing a home. The topic of housing choice is complex and was intentionally excluded from this study. Further research into the choice to live in MDH could benefit from consideration of 'housing history', by which we mean the housing typologies and densities people have lived in previously.
- Life satisfaction/subjective wellbeing/happiness: It may be that an important factor in explaining housing satisfaction is life satisfaction and/or subjective wellbeing and/or happiness. Literature measuring these concepts over life-courses describes (and debates) a U-shape pattern, whereby these are high at young ages, drop down in middle age, and increase again at older ages (Blanchflower, 2021; Galambos et al., 2020; Matsuo & Matthijs, 2021). Participants' rating of their overall satisfaction generally follows the same U-shaped age pattern, which may be correlated with their general life satisfaction/subjective wellbeing/happiness.
- Primary or secondary home: The survey did not ask participants if their MDH was their primary or secondary home. Some participants might split their time between, for example, a central apartment on weekdays and a standalone home further away from the city centre on weekends. It is anticipated that such a division of time in different homes would have an impact on lived experience and levels of satisfaction.
- Neighbourhood amenities: This study did not ask participants about their neighbourhood and nearby amenities (e.g. green space, transport, services). It is acknowledged that location and neighbourhood amenities are important factors in housing satisfaction (Allen, 2016). Further research could explore housing satisfaction and trade-offs between neighbourhood amenities and the home.

### Method

#### Invited participation

- Estimate of housing typology: Participation was invited based on an estimate of housing typology by Auckland Council. There may be some households living in

recently built MDH who were not invited to participate because of inaccurate estimates of housing typology.

- The Electoral Roll: Properties with at least one elector on the Electoral Roll were included. The Electoral Roll is not always entirely up-to-date, and this may be particularly relevant among those living in recently built and occupied homes. Those renting may also be less likely to have up-to-date information in the Electoral Roll. The Electoral Roll extract used in this study was retrieved approximately a year prior to the 2023 general election. Some groups, such as recent migrants, are ineligible to vote and are not represented in the Electoral Roll.
- Participation was by postal letter. The New Zealand postal system continues to reduce its service, in large part due to the rise in use of alternative means of communication such as email. The frequency by which people check their mailbox and update their postal address in the Electoral Roll may have affected participation.
- Invitations and the survey were in English. It is acknowledged that not all Aucklanders are English speakers.

### Choice and ability to participate

- Time to complete the survey: Completing the survey took on average 20 minutes. There may be some who were invited to participate who lacked the time or chose to prioritise their time elsewhere and so did not participate.
- Participation was primarily online, although a paper copy was available on request. These means of participation are acknowledged to not be viable for all who were invited. Three paper copies were requested, and one paper copy was returned.

### Sample size

- Sample size of sub-groups: The total sample size of this study is statistically robust. However, the sample size of some sub-groups is small and consequently confidence in findings for some sub-groups is low.
- Resource constraints: A sub-sample of 110 properties were selected to have details extracted from consented plans. The number of properties included in this phase of the study was limited by resourcing constraints.

### Data quality cautions

Participants gave conflicting responses to some questions and/or do not appear to have interpreted some questions as they were intended. Consequently, interpreting results from these data requires caution.

- Household composition and number of people in the household. Some participants gave conflicting responses to these two questions such as answering they live with a partner only and one adult is in the household. This is partially the fault of question

design in Qualtrics. To overcome this issue, a new variable was computed to best estimate household composition, and this is what is reported throughout this report.

- Facilities in outdoor living spaces. The survey asked about the impact of some facilities that may be present in an outdoor living space such as a hot water cylinder. The question included the answer ‘I don’t have this facility’. It appears that some participants responded to comment on the impact of the facility on enjoyment of their outdoor living space when the facility was present elsewhere in the home. Consequently, the impact of such facilities being present in outdoor living spaces is likely diluted in the results.
- Typology: Participants were asked to nominate the typology of their home by being shown images with descriptions. In some instances where multiple responses were received from a household, different household members recorded different housing typologies for the same home (e.g. one responded ‘terraced’ while another responded ‘standalone’). For the sub-sample of properties included in the consented plans phase, the typology reported by participants and that recorded by Urban Design Analysts can vary. Overall, housing typology is complex, and a degree of error is present in this variable.
- Room uses: Participants were asked how different spaces in their homes are used, including a garage. The answer options for all spaces were the same (e.g. lounge, cooking space, hobby space, storage could be assigned to any room such as bedroom, living room, garage).
  - Some participants reported conflicting results such as using a bedroom as a cooking space, bedroom, hobby space, storage, and not using the main living space for anything. Such results are likely due to the design of the question in the survey and do not accurately represent how participants are using the spaces in their homes.
  - ‘Carparking’ was not an option for a use of a space and consequently those who reported their garage is used for carparking did so by saying their garage is used for ‘something else’ and writing the use of their garage. The design of this question is therefore likely to underrepresent the proportion of participants who use their garage for carparking.
- Waste management: A question on waste management was asked of participants living in a complex or apartment building. The question was multiple choice and gave participants the answer options of a ‘Bin room/space shared with my neighbours. Collection by a private company (e.g. Green Gorilla, Rubbish Direct)’, ‘Auckland Council kerbside collection’ or ‘Something else’. Some participants who selected ‘something else’ explained they have a bin room shared with neighbours and the bins are collected by Auckland Council. This question is therefore incorrectly conflating the location of bin storage and the organisation(s) collecting waste.
- Overall satisfaction: The survey asked participants about their overall satisfaction with their home and answered by a 5-point Likert scale. The results of this question are not presented in this report as the evidence presented demonstrates that the experience

of living in a home is complex and could not be accurately represented by such a simple question.

## 13 Codes for open ended responses

Below are the codes for responses to the open ended question: ‘What about your home, including your building/complex, do you like the most?’ Multiple codes could be attributed to a participant response; therefore, percentages do not sum to 100.

Code	Count	Proportion (%)
Location including proximity to amenities and transport, nice area	373	32
New or modern including clean, comfortable, tidy	245	21
Uncoded other holding box (e.g. school zone, positive adjective (e.g. comfortable, convenience), having a lift, having two storeys)	213	18
Temperature including insulation, double glazing, warm	218	18
Nice neighbours including friendly neighbours, sense of community	207	17
Secure or safe including lock up and leave, gated community	195	16
Space or size including comment on specific rooms	137	12
Layout or design including well made. high quality	132	11
Low or easy maintenance	129	11
Quiet including soundproofing	101	9
Dry including not damp, no moisture	94	8
Own including that is mine, I own it, own space to have to myself/ourselves, who live with, afford it	85	7
Sunshine or light including bright, shade	87	7
Outdoor area including greenery/trees	71	6
Privacy	63	5
Good view including outlook	63	5
Carparking including carpark exists, garage	38	3
Unspecific, like everything, all great, I like it	21	2
Negative comment, something disliked	23	2
Total	1183	

Below are the codes for responses to the open ended question: ‘What about your home, including your building/complex, do you like the least?’ Multiple codes could be attributed to a participant response; therefore, percentages do not sum to 100.

Code	Count	Proportion (%)
Other; e.g. smells, air bnb, ventilation, moisture, accessibility, shared facilities, close to neighbours	287	24
Carparking issues within complex/property (or not specified); e.g. not enough for residents, difficult to access	242	20
Small, lacking space (both specific rooms/spaces and general 'small' comments)	183	15
Traffic issues; e.g. traffic noise, leaving complex, lack of PT, public roads, too much road space for PT/cycling, traffic safety	153	13
Noise generated inside complex by people; e.g. neighbours' noise, soundproofing issue	124	10
Outdoor living, green space	116	10
Privacy issues	105	9
Security/safety issues; e.g. theft including mail, vandalism, too much or not enough lighting, crime, feeling unsafe, car security concerns	104	9
Storage issues; e.g. not enough	96	8
Positive comment; e.g. nothing disliked, all great	70	6
Broader community issue (including social housing, non-residents entering complex, crime in neighbourhood)	76	6
Issue with carparking on street; e.g. not enough, garage used for storage and car on road	71	6
Temperature; e.g. too hot, too cold	74	6
Neighbour issues (including antisocial behaviour, non-compliance with rules, smoking)	72	6
Management issues; e.g. body corporate itself, BC decisions, management of common areas	57	5
Kitchen issue; e.g. bench space, small, no pantry	39	3
Visitor carparking issues	37	3
Rubbish issues; e.g. bin storage, incorrect sorting, dumping	37	3

Code	Count	Proportion (%)
Child issues had by households with children; e.g. outdoor play	28	2
Financial issues; e.g. expensive body corporate levies, rent cost, rates	25	2
Bathroom issue; e.g. no bathtub	22	2
Quality of construction, materials, fittings	20	2
Car maintenance issues; e.g. EV charging, car washing	15	1
Air flow, ventilation issue	12	1
Total	1185	

Below are the codes for responses to the open ended question: ‘What about your home makes it comfortable to do some of the activities that are important to you?’ Multiple codes could be attributed to a participant response; therefore, percentages do not sum to 100.

Code	Count	Proportion (%)
<b>Size/layout</b> <ul style="list-style-type: none"> <li>• Layout, room locations, open plan living, separation of space, number of bedrooms; good indoor-outdoor flow</li> <li>• Having a spare room that is not used as a bedroom all the time, but rather for hosting, working, hobbies or exercise</li> <li>• Spacious, ample room, large space</li> <li>• Enough space, just enough room, right amount, big enough</li> <li>• Comments referring to their private outdoors space, both backyards and balconies</li> </ul>	615	58
<b>Privacy, safety, noise</b> <ul style="list-style-type: none"> <li>• Comments about the degree of privacy in the home, both internal and external; ability to be alone</li> <li>• Comments on curtains helping achieve privacy</li> <li>• Safety of the building, safety of the neighbourhood</li> <li>• Comments about quiet neighbours, quiet location and soundproofing</li> <li>• Comments specifically about double-glazed windows</li> <li>• Insulation mentioned</li> </ul>	267	25
<b>Quality</b> <ul style="list-style-type: none"> <li>• Built quality of the home</li> <li>• Comments referring to ‘newness’ of the home</li> <li>• Comments about how clean and/or tidy their homes and surrounding territory are</li> <li>• Includes comments about how ‘modern’ their space is</li> <li>• Comments made about the design of the building, interior</li> <li>• Very broad good comments about their spaces, including niceness, cozyness, comfort</li> </ul>	199	19
<b>Locations and environment</b> <ul style="list-style-type: none"> <li>• View or outlook from the unit</li> <li>• Relaxing environment; being able to relax, read, watch TV, or listen to music</li> <li>• Cheap price or rent; cheap utilities and maintenance; more affordable lifestyle</li> <li>• Comments about spending time as a family</li> <li>• Comments about units being ‘well-equipped’</li> <li>• Comments about using the garage, both for carparking and for other activities</li> <li>• Comments about laundry, washing machine, dryer</li> <li>• Comments about living room</li> <li>• Comments about bathroom</li> </ul>	184	17

Code	Count	Proportion (%)
<b>Indoor environment</b> <ul style="list-style-type: none"> <li>• Comments about the level of light and sun in their home</li> <li>• General temperature mentioned – unable to say if warm or cool or both</li> <li>• Comments about cool temperature</li> <li>• Comments about warm temperature</li> <li>• Dry air inside their unit</li> <li>• Humidity mentioned – unable to say if dry or humid</li> <li>• Comments referring to breezeway, ventilation, airflow, freshness</li> <li>• Comments about temperature control, having a heat pump or air conditioner; if mentioned, then temperature and airflow are also ticked</li> </ul>	182	17
<b>Activities</b> <ul style="list-style-type: none"> <li>• Kitchen being used for cooking, kitchen appliances, kitchen space</li> <li>• Dining indoor space</li> <li>• Having an office, being able to work from home, enough soundproofing to attend meetings, study from home</li> <li>• Having friends and family for dinner or stay overnight</li> <li>• Being able to exercise</li> <li>• Hobbies, such as crafts, music, reading, gaming</li> <li>• Pray</li> </ul>	170	16
<b>Lifestyle</b> <ul style="list-style-type: none"> <li>• Comments about choosing to live in smaller space</li> <li>• Comments about buying and/or owning their home</li> <li>• Comments about neighbours and community</li> <li>• Having enough space for pets or being allowed pets</li> <li>• Ability to have a garden or arrange pots/planters to grow plants</li> <li>• Easier maintenance of smaller and/or newer space</li> </ul>	142	13
<b>Indoor setup</b> <ul style="list-style-type: none"> <li>• Comments about amount of things owned</li> <li>• Comments about how they have adapted the space through renovations or purchase of new furniture</li> <li>• Comments about changed habits or prioritisation of different hobbies, or being quiet to not disturb the neighbours.</li> <li>• Comments about furniture, including furniture, fitting, appliances</li> <li>• No need for large space to do their activities</li> <li>• Comments about storage</li> <li>• Comments specifically about displaying trinkets and collections</li> </ul>	142	13

Code	Count	Proportion (%)
<b>Other</b> <ul style="list-style-type: none"> <li>• Comments about imaginary scenarios</li> <li>• A negative comment that says something bad about the home</li> <li>• Not applicable</li> </ul>	110	10
<b>Small household size</b> <ul style="list-style-type: none"> <li>• Comments about the participant’s household size (living alone, living as a couple, or not having kids)</li> </ul>	96	9
<b>Location</b> <ul style="list-style-type: none"> <li>• Comments about convenient location and nearby facilities, or having a good environment, neighbourhood</li> <li>• Access to units</li> <li>• Access to public transport, cycleways, etc.</li> </ul>	64	6
<b>Apartment/complex facilities</b> <ul style="list-style-type: none"> <li>• On-site shared facilities (e.g. storage locker, shared guest rooms, communal garden)</li> <li>• Comments about being able to park close to home or having a garage</li> <li>• Comments about fibre or internet connection</li> </ul>	36	3
<b>Total</b>	1061	

Below are the codes for responses to the open ended question: ‘What about your home makes it uncomfortable to do some of the activities that are important to you?’ Multiple codes could be attributed to a participant response; therefore, percentages do not sum to 100.

Code	Count	Proportion (%)
<b>Not enough space</b> <ul style="list-style-type: none"> <li>General comments about 'not enough space' or 'not enough storage space' as this could be indoors or outdoors</li> </ul>	232	43
<b>Indoor space</b> <ul style="list-style-type: none"> <li>Comments where they have specifically mentioned indoor space, either general or a specific room such as the kitchen</li> <li>Can also relate to the layout (e.g. not open plan)</li> </ul>	142	26
<b>Outdoor space</b> <ul style="list-style-type: none"> <li>Comments where they have specifically mentioned outdoor space</li> <li>This can relate to their own property or to lack of a communal space</li> </ul>	84	15
<b>Guests</b> <ul style="list-style-type: none"> <li>Any comments where they mentioned having people over or guests or hosting</li> </ul>	68	12
<b>All other comments</b>	63	12
<b>Carparking</b> <ul style="list-style-type: none"> <li>Any comments related to parking, including comments about not having people over as there is not enough parking for them</li> <li>This theme might be expanded into sub themes</li> </ul>	45	8
<b>Noisy neighbours</b> <ul style="list-style-type: none"> <li>Where neighbours are noisy and/or where the participants do not want to be seen as noisy neighbours themselves</li> <li>Also includes comments related to their ability to hear conversations</li> </ul>	44	8
<b>Storage</b> <ul style="list-style-type: none"> <li>Any comments related to storage, whether actual or missing</li> </ul>	40	7
<b>Privacy</b> <ul style="list-style-type: none"> <li>General comments about privacy</li> </ul>	32	6
<b>Pets</b> <ul style="list-style-type: none"> <li>Comments where they have specifically mentioned pets/cats/dogs</li> </ul>	34	6

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<b>Noise-related issues</b>		
<ul style="list-style-type: none"> <li>Any other noise-related issues such as fireworks, busy road</li> </ul>	23	4
<b>Visual issues</b>		
<ul style="list-style-type: none"> <li>Comments about neighbours being able to see into their yard or their home, or vice versa</li> </ul>	20	4
<b>Neighbours</b>		
<ul style="list-style-type: none"> <li>Any other neighbour-related comments (e.g. general comments about 'proximity to neighbours')</li> </ul>	15	3
<b>Heat</b>		
<ul style="list-style-type: none"> <li>Comments where they have specifically mentioned heat and inability to control heat inside</li> </ul>	13	2
<b>No comment</b>		
<ul style="list-style-type: none"> <li>Answered 'yes' 'no'</li> </ul>	12	2
<b>Total</b>	545	



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